MACRO-PRUDENTIAL PROCEDURE, COVID-19 PANDEMIC AND BANKING PERFORMANCE IN THE MIDDLE EAST AND NORTH AFRICA COUNTRIES

By

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy

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The coronavirus pandemic's economic quagmire raises the possibility of a second banking crisis. This converges with the tightened banking regulatory regime seen in the course of the last decade and the emergence of new sources of revenue diversification that seriously interrogate the long-established business model. Needless to reiterate, more studies are required to test these claims. Thus, the present study confronts a cardinal research problem that has potentially far-reaching policy implications. The central question concerns the potential effects of higher liquidity (NSFR), contingent convertible capital (COCO bonds), revenue diversification (non-interest income), and the performance during the coronavirus pandemic. The study was performed using a sample of banks from (MENA) region with balanced panel data spanning the period from 2011 to 2020. The analysis incorporates various econometric estimations, such as system GMM, dynamic panel threshold, and quantile regression. Findings indicate that more COCO bonds will improve bank performance. Interestingly, Bank performance exhibits an inverse correlation with COCO bonds when they interact with liquidity, suggesting that the combination of liquidity and capital reduces bank performance. However, this relationship is only observed during the pandemic. Additionally, bank performance is positively related to funding liquidity. Furthermore, estimates from a dynamic GMM and a dynamic panel threshold regression show that NSFR will decrease bank performance during a pandemic. Finally, our findings show that during the COVID pandemic, higher numbers of revenue diversification lessened bank performance below the threshold and in the lower quantiles. Further, this impact increases above the threshold and in the upper quantiles. Notably, the findings are robust to alternative estimations and different measures as well. The study recommends that regulators in the MENA region prohibit banks from participating in non-interest- generating activities, particularly during the coronavirus closure. Future research could examine the potential mediating and moderating impacts of Basel III standards, particularly the countercyclical capital buffer, on revenue diversification and bank performance.

Keyword: NSFR, Bank performance, COVID Pandemic, non linearity

SDG: GOAL4: Quality Education; GOAL 8: Decent Work and Economic Growth; GOAL 12: Responsible Consumption and Production.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

PROSEDUR PENJIMATAN MAKRO, PANDEMIK COVID-19 DAN PRESTASI PERBANKAN DI NEGARA TIMUR TENGAH DAN AFRIKA UTARA

Oleh

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Krisis ekonomi yang timbul akibat pandemik koronavirus telah mencetuskan kemungkinan krisis perbankan kedua. Ini berlaku seiring dengan pengukuhan peraturan perbankan yang diperkenalkan sejak dekad yang lalu dan kemunculan sumber pendapatan pelbagai baharu yang secara serius mempengaruhi model perniagaan yang sudah mapan. Secara tidak langsung lebih banyak kajian diperlukan untuk mengesahi persoalan ini. Oleh itu, kajian ini merungkai permasalahan penyelidikan yang memiliki implikasi dasar yang besar. Pertanyaan utama merujuk kepada potensi Nisbah Pendanaan Stabil Bersih (NSFR), modal boleh ubah bersyarat (COCO bonds), kepelbagian pendapatan (pendapatan bukan faedah), selama pandemik koronavirus ini berlangsung. Kajian dilakukan dengan menggunakan sampel bank dari wilayah (MENA) dengan data panel seimbang yang meliputi tahun 2011 hingga 2020. Analisis melibatkan beberapa analisis ekonometrik,terkini seperti sistem GMM, panel dinamik, dan regresi kuantil. Hasil analisis menunjukkan bahawa lebih banyak COCO bonds akan meningkatkan prestasi bank. Menariknya, prestasi bank berhubungan terbalik dengan COCO bonds dan likuiditi, menunjukkan bahawa likuiditi dan modal bersama- sama mengurangi prestasi bank; namun, ini hanya berlaku ketika epidemik. Selain itu, prestasi bank berhubungan positif dengan kecairan pendanaan. Selanjutnya, perkiraan dari GMM dinamis dan regresi panel dinamik menunjukkan bahawa NSFR akan menurunkan prestasi bank selama pandemik. Akhirnya, hasil kajianjuga menunjukkan bahawa selama pandemik COVID, jumlah kepelbagaian pendapatan yang lebih tinggi menurunkan prestasi bank di bawah aras batas dan dalam kuantil yang lebih rendah. Selanjutnya, kesan ini meningkat di atas aras batas dan dalam kuantil yang lebih tinggi. Penemuan ini bagaimanapun dapat menahan terhadap analisis alternatif dan pengukuran yang berbeza juga. Kajian ini menyarankan agar pengubal dasar di wilayah MENA melarang bank-bank dari menjalani aktiviti yang tidak menghasilkan faedah, terutama selama penutupan koronavirus. Antara kajian masa depan adalah dapat meneliti potensi impak mediasi dan moderasi dari sudut Basel III, khususnya buffer modal antisisik, terhadap kepebagaian pendapatan dan prestasi bank.

Katakunci: NSFR, Prestasi Bank, Pandemik COVID, Bukan lineariti

SDG: Matlamat 4: Pendidikan Berkualiti; Matlamat 8: Pekerjaan yang sesuai dan Pembangunan Ekonomi; Matlamat 12: Penggunaan dan Pengeluaran Bertanggungjawab.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF ABBREVIATIONS

2SLS	Two-Stage Least Squares
AR	Auto-Regressive
ASF	Available Stable Funding
AT1	Additional Tier 1 Capital
BCBS	Basel Committee on Banking Supervision
COCO	Contingent Convertible Capital
CSSE	Center for Systems for Sciense and Engineering
GDP	Gross Domestic Product
GFC	Global Financial Crisis
GMM	Generalized Method of Moments
IV	Insturmental Variable
LCR	Liquidity Coverage Ratio
LLR	Loan Loss Reserves
MENA	Middle East and North Africa
NII	Non-Interest Income
NIM	Net Interest Margin
NPL	Non-Performing Loans
NSFR	Net Stable Funding Ratio
OLS	Ordinary Least Sqaure
PWD	Principle Amount Written Down
QRPD	Quantile Regression for Panel Data
ROE	Return on Equity
RSF	Required Stable Funding

TOBIN'S Q	James Tobin Ratio
VIF	Variance Inflation Factor
WDI	World Development Indicators

CHAPTER 1

INTRODUCTION

One palpable consequence of the recent coronavirus pandemic is the shrinking of the global economy, posing the threat of another worldwide financial downturn. Nevertheless, the banking sector has proven resilient to this economic crisis. With the prudential regulations that were instituted in the aftermath of the 2008 global financial crisis, banks have become significantly more sturdy in terms of capitalization and liquidity. The post-2008 regulatory framework has certainly aided the banking sector in coping with its financial needs. Despite all that, there remains the distinct possibility that, ultimately, banks will become more overstretched than envisaged, leading to widespread corporate shutdowns, as well as inability to service household debts. This likelihood is heightened by the fact that the coronavirus pandemic and its attendant financial consequences are converging with the turn of a decade of drastic but still emergent transformations in the global banking industry.

No doubt, the improved regulatory governance that combines more stringent capital and liquidity requirements with macro prudential policies has facilitated the cultivation of a sturdy banking sector, which is extremely vital in the heat of the recent economic challenges. At the same time, it has ironically undermined the overall productivity and efficacy of banks. Another source of challenge for the banking sector lies in the widespread adoption of a strategy of revenue diversification, including non-interest-yielding sources of income. To be sure, this approach has several advantages, such as enhanced operations, new products development and vibrant market competition. The flipside, however, is that it has also contributed to the rise of new players in banking-related businesses that compete with banks for their conventional sources of revenue generation, especially in the area of payments.

As Sahut and Mili (2011) maintain, when banks fail, economic growth is adversely impacted. This is a particularly important revelation in the context of the MENA region, where the economy is essentially dependent on the banking sector, which significantly shapes the region's monetary system. Unsurprisingly, the banking industry is also one of the most rigorously regulated in this region. Sadly though, since the coronavirus pandemic, the MENA countries have been experiencing persistently poor levels of growth, as well as macroeconomic disequilibrium (Arezki, 2020). With expenditures exceeding income generation, it became imperative to adopt policies to effectively grapple with the pandemic. The MENA countries were compelled to rely on loans as stop-gap measures. The World Bank (2021) suggested that this was likely to raise the region's public debt to about 54% of GDP by 2021, thus worsening the burgeoning public debt that had been witnessed in the previous decade. Doubtlessly, the coronavirus pandemic has important implications for the banking industry in the MENA region. A prominent challenge concerns the ability of banks to increase their market share in the area of financial intermediation. There is also uncertainty as to whether banks focusing on non-interest-yielding activities will eventually gain the upper hand in the struggle to dominate the financial services industry and its market capitalization. This, in effect, questions the ability of some banks to survive the crisis, maintain their capital base, as

well as preserve the basic framework of the banking industry. Clearly, weaker banks, especially those with inherited assets from the last global recession, would likely not survive amid a long-drawn period of low-interest rates. Thus, this study devotes attention to three core areas in respect of which the established framework of MENA banks is being interrogated. These relate to the reduced liquidity and capital of banks, strategic measures regarding income generation from non-interest yielding sources, as well as performance. The analysis extends to trends prevailing both before and during the coronavirus period.

1.1 Background of the study

1.1.1 An overview of additional tier 1 capital (COCO bond)

National bank balance sheet risk management guidelines had been in place before to the global financial crisis of 2007–2008. However, the Basel Committee on Banking Supervision (BCBS, 2011) issued the Basel III guidelines around the end of 2010. These guidelines established a far broader set of worldwide criteria aimed at reducing gaps in short and long-term capital and liquidity. The Basel Committee on Banking Supervision (BCBS, 2013) attempted to strengthen bank liquidity risk management strategies through post-crisis reforms (Basel III) by creating the Net Stable Funding Ratio (NSFR), a quantity-based liquidity baseline. Eliminating gaps between banks' assets and liabilities is the primary goal of this new liquidity regulation. This is accomplished by encouraging banks to fund their assets and activities for a longer period of time by establishing a minimum allowable amount of stable funding based on the liquidity of their assets and operations over one year (King, 2013).

The parameters under which capital instruments can be considered to meet the requirements for regulatory capital were further tightened under the new rules. The capital adequacy ratio, Tier 1 capital ratio, additional Tier 1 capital ratio, and Tier 1 common equity are four interrelated yardsticks of capital needs to be used for this purpose (Bitar et al. 2018). In this context, additional Tier 1 (AT1) capital instruments, such as preferred shares, may have no fixed maturity. To put it another way, there shouldn't be any effort made to encourage the holders of these instruments to redeem them. Convertible securities with a high contingent value (AT1 CoCos) will make up a large portion of additional tier 1, and their primary job will be to serve as a quickly accessible source of financing for a firm in times of crisis. To help banks transition smoothly to the new increased capital specifications, European legislation included a "phase-in period" that lasted until December 2021. During that time, the required amounts of former additional tier 1 instruments that did not meet the new standards were reduced steadily.

From the standpoint of banks, the Basel requirements (net stable funding ratio, tier 1 capital, and additional tier 1) are a constraint because they limit potential business possibilities, revenue, and risk mitigation techniques. A single component might have a reverberation effect on numerous others, often in different ways, necessitating adequate

capital and liquidity management (Schmaltz et al. 2014). This emphasizes the importance of carefully assessing the impact that compliance with the new liquidity and capital adequacy standards, especially cocos, may have on bank profitability during and after the coronavirus crisis, and vice versa. Strictly speaking, the regulatory reforms implemented in the aftermath of the global financial crisis appear to have had unforeseen repercussions, dampening the sources of liquidity for the banking system and functioning procyclically. This has exacerbated, rather than alleviated, market pressure. This result can be explained in part by the fact that the new regulatory measures were designed to alleviate the effects of the banking crisis. They were designed with the notion that crises will inevitably result in deposit and funding shortages, market illiquidity, substantial credit and losses in the market.

On December 31, 2019, the coronavirus outbreak was initially reported in Wuhan, China. On March 11, 2020, the World Health Organization (WHO) labeled it a pandemic. The pandemic had disastrous implications in a country like the United States. Its real GDP fell by almost 33% by the end of the second quarter of 2020, with unemployment reaching 14.7% in April 2020 (Li et al. 2021a). According to a survey of senior loan officers conducted by the United States Federal Reserve Bank in July 2020, there was a tightening of credit standards for most types of loans, as well as a decrease in applications for commercial and industrial (C&I), commercial real estate, and consumer loans, all of which inevitably harmed bank performance and profitability (Petras, 2020). The outbreak of the pandemic compelled global banking regulators to extend the Basel III reforms (commonly known as Basel IV) from January 2022 to January 2023 in order to provide both banks and regulators with the resources needed to effectively combat the pandemic (Brosens et al. 2021).

Important questions have arisen over how the net stable funding ratio and capital (additional tier 1coco) impacted bank profitability and performance in MENA countries during the coronavirus outbreak. Addressing these difficulties will, without a doubt, improve policies and ensure that the appropriate decisions are made in terms of joint capital, liquidity, and bank profitability, especially in emerging nations. This will aid in addressing the issue of bank performance, which typically has major negative consequences for the economy, thereby preventing future crises. However, the vast majority of existing studies on bank performance have focused on the relationship between bank capital and bank profitability in the context of industrialized countries. The function of net stable financing ratio and capital in the MENA banking industry has gotten significantly less attention. As a result, the current study investigates the relationship between funding liquidity, capital, and bank profitability in MENA nations from 2011 to 2020.

1.1.2 Profiling the MENA banking system

Since 1945, the MENA area has been one of the most unstable parts of the world, encompassing 17 countries. It comprises both stable and oil-rich countries like Saudi Arabia, Kuwait, Qatar, and the UAE, as well as unstable countries like Iraq, Syria, Libya, and Yemen (Gonz'alez et al. 2019). The region is strategically important in supplying oil and gas-related products to companies all over the world. The MENA countries share

many cultural and religious ideas. However, they differ significantly in terms of governmental systems, with some being dynastic monarchies and others being presidential republics.

The coronavirus caused a huge epidemic and spread in the MENA region. This presented policymakers with the dual problem of containing the health catastrophe while also keeping the economy afloat in the midst of a severe breakdown. The region's banking sector, including central banks and the banking system as a whole, contributed to government-adopted regulated or voluntary support and guarantee programs to address the financial and health challenges posed by the pandemic, while also attempting to turn this threat into an opportunity. As the virus expanded throughout the region, several banking industry customers lost jobs and revenues. According to surveys conducted by international organizations such as the International Monetary Fund (IMF) and the World Bank (WB), the MENA region's financial system is likely to experience its worst decline in decades, owing primarily to the coronavirus pandemic and decreased demand for petroleum. According to projections, the GDP of all MENA countries would contract by roughly 5%, while the region's oil-exporting countries will experience a 7.5% decline in GDP. Forecasts projected that the GDP of conflict-affected and fragile MENA nations will fall by much to 13% in 2020. Under these circumstances, banks are frequently bombarded with requests for financial aid from both regular customers and the general public. Of course, politicians have not shied away from urging, and even pressuring, banks to intervene in the fight against the pandemic. Such support could have both beneficial and bad consequences for banking operations and balance sheets. This study intends to investigate the banking industry's response to the coronavirus pandemic in selected MENA countries, including the accompanying difficulties and opportunities.

The numbers in the appendix (1.1-1.3) suggest that prudential regulation, particularly for MENA banks, has taken root quickly. Figure 1.1 depicts the evolution of bank liquidity as evaluated by the NSFR for the sample period of 2011 to 2020. As shown above, the average NSFR increased steadily in the aftermath of the global financial crisis. It then dramatically increased between 2014 and 2018. During this time, banks used economies of scale to increase their financial value. While the NSFR has marginally retreated since the beginning of 2019, the observed pattern supports BCBS's conclusion that the banking industry has experienced a large increase in liquidity since the 2008 global financial crisis. Figure 1.2 depicts a significant increase in the additional Tier 1 capital of banks in the MENA region, with AT1CoCos bonds experiencing rapid growth from 2011 to 2016. The increase in the issue of contingent convertible capital is due to regulatory restrictions designed to minimize bank risk- taking. Banking policies that required banks to raise their capital and liquidity reserves in order to alleviate capital-related uncertainties made them less hazardous and strengthened the banking system for the future. Notwithstanding the regulatory reforms, AT1CoCos bonds fell slightly at the start of 2018. Nonetheless, it appears that the increased liquidity and capital levels designed to bolster bank sturdiness have not, at any reasonable level, discouraged risk-taking by MENA banks. Figure 1.3 depicts the regulatory capital ratios of MENA banks from 2011 to 2019. From 2011 to 2013, the capital ratio increased steadily. This shows that the region's banks really increased their capital after the 2008 global slump. Between late 2013 and 2018, the ratio increased significantly due to the introduction of the final rules in place of Basel II.5 and the implementation of Basel III capital. This is in accordance with the regulatory initiative to raise the capital ratio.

1.1.2.1 Overview of prudential regulations in the MENA region

Legislators define prudential regulation as ensuring that banks have adequate stability to pay for losses and regain stability without relying on government aid. As a result, these policies are expected to be important accelerators for preserving financial stability. The number of risk-weighted assets (RWA) determines the minimum required capital. Banks often assume the majority of their risk-weighted assets by lending to individuals and companies. Boosting lending activity increases the quantity of assets susceptible to risk assessment proportionally. As a result, to support more lending, bank management will need to issue additional securities/shares. The capital ratio influences lending rates through this channel (Roulet, 2018). If the bank's capital ratio is already binding, banks may refrain from making new loans in order to avoid the need to issue new shares. Banks with already considerable capital reserves, on the other hand, may be able to obtain additional capital, ensuring their ability to lend more readily. We focused on contingent convertible capital (AT1 COCO bonds) to investigate how banks' performance is affected by regulatory capital requirements. The notion of AT1 COCO, first established in commercial banks by Flannery (2005), refers to a type of debt that can be automatically converted into ordinary stocks when the bank's equity or capital falls below a certain threshold. Its main strength was its capacity to rapidly supplement banks' capital. Furthermore, according to the contract's loss absorption mechanism, these bonds would be either written off or converted into equity when a certain trigger event occurred (Avdjiev et al. 2017). CoCos are converted to CET1 if the common equity Tier 1 capital (CET1) ratio falls below 5.125%, according to prudential standards. Furthermore, several banks in the MENA region have already used CoCo to reduce liquidity risk in the financial sector and strengthen their resistance to crises such as the recent worldwide epidemic. Second, banks would be forced to alter their financial statements in order to increase the liquidity of their assets and the trustworthiness of their liabilities in order to meet with prudential liquidity standards (Amroony et al. 2023). As a consequence, banks will have to raise their holdings of easily convertible assets, such as cash or government securities, while decreasing their holdings of illiquid assets, such as commercial loans. This will have an impact on their critical role in delivering liquidity to the economy (Berge & bouwmn, 2009). The MENA region has promised to implement the Basel III regulatory framework for prudential supervision. A few MENA countries have already fully adopted the liquidity framework, while others have chosen to postpone implementation or have implemented it in stages (AMF, 2018). Given the severity of previous recessions and the apprehension surrounding possible crises, the implementation of liquidity and capital prudential measures in the MENA area is expected to increase the banking sector's ability to resist such crises. Furthermore, these prudential criteria put additional costs on MENA banks, including the economic burden resulting from their impact on credit accessibility; this new rule reduces the MENA banking industry's profitability. As a result, these countries' enhanced ability to recover from setbacks, as well as their clear and open nature, make them appealing to international investors and reduce the additional cost associated with investing in these countries due to potential risks (Grey et al. 2013).

1.1.3 An overview of the COVID-19 pandemic

The greatest financial crisis since 2008 was brought on by the coronavirus epidemic, which brought down the whole global financial system. The ensuing economic downturn exacerbated inequality both inside and between countries. Early studies also point to a similar inequality in the pace of recovery from the pandemic, with developing markets and economically vulnerable segments of society needing a longer period to recover from the pandemic's economic ravages (McKibbin & Vines, 2020). Strong and coordinated fiscal policy intervention measures were implemented in response to the pandemic's outbreak. Simultaneously, these quick reactions introduced new issues, such as a large increase in individual and public indebtedness in the global economy, which, if not addressed adequately, would likely impede equitable recovery from the crisis. The pandemic's economic repercussions were more severe in developing markets, where the fall in revenue not only brought to light, but also exacerbated, old budgetary issues. Many people and businesses were visibly unprepared for the magnitude and severity of the recession that followed the pandemic's outbreak in 2020. According to surveys based on pre-crisis predictions, more than half of households in industrialized and developing countries would be unable to fulfill basic survival needs for more than three months if their sources of income were suddenly eliminated. Similarly, the average company entity's balances could only support funding and expenditures for less than 55 days. To be true, even before the crisis, many developing-market households and enterprises were saddled with unsustainable debt. Meeting their debt obligations became more difficult as the epidemic and precautionary health measures resulted in significant drops in individual incomes and company profits.

Governments' short-term responses to the pandemic were particularly swift and comprehensive. Many of the policy instruments were completely novel or were being used at this level in developing markets for the first time. Some of these solutions included significant immediate income assistance, debt moratoriums, and central bank asset purchase schemes. Not unexpectedly, the fiscal measures implemented in reaction to the crisis were often considerable in high-income countries and minimal or non-existent in low-income countries. There were significant differences in fiscal responses among middle-income nations, depending on governments' capabilities and willingness to engage on support programs.

The epidemic had a massive influence on the financial industry. As a result of the outbreak, politicians were forced to implement a slew of quarantine measures, such as social isolation, lockdowns, and economic closures. These actions drastically increased expenses and lowered revenue for corporations, while individuals saw large job losses and income drops. This reduced businesses' and individuals' ability to service their obligations, increasing the likelihood of bankruptcy (Ozili & Arun, 2023). These impacts would, as expected, spread to banks, resulting in monetary losses and an increase in the number of inactive loans, significantly undermining their capital position. Furthermore, lower loan demand may result in lower non-interest revenue, reducing bank profitability (Beck & Keil, 2020). Nonetheless, unlike past global crises, studies have yet to sufficiently focus on the consequences of the coronavirus pandemic for bank performance, particularly in MENA nations. Nonetheless, the scarcity of studies is simply one facet of the uncertainty surrounding the pandemic's impact on bank

performance. As a result, there is insufficient information to establish which banking laws should be implemented when macroprudential rules are strengthened. The primary goal of this study is to examine how the coronavirus pandemic affects bank performance and to identify legislative remedies that can be implemented in the face of tighter macro prudential rules.

1.1.4 An overview of the Net stable funding ratio (NSFR)

More thorough worldwide standards were implemented in March 2010 under the Recent Basel Guidelines, with the goal of addressing maturity imbalances between short-term and long-term liquidity. First, under the liquidity coverage ratio, banks can hold an ideal amount of "unencumbered, high-quality liquid assets" that can be converted into cash in 30 days under conditions of severe liquidity crisis (BCBS, 2010, p. 3). According to Basel III rules, the obtained value cannot be less than 100%. In other words, the total quantity of high-quality cash reserves must equal the anticipated total money outflows.

The second criteria, which is known as the net stable funding ratio (NSFR), is intended to eliminate maturity discrepancies between assets and liabilities and to promote more stable long-term financing conditions. To strengthen the financial system, the LCR (liquidity coverage ratio) and NSFR, in addition to other Basel compliance measures, were introduced gradually. All Basel III criteria are projected to be fully implemented by 2023 (L'Huillier et al. 2018). The net stable funding ratio (NSFR) was calculated in a rare study undertaken by King (2013), with the author concluding that the NSFR numerator measures the available stable financing (ASF) sources.

Long-term liabilities, long-term wholesale funding, and equity are the most reliable sources of finance; all receive equal weight. Deposits and short-term wholesale funding of less than a year follow. Interbank finance, according to King, is not a secure source of funding and hence receives no weight. The NSFR denominator represents required stable funding (RSF) multiplied by a factor (or haircut) based on an asset's expected liquidation value under extreme pressure. Cash, securities with a maturity of less than one year, and interbank claims do not require sponsorship and are subject to a 0% factor. Only 5% face value funding is required for eligible government debt that has a risk-weight of 0%, making it extremely liquid. Industrial and retail loans with maturities ranging from 50 to 85%, as well as residential mortgages with any maturity and industrial loans with maturities of more than one year have to be financed at 65%. All other assets are allocated completely.

Discourses on the relationship between NSFR and bank performance are inconclusive due to disparities in findings. Existing studies can be classified into three groups. The first group of studies maintains that the NSFR has a negative impact on bank performance (King, 2013). The second group of studies maintains that the NSFR has a positive impact on bank performance (Said, 2018). The third group of studies maintains that the NSFR has a negligible effect on bank profits (Dietrich et al. 2014). Despite changes in empirical methodology, there is still no comprehensive investigation of the

relationship between NSFR and bank performance in the MENA region. However, determining this link is critical since the NSFR is at the heart of the discussion on liquidity management, which tries to address the challenges associated with maturity inequalities and maintain bank security.

Considering numerous factors, this study focuses on examining trends in banks' net stable funding ratios in the context of the coronavirus pandemic and the impact on bank performance. First, as a result of the economic recession, lock-ups, and decreased demand for goods and services during and after the pandemic, banks became more vulnerable to credit and default risk globally, given shortcomings in their liquidity management and concerns about debt payment (Elnahass et al. 2021). The second step is if private market investment and consumption continue to fall, with no chance of recovery during or after the pandemic, lending operations may be limited, limiting bank profitability (Neef & Schandlbauer, 2021). Although the growing number of empirical studies on the effectiveness of the NSFR, only a few studies have attempted to investigate how the NSFR of MENA banks affects bank performance during a coronavirus pandemic. Understanding this subject could provide policymakers and regulators with a safeguard against the recurrence of crises such to the global financial crisis of 2007/08.

1.1.5 Bank performance

A large number of researches have been conducted to study the factors that generate variances in bank earnings. These researches are generally classified into various categories. One series of studies focuses on the relationship between commercial bank performance and several variables of bank efficiencies. Another category investigates the relationship between bank performance and balance-sheet structure. Another group investigates the relationship between bank performance and income statement composition. Another subset of research investigates the impact of regulatory, macroeconomic, or institutional issues on bank overall profitability.

Banks are critical in every economy because of the intermediary function they provide. Those who deposit surplus funds with banks gain interest on their deposits in one sense. In another sense, investors can access the funds they need to proceed with their company activities while also spending their future gains. It indicates that banks help to boost local output and consumption. Together, these roles played by banks contribute to the growth of domestic economies. Furthermore, banks employ more people in their branches, which generates employment opportunities in the communities in which they operate. Overall, banks play an important role in economies (Yüksel et al. 2018). Banks also make huge profits from the deposit accounts they keep for national deposits, as well as their lending activities.

However, with the current trend of globalization, the banking business faces significant issues such as default, bankruptcy, interest rate, and currency rate concerns. Over the previous two decades, a series of global banking crises have occurred as a result of poor risk management, with severe effects on affected enterprises. Each economic downturn

has resulted in enormous job losses and corporate failures. This emphasizes the importance of banks, as well as decision-makers, focusing on good risk and asset administration ensures economic stability (Dinçer et al. 2017). Given that economic problems are frequently bank-related, financial performance assessments are critical for identifying challenges and anticipating economic dangers. Understandably, an increasing corpus of work has been performed since the last global financial disaster and the implementation of the Basel III standards to analyze the consequences of those policies on banks. Researchers have been conducting essentially country-level experiments since 2010 using modern econometric research tools. In light of this, the current study intends to examine the effects of prudential laws on bank performance in MENA nations.

1.1.6 An overview of the income diversification

Global banking practices have seen major modifications over the previous two decades. Economic liberalization and integration have given rise to the concept of disintermediation, which has been made possible by developments in monetary technology. All of this has resulted in changes in how revenue is generated and corporate processes. Deregulatory reforms in the banking industry, in particular in Europe, have resulted in unique innovations in financial institutions through enhanced reorganization and competition (Lepetit et al. 2008).

In response to these developments, banks have adopted a business diversification strategy. They no longer rely on traditional interest-based sources of income, but rather on the supply of non-traditional services (Gambacorta et al. 2014). The evolving regulatory framework, combined with growing deregulation, has resulted in lower returns for banks, driving them to develop new lines of business and diversify their overall operations outside of the conventional (Nisar et al. 2018). Banks have had to expand their asset holdings and operations in order to maintain investment returns and competitiveness, such as derivative securities, insurance underwriting, investment banking, brokerage, mutual funds, venture capital, and asset securitization (Meslier et al. 2014).

Research conducted after the Great Recession of 2008 presented reasons in favor of banking operations' diversification. Nonetheless, there is a need to reconsider the advantages of this method in the post-crisis period, particularly in the context of the coronavirus pandemic. It is important to understand whether and to what extent banks changed their conduct over that time period as they retreated from riskier, non-interest-paying activities in order to meet the prudential criteria established by Basel III. In light of the uncertain findings from present studies, it is also worthwhile to investigate the relationship between diversity and bank performance using different and novel methodological viewpoints. Thus, in contrast to previous research that primarily uses linear modeling, this study takes a different tack when examining hazard and whether the discrepancies in earlier conclusions can be attributed to a nonlinear relationship between the diversity of revenue sources and bank performance.

Although there has been a flood of research on developed markets, especially the banking industry in the United States, less is known about their MENA counterpart. As a result, the current study focuses on the impact of diversity on bank performance, employing a data set of MENA banks from 2011 to 2020, including the coronavirus window. Some research has looked into the nonlinear relationship between diversifying income and the performance of banks (Gambacorta et al. 2014; Lin et al. 2012; Nisar et al. 2018). However, no one has attempted to calculate the optimal level of diversification that can produce a shift in the link between revenue diversification and bank performance.

According to the current author, no work has yet examined such relationship using two innovative nonlinear models. As a result, by addressing the questions that follow, this study helps to the clarification of significant regulatory and supervisory uncertainties: (1) the extent to which the coronavirus epidemic unravels the link between income diversification and bank profitability. (2) What is the degree of income diversification that causes the structure of that connection to change? These are crucial considerations because the three phenomena of the coronavirus pandemic, income diversifications, and bank performance have a constraining influence on the bank business model, with potentially major ramifications for the financial system as entirety.

1.2 Problem statement

Due to 2007/08 global recession, a stringent capital and liquidity rules was introduced by Basel Committee and that really helped tremendously in strengthening the stability of the banking system globally. The first case of the coronavirus was discovered in Wuhan, China on 17th November 2019. Then, the virus later continued to spread rapidly across the world. As it continued to spread, by March 2020, the Middle East and North Africa (MENA) countries were affected and leads to obstructing their economic activities. The first major challenge faced by the global financial regime which was introduced for banks in the year 2008 was the economic effect of this deadly virus. It had been proven that, the major challenge to the business paradigm shift of the banking system are identified to be three trends which are related to the coronavirus pandemic.

Following economic recession in 2008, the banking industry was secured to a large extent due to, firstly, rising supervisory standards, assessment and implementation of the Basel standards on liquidity. Though, it brought significant pressure on the performance of the bank[1] (Banerjee & Mio, 2018). In general, managing liquidity risk[1] by banks were done by adopting pecking order by revising the most liquid financial assets aspects rather than the less liquid ones. All these are done for the purpose of keeping the right liquidity level and maintaining the minimum level of liquidity risk, while at the same time realizing profits. However, under severe market conditions, the flexibility of following the pecking order have been reduced by the banks in their balance sheet. Therefore, this

[1] For emerging economies, especially those in the MENA region, the new liquidity rules amount to a curse, rather than a blessing, because of their restriction of business, investment strategies, and bank profitability. Furthermore, as demonstrated by King (2013) Compliance with the Basel liquidity would impose heavy costs on banks, such as the cost of balance sheet adjustment, which are likely to affect bank margins

poses a danger for them to change their less liquid retail lending and deposits than they would ordinarily do in normal market situations[2] (van den End & Tabbae, 2012). Due to coronavirus pandemic, the world witness lock ups and economic decline which lead to lesser demand lending, products and services. Therefore, the global banking supervisors met and agreed to extend the Basel III reforms for one year which was label as Basel IV from January 2022 to January 2023. This policy will allow both banks and regulators to get the enough resources to effectively confront the pandemic (Brosens et al. 2021). But the way the banks react during pandemic or any other similar crisis has more devastating effect on industries. On the other, the banks will suffer a shortfall in liquidity during crisis, because of not meeting the net stable funding ratio (NSFR) benchmark. Furthermore, in the case of common financial shock, the bank may experience shortfall in liquidity due to falling below NSFR threshold. But all this depends on their selected funding sources. The highlighted evidences shows that banks exhibited different responses to liquidity targets as time progresses. This shows that the overall economy is affected by the kind of actions taken by banks in response to economic crisis (Jobst, 2014). Therefore, evaluation of liquidity deficit and systemic risk issues require understanding and in depth comprehension of the strategies employed by banks in the course of achieving their optimal liquidity. The evaluation must be ascertain to determine the extent to which this threshold benefit and hampers bank's performance in MENA.

Another second aspect of uncertainty in the post pandemic period is related to the aggregated impact of macro prudential liquidity and capital on bank performance behavior in MENA countries. Another major challenge of untrained banks prior to the pandemic is adjustment to the newly regulatory framework which was established after the last financial crisis. It is noted already that the stability of the banking industry was secured due to the strengthened macro prudential regulations. During the 2007/09 global recessions, the contingent convertible capital (AT1CoCos) bonds levels of banks was much better. Boasting more AT1CoCos bonds levels by banks helps to reduce costs of funding, with better chance of giving out credit. Hence, the banks' capital structure flexibility will be enhanced with such bonds. Also, they can conveniently and quickly be changed into equity even in a stressed condition where capital does not meet the lower trigger threshold. So, the bond (AT1CoCos) will serve as automatic safety mesh against the banks' bankruptcy. But this might not work in the case of short run where banks are subjected to more stringent capital regulation (AT1CoCos bonds), especially during the prevalence of the coronavirus pandemic. The reason being that AT1CoCos bonds tend not to perform well in case of limited loss-absorbing ability,[2] pricing difficulties, high association with systemic market movements[3], and possible shareholder dilution (Avdjiev & Kartasheva, 2015). After coronavirus pandemic outbreak, MENA banks tried to raise capital through AT1CoCos bonds so as to lure investors[4] and with that their

[2] Bankers witnessed an extraordinary substitution during the global financial crisis. In the initial phase (August 2007 until the demise of Bear Stearns in March 2008) and the second phase (between March 2008 and the failure of Lehman in September 2008) of the recession, banks retained a considerable portion of fixed-term retail deposits on their balance sheets, although retail demand deposits decreased. During the third phase of the recession (October 2008 until March 2009), this pattern shifted. An important conclusion derived from this data observation is that banks seek different answers for liquidity targets at different periods.

[3] The paper by Pfleiderer (2013) provides a detailed assessment of whether rising bank capital is indeed expensive or not.

[4] Please refer to https://www.marmoremena.com/deluge-of- bond-issues-by-gulf-banks-provides-capital-boost/ for additional information.

balance sheets will be improved. Even with that uncertainty continues to remain with the combined effect of net stable funding ratio and capital (additional tier 1 COCO) on bank performance and their relationship in countries of the MENA region while the pandemic lasted. Solving these issues amongst others particularly in emerging markets would provide valuable insights for policymaking of the combined effect of capital and liquidity on bank performance. With that the banks' poor performance due to economic stress would be ease and at the same time minimize risks. As shown in Figure 1.4 justifies the hypothesis of this study. Also, it is clear that the net interest margin of MENA banks drops sharply during the first two quarters of the coronavirus pandemic. Furthermore, the loans from MENA banks, which are a widely used indicator of bank strength, decreased substantially because of the pandemic and continued in the downward trajectory throughout the study timeframe. These findings are consistent with results of Li et al. (2021b), and they suggest that the worsening condition of the banking system may limit bank profits and the capacity to extend credit to the economy.

Thirdly, strict prudential regulations has adverse effect which lies in the substantial changes they caused in the banking industry, most specifically with respect to business practices. The regulatory obsession with the recovery of profitability, as well as capital and liquidity led to several suggestions for the diversification of income sources. That prompt paradigm shift from traditional interest to non-interest yielding activities, examples of such activities include trading, consulting underwriting, and distribution of third-party products. Many research have looked into how diversification of bank revenue (non-interest income activity) impacts the performance of the banking industry. While other studies focused on the relationship between bank performance and income diversification. Nonetheless, there is great inconsistency in the findings from these studies[5]. These inconsistencies arises from peculiar factors that are particular to certain countries such as (governance systems and cultural backgrounds, among others), methodologies employed and differences in the timeframes covered (Adams et al. 2015).

In most statistical research findings, endogeneity problem may well be a manifested (Francoeur et al. 2019). Studies show that, an issue of endogeneity may arises on revenue diversification due to omission of firm characteristics. Therefore, revenue diversification and bank performance are strongly connected in a dynamic nature[6]. Hence, based on the study conducted by Bruna et al. (2020), they contends that most of the existing studies are distorted by endogeneity problems. So, agreement in findings is so eminent because of the endogeneity. The present study thus challenges the idea of a linear income diversification average (which is mostly adopted) effect on bank profitability. So, establishing relationship between income diversification and bank performance on the assumption that the linear income diversification average would probably yield

[5] The literature on revenue diversification has been mainly focused on bank stability and risk-taking (Abuzayed et al. 2018; Ben Lahouel et al. 2022; Edirisuriya et al. 2015; Kim et al. 2020; Liang et al. 2020; Maudos, 2017; Sissy et al. 2017). Few studies have examined the relationship between bank performance and income diversification. (Gambacorta et al. 2014; Lin et al. 2012; Nisar et al. 2018). Interestingly, these studies have yielded mixed results, showing either positive or negative outcomes (Mostak Ahamed, 2017; Nisar et al. 2018) (Adesina 2021; Maudos, 2017). Accordingly, the revenue diversification-performance link remains ambivalent and academically undetermined.

[6] Past year profits influence current year profits, creating ―dynamic endogeneity‖ (Wintoki et al. 2012).

erroneous outcomes (Kim et al. 2020)[7]. Despite significant number of research work on the implications of the diversification of bank non-interest income (non-interest income activity) for bank performance, there is still unclear or obscure relationship between non-interest income, the coronavirus pandemic, and bank performance. Sequel to coronavirus pandemic outbreak, authorities all over the world have taken quarantine measures to prevent its spread, but that resulted in decreased liquidity, corporate profitability and central bank interest rates, while raising public debt (Kozak, 2021). This had seriously affect the banks to diversify their sources of revenue (World Bank, 2021). Due to lack of related studies and divergences of opinions on the relationship between income diversification and bank performance, the present study seeks to look or establish a link between non-interest income and bank performance during the coronavirus pandemic. Also, the study will establish how well the pandemic stands in this relationship. Furthermore, the issue of non-linearity will be incorporated into this study which has so far being omitted in literature to be part of additional improvement. Also, the sample period has been extended to cover from peaks of the coronavirus pandemic up to the second wave period of the pandemic. Between these two periods, that is, phases of the health crises are believed to be the bases that worsened the economic uncertainties and prompt the investors to scramble for refuge. To conclude, the economic dilemma caused by coronavirus pandemic is one of the probable reasons to the possibility of second banking crisis. This has merged with the strict regulatory regime that was witness in the last era. Couple with diversification of additional sources of revenue, it actually questioned the long established business model. Hence, further and thorough studies are necessary to verify these claims. Therefore the current study is not only for addressing policy implication rather it confronts the key research problem at hand. The central question concerns the potential effect of the higher capital and liquidity levels stipulated by the Basel III regulations, as well as and non-interest income on bank performance in the context of the coronavirus pandemic.

1.3 Research questions

There are number of potential consequences for bank performance due to coronavirus pandemic. Non-interest income and prudential regulations also poses similar questions for bank performance in MENA countries in the context of the coronavirus pandemic. Looking at these general questions, the present study examines three specific and vital research questions, which are as follows:

1. To what degree does the bank performance is affected by NSFR in MENA countries during the pandemic?

2. To what level does Contingent Convertible Capital affect bank performance in MENA countries during the pandemic?

3. Has non-interest income really affect the bank performance during the pandemic?

[7] This study concurs with those of Kim et al. (2020), indicating that nonlinearity significantly influences the link between bank profitability and non-interest income, and that describing this relationship using a linear approach can result in biased results.

1.4 Research Objectives

The aim of this study is to identify the role of macro prudential liquidity, capital, and non-interest income on bank performance in MENA countries, while the specific research objectives are as follows:

1. To study and evaluate how NSFR affects bank performance in MENA countries during the coronavirus pandemic.

2. To investigate the effect of AT1CoCos bonds on bank performance in MENA countries during the pandemic.

3. To identify the effect of non-interest income in improving or declining bank performance in MENA countries concurrently during the pandemic.

1.5 Scope of the study

The substantial effect of the coronavirus pandemic and tightened bank business model as well as their individual effect of these factors on MENA countries' bank performance are the key motivational points for the current topic. As highlighted earlier in this study, after the global financial crisis in 2008, regulatory regime was established for banks but this had seriously affected by coronavirus pandemic with adverse effect on the global economy. Due to outbreak of the virus and subsequent drops in oil prices, MENA countries' economies are greatly affected. As predicted by World Bank and IMF, there are 7.5% decrease for oil exporting economies and 5% fall in GDP for all MENA economies. In these overstretched situations, banks are overwhelmed with requests for financial assistance from regular customers and society members at large, which are mandated to provide regulators to cope with the pandemic. Achieving such demands, however, may present both risks and opportunities for banking operations and balance sheets. During conditions of stricter prudential standards and reduced demand for most loans, a pertinent question worthy of examination is whether MENA banks improved in performance, where they had more diversified sources of income. This vital question is yet to receive satisfactory scholarly answer. Toward this end, the present study deploys three innovative linear and non-linear approaches to investigate 180 banks operating in one of the largest financial markets, the MENA region, between 2011 and 2021. The MENA region is a suitable platform for the examination of this issue based on a plethora of factors.

First, the MENA countries have a commonality of cultural norms, ethnic identities, and social mores (Albaity et al. 2022). Similarly, the region is considered as a―collectivistic‖ economy in that it is driven by collective decision-making. A majority of the MENA countries are endowed with petroleum resources, boasting 65% of the global reserve. This goes to explain why the repercussions of the coronavirus pandemic may be more profound in this region than other parts of the world (Albaity et al. 2021; Tissaoui et al. 2021). Moreover, existing studies on the effects of prudential regulations and income diversification have been confined essentially to developed economies. Also, the

implications of these requirements for bank performance have scarcely received attention on a general level, and not addressed at all in the MENA region, especially during the coronavirus pandemic. The heterogeneity of economies means that the results of studies on developed economies may not be applicable to their developing counterparts. Regional differences aside, measures to implement the prudential regulations may overlap with the distinct and diverse economic development goals of countries and ameliorate the impacts of the pandemic on the banking industry (Kim et al. 2020).

1.6 Contribution of the study

The knowledge and information that will be achieve from this study will expands the current body of knowledge in the literature on the crucial phenomena of coronavirus pandemic, bank liquidity risk management, contingent convertible capital, and bank performance in the MENA region. Principally, it addresses the vexed question of whether and how the pandemic may have impacted bank profitability in MENA countries. To the best of this author's knowledge, this issue is yet to receive any comprehensive examination. The study also provides useful insights for academics, who are preoccupied with the macro prudential measures (Basel III regulations) meant to secure bank profitability and stability practices. Further, it offers vital guidance for regulators and policymakers in this area. Thus, overall, the study makes theoretical, empirical and policy contributions.

1.6.1 Theoretical contribution

Theoretically, this study advances the current literature on macro prudential regulations (Basel III regulations) by means of eight theories used to demonstrate the effect of bank liquidity and capital on profitability. The quest for the enhancement of bank performance and the reduction of risk is the outcome of conflict of interests among concerned parties, such as maturity mismatches between assets and liabilities. Thus, this study highlights the need to incorporate these theories so as to deepen current understandings of risk management in MENA countries, which are compelled to comply with the Base III regulations.

The study advances relevant literature and theories in a number of ways. First, previous studies exclusively examined the effect of either liquidity (Dietrich et al. 2014; Giordana & Schumacher, 2017; King, 2013; Said, 2018) or capital (Bitar et al. 2018; Goddard et al. 2011) on bank performance. Moreover, they focused only on developed, as well as emerging countries. This study contributes to the literature by providing new insights into the implications of changes in the business model to achieve both liquidity and capital adequacy under the Basel III regulations. Second, while numerous studies have been undertaken on the connection between macro prudential regulations and performance, most of them have devoted attention to the banking sector in developed economies, particularly U.S. and European banks (Ben Lahouel et al. 2022; Chiorazzo et al. 2008; Kim et al. 2020; Li et al. 2021), as well as those in emerging Asian markets (Nguyen et al. 2021; Nisar et al. 2018; Wang & Lin, 2021). There is limited focus on the

banking sector in the developing economies of the MENA region. Therefore, this region a suitable subject of study.

Third, as far as this author is concerned, the present study is the first ever to apply three sophisticated statistical approaches, specifically the dynamic panel threshold, dynamic generalized method of moments (GMM), and the panel quantile regression, to assess the effect of the macro prudential regulations on the performance of specific MENA banks. These analyses demonstrate the importance of employing advanced methodologies to attain precise and reliable results that can aid policymaking efforts aimed at the development of a governance framework for the banking industry. Fourth, the MENA region boasts a robust banking industry that comprises conventional, as well as hybrid listed banks operating in equivalent macroeconomic circumstances. Therefore, the present study can be seen as advancing existing knowledge by incorporating listed and unlisted banks in the analysis. This is of importance as it offers a more representative picture of the banking system in the MENA region and makes the results achieved more widely generalizable.

1.6.2 Empirical contribution

This study makes three empirical contributions. The first relates to the limitation inherent in the modeling approach commonly used in the current literature to determine the dynamic threshold of macro prudential regulations and performance. For example, Kremer et al. (2013) use the dynamic panel threshold, while Le et al. (2020) apply the square term modeling strategy. However, these approaches run into difficulty when the panels are heterogeneous due to increasingly available large panel data with potential endogenous threshold variables. In this connection, the threshold model proposed by Seo et al. (2019) does better in managing panel data estimation issues by curbing multicollinearity and heterogeneity. By filling this methodological gap, this study makes an important empirical contribution and offers a novel perspective from which to examine the impact of macro prudential standards on bank profitability. It thus improves current understandings on the nonlinear relationship between macro prudential regulations and performance. Second, existing empirical studies on banking risk management are principally focused on the 2008 financial crisis. By contrast, the present study devotes attention to the period of the coronavirus pandemic. In this way, the study is able to demonstrate that there exist disparities in the effects of macro prudential regulations on the performance of banks prior to and during the pandemic. To the best of this author's knowledge, only a handful of studies (Cao & Chou, 2022; Li et al. 2021a) have been conducted in the context of the coronavirus pandemic, which seek to determine the relationship between income diversification and bank profitability. Importantly also, the scope of these studies is solely limited to advanced countries. Additionally, they exclusively employ a linear approach. With the timeframe used in the present study, it would be possible to better comprehend such a relationship both prior to and during the pandemic. This would enhance understandings of the systemic adjustments proposed by the Basel III rules, which generally may begin to manifest only after a long while. Third, this study advances the empirical literature on new regulations and bank performance by using the recent timeframe of 2011-2021. This is noteworthy, as previous works have depended on historical financial information obtained from the

1990s to the early 2000s, examples of which include (Dietrich et al. 2014; King, 2013; Ötker & Pazarbasioglu, 2010), while others, such as (Giordana & Schumacher, 2017; Said, 2018), have relied on data obtained right after the financial crisis to 2014. Finally, majority of analytical studies dwelling on liquidity indicators employ ratios derived from accounting data, consistent with CAMELS rating method liquidity indicators (Distinguin et al. 2013). The present study uses the NSFR and its comparison with the CAMELS rating approach. This is not based on its practical application, but because it is possible for investors and decision-makers to use it as a unit for the measurement of the sturdiness of banks, particularly the capacity to survive without external support in crisis periods; the principal explanatory factor for the 2008 global crisis. This approach also evaluates both sides of bank balance sheet.

1.6.3 Contribution to policymakers & bank practitioners

There are numerous significant recommendations for policy making derived from this study. First, the implications of the study's findings hold significant importance in informing policy development and bank practitioners within MENA countries, particularly in addressing the challenges faced by banks in maintaining profitability amidst the COVID-19 crisis. Initially, it is important to prove the existence of threshold levels pertaining to NSFR, which subsequently exert an influence on the profitability of banks operating within the Middle East and North Africa region. This finding suggests that the widely held assumption of a linear correlation, as commonly observed in previous studies, may not be supported. On the other hand, when banks in the MENA region achieve the optimum threshold, the presence of funding liquidity will decreases the degree of profitability. In this particular scenario, there is a need for policymakers and banking regulators to emulate the Federal Reserve's approach by providing exemptions for small banks from the funding criteria outlined in the Basel III agreement. This is particularly relevant during periods of significant financial strain, such as the COVID-19 pandemic. Furthermore, it is imperative for bank practitioners to maintain their oversight of systemically important financial institutions (SIFI). These institutions necessitate a greater degree of funding liquidity and capital. Regarding the NSFR guidelines, it is imperative for MENA banks to ensure that their net stable funding ratio shouldn't exceed the appropriate threshold level of 58% in order to effectively enhance bank profitability.

Second, the implications for banks in the MENA countries, particularly in the context of the pandemic, are substantial due to the study findings and the widespread recognition of the combined stringent bank contingent capital (AT1CoCos bonds) and liquidity (NSFR) standards on a global scale. Each of the countries under consideration exhibits significant heterogeneity in the banking and capital market sectors, raising doubts about the efficacy of heightened prudential rules as a means to improve bank performance. Hence, it is imperative that regulators direct their focus toward the tradeoff associated with ensuring adherence to prudential regulations for the purpose of fostering bank performance within the MENA area. Higher AT1CoCos bonds and NSFR requirements may enhance the bank’s performance to absorb external adverse shocks. Nevertheless, the results also suggest that increased funding liquidity (NSFR) has negatively affected the association between contingent convertible capital (AT1CoCos) and bank

profitability by 0.028. Therefore, it is advisable for regulators and policymakers in the MENA region to advocate for the adoption of the Federal Reserve's strategy, which involves granting small banks an exemption from the liquidity criteria outlined in Basel III, especially in times of economic hardship such as the COVID-19 outbreak. Thirdly, it is imperative for bank practitioners to possess knowledge regarding the degree to which a wider range of income diversification strategies might be efficacious in attaining stability and enhancing profitability. Our examination provides legislators with insights indicating that the adoption of non- interest activities by MENA banks during the pandemic may not result in financial gain. Consequently, the findings of our study offer valuable perspectives for both bank executives and regulators. From a policy standpoint, it is recommended that regulators implement measures to incentivize bank managers in the MENA region to prioritize their core objective of financial intermediation, considering the negative impact of income diversification on bank profitability. This shift can help alleviate the stability concerns associated with revenue diversity.

1.7 Organization of chapters

This study is organize into five chapters. Chapter I highlight an overview of the study, including its background, statement of problems, research questions, as well as research objectives. Other issues discussed in this are the significance of the study and organization of chapters. Chapter II extensively reviews the literature relevant to this study, both theoretical and empirical. Review of the theoretical literature critically analyzes existing theories, their historical development and implications for the research variables. The empirical literature review engages in an in-depth discussion of the objectives of this study. This chapter also summarizes the literature and highlights gaps. While, chapter III highlighted on the approaches and methodology used in this study. It covers population sample, model specifications, sources of data, and empirical methodology. Chapter IV presents the empirical findings and discussions of the results. Finally, chapter V summarizes the study, in addition to highlighting its limitations, policy implications, and possible future research areas.

REFERENCES

Abbas, F., Iqbal, S., & Aziz, B. (2019). Cogent Economics & Finance The impact of bank capital, bank liquidity and credit risk on profitability in postcrisis period: A comparative study of US and Asia the impact of bank capital, bank liquidity and credit risk on profitability in postcrisis. *Cogent Economics & Finance*, *0*(0). https://doi.org/10.1080/23322039.2019.1605683

Abuzayed, B., Al-Fayoumi, N., & Molyneux, P. (2018). Diversification and bank stability in the GCC. *Journal of International Financial Markets, Institutions and Money*, *57*, 17–43. https://doi.org/10.1016/j.intfin.2018.04.005

Acharya, V. V., Engle, R. F., & Steffen, S. (2021). Why Did Bank Stocks Crash during COVID-19? *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3799590

Acharya, V. V., Shin, H. S., & Yorulmazer, T. (2011). Crisis resolution and bank liquidity. *Review of Financial Studies*, *24*(6), 2166–2205. https://doi.org/10.1093/rfs/hhq073

Acharya, V. V., & Steffen, S. (2020). The Risk of Being a Fallen Angel and the Corporate Dash for Cash in the Midst of COVID. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3704158

Adams, R. B., de Haan, J., Terjesen, S., & van Ees, H. (2015). Board diversity: Moving the field forward. *Corporate Governance: An International Review*, *23*(2), 77–82. https://doi.org/10.1111/corg.12106

Adesina, K. S. (2021). How diversification affects bank performance: The role of human capital. *Economic Modelling*, *94*, 303–319. https://doi.org/10.1016/j.econmod.2020.10.016

Agoraki, M. K., Delis, M. D., & Pasiouras, F. (2011). Regulations, competition and bank risk-taking in transition countries. *Journal of Financial Stability*, *7*(1), 38–48. https://doi.org/10.1016/j.jfs.2009.08.002

akerlof. (1970). Lemons Quality Uncertainty and the Market Mechanism. *The Quartly Journal of Economic*, *2*(5), 255. Retrieved from?

Al-Maskati, N., Bate, A. J., & Bhabra, G. S. (2015). Diversification, corporate governance and firm value in small markets: Evidence from New Zealand. *Accounting and Finance*, *55*(3), 627–657. https://doi.org/10.1111/acfi.12069

Albaity, M., Md Noman, A. H., & Mallek, R. S. (2021). Trustworthiness, good governance and risk taking in MENA countries. *Borsa Istanbul Review*, *21*(4), 359–374. https://doi.org/10.1016/j.bir.2020.12.002

Albaity, M., Saadaoui Mallek, R., & Mustafa, H. (2022). Bank Stock Return Reactions to the COVID-19 Pandemic: The Role of Investor Sentiment in MENA Countries. *Risks*, *10*(2), 43. https://doi.org/10.3390/risks10020043

Albul, B., & Tchistyi, A. (2016). Contingent Convertible Bonds and Capital Structure Decisions. *SSRN Electronic Journal*, 1–57. https://doi.org/10.2139/ssrn.2772612

Alhadab, M., & Alsahawneh, S. (2016). Loan Loss Provision and the Profitability of Commercial Banks: Evidence from Jordan. *International Journal of Business and Management*, *11*(12), 242. https://doi.org/10.5539/ijbm.v11n12p242

Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, *68*(1), 29–51. https://doi.org/10.1016/0304-4076(94)01642-D

Arezki. (2020). *Reviving Middle East and North Africa Regional Integration in the Post-Covid Era*.

Ashraf, D., Rizwan, M. S., & L'Huillier, B. (2016). A net stable funding ratio for Islamic banks and its impact on financial stability: An international investigation. *Journal of Financial Stability*, *25*, 47–57. https://doi.org/10.1016/j.jfs.2016.06.010

Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Journal of International Financial Markets, Institutions and Money*, *18*(2), 121–136. https://doi.org/10.1016/j.intfin.2006.07.001

Avdjiev, S., & Kartasheva, A. (2015). CoCo Bond Issuance and Bank Funding Costs, 1–59.

Azad, A. S. M. S., Azmat, S., & Hayat, A. (2020). What determines the profitability of Islamic banks: Lending or fee? *International Review of Economics and Finance*, (August 2018). https://doi.org/10.1016/j.iref.2019.05.015

Baker, S. R., Bloom, N., Davis, S. J., Kost, K., Sammon, M., & Viratyosin, T. (2020). The unprecedented stock market reaction to COVID-19. *Review of Asset Pricing Studies*, *10*(4), 742–758. https://doi.org/10.1093/rapstu/raaa008

Baltagi, B. H., Song, S. H., & Jung, B. C. (2001). The unbalanced nested error component regression model. *Journal of Econometrics*, *101*(2), 357–381. https://doi.org/10.1016/S0304-4076(00)00089-0

Baltensperger, E. (1980). Alternative approaches to the theory of the banking firm. *Journal of Monetary Economics*, *6*(1), 1–37. https://doi.org/10.1016/0304-3932(80)90016-1

Banerjee, R. N., & Mio, H. (2018). The impact of liquidity regulation on banks. *Journal of Financial Intermediation*, *35*, 30–44. https://doi.org/10.1016/j.jfi.2017.05.008

Bapat, D. (2018). Profitability drivers for Indian banks: a dynamic panel data analysis. *Eurasian Business Review*, *8*(4), 437–451. https://doi.org/10.1007/s40821-017-0096-2

Barajas, A., Chami, R., & Cosimano, T. (2002). Did the Basel Accord Cause a Credit, (1997).

Bartik, A. W., Bertrand, M., Cullen, Z., Glaeser, E. L., Luca, M., & Stanton, C. (2020). The impact of COVID-19 on small business outcomes and expectations. *Proceedings of the National Academy of Sciences of the United States of America*, *117*(30), 17656–17666. https://doi.org/10.1073/pnas.2006991117

BCBS. (2010). Assessing the Macroeconomic Impact of the Transition to Stronger Capital and Liquidity. *Macroeconomic Assessment Group Final Report, December*, (December), 1–68. Retrieved from Macroeconomic

BCBS. (2014). Basel Committee on Banking Supervision Basel III: the net stable funding ratio, (October).

Ben Lahouel, B., Taleb, L., Kočišová, K., & Ben Zaied, Y. (2022). *The threshold effects of income diversification on bank stability: an efficiency perspective based on a dynamic network slacks-based measure model*. *Annals of Operations Research*. https://doi.org/10.1007/s10479-021-04503-4

Bennedsen. (2020). www.econstor.eu. *Global Labor Organization (GLO)*.

Berger, hasan, korhonen, zhou. (n.d.). Does Diversification Increase or Decrease Bank Risk and Performance? Evidence on Diversification and the Risk-Return Trade off in Banking. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.1651131

Berger, A. N. (1995). The Relationship between Capital and Earnings in Banking. *Journal of Money, Credit and Banking*, *27*(2), 432. https://doi.org/10.2307/2077877

Berger, A. N., Hasan, I., & Zhou, M. (2010). The effects of focus versus diversification on bank performance: Evidence from Chinese banks. *Journal of Banking and Finance*, *34*(7), 1417–1435. https://doi.org/10.1016/j.jbankfin.2010.01.010

Bernanke, B. E. N. S., & Lown, C. S. (1990). The Credit Crunch.

Bikker, J. A., & Vervliet, T. M. (2018). Bank profitability and risk-taking under low interest rates. *International Journal of Finance and Economics*, *23*(1), 3–18. https://doi.org/10.1002/ijfe.1595

Birn, M., Dietsch, M., Durant, D., General, S., Contrôle, D. E. L. A. D. E., Birn, M., … Durant, D. (n.d.). Débats économiques et financiers.

Bitar, M., Hassan, M. K., Pukthuanthong, K., & Walker, T. (2015). The performance of Islamic vs. Conventional Banks: A Note on the Suitability of Capital Ratios, 1–57.

Bitar, M., Pukthuanthong, K., & Walker, T. (2018). The effect of capital ratios on the risk, efficiency and profitability of banks: Evidence from OECD countries. *Journal of International Financial Markets, Institutions and Money*, *53*, 227–262.

blum. (1999). Do capital adequacy requirements reduce risks in banking?, *23*, 755– 771.

Blundell, R., & Bond, S. (1999). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, *87*(1), 115–143. https://doi.org/10.1016/S0304-4076(98)00009-8

Bolarinwa, S. T., Olayeni, R. O., & Vo, X. V. (2021). Is there a nonlinear relationship between nonperforming loans and bank profitability? Evidence from dynamic panel threshold. *Managerial and Decision Economics*, *42*(3), 649–661. https://doi.org/10.1002/mde.3262

Bologna, P. (2013). Structural Funding and Bank Failures, (January). https://doi.org/10.1007/s10693-013-0180-4

Bolton. (2009). outside and inside. *Journal of Chemical Information and Modeling*, *53*(9), 1689–1699. https://doi.org/10.1017/CBO9781107415324.004

Bond, S. (1991). Some tests of specification for panel data:monte carlo evidence and an application to employment equations. *Review of Economic Studies*, *58*(2), 277–297. https://doi.org/10.2307/2297968

Bongini, P., Cucinelli, D., Luisa, M., Battista, D., & Nieri, L. (2019). Profitability shocks and recovery in time of crisis evidence from European banks. *Finance Research Letters*, *30* (September 2018), 233–239. https://doi.org/10.1016/j.frl.2018.10.003

Bordeleau, É., & Graham, C. (2010). The Impact of Liquidity on Bank Profitability. *Bank of Canada Working Paper, No. 2010, 38*, 1–22. Retrieved from http://www.bankofcanada.ca/wp-content/.../12/wp10-38.pdf

Bouzgarrou, H., Jouida, S., & Louhichi, W. (2018a). Bank profitability during and before the financial crisis: Domestic versus foreign banks. *Research in International Business and Finance*, *44*, 26–39. https://doi.org/10.1016/j.ribaf.2017.05.011

Bouzgarrou, H., Jouida, S., & Louhichi, W. (2018b). Research in International Business and Finance Bank pro fi tability during and before the fi nancial crisis: Domestic versus foreign banks, *44*(April 2017), 26–39. https://doi.org/10.1016/j.ribaf.2017.05.011

Brosens, T., Kosonen, S. P., & Schuller, M. (n.d.). Covid-19 uncertainties to weigh on bank regulation in 2021. Retrieved from https://think.ing.com/articles/bank-regulation-in-2021-picking-up-where-things-left-off

Brosens, T., Kosonen, S. P., & Schuller, M. (2021). Covid-19 uncertainties to weigh on bank regulation in 2021. Retrieved from https://think.ing.com/articles/bank-regulation-in-2021-picking-up-where-things-left-off

Bruna, M. G., Đặng, R., Ammari, A., & Houanti, L. H. (2020). The effect of board gender diversity on corporate social performance: An instrumental variable quantile regression approach. *Finance Research Letters*, (August), 101734. https://doi.org/10.1016/j.frl.2020.101734

Brunnermeier, M. K., & Pedersen, L. H. (2009). Market liquidity and funding liquidity. *Review of Financial Studies*, *22*(6), 2201–2238. https://doi.org/10.1093/rfs/hhn098

Calem, P. (1999). The Impact of Capital-Based Regulation, *352*, 317–352.

Cao, Y., & Chou, J. Y. (2022). Bank resilience over the COVID-19 crisis: The role of regulatory capital. *Finance Research Letters*, *48*(February), 102891. https://doi.org/10.1016/j.frl.2022.102891

Caporale, G. M., & Kang, W. (2021). Journal of International Financial Markets, Institutions & Money On the preferences of CoCo bond buyers and sellers. *Journal of International Financial Markets, Institutions & Money*, *72*, 101314. https://doi.org/10.1016/j.intfin.2021.101314

Carbó Valverde, S., & Rodríguez Fernández, F. (2007). The determinants of bank margins in European banking. *Journal of Banking and Finance*, *31*(7), 2043–2063. https://doi.org/10.1016/j.jbankfin.2006.06.017

Carletti, E., Oliviero, T., Pagano, M., Pelizzon, L., & Subrahmanyam, M. G. (2020). The COVID-19 shock and equity shortfall: Firm-level evidence from italy. *Review of Corporate Finance Studies*, *9*(3), 534–568. https://doi.org/10.1093/rcfs/cfaa014

Casu, B., di Pietro, F., & Trujillo-Ponce, A. (2016). Liquidity Creation and Bank Capital in the Eurozone. *Ssrn*, (October). https://doi.org/10.2139/ssrn.2828619

Cathcart, L., El-Jahel, L., & Jabbour, R. (2015). Can regulators allow banks to set their own capital ratios? *Journal of Banking and Finance*, *53*(November), 112–123. https://doi.org/10.1016/j.jbankfin.2014.11.017

Chan, S., & van Wijnbergen, S. (2016). CoCo Design, Risk Shifting Incentives and Capital Regulation. *Ssrn*. https://doi.org/10.2139/ssrn.2725980

Chernozhukov, V., & Hansen, C. (2005). AN IV model of quantile treatment effects. *Econometrica*, *73*(1), 245–261. https://doi.org/10.1111/j.1468-0262.2005.00570.x

Chiaramonte, L., & Casu, B. (2016). Capital and Liquidity Ratios and Financial Distress. Evidence from the European Banking Industry. *The British Accounting Review*. https://doi.org/10.1016/j.bar.2016.04.001

Chiorazzo, V., Milani, C., & Salvini, F. (2008). Income diversification and bank performance: Evidence from Italian banks. *Journal of Financial Services Research*, *33*(3), 181–203. https://doi.org/10.1007/s10693-008-0029-4

Chodorow-Reich, G., Darmouni, O., Luck, S., & Plosser, M. (2021). Bank liquidity provision across the firm size distribution. *Journal of Financial Economics*, (April). https://doi.org/10.1016/j.jfineco.2021.06.035

Claessens, S., & Kodres, L. (n.d.). The Regulatory Responses to the Global Financial Crisis: Some Uncomfortable Questions.

Core, J. E., Guay, W. R., & Rusticus, T. O. (2006). Does weak governance cause weak stock returns? An examination of firm operating performance and investors' expectations. *Journal of Finance*, *61*(2), 655–687. https://doi.org/10.1111/j.1540-6261.2006.00851.x

Cummings, J. R., & Durrani, K. J. (2016). Effect of the Basel Accord capital requirements on the loan-loss provisioning practices of Australian banks. *Journal of Bankingand Finance*, *67*, 23–36. https://doi.org/10.1016/j.jbankfin.2016.02.009

Dahir, A. M., Mahat, F., Razak, N. H. A., & Bany-Ariffin, A. N. (2019). Capital, funding liquidity, and bank lending in emerging economies: An application of the LSDVC approach. *Borsa Istanbul Review*, *19*(2), 139–148. https://doi.org/10.1016/j.bir.2018.08.002

Deli, Y. D., & Hasan, I. (2017). Real effects of bank capital regulations: Global evidence. *Journal of Banking and Finance*, *82*, 217–228. https://doi.org/10.1016/j.jbankfin.2016.11.022

Delis, M. D., Hasan, I., & Tsionas, E. G. (2014). The risk of financial intermediaries. *Journal of Banking and Finance*, *44*(1), 1–12. https://doi.org/10.1016/j.jbankfin.2014.03.024

Demirguc-kunt, R. (2020). Banking Sector Performance During the COVID-19 Crisis, (August).

denis. (1997). Agency Problems, Equity Ownership, and Corporate Diversification. *CFA Digest*, *27*(4), 49–51. https://doi.org/10.2469/dig.v27.n4.171 Detragiache, E. (2013). Bank Capital: Lessons from the Financial Crisis, *45*(6).

Dewatripont, M., & Tirole, J. (2012). Macroeconomic Shocks and Banking Regulation. *Journal of Money, Credit and Banking*, *44*(SUPPL. 2), 237–254. https://doi.org/10.1111/j.1538-4616.2012.00559.x

DeYoung, R., Distinguin, I., & Tarazi, A. (2018). The joint regulation of bank liquidity and bank capital. *Journal of Financial Intermediation*, *34*(January), 32–46. https://doi.org/10.1016/j.jfi.2018.01.006

DeYoung, R., & Jang, K. Y. (2016). Do banks actively manage their liquidity? *Journal of Banking and Finance*, *66*, 143–161. https://doi.org/10.1016/j.jbankfin.2015.11.013

Deyoung, R., & Roland, K. P. (2001). Product Mix and Earnings Volatility at Commercial Banks: Evidence from a Degree of Total Leverage Model. *Journal of Financial Intermediation*, *10*(1), 54–84. https://doi.org/10.1006/jfin.2000.0305

Diamond, D. W. (1984). Financial intermediation and delegated monitoring. *Review of Economic Studies*, *51*(3), 393–414. https://doi.org/10.2307/2297430

Dietrich, A., Hess, K., & Wanzenried, G. (2014). The good and bad news about the new liquidity rules of Basel III in Western European countries. *Journal of Banking and Finance*, *44*(1), 13–25. https://doi.org/10.1016/j.jbankfin.2014.03.041

Dietrich, A., & Wanzenried, G. (2011). Determinants of bank profitability before and during the crisis: Evidence from Switzerland. *Journal of International Financial Markets, Institutions and Money*, *21*(3), 307–327. https://doi.org/10.1016/j.intfin.2010.11.002

Dietrich, A., & Wanzenried, G. (2014). The determinants of commercial banking profitability in low-, middle-, and high-income countries. *Quarterly Review of Economics and Finance*. https://doi.org/10.1016/j.qref.2014.03.001

Dietrich, A., Wanzenried, G., & Cole, R. A. (2010). Why are Net-Interest Margins Across Countries so Different? *Ssrn*. https://doi.org/10.2139/ssrn.1542067

Distinguin, I., Roulet, C., & Tarazi, A. (2013). Bank regulatory capital and liquidity: Evidence from US and European publicly traded banks. *Journal of Banking and Finance*, *37*(9), 3295–3317. https://doi.org/10.1016/j.jbankfin.2013.04.027

Edirisuriya, P., Gunasekarage, A., & Dempsey, M. (2015). Bank diversification, performance and stock market response: Evidence from listed public banks in South Asian countries. *Journal of Asian Economics*, *41*, 69–85. https://doi.org/10.1016/j.asieco.2015.09.003

Elnahass, M., Trinh, V. Q., & Li, T. (2021). Journal of International Financial Markets

, Institutions & Money Global banking stability in the shadow of Covid-19 outbreak. *Journal of International Financial Markets, Institutions & Money*, *72*, 101322. https://doi.org/10.1016/j.intfin.2021.101322

Faizulayev, A., Bektas, E., & Ismail, A. G. (2020). Profitability and persistency in the service industry: the case of QISMUT + 3. *The Service Industries Journal*, *0*(0), 1–25. https://doi.org/10.1080/02642069.2018.1461210

Fama, E. F., & French, K. R. (2002). Testing Trade-Off and Pecking Order Predictions About Dividends and Debt. *Review of Financial Studies*, *15*(1), 1–33. https://doi.org/10.1093/rfs/15.1.1

Fatouh, M., Giansante, S., & Ongena, S. (2021). Economic support during the COVID crisis. Quantitative easing and lending support schemes in the UK. *Economics Letters*, *209*, 110138. https://doi.org/10.1016/j.econlet.2021.110138

Fernandes, G., Mendes, L. dos S., & Leite, R. de O. (2021). Cash holdings and profitability of banks in developed and emerging markets. *International Review of Economics and Finance*, *71*(February 2020), 880–895. https://doi.org/10.1016/j.iref.2020.10.018

Fernández-Aguado, P. G., Martínez, E. T., Ruíz, R. M., & Ureña, A. P. (2022). Evaluation of European Deposit Insurance Scheme funding based on risk analysis. *International Review of Economics and Finance*, *78*(July 2021), 234–247. https://doi.org/10.1016/j.iref.2021.11.013

Francoeur, C., Labelle, R., Balti, S., & EL Bouzaidi, S. (2019). To What Extent Do Gender Diverse Boards Enhance Corporate Social Performance? *Journal of Business Ethics*, *155*(2), 343–357. https://doi.org/10.1007/s10551-017-3529-

Furlong, F. T., & Keeley, M. C. (1989). CAPITAL REGULATION AND RANK RISK-TAKING= A NOTE* Frederick T. FURLONG and Michael C. KEELEY, *13*(1977), 883–891.

Gambacorta, L., Scatigna, M., & Yang, J. (2014). Diversification and bank profitability: A nonlinear approach. *Applied Economics Letters*, *21*(6), 438–441. https://doi.org/10.1080/13504851.2013.866196

García-Herrero, A., Gavilá, S., & Santabárbara, D. (2009). What explains the low profitability of Chinese banks? *Journal of Banking and Finance*, *33*(11), 2080–2092. https://doi.org/10.1016/j.jbankfin.2009.05.005

Giordana, G. A., & Schumacher, I. (2017). An Empirical Study on the Impact of Basel III Standards on Banks' Default Risk: The Case of Luxembourg. *Journal of Risk and Financial Management*, *10*(4), 8. https://doi.org/10.3390/jrfm10020008

Gobat, J., Yanase, M., & Maloney, J. (n.d.). The Net Stable Funding Ratio: Impact and Issues for Consideration.

Goddard, J., Liu, H., Molyneux, P., & Wilson, J. O. S. (2011). The persistence of bank profit. *Journal of Banking and Finance*, *35*(11), 2881–2890. https://doi.org/10.1016/j.jbankfin.2011.03.015

Goddard, J., Liu, H., Molyneux, P., & Wilson, J. O. S. (2013). Do Bank Profits Converge? *European Financial Management*, *19*(2), 345–365. https://doi.org/10.1111/j.1468-036X.2010.00578.x

Goddard, J., Molyneux, P., & Wilson, J. O. S. (2004). The profitability of European banks: A cross-sectional and dynamic panel analysis. *Manchester School*, *72*(3), 363–381. https://doi.org/10.1111/j.1467-9957.2004.00397.x

Goncharenko, R. (2016). Bank Capital Structure with Contingent Capital: Empirical Evidence. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2862732

Greenwald, D. L., Krainer, J., & Paul, P. (2020). FEDERAL RESERVE BANK OF SAN FRANCISCO The Credit Line Channel. *Federal Reserve Bank of San Francisco*.

Gugler, K., & Peev, E. (2018). The persistence of profits in banking: an international comparison. *Applied Economics*, *00*(00), 1–14. https://doi.org/10.1080/00036846.2018.1489111

Hansen, lars peter. (1982). Large Sample Properties of Generalized Method of Moments Estimators Author(s): Lars Peter Hansen Source: *Econometrica*, *50*(4), 1029–1054.

Hansen, B. E. (1999). Threshold effects in non-dynamic panels: Estimation, testing, and inference, *93*.

Hasan, M., & Dridi, J. (n.d.). The Effects of the Global Crisis on Islamic and Conventional Banks: A Comparative Study.

Hoffmann, P. S. (2011). Determinants of the Profitability of the US Banking Industry*. *International Journal of Business and Social Science*, *2*(22), 255–269.

Hong, H., Huang, J. Z., & Wu, D. (2014). The information content of Basel III liquidity risk measures. *Journal of Financial Stability*, *15*, 91–111. https://doi.org/10.1016/j.jfs.2014.09.003

Horvitz, P. M. (2015). Risk-based Capital Standards and the Credit Crunch, *27*(3), 848–863.

Hu, S., & Zhang, Y. (2021). COVID-19 pandemic and firm performance: Cross- country evidence. *International Review of Economics and Finance*, *74*(2020), 365–372. https://doi.org/10.1016/j.iref.2021.03.016

Huang, G. Y., Huang, H. H., & Lee, C. I. (2020). Taming the dark side of asset liquidity: The role of short-term debt. *International Review of Economics and Finance*, *69*(June), 539–562. https://doi.org/10.1016/j.iref.2020.06.007

Hughes, J. P., & Mester, L. J. (2013). Who said large banks don't experience scale economies? Evidence from a risk-return-driven cost function. *Journal of Financial Intermediation*, *22*(4), 559–585. https://doi.org/10.1016/j.jfi.2013.06.004

Imbierowicz, B., & Rauch, C. (2014). The relationship between liquidity risk and credit risk in banks, *40*, 242–256. https://doi.org/10.1016/j.jbankfin.2013.11.030

IMF. (n.d.). Fault Lines Widen in the Global Recovery. Retrieved from https://www.imf.org/en/Publications/WEO/Issues/2021/07/27/world-economic-outlook-update-july-2021

Islam, S., & Nishiyama, S. (2016). The determinants of bank net interest margins: A panel evidence from South Asian countries. *Research in International Business and Finance*. https://doi.org/10.1016/j.ribaf.2016.01.024

Jayadev, M. (2013). Basel III implementation: Issues and challenges for Indian banks. *IIMB Management Review*, *25*(2),115–130. https://doi.org/10.1016/j.iimb.2013.03.010

Jean-loup, S. (2017). Measuring heterogeneity in bank liquidity risk: Who are the winners and losers? *Quarterly Review of Economics and Finance*, *66*, 302–313.

Jermias, J., & Yigit, F. (2019). Borsa _ Istanbul Review Factors affecting leverage during a financial crisis: Evidence from Turkey *. *Borsa Istanbul Review*, *19*(2), 171–185. https://doi.org/10.1016/j.bir.2018.07.002

Jobst, A. A. (2014). Measuring systemic risk-adjusted liquidity (SRL)— A model approach q. *Journal of Banking and Finance*, *45*, 270–287. https://doi.org/10.1016/j.jbankfin.2014.04.013

Kaur and Samriti Kapoor. (2015). adoption of basel norms.

Kausar, R., Mahmood, Z., & Abbas, U. (2017). Impact of Net Stable Funding Ratio Regulations on Net Interest Margin: A Multi-Country Comparative Analysis. *Journal of Accounting and Finance in Emerging Economies*, *2*(2), 93. https://doi.org/10.26710/jafee.v2i2.106

Khan, M. S., Scheule, H., & Wu, E. (2017). Funding liquidity and bank risk taking. *Journal of Banking and Finance*, *82*, 203–216. https://doi.org/10.1016/j.jbankfin.2016.09.005

Kim, H., Batten, J. A., & Ryu, D. (2020). Financial crisis, bank diversification, and financial stability: OECD countries. *International Review of Economics and Finance*, *65*(August 2019), 94–104. https://doi.org/10.1016/j.iref.2019.08.009

King, M. R. (2013). The Basel III Net Stable Funding Ratio and bank net interest margins. *Journal of Banking and Finance*, *37*(11), 4144–4156. https://doi.org/10.1016/j.jbankfin.2013.07.017

Koehn, M., & Santomero, A. M. (1980). Regulation of Bank Capital and Portfolio Risk, *XXXV*(5).

Koenker, R., & Bassett, G. (1978). No Title Regression Quantiles. *Journal of Chemical Information and Modeling*, *53*(9), 1689–1699. https://doi.org/10.1017/CBO9781107415324.004

Köhler, M. (2014). Which banks are more risky? The impact of business models on bank stability Matthias. *Journal of Financial Stability*. https://doi.org/10.1016/j.jfs.2014.02.005

Kovner, A., Vickery, J., & Zhou, L. (2014). Do Big Banks Have Lower Operating Costs? *Economic Policy Review*, *20*(2), 1–27. Retrieved from http://www.newyorkfed.org/research/epr/2014/1412kovn.html

Kozak, S. (2021). The impact of covid-19 on bank equity and performance: the case of central eastern south european countries. *Sustainability (Switzerland)*, *13*(19). https://doi.org/10.3390/su131911036

Koziol, C., & Lawrenz, J. (2012). Contingent convertibles. Solving or seeding the next banking crisis? *Journal of Banking and Finance*, *36*(1), 90–104. https://doi.org/10.1016/j.jbankfin.2011.06.009

Kremer, S., Bick, A., & Nautz, D. (2013). Inflation and growth: New evidence from a dynamic panel threshold analysis. *Empirical Economics*, *44*(2), 861–878. https://doi.org/10.1007/s00181-012-0553-9

laeven, l., ratnovski, l.,&tong, H. (2016. (2016). Bank Size, Capital, and Systemic Risk : Some International Evidence (International Monetary Fund , Tilburg University , and CEPR) Lev Ratnovski Hui Tong. *JOURNAL OF BANKING FINANCE*, (June). https://doi.org/10.1016/j.jbankfin.2015.06.022

Le, M., Hoang, V. N., Wilson, C., & Managi, S. (2020). Net stable funding ratio and profit efficiency of commercial banks in the US. *Economic Analysis and Policy*, *67*, 55–66. https://doi.org/10.1016/j.eap.2020.05.008

Lee, C. C., & Hsieh, M. F. (2013). The impact of bank capital on profitability and risk in Asian banking. *Journal of International Money and Finance*, *32*(1), 251–281. https://doi.org/10.1016/j.jimonfin.2012.04.013

Li, L., Strahan, P. E., & Zhang, S. (2020). Banks as lenders of first resort: Evidence from the COVID-19 crisis. *Review of Corporate Finance Studies*, *9*(3), 472–500. https://doi.org/10.1093/rcfs/cfaa009

Li, X., Feng, H., Zhao, S., & Carter, D. A. (2021a). The effect of revenue diversification on bank profitability and risk during the COVID-19 pandemic. *Finance Research Letters*, *43* (December 2020), 1–6. https://doi.org/10.1016/j.frl.2021.101957

Li, X., Feng, H., Zhao, S., & Carter, D. A. (2021b). The effect of revenue diversification on bank profitability and risk during the COVID-19 pandemic. *Finance Research Letters*, (January), 101957. https://doi.org/10.1016/j.frl.2021.101957

Liang, H. Y., Ching, Y. P., & Chan, K. C. (2013). Enhancing bank performance through branches or representative offices? Evidence from European banks. *International Business Review*, *22*(3), 495–508. https://doi.org/10.1016/j.ibusrev.2012.07.003

Liang, S., Moreira, F., & Lee, J. (2020). Diversification and bank stability. *Economics Letters*, *193*, 109312. https://doi.org/10.1016/j.econlet.2020.109312

Lin, J. R., Chung, H., Hsieh, M. H., & Wu, S. (2012). The determinants of interest margins and their effect on bank diversification: Evidence from Asian banks. *Journal of Financial Stability*, *8*(2), 96–106. https://doi.org/10.1016/j.jfs.2011.08.001

Louhichi, A., & Boujelbene, Y. (2017). Bank Capital, Lending and Financing Behaviour of Dual Banking Systems. *Journal of Multinational Financial Management*. https://doi.org/10.1016/j.mulfin.2017.05.009

Ly, K. C., Chen, Z., Wang, S., & Jiang, Y. (2017). The Basel III net stable funding ratio adjustment speed and systemic risk. *Research in International Business and Finance*, *39*, 169–182. https://doi.org/10.1016/j.ribaf.2016.07.031

Martynova, N., & Perotti, E. (2018). Convertible bonds and bank risk-taking. *Journal of Financial Intermediation*, *35*, 61–80. https://doi.org/10.1016/j.jfi.2018.01.002

Maudos, J. (2017). Income structure, profitability and risk in the European banking sector: The impact of the crisis. *Research in International Business and Finance*, *39*, 85–101. https://doi.org/10.1016/j.ribaf.2016.07.034

Mercieca, S., Schaeck, K., & Wolfe, S. (2007). Small European banks: Benefits from diversification? *Journal of Banking and Finance*, *31*(7), 1975–1998. https://doi.org/10.1016/j.jbankfin.2007.01.004

Mergaerts, F., & Vennet, R. Vander. (2016). Ac ce p te d t. *Journal of Financial Stability*. https://doi.org/10.1016/j.jfs.2015.12.002

Meslier, C., Tacneng, R., & Tarazi, A. (2014). Is bank income diversification beneficial? Evidence from an emerging economy. *Journal of International Financial Markets, Institutions and Money*, *31*(1), 97–126. https://doi.org/10.1016/j.intfin.2014.03.007

Montgomery, H. (2005). The effect of the Basel Accord on bank portfolios in Japan, *19*, 24–36. https://doi.org/10.1016/j.jjie.2004.02.002 Morris, shin. (2010). Illiquidity Component of Credit Risk.

Mostak Ahamed, M. (2017). Asset quality, non-interest income, and bank profitability: Evidence from Indian banks. *Economic Modelling*, *63*(January), 1–14. https://doi.org/10.1016/j.econmod.2017.01.016

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, *13*(2), 187–221. https://doi.org/10.1016/0304-405X(84)90023-0

Neef, H. Ö. D., & Schandlbauer, A. (2021). COVID-19 and lending responses of European banks, (xxxx). https://doi.org/10.1016/j.jbankfin.2021.106236

Nguyen, T. T., Ho, H. H., Van Nguyen, D., Pham, A. C., & Nguyen, T. T. (2021). The effects of business model on bank's stability. *International Journal of Financial Studies*, *9*(3), 1–12. https://doi.org/10.3390/ijfs9030046

Nisar, S., Peng, K., Wang, S., & Ashraf, B. (2018). The Impact of Revenue Diversification on Bank Profitability and Stability: Empirical Evidence from South Asian Countries. *International Journal of Financial Studies*, *6*(2), 40. https://doi.org/10.3390/ijfs6020040

Oluwaseun, S. (2022). Social Sciences & Humanities Open Institutional threshold in the nexus between financial openness and TFP in Africa: A dynamic panel analysis. *Social Sciences & Humanities Open*, *5*(1), 100245. https://doi.org/10.1016/j.ssaho.2021.100245

Ötker, I., & Pazarbasioglu, C. (2010). Impact of Regulatory Reforms on Large and Complex Financial Institutions. *IMF Staff Position Notes*, *2010*(16), 1.

Ozili, P. K. (2017). Bank Profitability and Capital Regulation: Evidence from Listed and non-Listed Banks in Africa Bank Pro fi tability and Capital Regulation: Evidence from. *Journal of African Business*, *00*(00), 1–26. https://doi.org/10.1080/15228916.2017.1247329

Özlem Dursun-de Neef, H., & Schandlbauer, A. (2021). COVID-19 and lending responses of European banks. *Journal of Banking and Finance*, *133*(xxxx). https://doi.org/10.1016/j.jbankfin.2021.106236

Pak, O. (2020). North American Journal of Economics and Finance Bank profitability in the Eurasian Economic Union: Do funding liquidity and systemic importance matter? *North American Journal of Economics and Finance*, *54*(July), 101265. https://doi.org/10.1016/j.najef.2020.101265

Paltrinieri, A., Dreassi, A., Rossi, S., & Khan, A. (2021). Risk-adjusted profitability and stability of Islamic and conventional banks: Does revenue diversification matter? *Global Finance Journal*, *50*(July 2018), 100517. https://doi.org/10.1016/j.gfj.2020.100517

Pástor, Ľ., & Veronesi, P. (2013). Political uncertainty and risk premia. *Journal of Financial Economics*, *110*(3), 520–545. https://doi.org/10.1016/j.jfineco.2013.08.007

Peek, J., & Rosengren, E. S. (1991). The Capital Crunch in New England.

Petras, M. (2020). Increasing profitability through contingent convertible capital: Empirical evidence from European banks. *Global Finance Journal*, (April), 100582. https://doi.org/10.1016/j.gfj.2020.100582

Pfleiderer, A. R. A. P. M. D. M. F. H. P. (2013). Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation: Why Bank Equity is Not Socially Expensive.

Powell, D. (2016). Quantile Regression with Nonadditive Fixed Effects Quantile Regression with Nonadditive Fixed Effects *. Retrieved from http://works.bepress.com/david_powell/1/

Rajan, R., Servaes, H., & Zingales, L. (2000). The cost of diversity: The diversification discount and inefficient investment. *Journal of Finance*, *55*(1), 35–80. https://doi.org/10.1111/0022-1082.00200

Roberts, M. R., & Whited, T. M. (2013). *Endogeneity in Empirical Corporate Finance*. *Handbook of the Economics of Finance* (Vol. 2). https://doi.org/10.1016/B978-0-44-453594-8.00007-0

Roengpitya, R., Tarashev, N., & Tsatsaronis, K. (2017). Bank business models: popularity and performance. *BIS Quarterly Review*, *December* (December), 55–65.

Roodman, D. (2009a). How to do xtabond2: An introduction to difference and system GMM in Stata, (1), 86–136.

Roodman, D. (2009b). How to do xtabond2: An introduction to difference and system GMM in Stata. *Stata Journal*, *9*(1), 86–136. https://doi.org/10.1177/1536867x0900900106

Rossi, S. P. S., & Malavasi, R. (2015). Financial crisis, bank behaviour and credit crunch. *Bank Profitability and Capital Adequacy in the Post-Crisis Context*, 1–193. https://doi.org/10.1007/978-3-319-17413-6

Roulet, C. (2017). Basel III: Effects of Capital and Liquidity regulations on European Bank Lending Caroline Roulet. My affiliation is the Organisation of Economic and Cooperation Development (OECD). *Journal of Economics and Business*. https://doi.org/10.1016/j.jeconbus.2017.10.001

Said, R. M. (2018). Basel III New Liquidity Framework and Malaysian Commercial Banks Profitability. *Jurnal Pengurusan*, *52*(52), 1–14. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=buh&AN=131737307&s ite=ehost-live

Santomero. (1984). Modeling The Banking Firm: Comment. *Journal of Money, Credit and Banking*, *16*(4), 612. https://doi.org/10.2307/1992095

Saona, P. (2016). Intra- and extra-bank determinants of Latin American Banks' profitability. *International Review of Economics and Finance*, *45*, 197–214. https://doi.org/10.1016/j.iref.2016.06.004

Schwerter, S. (2011). Basel III's ability to mitigate systemic risk. *Journal of Financial Regulation and Compliance*, *19*(4), 337–354. https://doi.org/10.1108/13581981111182947

Seo, M. H., Kim, S., & Kim, Y. (2019). Estimation of Dynamic Panel Threshold Model, (2015), 1–12.

Setiyono, B., & Naufa, A. M. (2021). The impact of net stable funding ratio on bank performance and risk around the world. *Buletin Ekonomi Moneter Dan Perbankan*, *23*(4), 543–564. https://doi.org/10.21098/BEMP.V23I4.1166

Sissy, A. M., Amidu, M., & Abor, J. Y. (2017). The effects of revenue diversification and cross border banking on risk and return of banks in Africa. *Research in International Business and Finance*, *40*, 1–18. https://doi.org/10.1016/j.ribaf.2016.09.017

Staikouras, C. K., & Wood, G. E. (2011). The Determinants Of European Bank Profitability. *International Business & Economics Research Journal (IBER)*, *3*(6), 57–68. https://doi.org/10.19030/iber.v3i6.3699

Stiroh, K. J., & Rumble, A. (2006). The dark side of diversification: The case of US financial holding companies. *Journal of Banking and Finance*, *30*(8), 2131–2161.

Sufian, F. (2009). Determinants of bank profitability in a developing economy: Empirical evidence from the china banking sector. *Journal of Asia-Pacific Business*, *10*(4), 281–307. https://doi.org/10.1080/10599230903340205

Sun, P. H., Mohamad, S., & Ariff, M. (2016). Determinants Driving Bank Performance : A Comparison of Two Types of Banks in the PT International Centre for Education in Islamic Finance (INCEIF), Kuala Lumpur , Malaysia. *Pacific-Basin Finance Journal*. https://doi.org/10.1016/j.pacfin.2016.02.007

Tan, Y. (2016). The impacts of risk and competition on bank profitability in China. *Journal of International Financial Markets, Institutions and Money*, *40*, 85–110. https://doi.org/10.1016/j.intfin.2015.09.003

Tan, Y., & Floros, C. (2013). Risk, capital and efficiency in Chinese banking. *Journal of International Financial Markets, Institutions and Money*, *26*(1), 378–393. https://doi.org/10.1016/j.intfin.2013.07.009

Tissaoui, K., Hkiri, B., Talbi, M., Alghassab, W., & Alfreahat, K. I. (2021). Market volatility and illiquidity during the COVID-19 outbreak: Evidence from the Saudi stock exchange through the wavelet coherence approaches. *North American Journal of Economics and Finance*, *58*(July), 101521. https://doi.org/10.1016/j.najef.2021.101521

Tran, V. T., Lin, C. T., & Nguyen, H. (2016). Liquidity creation, regulatory capital, and bank profitability. *International Review of Financial Analysis*, *48*, 98–109. https://doi.org/10.1016/j.irfa.2016.09.010

Ur Rehman, A., Aslam, E., & Iqbal, A. (2021). Intellectual capital efficiency and bank performance: Evidence from islamic banks. *Borsa Istanbul Review*. https://doi.org/10.1016/j.bir.2021.02.004

valentina Flamini, mcdonald and schumacher. (2009). Determinants of Commercial Bank Profitability in Sub-Saharan Africa. *International Journal of Economics and Finance*, *5*(9). https://doi.org/10.5539/ijef.v5n9p134

van den End, J. W., & Tabbae, M. (2012). When liquidity risk becomes a systemic issue: Empirical evidence of bank behaviour. *Journal of Financial Stability*, *8*(2), 107–120. https://doi.org/10.1016/j.jfs.2011.05.003

Vera-Gilces, P., Camino-Mogro, S., Ordeñana-Rodríguez, X., & Cornejo-Marcos, G. (2020). A look inside banking profitability: Evidence from a dollarized emerging country. *Quarterly Review of Economics and Finance*, *75*, 147–166. https://doi.org/10.1016/j.qref.2019.05.002

Vousinas, G. L. (2015). Supervision of financial institutions: The transition from Basel I to Basel III. A critical appraisal of the newly established regulatory framework. *Journal of Financial Regulation and Compliance*, *23*(4), 383–402. https://doi.org/10.1108/JFRC-02-2015-0011

Wagner, W. (2010). Loan market competition and bank risk-taking. *Journal of Financial Services Research*, *37*(1), 71–81. https://doi.org/10.1007/s10693-009-0073-8

Wang, C., & Lin, Y. (2021). Income diversification and bank risk in Asia Pacific. *North American Journal of Economics and Finance*, *57*(April), 101448. https://doi.org/10.1016/j.najef.2021.101448

Wei, X., Gong, Y., & Wu, H. M. (2017). The impacts of Net Stable Funding Ratio requirement on Banks' choices of debt maturity. *Journal of Banking and Finance*, *82*, 229–243. https://doi.org/10.1016/j.jbankfin.2017.02.006

Wheelock, D. C., & Wilson, P. W. (2018). The evolution of scale economies in US banking. *Journal of Applied Econometrics*, *33*(1), 16–28. https://doi.org/10.1002/jae.2579

Windmeijer, F. (2005). A finite sample correction for the variance of linear efficient two-step GMM estimators. *Journal of Econometrics*, *126*(1), 25–51.

Wintoki, M. B., Linck, J. S., & Netter, J. M. (2012). Endogeneity and the dynamics of internal corporate governance. *Journal of Financial Economics*, *105*(3), 581–606. https://doi.org/10.1016/j.jfineco.2012.03.005

World Bank, 2021. (2021). *The Global Economy: on Track for Strong but Uneven Growth as COVID-19 Still Weighs*. Retrieved from https://www.worldbank.org/en/news/feature/2021/06/08/the-global-economy-on- track-for-strong-but-uneven-growth-as-covid-19-still-weighs

Wren-Lewis, S. (2020). *The economic effects of a pandemic*. *Economics in the Time of COVID-19*. Retrieved from https://voxeu.org/content/economics-time-covid-19

Yakov Amihud, B. L. (1981). Agency theory and a concession relation in ports open to public traffic in the function of empowerment of entrepreneurial initiatives [Agencijska teorija i koncesijski odnos u lukama otvorenim za javni promet u funkciji osnaživanja poduzetničkih inicijati. *Pomorstvo*, *27*(1), 225–246. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-84880930707&partnerID=40&md5=6098f7259b2c6cce098495601411c3de

Yurttadur, M., Celiktas, E., & Celiktas, E. (2019). The Place of Non-performing Loans in the Turkish Banking Sector. *Procedia Computer Science*, *158*, 766–771. https://doi.org/10.1016/j.procs.2019.09.113

Zouaoui, H., & Zoghlami, F. (2020). On the income diversification and bank market power nexus in the MENA countries: Evidence from a GMM panel-VAR approach. *Research in International Business and Finance*, *52*(January), 101186. https://doi.org/10.1016/j.ribaf.2020.101186

Çolak, G., & Öztekin, Ö. (2021a). The impact of COVID-19 pandemic on bank lending around the world. *Journal of Banking and Finance*, *133*(July 2020), 106207. https://doi.org/10.1016/j.jbankfin.2021.106207

Çolak, G., & Öztekin, Ö. (2021b). The impact of COVID-19 pandemic on bank lending around the world. *Journal of Banking and Finance*, (July 2020), 106207. https://doi.org/10.1016/j.jbankfin.2021.106207