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Did the US Federal Reserve Policy Harm the Stability Of GCC Banks?

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Abstract

This study analyzed the performance and risk management practices of the top banks in the GCC during a period of significant turmoil following several bank failures in the US. Our analysis identifies leaders and laggards in a peer group of 10 GCC banks. High performing banks maintain a sustainable managerial style of their capital ratio, liquidity and profitability during a period of rising interest rate whereas laggards fail to cope with the interest rate challenges they face. Our examination of the unrealized losses that banks suffered as a result of the sharp rise in interest rates supports the IMF concern that banks in the Middle East may mask their losses and receive regulatory forbearance to carry them forward. The size of the unrealized losses, which in some cases represent 3% of capital, raises questions about the bank's risk controls and established limits and the Central Bank regulatory oversight.

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Abstract

This study analyzed the performance and risk management practices of the top banks in the GCC during a period of significant turmoil following several bank failures in the US. Our analysis identifies leaders and laggards in a peer group of 10 GCC banks. High performing banks maintain a sustainable managerial style of their capital ratio, liquidity and profitability during a period of rising interest rate whereas laggards fail to cope with the interest rate challenges they face. Our examination of the unrealized losses that banks suffered as a result of the sharp rise in interest rates supports the IMF concern that banks in the Middle East may mask their losses and receive regulatory forbearance to carry them forward. The size of the unrealized losses, which in some cases represent 3% of capital, raises questions about the bank's risk controls and established limits and the Central Bank regulatory oversight.

I. Introduction and Background

We analyze the balance sheet exposure of leading banks in the Gulf Cooperation Council (GCC) countries to the rapid monetary tightening by the Federal Reserve Bank since March 2022. In lockstep with the Federal Reserve, central banks in the GCC increased key interest rates as their currencies are pegged to the US dollar. For example, following the last round of US rate increases in March 2023, Saudi Arabia also increased its repo rate by 25 bps to 5.75% and its reverse repo rate by 25 bps to 5.25%. The Saudi Central Bank (SAMA) said the move was consistent with its mandate to preserve monetary stability in the kingdom.

As it is well known now, the collapse of Silicon Valley Bank (SVB) and Signature Bank (SB) in the US was the result of a sharp drop in the value of their bond holdings[2]. The banks had invested in bonds when rates were near zero. At the time, most banks were experiencing excess liquidity from a large inflow of customer deposits who needed somewhere to park their cash. When the Federal Reserve began to hike rates and fight inflation, SVB's bonds declined in value because newly issued bonds paid higher rates, and older bonds with lower rates became less attractive. As a result, most banks, including SVB accumulated unrealized losses on their books for the bonds and fixed income investments they held and have not yet sold. Unrealized losses weaken a bank's future ability to meet unexpected liquidity needs. A bank may find it has less cash on hand when liquidating its securities holdings to meet deposit outflows. According to the US Federal deposit insurance Corporation (FDIC), at the end of 2022 alone, US banks had accumulated $620 billion in unrealized losses and the market value of securities held fell over 20% in the span of 12 months as a direct result of the rise in interest rates.

[2] Review of the Federal Reserve's Supervision and Regulation of Silicon Valley Bank, 28 April, 2023

Outside the US, the fragility of non-US banks is not necessarily better. The decision of UBS to absorb Credit Suisse is a case in point. And the risk varies by the level of capitalization of each bank as net accumulated losses on security holdings will have to be written off against their capital base when these securities are sold. In April 2023, the IMF[3] pointed to an increasing fragility of the global financial system as a result of the sharp rise in US Interest rates. The IMF argued that the turmoil in the US banking sector is a powerful reminder of the challenges posed by the interaction between tighter monetary and financial conditions and the buildup in vulnerabilities since the global financial crisis. The emergence of stress in financial markets globally complicates the task of central banks at a time when inflationary pressures are high and stubborn. In October 2023, the IMF went further to reaffirm its concern by raising a red flag about the impact of high interest rates on banks in the Middle East. In its report[4], the IMF states: "A fundamental question confronting market participants and policymakers: Is the higher interest rate environment, which recently triggered banking sector stress in some advanced economies, a harbinger of more systemic risks that could test the resilience of Middle East banking systems".

Another important factor to which the IMF alludes, is that the regional banks in the Middle East may resort to opaque practices and hide their vulnerabilities. The reasons for the lack of transparency may be due to accounting rules, or regulatory forbearance that can "temporarily mask exposures and losses". Some holdings are concentrated in certain asset classes, such as government bonds"[5]. This last category is problematic because the GCC bank holdings of government securities are considered safe from a credit and liquidity risk perspective, but they can hide a considerable level of interest rate risk, particularly when they have a long duration.

Motivated by these factors, we examine the performance of the top 10 banks in the GCC during a period of challenging interest rate environments. We ask the following questions: how did the liquidity of the GCC banks evolve as their foreign counterparts were under a significant stress? What is the severity of their losses from the sharp rise in interest rates? Is there evidence to the IMF concern that banks may mask their losses and receive regulatory forbearance to carry them forward? Finally, how do the 10 banks rank in relation to one another in terms of the key risk indicators?

These key questions are explored in the following sections of the paper. Section II discusses the current literature on bank interest rate management. Section III describes the data period, the peer methodology, and introduces the bank key risk indicators. Section VI presents the theoretical foundation of interest rate management. Section V discusses the results and focuses

[3] Global Financial Stability Report, IMF April 2023.

[4] Regional Economic Outlook, Middle East and Central Asia, IMF Oct 2023

[5] The sentences in quotes are directly from p. 45 of the IMF (2023) report

on GCC bank capitalization and hidden losses. Section VI discusses policy implications and concludes the paper.

II. Discussion and Literature Review

The literature on the relation between bank performance and the level of interest rates is both broad and extensive. For example, White (2023) argues that the size of the realized or unrealized losses on banks investment securities impact its capital and liquidity. He further states that large unrealized losses in the investment portfolio increase the bank's risk level but with varying degrees. The bank investment risk can be mitigated if the duration of assets is equal to the duration of liabilities in addition to diversifying a bank contingent funding source. Paul (2022) suggests that bank profit margins could suffer over the ongoing tightening cycle. He finds that the stability of a bank profit margin can be achieved in part via large deposit outflows and asset reallocations. After monetary tightening and interest rates rise, he argues that liquid deposits flow out of the banks, allowing money market funds to grow and provide additional funding for shadow banks. Gomez et al (2021) find that banks retain significant exposure to interest rate risk through the composition of their asset and liability structures. They measure a bank's income exposure to changes in the Fed Funds rate through a bank maturity gap. While this is a simple way to measure risk, it ignores the fact that maturity and duration are not identical. Windsor et. al. (2023), use private bank data, complemented by survey information, to form ten different banking systems and investigate the relationship between bank profitability and interest rates. They focus on the period of very low interest rates. Using different measures and components of profitability (net interest margins, return on asset, non-interest income, and loan-loss provisions), their results indicate that declining interest rates reduce a bank net interest margin. On average across countries, they find a 100 bps decline in short-term interest rates results in a 5 bps decline in net interest margins in the short run with substantial cross-country differences.

With respect to stress testing, Cohen et al (2023) use stress tools to focus on the risks from rising interest rates and funding pressures that toppled some banks in March 2023. They conclude that stress tests by regulators should be revised to include market-based analysis in order to be able to identify bank vulnerabilities. They find that higher interest rates expose vulnerabilities in some banks, and many more institutions would be weakened by a prolonged period of high interest rates and tight monetary policy.

Caballero et al (2023) find that banks in emerging market economies use the duration gap between their asset and liabilities to manage their interest rate risk instead of using swaps and other interest rate derivatives, a more common practice for hedging in developed financial markets. They predict that as banks in emerging markets expand and diversify their asset

holdings, the traditional duration gap tool would become more challenging and eventually replaced with derivatives as hedging instruments.

Several authors have examined the relation between liquidity and capital requirements. We cite the main references in this area. For example, Van den Heuvel (2007) argues that since capital requirements limit the fraction of bank assets that can be financed by issuing deposit-type liabilities, capital requirement regulation imposes an important cost and reduces the ability of banks to create liquidity by accepting deposits. In the context of banks in the GCC, Al Khouri (2012) finds that the negative relationship between bank profitability and liquidity indicates either high loan losses or high cost of intermediation.

Along those same lines, Adedeji et al (2019) also focus on GCC banks. The authors find that rising U.S. rates directly impairs the profitability of GCC banks if they have to raise liability rates more for a given increase in U.S. rates. Among GCC banks, liability sensitive banks may have to raise their deposit rates significantly to remain competitive and retain their deposit base, thereby increasing their cost of funding and hurting their profitability. However, Adedeji et al (2019) overlook the liquidity implications of interest rate changes and do not address what impact this may have on unrealized losses of security holdings.

Indeed, the concern about the liquidity of GCC banks has recently been the focus of the IMF (see IMF Oct 2023). The IMF finds that GCC banks could be tested by a combination of higher interest rates, corporate sector stress, and liquidity pressures. These factors will all lead to a greater interest-rate risk, with some banks becoming more vulnerable than others depending on the size of their security holdings.

The significance of unrealized losses and the marked-to-market of security holdings and how these positions may impact a bank solvency is analyzed in Jiang et al (2023). The authors present a conceptual framework to analyze the effect of rising interest rates on the assets of US banks in the wake of the failure of SVB. They determine that 10% of the banks in the US have larger unrecognized losses and lower capital than SVB. What is important in their findings is that these banks were able to keep their capital ratio intact by accumulating unrealized losses.

III. Data and Methodology

We propose to use bank-level data to explore the effect of changes in the U.S. federal funds rate on largest banks in the GCC countries. The goal is to identify which GCC bank has suffered the most as result of the rise in rates and generate a basic performance ranking. Unlike other studies, we focus directly on specific GCC banks not economies or the banking sector as a whole[6].

[6] For a survey about the financial stability of GCC countries in response to US Monetary Policy, please see Elsayed et al (2023)

The new rise of interest rates worldwide is a recent phenomenon[7] that dates back to March 17, 2022, providing limited observations and insufficient time period to conduct standard econometric analysis. Unlike other regression-based studies, which have suffered from limited time series, especially for cross country analysis, a criticism repeatedly raised by the IMF staff[8] with respect to GCC banks, we use a simple but widely used and effective comparison based on the median analysis for each bank in the peer group. The median analysis is used by regulators to evaluate the performance of individual banks over time and is consistent with the methodology adopted by the Federal Deposit Insurance Corporation, the Bank of International Settlements[9], and several academic articles.

The peer group is comprised of the top 10 banks in the GCC. For each bank, we calculate 6 risk indicators up through their most recent quarterly financial disclosures (Q3 2023). We measure the change in each risk indicator between two interest rate time periods:

- Time period 1 is when monetary policy was easy and interest rates were declining. Period 1 stretches between Q1 2019 and Q1 2022 for a total of 13 quarters.
- Time period 2 is when monetary policy began to tighten in the US and interest rates began to rise. It stretches from Q2 2022 through Q3 2023 for a total of 6 quarters.

Table 1a, captures the key dates that marked the change in interest rates in the US as voted by the Federal Open Market Committee. The magnitude of the rate change is cumulative and substantial. Over just 6 quarters, interest rates jumped 475 bps from 0.25% to 5% putting a lot of strain on the most diligent asset liability management of any bank.

The 6 risk indicators we propose to use are:

- Liquidity Coverage Ratio (LCR) which measures the amount of high-quality liquid assets available to fund cash outflows for 30 days. The LCR is a measure of liquidity not solvency and gauges a bank's ability to meet its short-term financial obligations.
- Tier 1 Capital Ratio is calculated as a bank's core tier 1 capital normalized by its total risk-weighted assets. The ratio is a key measure of a bank's financial strength and has been adopted by the Basel III Accord on bank regulation.
- Net Interest Income as a % of a bank equity. This is a standard measure a bank interest income.
- Funding Risk is defined as the proportion of a bank short-term borrowing to total funding. Total funding represents a bank's total deposits + short- and long-term debt. If

[7] https://www.forbes.com/advisor/investing/fed-funds-rate-history/

[8] See for example p6 of Adedeji et al (2019)

[9] For the use of median analysis by the FDIC, see Hinton and Polson (2021). See Caballero et al (2023) for its use by the Bank of International Settlements

the ratio rises, a bank is trying to raise more funds in the short term and may have a premium to shore up its liquidity at the expense of its profitability.

- Unrealized Gains or losses on security holdings as a % of a bank equity
- The market to book value of a bank stock price, also known as the stock price multiple. This is a standard measure of investors' confidence in a particular stock.

These ratios represent standard risk metrics used by the GCC Central Bank examiners to assess the risk of an individual bank in their jurisdiction. Our sample focus on the top 10 leading and publicly held banks in the GCC. These banks and their sizes are as in Table 1b.

As it is well known, monetary policy in the GCC countries is based on a fixed exchange rate regime and open capital accounts. The currency of each GCC country is pegged to the U.S. dollar. Kuwait is a special case because the Kuwaiti Dinar is pegged to an undisclosed basket of currencies with the U.S. dollar representing the largest share. The currency pegs are maintained by managing the magnitude of short-term interest rate differentials with U.S interest rates. As a result, interest rates in GCC countries have mirrored the shifts in the U.S. monetary policy. Consequently, changes in the US interest rates have a direct impact on interest rates in the GCC countries and the banking sector of that region.

IV. Banks and Interest Rate Risk Management

Banks manage their interest rate risk based on their business model and the regulatory environment in which they operate. In comparison with worldwide banks, GCC banks have traditionally mitigated the impact of rate changes on their net interest income by minimizing repricing gaps between assets and liabilities and expanding their securities holdings.

Conceptually, banks assume interest rate risk when the interest sensitivity of their assets differs from that of their liabilities. When the sensitivity of assets (such as loans) is greater than the sensitivity of liabilities (such as deposits), an unexpected rise in interest will reduce a bank's equity value. Conversely, an unexpected decline in interest rates will increase the value of bank net worth.

The impact of unexpected (or unhedged) interest rate changes on a bank depends on the relative interest rate sensitivities of its assets and liabilities and is measured by its duration gap, where the duration is evaluated on each asset and liability account. To illustrate the use of duration and its relation to the value of a bank, we follow the model in Roncalli (2020), where the present value of a financial asset is given by:

$$P = \sum_{t_{i \geq t}} \frac{CF(t_i)}{(1+y)^{t_i}} \qquad (1)$$

where CF(.) is the cash flow at time t_i and y is the yield to maturity. The simple Maccaulay measure of duration is given by:

$$D = \frac{\sum_{t_i \geq t} \frac{t_i w(t_i).CF(t_i)}{(1+y)^{t_i}}}{P} \qquad (2)$$

Where w(.) is the weight associated to the cash flow at time t_i.

Differentiating P with respect to yield to maturity, we get:

$$\frac{\partial P}{\partial y} = -\frac{D}{(1+y)} \; . \; P \equiv -d.P \qquad (3)$$

Where ***d*** is defined as modified duration *D/(1+y).* We can easily show that the modified duration is the interest sensitivity measure expressed as:

$$\frac{\partial lnP}{\partial y} = \frac{\partial P/P}{\partial y} = -d \qquad (4)$$

The duration gap is defined as difference between the duration of interest sensitive assets and that of interest sensitive liabilities after an adjustment for a bank capital:

$$D_G = D_A - D_L \frac{L}{A} \qquad (5)$$

And A and L are respectively the present values of the bank assets and liabilities.

The value of a banking firm equity (or net worth) E is the difference between the value of its assets (A) and liabilities (L):

$$E = A - L \qquad (6)$$

And the duration of its equity is given by:

$$D_E = D_G \frac{A}{E} \qquad (7)$$

Using equation (3), we can replace P by the value of equity of a banking firm E, and replace D by the D_E in equation (7). This yields the following expression which connects the change in value of a bank equity as a function of its duration gap as follows:

$$\frac{\partial E}{\partial y} = -\frac{D_E}{(1+y)} \; . \; E \qquad (8)$$

Which we can write in discrete form as:

$$\Delta E = -D_E \, E \, \frac{\Delta y}{(1+y)} \qquad (9)$$

$$= -D_G \, A \, \frac{\Delta y}{(1+y)} \qquad (10)$$

Equation 10 is investigated by Gomez et. al (2021) in the context of US banks.

We are now able to connect the duration of equity to the bank net interest income (NII).

To do so, recall that the value of a banking firm can be represented as the present value of its future dividends. If a bank lives infinitely and pays all its dividends, the equity of the bank is equivalent to the present value of a perpetuity:

$$E = \frac{NII}{y} \qquad (11)$$

The expression shows a direct positive link between a bank NII and the value of its equity.

Differentiating with respect to interest rates:

$$\frac{dE}{dy} = \frac{d(NII)}{y \, dy} - \frac{E}{y} \qquad (12)$$

Expressing this in discrete form we can express the change in a bank equity as a result of change in NII as:

$$\Delta E = \frac{\Delta(NII)}{y} - \frac{E}{y}\Delta y \qquad (13)$$

We evaluate these variables in Tables 2 through 5.

V. Results and Analysis

In Table 2, we first look at the Tier 1 Capital Ratio for each bank for the 13 quarters when rates were declining and the 6 quarters that followed this period when rates were rising. These periods correspond to the episode when the Fed was easing monetary policy followed by the period of monetary tightening. Our analysis is based on the median quarter for that time period consistent with the analysis used by the Bank of International Settlements and how a bank is compared to a peer group. The median analysis is also adopted by Caballero et al. (2023) to evaluate the interest rate risk borne by banks in Europe's Emerging Economies.

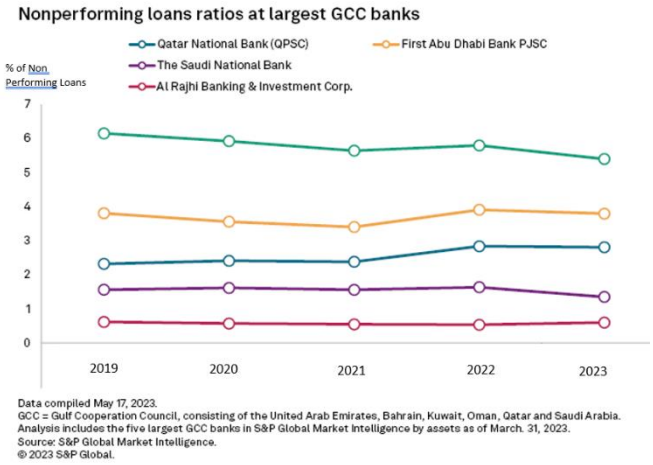
The median Tier 1 cap ratio for the peer group composed of these 10 banks is provided at the bottom of Table 2. Except for two banks (First Abu Dhabi Bank and the National Bank of Kuwait), the majority of the banks have either experienced a slight increase or no change in their capital ratio. The peer group capital ratio is 17.6 during interest rate period 1 vs 17.8 during period 2.

By examining the direction of the change in the bank capital ratio, we use equation (10) to infer the duration gap of each bank. In that equation, Δy is positive, representing the change in rates between period 1 and period 2. All other things held constant, banks with a shrinking capital ratio (ΔE < 0) are likely to have maintained a positive duration gap during the period of interest rate changes. The likely scenario is that these banks were possibly stuck with an asset base of loans and investments that have an average maturity longer than their deposits. Conversely, banks with higher capital ratio are likely to have done so by managing their interest rate risk through a negative duration gap. These banks would be expected to have a weighted average maturity for deposits smaller than their loans and other security investments.

It is important to note here that the duration gap is a choice parameter. Banks *choose* to set this parameter based on their expectations about the future course of interest rates, their risk management practices, and the extent to which they want to hedge their risk. Banks that wish to immunize their balance sheet from interest rate risk can do so by choosing a duration gap as close to zero as possible (ignoring the small impact of convexity). Of course, swaps and other derivatives are also other options to manage interest rate risk but our analysis of the balance sheets of these banks did not identify a significant change in their derivative positions.

Of course, interest rate is only one among multiple risk factors to which a bank is exposed. The other main risk category is credit. As we see in the plot of non-performing loans nearby we obtained from S&P Global. The actual non-performing loans ratio is stable over the two time

periods suggesting no change in credit losses for the key banks under study. This leads us to conclude that a negative change in a bank Tier 1 capital ratio during high interest rates is not attributed to credit losses.



Beyond the capital ratio, we also compare the stock market multiple for each bank in the second set of columns of Table 2. The stock price multiple is the ratio of the market price of the stock price of a bank divided by its book value. The higher the ratio, the greater the premium investors are willing to pay for the stock above its historical book value. The premium reflects the future performance of the stock and from equation (11), is directly linked to a bank NII. In Table 2, the stock price multiple varies significantly across banks reflecting a wide range of investor's expectations. At the peer level there is a slight improvement in the price multiple from 1.88 in period 1 vs 1.92 in period 2. However, within the peer, some banks have experienced a marked improvement (Alinma Bank jumped from 1.7 in period 1 to 2.4 in period 2), whereas others have experienced a significant decline in market premium (Kuwait Finance House 2.7 vs. 2.2; Saudi National Bank 1.9 vs. 1.5).

We turn our attention next to liquidity because many banks experienced a large outflow of deposits as their customers chased higher returns elsewhere. To that end, we compare the bank choice of maturity funding in period 1 vs period 2. An increase in short-term borrowing relative to total funding suggests that the bank is trying to raise more funds and pay a premium to attract funds in the short term and shorten the duration of its funding sources.

There are several reasons why a bank wants to increase its short-term borrowing when rates are rising and pay a premium to do so. One possible explanation is that the bank may be trying to recalibrate its duration gap as part of its interest rate risk strategy. Another, and perhaps more compelling reason, is that the bank is trying to boost its liquidity, even at the expense of its profitability. We address this factor in the following section below.

One of the greatest policy challenges faced by GCC banks has been managing liquidity inflows and speculative funds. Funds flew to the region due to speculation on currency reform and the continuation of an expansionary fiscal policy, compounded by a trend of declining interest rates worldwide which led to additional credit growth. These factors have contributed to an increase in the banking system's deposit base and the expansion of retail and commercial lending. To the

extent that the duration of bank deposits is traditionally shorter than its loans[10], and its duration gap is positive, banks profit would rise when interest rates decline. It is likely that the period of low interest rates had incentivized GCC banks to take more risk, widen their duration gap, in order to increase their NII. While this factor may ultimately boost a bank capital as shown in Equation 13, it is important to note that the effect of increasing the gap between deposits and loans, also exposes a bank to additional liquidity risk. Therefore, there is an implicit tradeoff between a bank NII and its liquidity ratio. The higher the liquidity, the safer is the bank, but the more are the forgone opportunities to lend and make a profit.

We find evidence of this tradeoff in Al Rajihi, one of the largest banks in the GCC region (see Table 3). Al Rajihi's NII declined from 815 bps to 538 bps when rates started to increase. The bank's relative short-term borrowing increased 4 folds from 2.7% to 11.9% and its liquidity ratio went down from 155 to 131. A look at the trend in bank deposits for Alrajihi in Figure 1 confirms that deposit growth was brisk until early 2022 before it suddenly stagnated when interest rates rose. In fact, AlRajihi's deposits slightly fell in Q1 2023 and again in Q3 2023. A similar experience is also noted for Kuwait Finance House, Qatar Islamic Bank, Riyad Bank, and Saudi National Bank all of which experienced a dip in deposits when rates began to rise.

Looking at the trend in NII and comparing the two periods of interest rate changes, we find several banks have actually experienced a higher profitability when rates rose. These banks are Alinma, First Abu Dhabi Bank, Qatar National Bank, Riyad Bank, and Saudi British Bank. These results are consistent with the findings of Windsor et al (2023)[11].

While these accomplishments are noteworthy, they only tell half the story because several banks also suffered losses on their security holdings. Eight of the 10 GCC banks reported significant unrealized losses on positions in securities they hold. This observation is critical and is consistent with the findings of Jiang et al (2023) in the context of US banks following the failure of Silicon Valley Bank (SVB). What is important in their findings, and to some extent here as well, is that banks were able to keep their capital ratio intact by incurring unrealized losses because regulators did not force them to liquidate their positions. Concerns about hiding large unrealized losses from rising interest rates were also expressed by the IMF in the context of banks in the Middle East. We find evidence of such losses for several banks in the GCC.

We hasten to add that there is nothing wrong in incurring losses on security holdings. At a point in time, any bank may find itself inevitably on the wrong side of the Interest rate risk. However, it is important to evaluate the size of these losses, question what loss amount is acceptable, how risk controls and limits are set, and what action regulators took if any.

[10] More recently Dreschsler, Savov, and Schnabl (2023) have challenged this view by showing that maturity transformation does not expose banks to interest rate risk.

[11] Windsor et al (2023) report that on average, market interest rates and bank NII move together and in the same direction. We confirm their findings for the 5 GCC banks we cite.

We shed more light on this issue in Table 4 where we report the quarterly unrealized losses on security holdings for each bank. The largest loss is noted for Saudi National Bank with an amount of 4.051 billion when rates were rising. This compares with a gain on security holdings when rates were declining. Banks with significant losses are noted for First Abu Dhabi Bank, Saudi British Bank, National Bank of Kuwait, and Riyad Bank.

We elaborate further on this important result in the right columns of Table 5 where we report the size of the unrealized securities losses normalized to each bank equity. The results measure the adjustment in bank capital that would have occurred had a bank liquidated its position. For some banks, the adjustment is large and meaningful, and represents as much as 3% of the bank capital for Riyad Bank. Other banks with significant losses are Saudi National Bank (-2.5% of capital), and First Abu Dhabi Bank (-2.1% of capital), and Saudi British Bank (-1.6% of capital) and National Bank of Kuwait (-1% of capital).

It is difficult to argue that bank regulators in the GCC have overlooked the severity of unrealized losses. The most logical explanation is that some banks have received a discrete regulatory forbearance to carry forward their losses without being forced to liquidate their security holdings. These observations were first expressed by the IMF[12] in October 2023, who raised concerns about regulatory restraint. The IMF stated that "rising unrealized losses on banks' holdings of [fixed income] securit*ies*, particularly long duration securities" will exacerbate their liquidity challenges for Saudi banks.

We conclude our analysis by presenting Table 5 where we summarize the financial metrics of the 10 GCC banks during the two interest rate periods and evaluate their risk management practices. We compare a bank median liquidity (LCR), profitability (NII), and capitalization (T1 cap ratio) when rates were declining vs rising. Improvements in each category are noted as a " + ", and deteriorations as " - ". For capitalization, we adjust the Tier 1 cap ratio by the size of unrealized losses. For example, the reported T1 cap ratio for Riyad Bank grew on average from 16.1 to 17.4 between period 1 and period 2 (Table 2). Meanwhile, the magnitude of the unrealized losses on its security holdings amount to a reduction of as much as 3% of its capital. If Riyad Bank losses were realized, its Tier 1 capital would decline from 17.4 to 14.4, and the change in its capitalization between period 1 and period 2 would be negative not positive (a change from 16.1 to 14.4 not 17.4 as reported).

The performance of most 10 banks, in terms of liquidity, profitability, and capitalization is mixed as indicated with various pluses and minuses in Table 5. However, two banks stand out as outliers in this table and these institutions fall on the opposite end of the performance spectrum. Specifically, Alinma Bank dominates all other banks with simultaneous improvement in liquidity and profitability despite the traditional tradeoff between these financial metrics we discussed

[12] IMF Oct 2023, p. 39

earlier. At the same time, Alinma Bank succeeded in boosting its capitalization even after adjusting its capital ratio for unrealized losses. The evidence suggests that Alinma had a more successful asset liability management than any of its peers and would rank first among the top 10 banks.

Conversely, Al Rajihi represents an institution that scored unfavorable performance on all the 3 levels we evaluated. Specifically, Al Rajihi's liquidity ratio went down from 155 to 131, while its NII to equity ratio fell from 815 bp to 538 bp. Throughout these changes, the bank capitalization deteriorated from 18.2 to 17.3 (Table 4). All these factors represent significant challenges to the bank asset liability management and we rank it lowest in the peer group.

These observations are further confirmed by the trend in deposits and the banks ability to compete for those funds in its marketplace (Figure 1). The trend for Alinma shows a constant and steady growth since Q2 2022, while the trend in deposits for Alrajihi reveals a clear stagnation since that quarter.

VI. Conclusion

This study analyzed the performance and risk management practices of the top banks in the GCC during a period of significant turmoil following several bank failures in the US. We compared a bank's liquidity, profitability, capitalization during two distinct interest rate periods: when rates were declining and near zero (period 1) vs a period when rates were rising as a result of the US Federal Reserve Bank tightening its monetary policy (period 2). In a span of 18 months, interest rates rose 475bp creating a lot of challenges to manage interest rate risk in banking. Our analysis shows that the capitalization of 3 of the 10 banks weakened during this period, liquidity and profitability suffered in 4 out of 10 banks during this period. Investor's perception about the valuation of each bank (measured by the stock price premium to book value) deteriorated in 6 out of the 10 banks in the peer group. These results suggest that these banks experienced significant challenges in managing their interest rate risk, and were directly harmed by the Federal Reserve Bank monetary tightening.

A major analysis of this paper has also focused on the size of unrealized losses on security holdings that the IMF had flagged in its regional report on Middle East banking in October 2023. IMF was concerned that banks in the Middle East may try to mask their unrealized losses hoping to liquidate them when prices become more favorable. Our results show that half the banks in the peer group reported significant unrealized losses on positions in securities they hold but have not closed with the approval and consent of bank regulators who allowed them to carry these positions forward. Our investigation shows that without accounting for these losses, bank capitalization (measured by the Tier 1 cap asset ratio) deteriorated in 3 out of 10 banks in the peer group. However, if the security holdings were liquidated, the deterioration of bank capital

would extend to 8 banks out of 10. In addition, 5 out of 10 banks had losses in excess of 1% of their capital, and in one case the loss represents 3% represents 3% of the bank capital.

These results not only confirm the IMF concerns but also raise questions about the role of Central bank regulators who restrained their enforcement and the risk controls and limits established within these banks.

Table 1a. US Fed Rate Increases 2022-2023

Date*	Rate Change (bps)	Federal Funds Rate	Cumulative Change in Interest Rates (bps)	Quarter Impacted by the Rate Change
17-Mar-22	25	0.25% to 0.50%	25	Q2 2022
5-May-22	50	0.75% to 1.00%	75	Q2 2022
16-Jun-22	75	1.50% to 1.75%	150	Q3 2022
27-Jul-22	75	2.25% to 2.50%	225	Q3 2022
21-Sep-22	75	3.00% to 3.25%	300	Q4 2022
2-Nov-22	75	3.75% to 4.00%	375	Q4 2022
14-Dec-22	50	4.25% to 4.50%	425	Q1 2023
1-Feb-23	25	4.50% to 4.75%	450	Q1 2023
22-Mar-23	25	4.75% to 5.00%	475	Q2 2023
3-May-23	25	5.00% to 5.25%	500	Q2 2023

** Date of the Federal Open Market Committee Meeting that decides on the level of US interest rates. Bank rates, domestic and international, follow suit.*

Table 1b. Bank Assets and Location

Bank	GCC Country	Total Assets (Billions in local currencies)
Al Rajihi Banking and Inv	SA	762
Saudi National Bank[13]	SA	945
National Bank of Kuwait	KW	36
Qatar National Bank	QA	1189
Kuwait Finance House	KW	37
Alinma Bank	SA	200
First Abu Dhabi Bank	AE	1186
Riyad Bank	SA	360
Saudi British Bank	SA	314
Qatar Islamic Bank	QA	184

[13] Formerly known as National Commercial Bank. Another large bank in Saudi Arabia, Saudi American Bank, merged with National Commercial Bank in April 2021 to create Saudi National Bank.

Table 2: Capital Ratio and Stock Price Multiple*

	TIER 1 CAPITAL RATIO		PRICE TO BOOK RATIO	
	Period 1 Q1 '19 – Q1 '22 13 quarters	Period 2 Q2 '22 – Q3 '23 6 quarters	Period 1 Q1 '19 – Q1 '22 13 quarters	Period 2 Q2 '22 – Q3 '23 6 quarters
Al Rajihi Banking and Inv	18	18.2	3.5	3.6
Alinma Bank	18.6	19.7	1.7	2.4
First Abu Dhabi Bank	14.8	14.5	1.8	1.6
Kuwait Finance House	15.7	15.9	2.7	2.2
National Bank of Kuwait	15.4	14.8	1.9	2.2
Qatar Islamic Bank	17.6	17.7	2.2	1.9
Qatar National Bank	17.6	17.9	2.3	1.9
Riyad Bank	16.1	17.4	1.8	1.9
Saudi British Bank	18.6	18.4	1.2	1.4
Saudi National Bank	17.9	17.9	1.9	1.5
Peer Median	**17.6**	**17.8**	**1.88**	**1.92**

**Positive (negative) changes between time periods are in green (red).*

Table 3. Key Liquidity and Profitability Indicators

	Period 1 Q1 '19 – Q1 '22 13 quarters			Period 2 Q2 '22 – Q3 '23 6 quarters		
	LCR (%)	Short-Term Borrowing Ratio (%)	NII to Equity (in BP)	LCR (%)	Short-Term Borrowing Ratio (%)	NII to Equity (in BP)
Alinma Bank	133	6.35	489.1	137	9.26	531.7
Al Rajihi Banking and Inv	155	2.7	815.1	131	11.9	538.3
First Abu Dhabi Bank	133	11.1	282.4	156	9.97	373.2
Kuwait Finance House	195	16.4	663.6	184	20.8	446.7
National Bank of Kuwait	152	26.2	400.1	156	12.5	464.7
Qatar Islamic Bank	105	19.1	510.7	119	20.5	485.4
Qatar National Bank	159	9.7	566.3	139	14.3	714
Riyad Bank	168	15	485.9	177	13.4	539.1
Saudi British Bank	217	7.1	295	179	10.3	431.7
Saudi National Bank	180	14.9	550.8	275	20.1	403.3
Peer Median	157	12.98	499.9	156	12.95	475.1

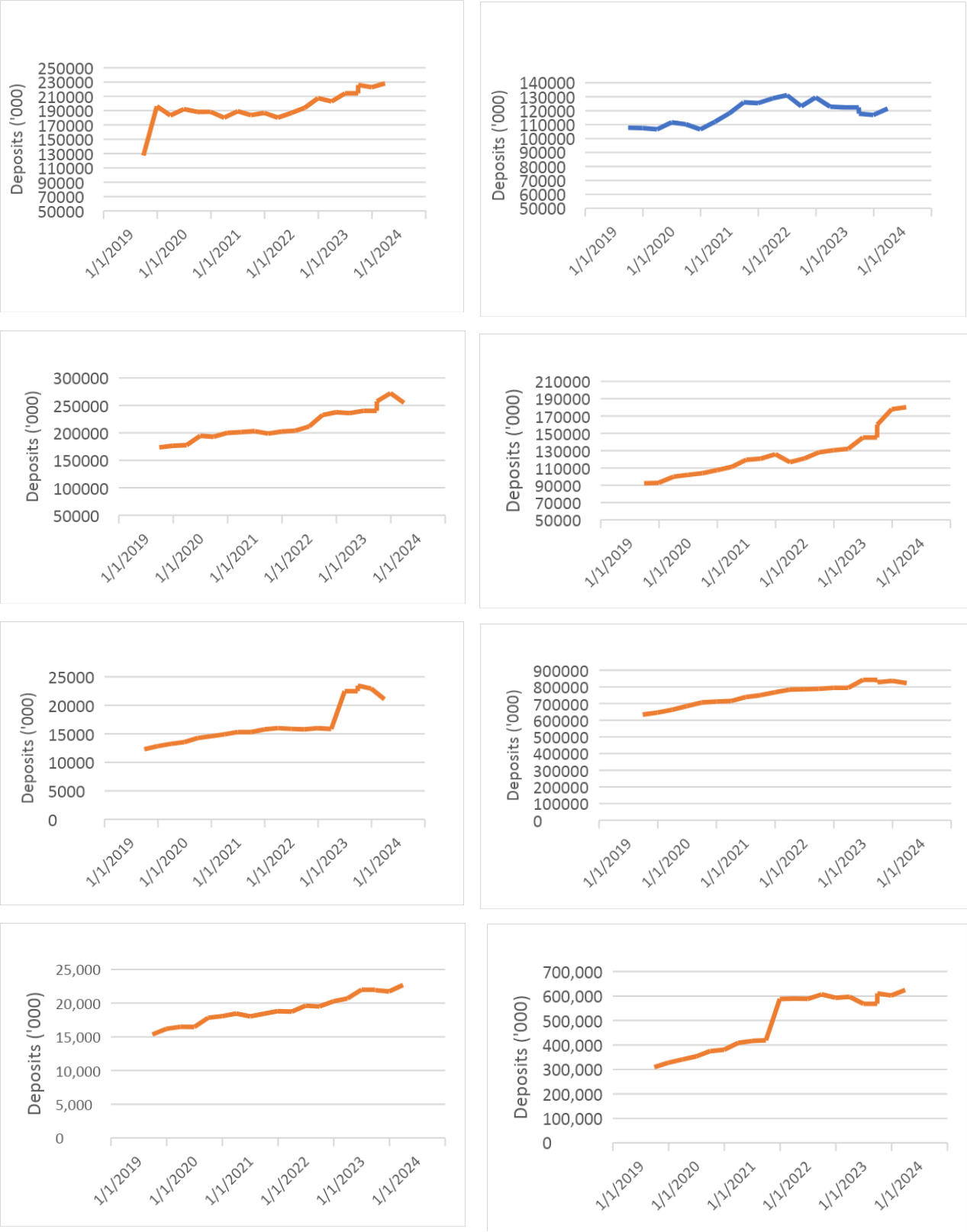
Table 4. Largest Unrealized Quarterly Losses on Security Holdings Between Q2 2022 – Q3 2023

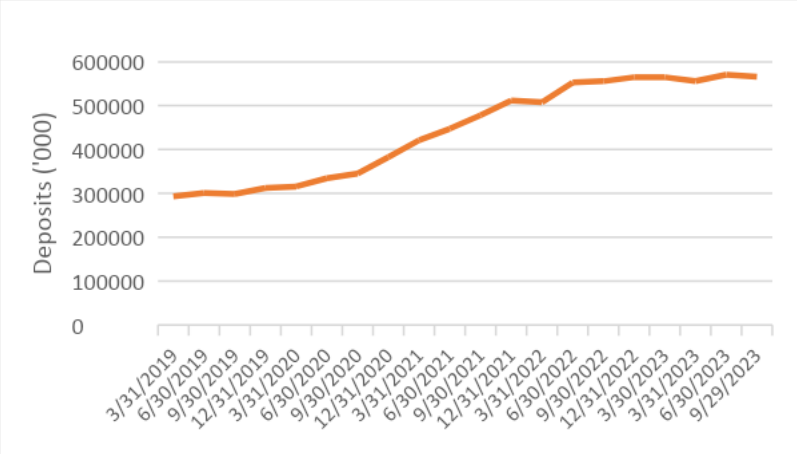
	Largest quarterly Unrealized Losses (in millions of local currencies)	Tier 1 Capital Ratio	Unrealized Losses as % of bank equity	Adjusted Tier 1 Capital Ratio
Alinma Bank	-216	19.7	-0.7	19
Al Rajihi Banking and Inv	-766	18.2	-0.9	17.3
First Abu Dhabi Bank	-2335	14.5	-2.1	12.4
Kuwait Finance House	-43	15.9	-0.8	15.1
National Bank of Kuwait	-45	14.8	-1.0	13.8
Qatar Islamic Bank	Not reported	17.7	Not reported	
Qatar National Bank	-460	17.9	-0.4	17.5
Riyad Bank	-1584	17.4	-3.0	14.4
Saudi British Bank	-889	18.4	-1.6	16.8
Saudi National Bank	-4051	17.9	-2.5	15.4

Table 5. Performance Ranking

	LCR	**NII**	**Adjusted T1 Cap Ratio**
Alinma Bank	+	+	+
Al Rajihi Banking and Inv	-	-	-
First Abu Dhabi Bank	+	+	-
Kuwait Finance House	-	-	-
National Bank of Kuwait	+	+	-
Qatar Islamic Bank	+	-	+
Qatar National Bank	-	+	-
Riyad Bank	+	+	-
Saudi British Bank	-	+	-
Saudi National Bank	+	-	-

Figure 1. **Trends in Bank Deposits (Q1 2019 – Q3 2023)**




Deposits ('000)
600000
500000
400000
300000
200000
100000
0
3/31/2019
6/30/2019
9/30/2019
12/31/2019
3/31/2020
6/30/2020
9/30/2020
12/31/2020
3/31/2021
6/30/2021
9/30/2021
12/31/2021
3/31/2022
6/30/2022
9/30/2022
12/31/2022
3/30/2023
3/31/2023
6/30/2023
9/29/2023

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