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Liquidity, Credit and Leverage Risk as Determinants of Profitability: An Empirical Study of Pakistan's Commercial Banks

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ABSTRACT

This study aims to determine the impact of liquidity, credit risk, leverage risk, bank size, GDP and inflation on bank profitability of 15 commercial banks of Karachi, Pakistan. Data has been collected from the consolidated audited financial statements and annual reports of 15 private commercial banks of Pakistan. The study has employed correlation analysis, panel cointegration analysis for long-run relationships, Hausman test for misspecification estimation of random-effect analysis and panel OLS analysis for hypothesis-testing using EViews 9 software. The present paper identified that liquidity risk has an insignificant and negative relationship with firm profitability, credit risk has a significant and positive relationship with firm profitability, leverage risk has a significant and positive relationship with firm profitability, bank size has a significant and positive relationship with firm profitability, GDP has an insignificant and negative relationship with firm profitability, and inflation has an insignificant and negative relationship with firm profitability. The data gathered for the study is from a developing nation. The sample size taken by the researcher is smaller as compared to the target population of the study. For regulators, decision-makers, and bank management, our findings are pertinent. For instance, the possibilities for higher profitability are supported by the rising ownership concentration, particularly in nations with stricter laws. Management must be well informed of the bank's liquidity condition in various investment categories, and immediate remedial action should be implemented.

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Introduction

Banking organizations and non-banking organizations are supplementary for robust success and continuing development of the economy. Normally, these institutions generate funds by keeping deposits from various customers and use those deposits as loan to those who needed. In this way these organizations produce input resources for development of the state in terms of development of financial and economic sectors. Banking systems are one of the basic pillars of stat's economy; therefore, a stable banking system is a prerequisite to maintain economic growth and magnification (Jahan et al., 2022). Risk is a fundamental challenge faced not only by developed nations but also by developing countries, where it poses a serious threat to the performance and stability of banks. The banking sector is inherently exposed to significant risks due to the volatile and unpredictable nature of financial markets and economic conditions. This volatility makes banking a high-risk industry, requiring robust risk management practices to ensure sustainability and profitability (Ul Mustafa et al., 2021).

The impact of risk is critical because, in today's tough environment, managing risk leads to successful management of any firm. Commercial banks, through their financial operations of receiving deposits and lending money, play a critical role in increasing the economy's performance (Shah et al., 2020). Risk has an impact on the banking industry in both developed and emerging nations throughout the world. Banks should focus on the soundness of the banking system by controlling various sorts of risks to deal with the monetary crises in emerging nations (Rehman et al., 2020). Furthermore, risk management is strategic because a company's performance and value are mainly dependent on how well it manages risk elements. It has grown in importance in the fields of accounting and corporate finance. Risk uncertainty is unquantifiable, and it has a negative impact on the quality of financial accounting data (Waqas and Bahrain, 2019). Also, risk management that is both effective and competent may help managers boost their organization's efficiency levels and enhance the banking industry's worth. As a result, it is necessary for financial firms' management teams to recognize, monitor, and manage their risks, particularly the financial and monetary risks that may arise (Ehsan and Javid, 2018).

The financial performance of a bank is affected by interest rate risk, credit risk, and liquidity risk. Risk has an impact on an organization's financial performance. Profitability and asset quality are negatively impacted by ineffective CR management. It has the potential to raise non-performing loans, resulting in financial crisis (Zheng et al., 2019). Additionally, liquidity risk is caused by shortcomings in the capital funds mix and mismatches in the maturities of assets and obligations, which has a negative influence on banks' FP. Banks are unable to liquidate an investment in a timely manner (Ahmed et al., 2021).

Banking sector of Pakistan

The most significant financial intermediaries that offer a diversity of services are banks. Banks continue to play a crucial role in financing economic activity at various levels (Amararathne and Wanigasuriya, 2022). The scenario and situation of the Pakistani banking

sector have undergone some significant instances of progress over the past 20 years. It is generally acknowledged that the banking sectors and financial institutions in Pakistan were under intense pressure to continue to be profitable (Naseer et al., 2021). Bank irritations owing to reduced productivity, high intermediate cost of funds, significant establishment costs, excessive staffing, numerous loss-making branches, and improper financial management, So In latest years, Pakistani banks have shifted their loaning money from the public to private entities. These transitional moments influence the variables that influenced the banking sector's profitability (Danlami et al., 2022). That's because the regulatory framework permits commercial banks to cater to various financial market activities, these banks have dominated the financial system in Pakistan and hold a significant position in the country's financial system (Hanif et al., 2022).

In the past, financial institutions in Pakistan struggled to effectively contribute to the country's broader socio-economic goals. This shortcoming led to the nationalization of the banking sector, as the government sought to exert greater control over financial activities to align them with national priorities. However, over time, it became evident that nationalization had an adverse effect on the operational efficiency of both banking and non-banking financial institutions (Ali et al., 2021). The performance of the financial system deteriorated under state ownership, prompting major structural reforms. Significant changes began to take shape after 1997, when regulatory authorities initiated comprehensive reforms aimed at modernizing the banking sector. These reforms involved overhauling banking policies, improving governance structures, and aligning managerial practices with the standards of more advanced and competitive economies. Modernization efforts were designed not only to enhance operational efficiency but also to foster a more dynamic and marketoriented financial environment. Furthermore, the profitability of commercial banks has been recognized as a critical factor influencing economic growth (Ahmed et al., 2021). In recent years, the reforms and regulatory restructuring have contributed to the revitalization of Pakistan's financial system, accelerating the country's economic development. This evolution highlights the interconnected role of institutional frameworks, regulatory environments, macroeconomic stability, and bank-specific characteristics in shaping the structure and performance of the banking sector in Pakistan (Ahmad et al., 2022).

Only a few researches integrate different examinations of the influence of liquidity risk on BP. However, the elements impacting BP and the liquidity risk measuring indicator have not been adequately utilized (Huong et al., 2021). Endogenous difficulties generated by the lagged effects of dependent variables, which can lead to distortions in regression model study results, have yet to be overcome (Margono et al., 2020). There are very few studies in the Pakistani market that examines the effect of liquidity risk on BP or the impact of the financial crisis on this connection, as there is in many other countries (Alim et al., 2021). As a result, research on the influence of liquidity risk on BP in Pakistan from 2010 to 2020 helps to confirm the impact of liquidity risk on BP in Pakistan.

Moreover, the Pakistani banking sector's asset quality is deteriorating, according to the State Bank of Pakistan's Quarterly Review Report. The number of non-performing loans

has risen. Interest rates are extremely volatile in a dynamic way because of increased market competition and deregulation. This can have an influence on earnings and expenses as well as enhance the interest rate risk in the risk (Ahmed et al., 2021). Hence, the goal of this study is to identify how financial risk affects Pakistani commercial banks' FP.

Also, competitive environmental conditions necessitate several rules designed to act as control mechanisms, one of which is capital requirements. The capital ratio of a bank is a financial buffer (buffer) that protects against several sorts of risk. Several research have looked at the influence of capital on bank risk, but no definitive results have been found in the context of developing nations such as Pakistan (Isnurhadi et al., 2021). Therefore, this study has considered this variable.

Furthermore, the recent financial crises have emphasized the need for a better understanding of the elements that influence bank risk by taking efficiency into account (Isnurhadi et al., 2021). This study sheds light on an important topic, i.e., the link between efficiency and risk in commercial banks. Although empirical research in finance agrees that firm size matters, no study has explored the impact of firm size on critical financial operations to date (Hashmi et al., 2020). Additionally, the banking sector, like other industries, has a high tax rate, which has reduced its profitability and attracted potential competitors. There were several banks, some of which had a thin distribution network, undercapitalization, and bad management (Kamal, 2021).

Research outcomes often vary significantly across different geographical regions, highlighting the influence of regional factors on key financial variables (Chowdhury and Zaman, 2018). This suggests that regional context can have a substantial impact on the determinants of bank performance. As such, findings from studies conducted in other countries may not be directly applicable to Pakistan. Differences in regulatory frameworks, institutional structures, and economic environments mean that conclusions drawn in one country may not hold true in another. Pakistan, with its unique socio-economic and regulatory landscape, presents distinct characteristics that must be considered when analyzing its banking sector. Therefore, relying on international studies as a foundation for understanding bank performance in Pakistan could lead to inaccurate or misleading conclusions. To address this gap, there is a clear need for a comprehensive and context-specific study focusing on Pakistani commercial banks. Such research should examine the influence of bankspecific factors, such as liquidity risk, credit risk, bank size, and leverage risk, alongside macroeconomic indicators like GDP growth and inflation. This approach would provide a more accurate understanding of the dynamics influencing bank performance within Pakistan's unique financial and economic environment.

The Pakistani banking industry is under numerous pressures such as the liquidity risk, credit risk, and interest rate volatility, as well as increasing number of non-performing loans. Although a significant amount of research on the association between liquidity risk and the performance of banks has been conducted across the world (e.g., Abdullah et al. (2025)), there is little literature regarding the matter in the Pakistani context. This can be explained by the fact that researchers either ignore financial risks, or place significant

dependence on information obtained in developed economies. This deficiency presents the necessity of examining the influence of the leverage risk, credit risk, liquidity risk on the performance of commercial banks in Pakistan. This is especially crucial among bank policymakers and managers since such research can help to provide evidence of certain insights that can be used to enhance risks management and performance strategies. Therefore, this research will take empirical approach to assessing the influence of liquidity, credit and leverage risks towards performance of commercial banks in Pakistan during the period 2010 to 2020. With reference to the identified gaps, this paper aims at investigating the role of financial risks and macroeconomic factors on the profitability of commercial banks in Pakistan. Precisely, the major aim of the research is to study the influence of financial risks to the profitability of commercial banks in Pakistan. Specifically, the study analyzes the effects of liquidity risk, credit risk, and leverage risk on the performance of banks in 2010-2020. Besides financial risks, there are macroeconomic factors that we must also take note of in determining the performance of banks. It aims at the analysis of the influence of the size of banks, gross domestic product (GDP), and inflation on the profitability of the commercial banks in Pakistan. Besides, this paper attempts to respond to some important questions about the factors which influence profitability of commercial banks in Pakistan. It investigates the impacts of various forms of financial risks on the performance of the banks namely liquidity risk, credit risk and leverage risk. Moreover, in this research, it will be investigated how the macroeconomic factors such as the size of banks, gross domestic product (GDP) and inflation determine the profitability of commercial banks.

Purpose of the study

This study aims to empirically investigate the impact of leverage risk, credit risk, and liquidity risk on the profitability of Pakistani commercial banks, while also considering additional determinants such as bank size, gross domestic product, and market penetration. Although extensive research on this subject exists at the international level, limited attention has been given to the Pakistani context. By focusing on the period from 2010 to 2020, this research fills an important gap by examining how key risk factors influence the profitability of commercial banks in Pakistan. The findings are expected to provide valuable insights for bankers, policymakers, investors, owners, and regulators in developing effective risk management strategies and enhancing the performance of the banking sector in Pakistan.

Literature Review

Theoretical background and hypothesis formulation

Modern portfolio theory

MPT is a practical method for selecting assets with the aim of maximizing total returns while retaining a reasonable level of risk. The MPT theory places a lot of emphasis on diversification. Most investments are either high risk or low risk and low return. Investors may also get the maximum benefit by choosing an appropriate combination of the two, depending on an assessment of their specific risk tolerance (Elton and Gruber, 1997).

Also, the explicit incorporation of liabilities in the asset allocation decision is one of the most essential aspects of portfolio theory. Liabilities are rarely certain and are frequently influenced by factors such as inflation and interest rate fluctuations (Fabozzi et al., 2002). The return on assets is influenced by similar factors. The portfolio problem can be resolved by formulating both liabilities and asset returns as a function of indexes that affect these returns (and, in the case of liabilities, affect the amounts). This will enable investors to make tradeoffs between expected return and total risk as well as the type of risk to which they will be exposed (Francis and Kim, 2013).

According to Modern Portfolio Theory (MPT), the total risk associated with an individual stock's return can be divided into two main components: systematic and unsystematic risk. Systematic risk, also known as market risk, refers to external factors that affect the entire market and cannot be mitigated through diversification. These risks are broad in nature and include economic downturns, fluctuations in interest rates, geopolitical events such as wars, and other macroeconomic disturbances. On the other hand, unsystematic risk, also called specific or idiosyncratic risk, is unique to a particular company or industry. This type of risk arises from internal factors such as changes in a firm's management, poor financial performance, operational setbacks, or product recalls. Unlike systematic risk, unsystematic risk can be significantly reduced or even eliminated by holding a well-diversified portfolio of stocks. By adding more stocks to your portfolio, you may diversify this kind of risk (Rom and Ferguson, 1994). It is the fraction of a stock's return that is unrelated to broad market changes. In a well-diversified portfolio, the risk, or mean deviation from the average of each stock, contributes little to portfolio risk. Total portfolio risk is determined by the variance or difference between the risk levels of several stocks rather than the risk levels of individual stocks. Therefore, having broad portfolios rather than individual equities benefits investors (Goetzmann et al., 2014).

Liquidity risk

Liquidity risk is independent variable in this research, liquidity risk is calculated by Current Assets to Current Liabilities. When bank is unable to fulfill bank obligations when obligations are due without incurring unacceptable losses, it is called liquidity risk (Comptroller of the Currency, 2001) banks earning and capital can be inversely effected

liquidity risk so for bank managers give priority on liquidity risk for sufficient availability of funds to meet the need of short term obligation on the demand of providers and borrowers.

According to the State Bank of Pakistan "Liquidity risk is the potential for loss to an institution, arising from either its inability to meet its obligations or to fund increases in assets as they fall due without incurring unacceptable cost or losses" liquidity risk is calculated as ratio of gross loans and advances to total deposits. Cash deposits are great sources of liquid assets. These deposits are further utilized to allow loans to borrowers and to earn interest income. Banks must maintain adequate deposits to effectively manage and mitigate liquidity risk. A higher liquidity ratio typically indicates reduced liquidity availability, thereby signaling increased liquidity risk. Liquidity risk arises when a bank faces a shortage of liquid assets, making it unable to fulfill its short-term financial obligations, such as meeting the cash demands of depositors or settling other immediate liabilities. In such situations, the bank's ability to operate efficiently and maintain customer confidence can be severely impacted (Jahan et al., 2022).

Liquidity is the company's ability to fulfill its current financial obligations. The greater the company's liquidity ratio, the more capable it is of meeting its commitments (HASANUDDIN et al., 2021). Companies with a high level of liquidity are regarded to be attractive investment possibilities by investors since they are perceived to have outstood performance, allowing stock prices to rise, hence increasing the firm's worth (Putri and Wiksuana, 2021).

Relationship between liquidity and profitability

Working capital choices determine the link between an organization's profitability and financial liquidity (Dwiantari and Artini, 2021). Liquidity refers to the ease with which a firm can convert its assets into cash or access funds to meet its immediate financial needs. It reflects a company's ability to obtain readily available cash when required, especially during emergencies or unexpected financial disruptions. This may include funds held in emergency savings accounts or cash reserves readily accessible to the business (Hashmi and Iqbal, 2022). Liquidity and profitability are considered two of the most critical indicators of a firm's overall financial health. While profitability measures long-term success and value creation, liquidity assesses the firm's ability to fulfill short-term obligations as they come due. One common metric used to evaluate this is the liquidity ratio, particularly the current ratio, which compares a company's current assets to its current liabilities. A higher current ratio generally indicates a stronger margin of safety for short-term creditors, enhancing the firm's creditworthiness and financial resilience (Sibarani et al., 2022).

The implementation of a flexible short-term financial policy decreases the danger of losing liquidity. This strategy is defined by a high level of current assets compared to sales revenues and a low fraction of current liabilities used to finance these assets (Gunanta, 2022). A company that has expense of maintaining a high level of current assets is the drawback of this approach. High expenses are also the outcome of a growing engage-

ment in the financing of existing assets and, in general, more costly long-term capital (equity plus long-term liabilities) (Javid et al., 2022). This indicates that the more flexible the company's strategy is in terms of raising liquidity, the greater the company's costs will be, restricting its profitability (Muda, 2021). Profitability has an impact on a company's worth by encouraging investors to react favorably, which can raise stock prices in the market and eventually raise the company's value in the eyes of investors (Silalahi et al., 2022). Hence, it can be proposed that:

H1: Liquidity risk has a negative impact on FP

Credit risk

Credit risk is independent variable, Credit risk is also termed as risk of default and is considered as most important among all other types of risks. It is calculated as a loan loss provision for total loans. The loan loss provision is defined as a portion of the total loan that cannot be repaid to banks so unrecoverable by bank. As the ratio of loan loss provision to total loan increases, it also increases credit risk and decreases bank's profitability. Banks earn interest income by lending money to various borrowers for individual needs or to carry out business operations. There is always probability that borrowers may be unable to pay back their obligations on time (Jahan et al., 2022).

CR is the risk associated with a borrower failing to make payments, complying with contractual obligations, or defaulting (Sondakh et al., 2021). Loans are a major source of CR since interest in loans accounts for the majority of a bank's revenue. It often refers to the possibility that a lender won't get the owed principal and interest, which would disrupt cash flow and increase expenses (Kaminskyi and Nehrey, 2021).

Relationship between credit risk and profitability

Credit risk (CR) refers to the potential for financial loss that arises when a borrower fails to meet their debt obligations, such as repaying a loan or honoring the terms of a contract (Jungo et al., 2022). This type of risk typically involves the danger that a lender will not receive the expected payments of principal and interest, which can negatively impact the institution's cash flow and increase its operational costs. Managing credit risk is essential for financial institutions, as it enables them to maintain a balance between risk and return. As noted by Fauziah and Fadhilah (2022), the objective of credit risk management is to optimize a bank's return on risk-adjusted capital by keeping credit exposures within acceptable thresholds. Aguti (2022) emphasizes that credit risk is among the most critical challenges facing banks today, largely because lending activities constitute a core revenue stream for most commercial banks. Failure to manage this risk effectively can have severe consequences not only for individual banks but also for the broader financial system. Proper credit risk management ensures institutional sustainability, promotes profitability, and contributes to the stability and efficiency of the wider economic system. Additionally, as highlighted by Mulwanda (2022), even a small proportion of borrower defaults can lead to disproportionately large financial losses for a bank. This underlines

the importance of having robust credit assessment frameworks, continuous monitoring systems, and proactive risk mitigation strategies in place. Through effective credit risk management, banks are better positioned to allocate capital prudently, maintain investor confidence, and support long-term economic growth.

Banks make money when their earnings exceed their costs, this is known as profitability in common language (Zuhroh, 2022). A large quantity of credit provided to one account implies the risk that the bank will bear if the firm fails to pay (Bandara et al., 2021). Loan concentration risk can be mitigated by managing the quantity and repayment conditions of credit granted to a large client. A negative relationship between equity and CR suggests that higher debt levels are associated with higher CR (Banu et al., 2021). Higher CR may lead to lower profitability due to a higher likelihood of uncollectible debts owing by bank customers Rasa (2021). Hence, it can be proposed that:

H2: Credit risk has a negative impact on BF

Leverage risk

Leverage risk is independent variable, Leverage is the term for using debt (borrowed money) to finance a venture. The project's potential profits are doubled as a result. Leverage also increases the risks that the venture won't succeed (Sari and Witjaksono, 2021). The main elements of leverage are the total debt to assets, as well as the short- and long-term debt to assets. The results indicate that leverage has a negative effect on profitability. The results of this study support the pecking order theory by demonstrating that highly profitable companies with low bankruptcy risk have less debt (Witjaksono and Sari, 2021).

Leverage risk, also known as interest rate risk, is typically measured by the ratio of interest ratesensitive assets to a bank's total assets. In financial terms, interest rate-sensitive assets are those whose values fluctuate in response to changes in market interest rates. These fluctuations impact asset valuations, as their worth is re-assessed based on prevailing interest rate conditions. A sudden or unexpected shift in interest rates, particularly an increase, can lead to a decrease in the value of equity markets. As a result, banks holding a significant portion of such sensitive assets may experience substantial financial losses (Jahan et al., 2022).

The relationship between a company's size and its profitability has long been a topic of interest among researchers and financial analysts. Firm size is often considered a crucial factor that can significantly influence a company's financial performance. According to Hasanuddin et al. (2021), there is a statistically significant and positive correlation between the size of a firm and its return on equity (ROE). This implies that as a firm grows in size, its ability to generate profits relative to shareholders' equity tends to improve proportionately. However, the academic community has presented mixed findings on this topic. While some studies confirm the positive influence of firm size on profitability, others suggest the relationship may be negative or even negligible, depending on industry dynamics, market conditions, and managerial efficiency (Akinola, 2022). These differing

perspectives highlight the complexity of the issue and suggest that the size-profitability nexus may not be uniformly applicable across all sectors or regions. Despite the divergent findings, firm size continues to be recognized as a foundational variable in the analysis of corporate profitability. Recent contributions to the literature, including those by Amararathne and Wanigasuriya (2022); Dang (2022); Muttaqin and Qomar (2022), reinforce the importance of firm size as a key determinant in explaining variations in financial performance. Larger firms may benefit from economies of scale, stronger market presence, and greater access to capital, all of which can enhance profitability. Conversely, increased bureaucracy and inefficiencies in larger organizations might offset these advantages, further complicating the relationship.

Relationship between leverage risk and profitability

Leverage enables investors to broaden their exposure to a market, be it one for commodities, equities, or real estate. Leverage is the process of purchasing an asset without paying the full price by using debt or credit (Alhamshary et al., 2022). Leverage is the use of debt to make larger purchases than you can afford, according to certain definitions. An investor's exposure to a market is increased by using leverage, but it can also put them in danger (Amararathne and Wanigasuriya, 2022). This is especially true for investors who are making larger purchases than they can afford. When a company's return on assets (ROA) does not exceed the loan's interest rate, which considerably lowers its return on equity and profitability, the principal risk associated with excessive financial leverage arises (Danlami et al., 2022). While loans utilized to make money might eventually increase income and profits, unproductive or excessive debt can hamper profitability of the banks (El Charef et al., 2022).

When a bank's internal resources are insufficient to cover its investment demands, debt is issued; as a last option, stock is issued if no more debt is available (Grau and Reig, 2021). When internal capital is available, firms would rather use it first; if outside funding is needed, debt will be favored over stock. In other words, it believes that profitability and leverage have a negative relationship (Ravindran and Kengatharan, 2021). The pecking order theory, which claimed that leverage and profitability have a negative relationship, is supported by empirical data (Akhtar et al., 2021; Azizah et al., 2022; Kirimhan et al., 2022). Hence, it can be proposed that:

H3: LR has a negative impact on FP.

Bank size

Bank size is independent variable in the research, bank size is calculated as taking logarithm of total assets. This variable is considered as very important in evaluating performance of bank. It is measured through the assets that perform as engine to carry out all banking activities. Several studies also confirm that banks size positively impact on profitability of banks. As more assets a bank have the more chances will be for investing

in various opportunities and large base of diversified portfolio and to earn more profit. Therefore, large banks can generate more profits as compared to small size banks (Jahan et al., 2022).

A bank's capacity refers to its ability to offer a diverse range of services and products, as well as the overall quantity and variety of offerings it can provide to customers simultaneously (Jayaraman et al., 2021). The size of a bank is commonly measured using various standard metrics, such as its total gross assets, the logarithmic value of its assets, the number of employees, and its profit turnover. These indicators help assess the scale and operational scope of a bank. To evaluate the growth of a bank's size, key factors such as revenue, profit levels, asset expansion, and workforce size are often considered. These metrics are critical in understanding the bank's performance and its ability to achieve long-term financial stability. Additionally, growth in these areas is directly linked to enhanced profitability, as they often reflect improvements in operational efficiency and market reach, which are fundamental to the bank's overall success (Kumar et al., 2021).

Relationship between bank size and profitability

Profitability is considered as being significantly influenced by firm size. Size is typically determined by looking at gross sales, gross asset value, the number of employees, and sales turnover (Olivia et al., 2022). A company's growth can be reflected through increased sales, higher earnings, a rise in total assets, or an expansion in its workforce. These indicators of growth are essential for enhancing the firm's financial stability and boosting long-term profitability. In addition, it has been demonstrated that, in addition to other variables like liquidity, the size of the bank affects profitability (Chhaidar et al., 2022). The trend and pattern of profitability has traditionally been used to assess the effectiveness of investments and the performance of banks. Larger companies are thought to be able to produce goods at a lower cost than small companies (Al-Homaidi et al., 2021). This is due to the fact that the former have gained more knowledge and cumulative experience, as well as the ability to spread their fixed costs over a larger volume of output (Alabdullah et al., 2021). Hence, it can be proposed that:

H4: Bank size has a positive impact on FP.

Gross Domestic Product

Gross domestic product is independent variable in the research, GDP is a monetary indication of the market value of all completed goods and services produced in a country. For worldwide comparisons of living standards, GDP per capita at PPP may be more relevant. Although real GDP is more significant for international comparisons of national economies (Abdullahi & Yusuf, 2022). The GDP (nominal) per capita does not accurately represent changes in the cost of living and inflation rates of individual countries. The nation's economic activity, as measured in our study by real GDP growth, is a significant factor that affects bank profitability (Adesina, 2021). When the economy is growing, banks

are often able to boost lending while also earning more fees from the increased activity in the stock market. Additionally, banks' profitability increases when firms are doing well because they create fewer non-performing loans. In times of economic expansion, margins also often increase, boosting bank profits even more (Yücel and Vural, 2022). We thus anticipate a favorable correlation between bank profitability and GDP, which is consistent with prior findings (Lawa et al., 2021).

The economic cycle and bank profitability have an impact on the rate of annual GDP growth. GDP has an impact on both provisions and net interest income. Furthermore, GDP enables central banks and policymakers to identify whether the economy is growing or declining and immediately take the necessary measures (Koroleva et al., 2021). The impact of variables including monetary and fiscal policy, economic shocks, and tax and expenditure plans may also be evaluated by policymakers, economists, and businesses. Furthermore, rising real GDP encourages workers to demand rises in pay, and costs for services that support banking operations may also rise (Bekhet et al., 2021).

Relationship between GDP and profitability

GDP is a measure of economic growth. A favorable association between GDP and bank profitability has been found in several research studies (Amararathne and Wanigasuriya, 2022; Jaara et al., 2021). The effect of gross domestic product growth as an external element cannot be ignored given the slowdown of global economic growth (Pamuncak and Wijaya, 2022). Gross Domestic Product (GDP), representing a country's overall economic output and growth, plays a crucial role in shaping the financial well-being of nearly all participants in the economy. When GDP growth is strong, businesses tend to expand, hire more employees, and offer higher wages. This, in turn, boosts consumer spending on goods and services (Isayas, 2022). For the banking sector, such economic activity translates into increased demand for financial services, higher loan volumes, and improved loan repayment capacity, all of which contribute positively to banks' profitability ratios.

During an economic boom, there is an increase in demand for bank transactions and other procedures. This might result in increased fee and commission income (Lisowski and Woźniak, 2022). During economic downturns, the connection between economic activity and commercial bank revenue may be inverse (Chiahti et al., 2021). Profitability of a company rises during a period of economic rise and falls during a period of recession. Stronger GDP growth thus causes a rise in company loans and deposits in addition to an improvement in bank net interest profit and loan losses (Abdo, 2020). Hence, it can be proposed that:

H5: GDP has a positive impact on FP

Inflation

Inflation is independent variable in the research, Inflationary pressures have a detrimental influence on financial sector performance, which hurts long-term economic growth

(Nugraha et al., 2021). Inflation stifles economic growth through depressing financial sector performance, particularly the functioning of financial markets. Increased interest rates give banks more opportunities to make revenues. Meanwhile, their cost of capital rises, potentially reducing revenues (Azizi and Jokar, 2021).

Relationship between inflation and profitability

When the cost of products and services exceeds the quality of living in an area, this is referred to as inflation. Investors are put off by inflation, which also affects the stock market (Azizi and Jokar, 2021). An increase in the prices of commodities, food, energy, and various other goods and services, commonly referred to as inflation, has widespread implications across the entire economy (Fuadi et al., 2022). Inflation affects not only the purchasing power of consumers but also significantly influences the operational costs of businesses. It raises the cost of production, affects profit margins, and leads to higher borrowing costs. Furthermore, inflation impacts interest rates on mortgages, as well as the yields on both corporate and government bonds, thereby influencing investment decisions and financial market dynamics (Rosabila and Mongid, 2022). Inflation rates negatively affect bank profitability, the banking industry, and real return on financial assets, according to previous empirical findings (Priyana and Surjandari, 2022; Sanusi and Wiayanti, 2022; Trihardianto and Hartanti, 2022). Their argument is that rising inflation causes the financial sector to perform worse, which hurts economic growth. The value of their nominal assets would therefore decline more than the value of their nominal obligations because of rising prices. Banks will thus suffer during inflation (Wijaya and Muljo, 2022).

Thus, borrowers get profit from inflation because they may repay lenders with money that is worth less than when they borrowed it. Inflation increases the demand for credit, which results in higher interest rates that benefit lenders (Katırcıoglu et al., 2020). Inflation may diminish the value of your assets over time since future price rises are predicted. This is particularly evident when dealing with currencies (Tinoco Zermeño et al., 2018). By depositing cash in a bank, you may earn interest, which helps to minimize the consequences of inflation. When inflation is strong, banks often pay higher interest rates (Sitompul et al., 2021). Hence, it can be proposed that:

H6: Inflation has a negative effect on FP.

A study is conducted was to assess the link between Islamic bank capital, efficiency, and risk. The data from 129 Islamic banks throughout the world from a variety of sources. The study's findings supported previous studies that indicated BC had a positive influence on bank stability (natural logarithm of Z-Score) but a negative impact on CR (loan loss provision to total liabilities). Efficiency seems to have the same influence, according to the studies. The relationship between BC and efficiency showed that banks are motivated to reduce risk even when BC is low (Isnurhadi et al., 2021).

To demonstrate how financial information and corporate governance procedures may be used to mitigate bank liquidity risk in the market. This article investigated the rela-

tionship between CG, financial disclosure, and banks' LR management in Bangladesh. 346 observations from public annual reports were used in the study to examine panel data on 32 commercial banks from 2008 to 2018. The article claims that effective corporate governance and financial disclosure practices support banks' ability to withstand intense regulatory pressure while maintaining a stable reputation with investors (Sarker and Bhowmik, 2021).

A study conducted on Vietnamese commercial banks, using data from 2009 to 2018, aimed to explore the relationship between bank size, credit risk, and profitability. Employing the two-step Generalized Method of Moments (GMM) technique, the findings indicated that credit risk (CR) has a negative impact on bank profitability. However, this adverse effect was found to be less significant in larger banking institutions, suggesting that size may offer some buffer against credit-related losses. Interestingly, the study also identified a negative linear relationship between bank size and profitability, indicating that larger banks in Vietnam may operate less efficiently than smaller ones. Furthermore, the researchers observed a non-linear relationship between bank size and profitability. This suggests that profitability tends to increase with bank size up to a certain optimal point, beyond which further growth leads to diminishing returns. In essence, while size may initially contribute positively to profitability, excessive expansion can ultimately reduce operational efficiency and financial performance (Thi Thanh Tran and Phan, 2020).

To examine the factors that changed the level of CR across Bangladeshi commercial banks during the global financial crisis (GFC). Multiple regression analysis was used to examine the relationship between the degree of CR as a dependent variable and the financial crisis, other bank-level variables, and macroeconomic variables. The reasons of the great recession made it clear that CR management standards must be upheld and developed in addition to systemic or structural problems. It was shown that CR correlates to macroeconomics variables, indicating that the banking sector has considerable feedback effects on the actual economy (Moudud-Ul-Huq et al., 2020).

To assess whether the default risk of Islamic and conventional banks is affected differently by economic uncertainty. Between 2009 and 2018, they conducted research based on a similar metric across nations using a sample of 568 banks from 20 different countries. The findings showed that, although increasing the DR for conventional banks, EU has no impact on Islamic banks. They examined how religion, organizational characteristics, and bank-level heterogeneity influenced DR and found that it was unaffected by uncertainty in all countries for Islamic banks, but that this was only true for banks with greater non-interest revenue, larger sizes, and publicly listed banks. The findings revealed that in nations with more religiosity, conventional banks face greater uncertainty in terms of stability (Bilgin et al., 2021).

Bekhet et al. (2021) conducted an in-depth study to assess how both internal and external factors influence the profitability of commercial banks in Jordan. The analysis was based on panel data from thirteen commercial banks, covering the period between 2000 and 2018. To evaluate the relationships between variables, the researchers employed several

econometric techniques, including pooled Ordinary Least Squares (OLS), random effects, and fixed effects models. The results demonstrated that internal factors, especially bank size and the degree of diversification, positively contributed to bank profitability. In contrast, risks such as credit risk, operational risk, and leverage risk were found to negatively affect profitability, highlighting the detrimental impact these risks can have on a bank's financial performance. Notably, while credit risk is traditionally seen as a threat to profitability, the study uncovered a slight but positive relationship between credit risk and profitability, suggesting that banks may be pricing risk appropriately or managing it efficiently to generate returns. In terms of external influences, the findings revealed that market concentration and stock market volatility had a significant negative impact on the profitability of Jordanian commercial banks. These results underline the importance of both internal risk management practices and the broader economic environment in shaping bank performance. In contrast, financial development and inflation were identified as external factors that positively influenced profitability. Furthermore, the study noted that the overall impact of the country's GDP and the ongoing refugee crisis on bank profitability was negative but relatively small, suggesting that while these factors played a role, their effects were limited in comparison to others (Bekhet et al., 2021).

A study was conducted to analyze the impact of various risk factors and competition on the profitability of Pakistan's banking sector, utilizing data from 2007 to 2017. The data was gathered from annual bank reports, the Pakistani Ministry of Finance, and the World Bank. The results revealed that different risk factors exerted varying effects on the profitability of banks operating in Pakistan. These findings provide valuable insights into the relationship between financial risks, market competition, and the performance of banks within the country's banking industry. Specifically, while liquidity risk was found to have a positive effect, credit risk, bankruptcy risk, and the level of competition negatively impacted bank profitability. The study also highlighted several factors that positively influenced the profitability of banks in Pakistan, including capitalization, bank size, taxes, and the growth rate of GDP. On the other hand, factors such as banking sector development and infrastructure were found to have a significant effect on bank profitability, suggesting that these elements may not be as supportive of financial performance as anticipated. Additionally, the research noted that effective management of operational costs was beneficial for improving net interest margins, although it is negatively related to other profitability measures, such as Return on Assets (ROA) and Profit Before Tax (PBT) (Shair et al., 2019).

Researching at Kenyan microfinance institutions' (MFIs') experience in managing market risk and financial performance. The thirteen registered deposit-taking MFIs in Kenya were the target population, and a census was used as the technique. The results showed that interest rates and the risk of financial leverage had a favorable and significant impact on MFI's FP in Kenya. Foreign exchange risk was found to significantly negative impact on MFI financial performance. On the other hand, it was found that inflation rate risk had no effect on the FP of MFIs (Kahihu et al., 2021).

A study examined the relationship between the market power of banks and their risk-

taking behavior. The researchers utilized bank-level data from 35 emerging economies, spanning the years 2000 to 2014. By employing a semiparametric model of the market power-risk-taking nexus, coupled with Bayesian inference, the study provided empirical evidence of a significant nonlinear relationship between market power (MP) and bank risk-taking (RT). The findings suggest that the impact of a bank's market power on its risk-taking behavior is not linear, indicating that changes in market power can have varying effects on risk preferences, depending on the level of market concentration and other factors. Increased MP was shown to promote bank stability, but if banks' MP rises above a certain point, the relationship decreases and even reverses (Wu et al., 2019).

A study investigated the relationship between political risk and bank stability in the Middle East and North Africa (MENA) region. They found a relationship between PR and BS, suggesting that the financial fragility hypothesis is true. The results show that the stability of conventional and Islamic banks is affected in different ways by PR. PR affects Islamic banks less than conventional banks in terms of how risky they are (Al-Shboul et al., 2020).

Using a sample of 133 Japanese commercial banks from 2007 to 2016, investigated the impact of real estate prices on bank risk-taking. Researchers found that house price increase, divergence, and cyclicality had significant positive (negative) effects on bank risk-taking after controlling for other bank risk indicators (stability). When several bank risk measures and econometric techniques were applied, the outcome remained constant (Wang and Luo, 2021).

While investigating how ownership and regulation impacted bank performance in 19 MENA (Middle East and North Africa) nations, it was studied that at whether the ownership structure affected how much regulation affected BF. The relationship between bank regulation and ownership as well as the public and private perceptions of bank regulation were also examined. They discovered that regulatory measures have a significant impact on bank profitability, but ownership structure appears to have a little impact on bank performance in the MENA area (Mateev and Bachvarov, 2021).

A study was conducted to investigate the relationship between risk management and the financial performance of commercial banks in Nigeria. The primary objective of this research was to assess how effective management of risk assets influences the optimal financial performance of these banks. By focusing on risk asset management practices, the study sought to determine their impact on the banks' ability to achieve financial stability and profitability within the Nigerian banking sector. According to the findings, liquidity risk has a significant short-term influence on bank profitability whereas credit risk, capital adequacy risk, leverage risk, and LR have significant longterm effects. Furthermore, it was shown that profitability, as measured by ROA, had a positive relationship with LR but a negative relationship with CR (Inegbedion et al., 2020).

A study analyzed the impact of credit risk (CR), liquidity risk (LR), and bank capital (BC) on the profitability of banks over a nine-year period (2010-2018), utilizing empirical data from a developing country. The findings revealed that all three factors as CR, LR, and

BC significantly influence bank profitability (BF). The study emphasized the importance of managing these risks effectively, as maintaining optimal levels of credit risk, liquidity, and capital can enhance a bank's operational efficiency and profitability. Additionally, proper risk management helps safeguard banks from financial instability. Understanding these fundamental factors and their implications for both local and international banking operations is crucial for improving the effectiveness and profitability of banks (Saleh and Abu Afifa, 2020).

To look at how internal risks affected the financial performance of Jordanian commercial banks, all commercial banks that participated in the Amman Stock Exchange (ASE) between 2009 and 2019 made up the study sample. The study team developed four hypotheses on how leverage risk and liquidity risk affect bank performance as shown by ROA and ROE. According to the findings, LR had no significant impact on both ROA and ROE, but leverage risk had a substantial impact on ROA but not on ROE (Alkhazali et al., 2021).

Summary of the Literature Review

Table 1: Summary of the Literature Review

Variable	Definition	Source
Liquidity risk	The possibility of suffering losses as a result of being unable to fulfill payment obligations when they become due promptly or affordably is referred to as LR.	(Goodhart, 2008)
Credit risk	CR is the possibility of losing money if a borrower is unable to pay back a loan or fulfil contractual obligations.	(De Servigny & Renault, 2004)
Leverage risk	The use of debt (borrowed cash) to finance a venture or undertaking is known as LR.	(Alaghi, 2011)
Bank size	The ownership of assets by banks is known as bank size. Banks with a large asset base can provide more financial services at a lower cost.	(Kishan & Opiela, 2000)
GDP	A monetary measure of the market value of all finished goods and services produced over a specific time period is known as GDP.	(Soytas & Sari, 2003)
Inflation	A gradual rise in the price of goods and services in a certain economy is referred to as inflation.	(Coibion et al., 2020)
Bank profitability	The measure of a bank's performance is known as BF.	(Le & Ngo, 2020)

Research Methodology

The research technique refers to the data gathering procedure, while the research strategy aids in determining the specific set of data that should be collected. The quantitative approach is a numerical-based method of data collecting that uses exclusively statistical

instruments (Welman et al., 2005). This method has a benefit of providing a systematic approach for gathering data, as well as being simple to conduct and collecting a big number of replies (Blessing and Chakrabarti, 2009). This method is very useful for testing theories and establishing hypotheses. The quantitative approach has a high adoption rate since the time and cost necessary to apply it are comparatively low and efficient (Roy and Cordery, 2010). In addition, research is classified into two basic types i.e. explanatory and exploratory. Explanatory research has concentrated on establishing the research's purpose, objectives, and questions in a detailed manner (Jones and Zufryden, 1980). This type is viewed in this respect since it improves the quantity of information and knowledge about the study topic as well as the level of comprehension (Buchanan et al., 2013). Similarly, explanatory research aids in hypothesis testing and analyzes issues that have not been well investigated, therefore aids in filling a research gap (Fisher and Ziviani, 2004). Hence, the explanatory type was used in this study to provide a quantitative and enhanced explanation for the research variables.

The method of determining the associations between study variables is defined by the research design. A correlational design is a naturally occurring design that investigates the primary link between two variables (Curtis et al., 2016). Since it is non-experimental, this form of design is carried out outside of any lab or controlled environment. The advantage of this strategy is that it produces useful data that may be used in future studies. The direction of the exposed link is also provided by this design (Seeram, 2019). As a result, this study attempted to employ a correlational methodology to quickly uncover their natural link.

The World Development Indicator (WDI) database of the World Bank (WB) was used to collect data on macroeconomic variables like GDP and inflation on an annual basis. The data were also taken from the combined audited financial statements and annual reports of 15 commercial banks in Pakistan. To avoid unnecessary factors and to keep the study more in line with the objective of the research, the sample data is based on commercial banks only. The word commercial banks do not include any other types of banks like development banks, mortgage banks, co-operative banks, and saving banks etc.

Data type and sources

The study is based on panel data of 15 commercial banks of Pakistan for the period of 16 years from 2006 to 2022. The reason for selecting 15 banks is that before this period many banks were privatized, and some banks went for a merger. Hence, the selection of 15 banks avoids inconsistency in data set which may be affected due to over-valued observations. Measurement, proxies, formula and sources of data collection have been explained in the following table 2.

Table 2: Measurement of the Variables

Variable Name	Proxy and Formula	Source(s)
BP	Return on Assets (ROA)	Annual Reports
LR	Current Assets to Current Liabilities	Annual Reports
CR	Loan Loss Provision to Total Liabilities	Annual Reports
Leverage risk	Capitalization to SD (ROA)	Annual Reports
BS	Natural Logarithm of Total Assets	Annual Reports
Economic growth	GDP (% Annual Growth)	WDI Database
Inflation	Consumer Price Index (CPI, % Annual)	WDI Database

Econometric Model/ Conceptual Framework

The following regression equation of ROA with independent variables through pooled OLS illustrates the econometric model/conceptual framework of the stud:

$ROA = \alpha + \beta_1 LR + \beta_2 CR + \beta_3 LEVR + \beta_4 SIZE + \beta_5 GDP + \beta_6 CPI + \epsilon$
In the above model, return on assets is represented by ROA, liquidity risk is represented as LR, credit risk is represented as CR, leverage risk is represented as LEVR, bank size is represented as SIZE, economic growth is represented as GDP, and inflation is represented as CPI.

Results And Findings

Descriptive statistics

The descriptive statistics of each series included in the analysis are displayed in table 1 below:

Table 3: Descriptive Statistics

Variable	Mean	S.D.	Min.	Max.	Obs.
Bank size	8.556	0.482	7.217	9.485	240
Bank profitability	0.007	0.013	-0.064	0.037	240
Liquidity risk	2.904	20.912	-183.508	170.792	197
Leverage risk	0.003	0.005	0.000	0.036	240
Inflation	9.001	4.295	2.529	20.286	240
Economic growth	3.412	1.814	-0.935	5.836	240
Credit risk	0.582	6.152	0.002	92.006	240

Correlation Analysis

Table 4: Correlation Analysis

Variables	SIZE	ROA	LIQR	LEVR	INF	GDP	CR
Bank size	1.000						
Bank profitability	0.558**	1.000					
Liquidity risk	-0.007	-0.046	1.000				
Leverage risk	-0.409**	-0.552**	0.079	1.000			
Inflation	-0.271**	-0.163**	-0.033	0.217**	1.000		
Economic growth	0.033	0.078	0.041	-0.083	-0.665**	1.000	
Credit risk	-0.218**	0.010	-0.003	0.027	0.023	0.041	1.000

Note: ** indicates significance at the 5% level.

Above table has shown that BS has a positive association with BP (Υ = 0.558; $p < 0.05$), while negative associations with LR (Υ = -0.409; $p < 0.05$), inflation (Υ = -0.271; $p < 0.05$) and CR (Υ = - 0.218; $p < 0.05$). ROA has a negative association with LR (Υ = -0.552; $p < 0.05$), and inflation (Υ = - 0.163; $p < 0.05$). Liquidity risk has no association with any other series in the model while LR has a positive association with inflation (Υ = 0.217; $p < 0.05$) and inflation has a negative association with economic growth (Υ = -0.665; $p < 0.05$).

However, the correlation coefficients with no steric sign showed non-significant association between series, i.e. probability level higher than 5 percent.

Cointegration Analysis

The results of cointegration analysis using Pedroni (1999) for long-run relationships between series are shown in the table below.

Table 5: Cointegration Analysis

Test	t-Statistic	Prob.	Decision
Panel v-Statistic	-3.058	0.999	Not supported
Panel rho-Statistic	3.009	0.999	Not supported
Panel PP-Statistic	-5.925	0.000	Supported
Panel ADF-Statistic	-5.764	0.000	Supported
Group rho-Statistic	3.951	1.000	Not supported
Group PP-Statistic	-5.945	0.000	Supported
Group ADF-Statistic	-4.931	0.000	Supported

According to Pedroni (1999)'s technique, the majority of the statistics should be statistically significant to reject the null hypothesis, which states that there is no long-term relationship between the series under the cointegration analysis. In the above table 3, it

has been found that panel PPstatistics (t = -5.925, p $<$ 0.05) and panel ADF-statistics (t = -5.764, p $<$ 0.05) found statistically significant while group PP-statistics (t = -5.945, p $<$ 0.05) and group ADF-statistics (t = -4.931, p $<$ 0.05) found statistically significant. The null hypothesis has therefore been disproved, demonstrating that there is a long-term relationship between series.

Hausman Test

The results of the Hausman (1978) test for estimating the misspecifications in random-effect (RE) analysis are shown in table below.

Table 6: Hausman Test

Test Summary	Chi-Square Statistic	D.F.	Prob.
Cross-section random	0.000	6	1.000

The Hausman (1978) test's null hypothesis states that the RE estimation in the OLS analysis was properly specified. Table 4 above demonstrated that cross-section random statistics were insignificant at a 5 percent probability level, demonstrating that there was no misspecification in the estimation of RE analysis.

Pooled OLS using RE estimations

The results of hypothesis testing using pooled OLS analysis based on RE estimations are shown in table below.

Table 7: RE Estimations

Variable	Beta	S.E.	t-Stats	Prob.
Constant	-0.057	0.025	-2.335	0.021
Liquidity risk	0.804	0.000	0.248	0.000
Credit risk	0.005	0.000	2.860	0.000
Leverage risk	-0.993	0.160	-6.195	0.000
Bank size	0.008	0.003	2.920	0.004
Economic growth	0.496	0.001	0.682	0.000
Inflation	0.784	0.000	0.275	0.000
Dependent Variable: Bank Profitability (ROA)				
R-Square = 0.303; Adjusted R-Square = 0.281				
F-Statistics (Prob.) = 13.777 (0.000)				

Above table has shown that liquidity risk (β = 0.000; p ¿ 0.05) has a positively insignificant impact on BP. CR (β = 0.000; p $<$ 0.05) has a positively significant impact on BP while LR

(β = -0.993; p $<$ 0.05) has a negatively significant impact on BP, whereas BS (β = 0.008; p $<$ 0.05) has a positively significant impact on BP. In regards to macroeconomic indicators, GDP (β = 0.000; p ¿ 0.05) and inflation (β = 0.000; p ¿ 0.05) have positively insignificant impact on BP. Furthermore, BP has been explained upto 30.3 percent in the model while the model found fit with the F-statistics found statistically significant at 5 percent probability level.

Hypothesis-testing summary

The following table provides the summary of hypothesis-testing based on pooled OLS analysis using RE estimations.

Table 8: Hypothesis-Testing Summary

Hypothesis statement	Decision
H1. LR has a negative impact on FP.	Accepted
H2. CR has a negative impact on FP.	Accepted
H3. Leverage risk has a negative impact on FP.	Accepted
H4. BS has a positive impact on FP.	Accepted
H5. GDP has a positive impact on FP.	Accepted
H6. Inflation has a negative impact on FP.	Accepted

Discussion

Hypothesis 1:Liquidity risk and firm profitability

The present paper identified that LR has an insignificant and negative relationship with FP. Thus, the results have been rejected. This result is also consistent with Fauziah and Rafiqoh (2021). The profitability of the firm might be adversely affected by the increase in financial liquidity. The profitability will suffer if the firm is overly liquid in a static sense since some cash will be locked in current assets (Ahmed et al., 2021). The chance of insolvency is decreased but profitability is also decreased as liquidity rises. On the other hand, if liquidity is restricted, profitability rises yet insolvency risk also rises. Cash investment alternatives always have lower interest rates than others (Ndum, 2021). A bank or other financial institution may be able to make more money from your money and pay people more if investors know they will have access to it for a longer length of time (Ahmed et al., 2021). Additionally, a person will be required to pay taxes on the meagre interest he gets on your investment unless customers collect your liquidity in a jar and stow it beneath the bed. Investors lose money on these low-interest liquid assets because of taxes and rising inflation (Fauziah and Rafiqoh, 2021).

Hypothesis 2: Credit risk and firm profitability

Similarly, the results revealed that CR has a significant and positive relationship with FP. The results are like the study of Mushafiq et al. (2021). Thus, the results have been accepted. This finding suggests that a bank may boost its profitability even if the probability of a client loan default rises. According to Aduda and Obondy (2021), banks have some of the greatest pretax returns on assets and equity, despite having high overhead expenses and significant provisioning because of the country's large NPLs. This result is very unexpected because, in a normal scenario, one would think that as more customers refuse to pay for services they have received from a bank, the bank's profitability would decline (Koutoupis and Malisiovas, 2021). Despite this, it is still possible for a bank to increase the proportion of the default risk component in the interest rate charged out on loans much higher than the actual default risk (knowing quite well the inherent risk in a facility being handed out) (Aduda & Obondy, 2021). Even though the credit risk may be significant, banks who exhibit this behavior are ultimately more likely to boost their profits. To put it another way, the existence of credit risk enables banks to charge massively high interest rates, which inevitably results in their great profitability (Mushafiq et al., 2021).

Hypothesis 3:Leverage risk and firm profitability

The findings revealed a significant and positive relationship between liquidity risk (LR) and financial performance (FP), which aligns with the conclusions of Aprilyani et al. (2021). As such, these results were accepted as valid. Leverage, contrary to common perceptions, is not inherently detrimental. When used strategically, leverage can support business growth and facilitate the acquisition of assets, helping companies expand and increase their profitability. However, excessive borrowing can lead to financial strain, potentially impairing a company's ability to meet its debt obligations (Margono and Gantino, 2021). The market instead restricts the quantity of debt since it cannot efficiently oversee investment decisions. High-growth companies will have less financial leverage since they can't be adequately monitored. This study suggests that profitability has a significant impact on both financial leverage and shareholder return when assessing the impact of leverage on return to shareholders (Septyanto and Nugraha, 2021). Shareholders can earn a high return on equity thanks to excessive financial leverage, but they also run a larger risk of suffering a sizable loss if the return on assets is poor (Aprilyani et al., 2021). Additionally, taking loans might limit the management team's autonomy, and creditors are concerned about a company's debt load. The larger companies have more debt and smaller earnings (Margono and Gantino, 2021). Low leverage, higher profitability, and increased risk are characteristics of highly capital demanding businesses. Higher fixed cost organizations retain more debt and have fewer profits, but they are typically riskier (Aprilyani et al., 2021).

Hypothesis 4: Bank size and firm profitability

Likewise, the results concluded that BS has a significant and positive relationship with FP. The results are parallel to the results of AlFadhli and AlAli (2021). Thus, the results have been accepted. The amount of money a firm generates will be influenced by its size. High firms often have substantial total assets and are able to earn large profits as well; therefore, the bigger a bank is, the more profitable the bank will be (Akinola, 2022). The profitability of the bank increases as size increases. a company's size significantly affects its profitability. According to Singh et al. (2021), the size of the bank affects profitability in a favourable and substantial way. According to Ojeyinka and Akinlo (2021), BS positively impacts profitability. Banks often have strong reasons to expect a positive relationship between their size and profitability. As banks expand, they can benefit from economies of scale, which can enhance profitability by reducing costs and improving operational efficiency (Singh et al., 2021). For example, as banks grow, they can spread fixed costs across a larger asset base, which leads to a reduction in average costs per unit of output. This makes the bank more cost-efficient and competitive. Additionally, an increase in the bank's asset size allows for greater diversification of activities, whether across different product lines, industries, or geographical regions. Such diversification helps to reduce risk by spreading exposure to various market factors (Akinola, 2022). As banks expand their operations, they also can employ specialized personnel, such as loan officers with expertise in commercial and industrial business lines, which can lead to improved efficiency and decision-making. Furthermore, achieving economies of scale can help banks eliminate operational inefficiencies, reduce risk, and optimize resource allocation. These advantages not only strengthen the bank's financial position but also contribute to the overall health and stability of the financial sector (AlFadhli and AlAli, 2021).

Hypothesis 5: Economic growth and firm profitability

The present paper identified that GDP has an insignificant and negative relationship with FP. Thus, the results have been rejected. This result is also consistent with Jeris (2021). However, a negligible negative link between GDP and profits runs counter to the idea that a recession will have a negative impact on interest income. The client's inclination or decision to deposit extra cash and take loans, as well as informational asymmetry of the customer and ignorance of national economic developments, may be contributing factors to the opposite outcome (Krisna et al., 2022). Contrary to what was predicted by this analysis, bank profitability is slightly negatively influenced by GDP growth. BP may be negatively impacted by GDP owing to non-performing loans brought on by a downturn in the economy (Antwi, 2021). In other words, when the economy falters, commercial banks could be forced to write down non-performing loans, which would hurt their earnings (Jeris, 2021).

Hypothesis 6: Inflation and firm profitability

Finally, the paper identified that inflation has an insignificant and negative relationship with FP. Thus, the results have been rejected. This result is also consistent with Fuadi et al. (2022). Inflation has a little impact on profitability, according to statistics on the link between the two. The probability value results show that the impact of inflation on profitability is negligible. The findings of this study indicate that, although being marginal, profitability tends to grow as inflation rises (Kusumaningtyas et al., 2021). The inflation factor's negative sign indicates that as inflation rises, bank profitability declines. This inverse relationship may be explained by the fact that as inflation rises, bank expenditures rise faster than their income does, which has the net result of reducing income (Senan et al., 2021). The small impact of bank size is indicative of ineffective asset management. According to one of the empirical findings, inflation rates have a negative effect on BP, the banking industry, and real return on financial assets (Maralutua and Pulungan, 2022). The authors argue that rising inflation negatively impacts the performance of the financial sector, ultimately hindering overall economic growth. Rather than encouraging individuals to save, inflation tends to stimulate spending (Kusumaningtyas et al., 2021). As prices rise, consumers are more inclined to make purchases sooner, anticipating that goods will become more expensive in the near future. This behavior discourages saving, as people recognize that their money will lose value over time. Since savings are essential for funding financial markets and supporting investment, inflation can disrupt this critical flow of capital (Fuadi et al., 2022).

This study seeks to examine the impact of financial risk on the financial performance of commercial banks in Pakistan. Recent structural changes have accelerated the country's economic growth, which, in turn, has influenced the operational structure and performance of the Pakistani banking sector. The study adopts an explanatory approach, aiming to provide a quantitative and detailed explanation of the variables under investigation. Data for macroeconomic factors such as GDP and inflation were sourced annually from the World Bank's World Development Indicators (WDI) database. Additionally, data on bank-specific factors were gathered from the combined audited financial statements and annual reports of 15 private commercial banks in Pakistan.

The findings of the study indicate several key relationships. Liquidity risk (LR) was found to have an insignificant and negative impact on bank profitability. In contrast, credit risk (CR) was shown to have a significant and positive relationship with financial performance, suggesting that, in certain contexts, credit risk may be well-managed or offset by higher returns. The study also identified a significant and positive relationship between bank size (BS) and profitability, indicating that larger banks in Pakistan tend to perform better financially. However, macroeconomic factors such as GDP and inflation were found to have an insignificant and negative effect on profitability, implying that these factors might not have a substantial immediate impact on the profitability of commercial banks in Pakistan.

Our results have several political repercussions. Governments and regulatory agencies should be aware of how uncertainty affects default risk differently for conventional banks

and Islamic banks, particularly about the component of leverage risk. Our findings show that a sharp increase in uncertainty can lead to serious instability in the banking sector, albeit with a smaller effect in dual banking markets where both varieties of banks coexist. Additionally, because conventional institutions are more impacted than Islamic banks, authorities may need to take stronger action in terms of recapitalization for conventional banks. In fact, increased uncertainty has a more significant effect on conventional banks' leverage risk.

Efficiency motivates banks to cut back on risk, even when bank capital is comparatively low. This discovery is anticipated to have ramifications for the authorities' efforts to increase banking efficiency and adopt a number of capital-related laws. By being more efficient, banks will be motivated to behave responsibly and may come under the scrutiny of regulators.

For regulators, decision-makers, and bank management, our findings are pertinent. For instance, the possibilities for higher profitability are supported by the rising ownership concentration, particularly in nations with stricter laws. Such laws should address capital requirements, market transparency, and monitoring with regard to their effects on conventional banks. However, the quality of the institutions and a few bank-specific traits are what mostly determine these banks' profitability. The profitability of islamic banks, on the other hand, appears to be significantly influenced by regulatory consequences. Additionally, bank management should take the necessary precautions to lessen the negative effects of the capital buffers' depletion, which are predicted to be severe during the COVID 19 pandemic.

Management should ensure the bank's liquidity condition in various investment categories so that their investment portfolios would grow as a result, and they would gain a competitive edge. It is crucial that a bank's management pay close attention to liquidity concerns. To avoid the effects of illiquidity, any problems should be fixed as quickly as feasible, and immediate remedial action should be implemented. Governments and regulatory authorities should be aware of the differing ways that uncertainty impacts default risk for Islamic and conventional banks, particularly about the component of leverage risk.

The importance of risk management continues to grow due to its direct impact on a bank's overall performance. Effective management of credit risk is vital for the stability and success of banking institutions. Banks must prioritize credit risk management, particularly in monitoring and assessing their loan portfolios. It is essential for bank managers to adopt and focus on modern strategies for managing credit risks to stay ahead in an increasingly complex financial environment. Additionally, by diversifying their revenue streams, banks can enhance their ability to effectively manage credit risk, as a broader income base provides greater flexibility and financial resilience to absorb potential losses.

This study has several limitations. First, it is based on data from a single developing country, Pakistan, which may restrict the generalizability of the findings. Second, the

framework does not account for personal, political, or broader socio-economic variables that could influence bank profitability. Third, the relationship between credit risk and profitability may not necessarily be linear, yet this study does not test for potential non-linear effects. In addition, the sample excludes foreign banks, relies on a relatively smaller dataset due to time and resource constraints, and applies only one theoretical lens, the Modern Portfolio Theory, without considering mediating or moderating variables. Future research could expand the scope by including foreign, Islamic, and cross-country banking data, particularly from developed or European economies, to enhance comparative insights. Incorporating additional theories, larger datasets, and exploring mediating or moderating variables would provide a deeper understanding of the complex dynamics between risk and profitability

References

Abdullah, S. A., Ali, S. S., and Fatah, N. A. (2025). The effect of liquidity risk management on the bank performance: Evidence from iraqi banks. *Academic Journal of International University of Erbil*, 2(2):120–128.

Ahmad, N., Ullah, Z., AlDhaen, E., Han, H., and Scholz, M. (2022). A csr perspective to foster employee creativity in the banking sector: The role of work engagement and psychological safety. *Journal of Retailing and Consumer Services*, 67:102968.

Ahmed, U., Ismail, A. I., Rasool, Y., and Soomro, M. A. (2021). Organizational performance in banking sector of pakistan: Assessing the impacts of strategic orientation and organizational culture. *Global Business Review*, page 09721509211044307.

Akhtar, M., Yusheng, K., Haris, M., Ain, Q. U., and Javaid, H. M. (2021). Impact of financial leverage on sustainable growth, market performance, and profitability. *Economic Change and Restructuring*, pages 1–38.

Akinola, A. (2022). The nexus between bank size and financial performance: Does internal control adequacy matter? *Journal of Accounting and Taxation*, 14(1):13–20.

Al-Homaidi, E. A., Farhan, N. H., Alahdal, W. M., Khaled, A. S., and Qaid, M. M. (2021). Factors affecting the profitability of indian listed firms: a panel data approach. *International Journal of Business Excellence*, 23(1):1–17.

Al-Shboul, M., Maghyereh, A., Hassan, A., and Molyneux, P. (2020). Political risk and bank stability in the middle east and north africa region. *Pacific-Basin Finance Journal*, 60:101291.

Alabdullah, T. T. Y., Ahmed, E. R., Almashhadani, M., Yousif, S. K., Almashhadani, H. A., Almashhadani, R., and Putri, E. (2021). How significantly to emerging economies benefit from board attributes and risk management in enhancing firm profitability? *Journal of Accounting Science*, 5(2):104–113.

AlFadhli, M. S. and AlAli, M. S. (2021). The effect of bank size on financial performance: A case study on kuwaiti banks. *Journal of Insurance and Financial Management*, 4(3).

Alhamshary, F. S., Ariff, A. M., and Zainuddin, W. M. (2022). The relationship between corporate risk taking and corporate cash holding in saudi industrial companies. *Available at SSRN 4119708*.

Ali, R., Rehman, R. U., Kanwal, M., Naseem, M. A., and Ahmad, M. I. (2021). Determinants of corporate social responsibility disclosure of banking sector in pakistan. *Social Responsibility Journal*.

Alim, W., Ali, A., and Metla, M. R. (2021). The effect of liquidity risk management on financial performance of commercial banks in pakistan. *Journal of Applied Economics and Business*, 9(4):109–128.

Alkhazali, A., Al-Eitan, G., Al-serhan, H., Bani-Khalid, T., and Al-Naimi, A. (2021). The effect of internal risks on the performance of jordanian commercial banks. *Accounting*, 7(7):1819–1824.

Amararathne, U. and Wanigasuriya, W. (2022). Determinants of profitability of listed commercial banks in sri lanka.

Antwi, A. (2021). Analysis of long-term determinants of the profitability for amalgamated bank of south africa. *International Journal of Finance & Banking Studies*, 10(3):01–11.

Aprilyani, I., Widyarti, M. T. H., and Hamida, N. (2021). The effect of erm, firm size, leverage, profitability and dividend policy on firm value. *Jurnal Aktual Akuntansi Keuangan Bisnis Terapan*, 4(1):65–75.

Azizah, A., Diah, A. M., and Wulaningrum, R. (2022). The impact of risk management on firm performance. In *International Conference on Applied Science and Technology on Social Science*.

Azizi, S. and Jokar, H. (2021). Investigating the existence of the optimal level of working capital management and the critical point of inflation and its effect on the level of cash holding. *Journal of Financial Accounting Knowledge*, 8(28):145–173.

Bandara, H. M. K. S., Jameel, A. L. M., and Athambawa, H. (2021). Credit risk and profitability of banking sector in sri lanka. *Journal of Economics, Finance and Accounting Studies*, 3(1):65–71.

Banu, M. H., Sayaduzzaman, M., and Sil, S. C. (2021). The impact of credit risk management indicators on profitability attributes: Evidence from the state-owned commercial banks in bangladesh. *American Journal of Trade and Policy*, 8(3):215–224.

Bekhet, H. A., Alsamdi, A. M., and Khudari, M. (2021). Dynamic linkages between profitability and its determinants: Empirical evidence from jordanian commercial banks. *The Journal of Asian Finance, Economics and Business*, 8(6):687–700.

Bilgin, M. H., Danisman, G. O., Demir, E., and Tarazi, A. (2021). Economic uncertainty and bank stability: Conventional vs. islamic banking. *Journal of Financial Stability*, 56:100911.

Blessing, L. T. and Chakrabarti, A. (2009). *DRM, a design research methodology*. Springer Science & Business Media.

Buchanan, G. M., Seligman, M. E., and Seligman, M. (2013). *Explanatory style*. Routledge.

Chhaidar, A., Abdelhedi, M., and Abdelkafi, I. (2022). The effect of financial technology investment level on european banks' profitability. *Journal of the Knowledge Economy*, pages 1–23.

Chiahti, M. F., Shokat, W., Alvi, A. K., Afzal, A., Afzal, M., Irum, S., and Kaur, P. (2021). Factors affecting bank-specific and macroeconomic profitability determinants of islamic and conventional banks in pakistan. *Global Business & Management Research*, 13(2).

Chowdhury, M. and Zaman, S. (2018). Effect of liquidity risk on performance of islamic banks in bangladesh. *IOSR Journal of Economics and Finance*.

Comptroller of the Currency (2001). *Liquidity: Comptroller's Handbook*. Comptroller of the Currency: Administrator of the National Banks, Washington, DC.

Curtis, E. A., Comiskey, C., and Dempsey, O. (2016). Importance and use of correlational research. *Nurse researcher*, 23(6).

Dang, V. D. (2022). Exploring the asymmetric effects of loan portfolio diversification on bank profitability. *The Journal of Economic Asymmetries*, 26:e00250.

Danlami, M. R., Abduh, M., and Razak, L. A. (2022). Camels, risk-sharing financing, institutional quality and stability of islamic banks: evidence from 6 oic countries. *Journal of Islamic Accounting and Business Research*.

Dwiantari, R. A. and Artini, L. G. S. (2021). The effect of liquidity, leverage, and profitability on financial distress. *American Journal of Humanities and Social Sciences Research*, 5(1):367–373.

Ehsan, S. and Javid, A. Y. (2018). Bank ownership structure, regulations and risk-taking: evidence from commercial banks in pakistan. *Portuguese Economic Journal*, 17(3):185–209.

El Charef, F., El Bakkouchi, M., and El Morajji, N. (2022). Empirical study of the impact of financial risk and regulation on the performance of moroccan banks. *Revue du contrôle, de la comptabilité et de l'audit*, 6(1).

Elton, E. J. and Gruber, M. J. (1997). Modern portfolio theory, 1950 to date. *Journal of banking & finance*, 21(11-12):1743–1759.

Fabozzi, F. J., Gupta, F., and Markowitz, H. M. (2002). The legacy of modern portfolio theory. *The journal of investing*, 11(3):7–22.

Fauziah, F. and Rafiqoh, R. (2021). The role of profitability, company size, capital structure, and liquidity risk on firm value of indonesian banks. *Organum: Jurnal Saintifik Manajemen dan Akuntansi*, 4(1):14–27.

Fauziah, R. S. and Fadhilah, N. H. K. (2022). The impact of credit risk on the profitability with characteristics bank as control variables. *Jurnal RAK (Riset Akuntansi Keuangan)*, 6(2):239–253.

Fisher, I. and Ziviani, J. (2004). Explanatory case studies: Implications and applications for clinical research. *Australian Occupational Therapy Journal*, 51(4):185–191.

Francis, J. C. and Kim, D. (2013). *Modern Portfolio Theory,+ Website: Foundations, Analysis, and New Developments*, volume 795. John Wiley & Sons.

Fuadi, F., Saparuddin, S., and Sugianto, S. (2022). The effect of inflation, bi rate and exchange on profitability in sharia banking in indonesia period of 2009-2019. *International Journal of Educational Review, Law And Social Sciences*, 2(1):1–8.

Goetzmann, W. N., Brown, S. J., Gruber, M. J., and Elton, E. J. (2014). *Modern portfolio theory and investment analysis*. John Wiley & Sons.

Grau, A. and Reig, A. (2021). Operating leverage and profitability of smes: agri-food industry in europe. *Small Business Economics*, 57(1):221–242.

Gunanta, R. (2022). Influence of liquidity, profitability, and solvency of companies on bond ratings. *Journal of Positive School Psychology*, pages 4997–5008.

Hanif, N., Arshed, N., and Farid, H. (2022). Competitive intelligence process and strategic performance of banking sector in pakistan. *Int. J. Bus. Inf. Syst.*, 39(1):52–75.

Hasanuddin, R., Darman, D., Taufan, M. Y., Salim, A., Muslim, M., and Putra, A. H. P. K. (2021). The effect of firm size, debt, current ratio, and investment opportunity set on earnings quality: An empirical study in indonesia. *The Journal of Asian Finance, Economics and Business*, 8(6):179–188.

Hashmi, M. A. and Iqbal, M. S. (2022). Impact of working capital management on firm profitability and liquidity: the moderating role of family ownership. *Accounting Research Journal*.

Hashmi, S. D., Gulzar, S., Ghafoor, Z., and Naz, I. (2020). Sensitivity of firm size measures to practices of corporate finance: evidence from brics. *Future Business Journal*, 6(1):1–19.

Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica: Journal of the econometric society*, 46(6):1251–1271.

Huong, T. T. X., Nga, T. T. T., and Oanh, T. T. K. (2021). Liquidity risk and bank performance in southeast asian countries: a dynamic panel approach. *Quantitative Finance and Economics*, 5(1):111–133.

Inegbedion, H., Vincent, B. D., and Obadiaru, E. (2020). Risk management and the financial performance of banks in nigeria. *International Journal of Financial Research*, 11(5):115–128.

Isayas, Y. N. (2022). Determinants of banks' profitability: Empirical evidence from banks in ethiopia. *Cogent Economics & Finance*, 10(1):2031433.

Isnurhadi, I., Adam, M., Sulastri, S., Andriana, I., and Muizzuddin, M. (2021). Bank capital, efficiency and risk: Evidence from islamic banks. *The Journal of Asian Finance, Economics, and Business*, 8(1):841–850.

Jaara, B. O. A., AL-Dahiyat, M. A., and AL-Takryty, I. (2021). The determinants of islamic and conventional banks profitability in the gcc region. *International Journal of Financial Research*, 12(3):78–91.

Jahan, N., Iftikhar, S. F., Ahmed, C. S., and Hussain, T. (2022). Risk management and its impact on banking sector performance: Evidence from pakistan. *Competitive Social Science Research Journal*, 3(2):354–379.

Javid, M., Chandia, K. E., Zaman, Q. U., and Akhtar, W. (2022). Examining the effect of liquidity creation on banking profitability and stability: moderating role of political instability. *Kybernetes*.

Jayaraman, G., Azad, I., and Ahmed, H. S. (2021). The impact of financial variables on firm profitability: An empirical study of commercial banks in oman. *The Journal of Asian Finance, Economics and Business*, 8(5):885–896.

Jeris, S. S. (2021). Factors influencing bank profitability in a developing economy: Panel evidence from bangladesh. *International Journal of Asian Business and Information Management*, 12(3):333–346.

Jones, J. M. and Zufryden, F. S. (1980). Adding explanatory variables to a consumer purchase behavior model: An exploratory study. *Journal of Marketing Research*, 17(3):323–334.

Jungo, J., Luzendo, W., Quixina, Y., and Madaleno, M. (2022). Corruption, credit risk, and bank profitability: Evidence of angolan banks. In *Handbook of Research on New Challenges and Global Outlooks in Financial Risk Management*, pages 83–98. IGI Global.

Kahihu, P. K., Wachira, D. M., and Muathe, S. M. (2021). Managing market risk for financial performance: experience from micro finance institutionin kenya. *Journal of Financial Regulation and Compliance*.

Kamal, M. (2021). Cpec and capacity of banking sector. *Innovative Technologica: Methodical Research Journal*, 2(04):57–77.

Kaminskyi, A. and Nehrey, M. (2021). Clustering approach to analysis of the credit risk and profitability for nonbank lenders.

Kirimhan, D., Nazlıoğlu, , and Payne, J. E. (2022). Are stress-tested banks in the us becoming similar? evidence from convergence tests. *Evidence from Convergence Tests*.

Koroleva, E., Jigeer, S., Miao, A., and Skhvediani, A. (2021). Determinants affecting profitability of state-owned commercial banks: Case study of china. *Risks*, 9(8):150.

Koutoupis, A. G. and Malisiovas, T. (2021). The effects of the internal control system on the risk, profitability, and compliance of the us banking sector: A quantitative approach. *International Journal of Finance & Economics*.

Krisna, I. N., Rahim, R., and Alfarisi, M. F. (2022). Competition and profitability: Impact on stability in indonesian banking. *JBTI: Jurnal Bisnis: Teori dan Implementasi*, 13(1).

Kumar, V., Thrikawala, S., and Acharya, S. (2021). Financial inclusion and bank profitability: Evidence from a developed market. *Global Finance Journal*, page 100609.

Kusumaningtyas, N., Widagdo, B., and Nurjannah, D. (2021). The effect of interest rate, inflation and exchange value on stock returns with profitability as intervening variables. *Jurnal Manajemen Bisnis dan Kewirausahaan*, 1(2):97–108.

Lawa, E., Zogli, L.-K. J., and Dlamini, B. I. (2021). Investigating the determinants of bank performance in south africa: A panel data analysis. *Modern Perspectives in Economics, Business and Management*, 8(27):12–29.

Lisowski, R. and Woźniak, M. (2022). Effects of fiscal preferences on profitability of enterprises against the gross domestic product in poland. *Central European Review of Economics & Finance*, 36(1):37–52.

Maralutua, J. T. and Pulungan, N. A. (2022). Inflation, interest rate, and exchange rate for their effect on profitability and the implications on corporate value: Case studies in national banking 2014 until 2019. *Journal of Economics, Finance and Accounting Studies*, 4(1):263–279.

Margono, F. P. and Gantino, R. (2021). The influence of firm size, leverage, profitability, and dividend policy on firm value of companies in indonesia stock exchange. *Copernican Journal of Finance & Accounting*, 10(2):45–61.

Margono, H., Wardani, M. K., and Safitri, J. (2020). Roles of capital adequacy and liquidity to improve banking performance. *The Journal of Asian Finance, Economics, and Business*, 7(11):75–81.

Mateev, M. and Bachvarov, P. (2021). Regulation, ownership and bank performance in the mena region: Evidence for islamic and conventional banks. *Emerging Markets Review*, 47:100789.

Moudud-Ul-Huq, S., Akter, R., and Biswas, T. (2020). Impact of financial crisis on credit risk: Pre-and post-financial crises in an emerging economy. *FIIB Business Review*, 9(2):118–132.

Muda, I. (2021). Analysis of the effect of good corporate governance, company size and liquidity on dividend policy and company value with profitability as an intervening variable in state-owned companies listed on the idx 2011–2019. *Jurnal Mantik*, 5(1):292–302.

Mulwanda, H. (2022). Investigating the effects of credit risk management practices on profitability at absa bank zambia plc. *The University of Zambia*.

Mushafiq, M., Sindhu, M. I., and Sohail, M. K. (2021). Financial performance under influence of credit risk in non-financial firms: evidence from pakistan. *Journal of Economic and Administrative Sciences*.

Muttaqin, I. and Qomar, M. N. (2022). Pengaruh risiko kredit dan bank size terhadap profitabilitas bank umum syariah milik bumn di indonesia sebelum merger. *Jurnal BAABU AL-ILMI: Ekonomi dan Perbankan Syariah*, 7(1):12–27.

Naseer, S., Khawaja, K. F., Qazi, S., Syed, F., and Shamim, F. (2021). How and when information proactiveness leads to operational firm performance in the banking sector of pakistan? the roles of open innovation, creative cognitive style, and climate for innovation. *International journal of information management*, 56:102260.

Ndum, N. B. (2021). Effect of liquidity risk management on bank financial performance in nigeria. *Research Journal of Management Practice*, 2782:7674.

Nugraha, N. M., Ramadhanti, A. A., and Amaliawiati, L. (2021). Inflation, leverage, and company size and their effect on profitability. *Journal of Applied Accounting and Taxation*, 6(1):63–70.

Ojeyinka, T. A. and Akinlo, A. E. (2021). Does bank size affect efficiency? evidence from commercial banks in nigeria. *Ilorin Journal of Economic Policy*, 8(1):79–100.

Olivia, C., Atahau, A. D. R., and Martono, S. (2022). Financial risk and performance of national private foreign exchange commercial bank: Moderating effects of bank size. *Jurnal Keuangan dan Perbankan*, 26(1):229–246.

Pamuncak, M. B. and Wijaya, A. P. (2022). Investigating the determinants of shariah-compliant firms profitability in indonesia: Does covid-19 play an essential role? *AL-MUZARA'AH*, pages 31–41.

Pedroni, P. (1999). Critical values for cointegration tests in heterogeneous panels with multiple regressors. *Oxford Bulletin of Economics and statistics*, 61(1):653–670.

Priyana, A. and Surjandari, D. A. (2022). The effect of decreasing the idr exchange rate, interest in transactions, and interest in borrowing capital on msms profitability with inflation as moderation variable: A case study on msmes in serang banten in 2016–2020. *Journal of Economics, Finance and Accounting Studies*, 4(2):249–258.

Putri, M. O. D. and Wiksuana, I. G. B. (2021). The effect of liquidity and profitability on firm value mediated by dividend policy. *American Journal of Humanities and Social Sciences Research*, 5(1):204–212.

Rasa, R. (2021). The effects of credit risk on the profitability of commercial banks in afghanistan. *The Journal of Asian Finance, Economics and Business*, 8(7):477–489.

Ravindran, M. and Kengatharan, L. (2021). Impact of financial leverage on firm profitability: Evidence from non-financial firms listed in colombo stock exchange-sri lanka. *Journal Homepage: https://journals. kln. ac. lk/sajf*, 1(1):80–91.

Rehman, A., Abdul Adzis, A., and Mohamed Arshad, S. B. (2020). The relationship between corruption and credit risk in commercial banks of pakistan. *International Journal of Innovation, Creativity and Change*, 11(1):701–715.

Rom, B. M. and Ferguson, K. W. (1994). Post-modern portfolio theory comes of age. *Journal of Investing*, 3(3):11–17.

Rosabila, R. H. and Mongid, A. (2022). Analysis of the effect of inflation, capital adequacy ratio, operation cost of operating income, and net performing financing on the profitability of sharia commercial banks in indonesia.

Roy, R. N. and Cordery, N. (2010). Comparing and improving value chain-supply chain in the three most important wine regions of new zealand. *International Journal of Value Chain Management*, 4(3):288–303.

Saleh, I. and Abu Afifa, M. (2020). The effect of credit risk, liquidity risk and bank capital on bank profitability: Evidence from an emerging market. *Cogent Economics & Finance*, 8(1):1814509.

Sanusi, F. and Wiayanti, A. (2022). Efect of liquidity and profitability on stocks return with inflation as a moderating variable in manufacturing companies listed on indonesia stock exchange. *Jurnal Riset Akuntansi Terpadu*, 15(1):41–59.

Sari, R. and Witjaksono, A. (2021). The effect of enterprise risk management, firm size, profitability, and leverage on firm value. *EAJ (Economic and Accounting Journal)*, 4.

Sarker, N. and Bhowmik, P. K. (2021). Bank liquidity risk: Significance of financial disclosure and governance practice. *Asian Economic and Financial Review*, 11(9):724–744.

Seeram, E. (2019). An overview of correlational research. *Radiologic technology*, 91(2):176–179.

Senan, N., Noaman, A., Al-dalaien, B., and Al-Homaidi, E. (2021). Corporate social responsibility disclosure and profitability: Evidence from islamic banks working in yemen. *Banks and Bank Systems*, 16(2):91–102.

Septyanto, D. and Nugraha, I. M. (2021). The influence of enterprise risk management, leverage, firm size and profitability on firm value in property and real estate companies listed on the indonesian stock exchange in 2016-2018. *KnE Social Sciences*, pages 663–680.

Shah, S. F. A., Hussain, A., Khan, M., Jacquemod, J., and Shah, Z. (2020). Determinants of systematic risk in commercial banks of pakistan. *International Journal of Economics and Financial Issues*, 10(3):125.

Shair, F., Sun, N., Shaorong, S., Atta, F., and Hussain, M. (2019). Impacts of risk and competition on the profitability of banks: Empirical evidence from pakistan. *PloS one*, 14(11):e0224378.

Sibarani, A., Yunita, R. P., Siregar, K. J., and Panggabean, B. A. (2022). The effect of liquidity, profitability, activity and leverage on stock returns in food and beverage sub-sector companies listed on the indonesia stock exchange for the 2016-2020 period. *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences*, 5(2):12696–12710.

Silalahi, A. S., Sadalia, I., Subhan, S., Ilham, R. N., Putri, D. E., and Sinta, I. (2022). Relationship between profitability and liquidity on return of state owned company shares supported by good corporate governance as a moderator. *Jurnal Akuntansi dan Pajak*, 22(2):824–835.

Singh, S. K., Basuki, B., and Setiawan, R. (2021). The effect of non-performing loan on profitability: Empirical evidence from nepalese commercial banks. *The Journal of Asian Finance, Economics and Business*, 8(4):709–716.

Sondakh, J. J., Tulung, J. E., and Karamoy, H. (2021). The effect of third-party funds, credit risk, market risk, and operational risk on profitability in banking. *Journal of Governance and Regulation*, 10(2).

Thi Thanh Tran, D. and Phan, H. T. T. (2020). Bank size, credit risk and bank profitability in vietnam. *Malaysian Journal of Economic Studies*, 57(2):233–251.

Trihardianto, Y. K. and Hartanti, N. D. (2022). Effect of fee based income and inflation rate on profitability (roa) on state-owned banks listed at indonesia stock exchange (idx) for the 2016-2020 period. *East Asian Journal of Multidisciplinary Research*, 1(3):425–438.

Ul Mustafa, A. R., Abro, A. A., and Awan, N. W. (2021). Social protection and economic growth: An empirical analysis for emerging economies. *Elementary Education Online*, 20(5):6932–6932.

Wang, R. and Luo, H. (2021). Real estate prices and bank risk-taking in japan. *Journal of the Asia Pacific Economy*, 26(1):158–181.

Waqas, H. and Bahrain, S. (2019). Risk management, capital adequacy and audit quality for financial stability: Assessment from commercial banks of pakistan. *Asian Economic and Financial Review*, 9(6):654–664.

Welman, C., Kruger, F., and Mitchell, B. (2005). *Research methodology*. Oxford University Press Cape Town.

Wijaya, D. A. and Muljo, H. H. (2022). The effect analysis of solvency ratio, profitability ratio and inflation on stock return. *Business Economic, Communication, and Social Sciences (BECOSS) Journal*, 4(1):65–73.

Witjaksono, A. and Sari, R. P. (2021). The effect of enterprise risk management, firm size, profitability, and leverage on firm value. *EAJ (Economic and Accounting Journal)*, 4(1):71–81.

Wu, J., Guo, M., Chen, M., and Jeon, B. N. (2019). Market power and risk-taking of banks: Some semiparametric evidence from emerging economies. *Emerging Markets Review*, 41:100630.

Yücel, E. and Vural, G. (2022). The nonlinear effects of ownership concentration and board structure on bank performance. *Panoeconomicus*, pages 1–16.

Zheng, C., Perhiar, S. M., Gilal, N. G., and Gilal, F. G. (2019). Loan loss provision and risk-taking behavior of commercial banks in pakistan: A dynamic gmm approach. *Sustainability*, 11(19):5209.

Zuhroh, I. (2022). How does profitability, size, and capital affect credit risk?: Evidence from islamic banks in asian countries. *Falah: Jurnal Ekonomi Syariah*, 7(1):13–23.