3

The Banking Sector

The banking sector maintained its soundness in a relatively better and improving macroeconomic environment during 2024. Asset base expanded by 15.8 percent to touch Rs 53.7 trillion by end December 2024, mainly driven by investments as well as advances. An improvement aspect of CY24 was the ADR-related tax policy, due to which banks sharply pushed advances and shed deposits in Q4CY24, which raised banks' reliance on borrowings. Earnings indicators moderated on the back of several factors such as the translation of falling benchmark rates to earning assets, a one-off extra ordinary expense by a major bank and increased corporate tax rate on banking companies during CY24. Asset quality indicators of banks manifested muted risk to solvency amid the increased provisioning (IFRS-9), easing financial conditions and improvement in repayment capacity of borrowers, especially of non-financial corporates. Liquidity profile in terms of liquid assets vis-à-vis liabilities remained comfortable – augmented by the increased investments in government securities. In the backdrop of a conservative regulatory regime, banks could comfortably manage currency and equity price movement risks, while market risk also remained contained due to relatively shorter repricing maturity of investment portfolio. Solvency indicators such as Capital Adequacy Ratio (CAR) not only strengthened further to 20.6 percent but also stood well above the minimum regulatory requirements. Islamic Banking Institutions (IBIs) maintained their growth momentum and sound financial position, which contributed to the overall stability of banking sector.

3 The Banking Sector

The banking sector in Pakistan constitutes around 77 percent of total assets of the financial sector and therefore occupies a central place in financial stability. The sector continued its steady performance and remained resilient in terms of its operational and financial soundness in a relatively favorable and improving macroeconomic environment compared to last year.

Asset base of the sector expanded by 15.8 percent to Rs 53,693 billion in CY24, compared to 29.5 percent growth in last year (**Figure 3.1 and Table 3.1**). This slowdown was mainly due to contained growth in investments in government securities and slight contraction in holding of equity stock and mutual funds, though advances grew at a significantly high growth rate that was highest in the last 20 years. However, changes in Q4 of CY24 dominated the whole year. In this backdrop, the share of total investments, which predominantly comprise government securities, in the asset base lowered to around 55 percent by end CY24 (56.1 percent in CY23) (**Figure 3.2**).

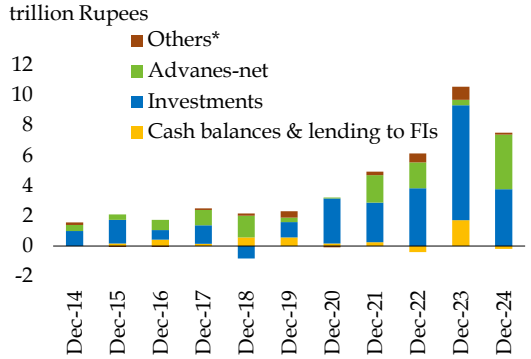
Key Statistics and FSIs* of Banking Sector **Table 3.1**

Balance Sheet	CY22	CY23	CY24
	billion Rupees		
Total Assets	35,796	46,364	53,693
Advances - Net	11,818	12,178	15,805
Investments - Net	18,400	26,019	29,791
Borrowings	7,845	11,673	15,006
Deposits	23,461	29,128	31,792
Total Liabilities	33,710	43,577	50,390
Net Assets	2,086	2,787	3,303
Profit/(Loss) Before Tax	703	1,287	1,368
Profit/(Loss) After Tax	336	642	644
	percent		
Risk Weighted CAR	17.0	19.7	20.6
NPLs to Total Loans	7.3	7.6	6.3
Provision to NPLs	89.5	92.7	103.9
Net NPLs to Net Loans	0.8	0.6	-0.3
Net NPLs to Capital	4.6	2.7	-1.2
Return on Assets (Before Tax)	2.1	3.1	2.7
Return on Assets (After Tax)	1.0	1.6	1.3
ROE (Before Tax)	35.3	54.4	45.8
ROE (After Tax)	16.9	27.1	21.5
Liquid Assets/Total Assets	56.6	63.5	60.3
Liquid Assets/Total Deposits	86.4	101.1	101.9
Advances/Deposits	50.4	41.8	49.7

Note: Based on unaudited Quarterly Report of Condition (QRC) submitted by banks.
**Financial Soundness Indicators*

Source: State Bank of Pakistan

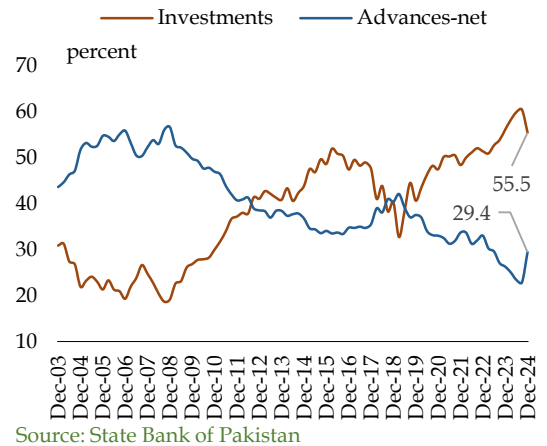
Yearly flows in Assets of Banking Sector **Figure 3.1**



*Others include Fixed assets, Deferred Taxes and Other Assets

Source: State Bank of Pakistan

Share in Total Assets of Banking Sector **Figure 3.2**



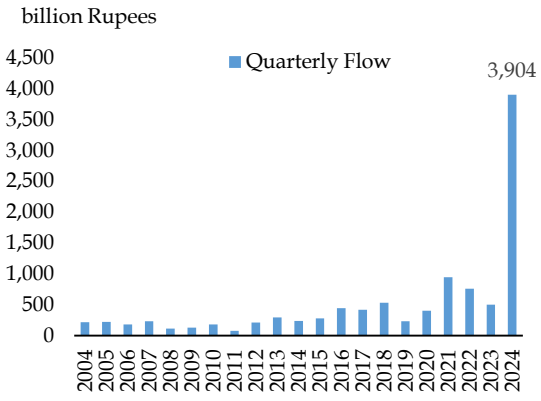
Source: State Bank of Pakistan

Government securities rose by Rs 3.3 trillion in CY24, much lower than Rs 7.4 trillion increase in last year. Within government securities, the government retired around Rs 1.3 trillion of Treasury bills through various buybacks, as its cash flow position improved in Q3CY24, and mobilized resources through floating rate PIBs, especially semi-annual coupon bonds. Auctions data shows that the market took keen interest in treasury bills, floating rate PIBs (semi-annual coupon) and fixed rate PIBs. However, the government accepted lower than target amounts in fixed rate PIBs and Ijarah Sukuk in CY24 (for details **see Chapter 2: Financial Markets**). This behavior was consistent with the accommodation in monetary policy, wherein the government tried to take benefit of falling interest rates and banks tried to lock in the funds in long-term securities.

Advances rebounded amid easing financial conditions, improving economic activity while incentive to improve ADR also played a key role …

Advances rebounded by 29.8 percent in CY24 as compared to a muted growth of 3.0 percent in last year. In fact, advances recorded highest growth since CY05, though the major increase emanated in Q4CY24 (**Figure 3.3**).

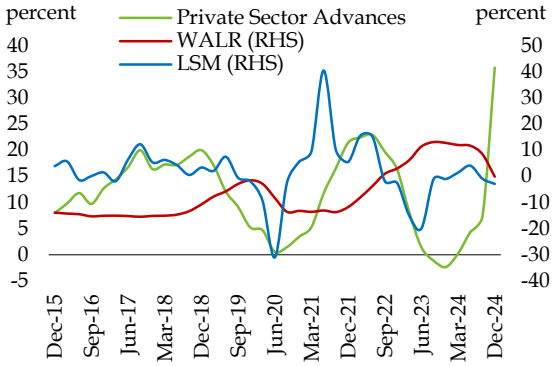
Quarterly Flows of Advances in Q4CY **Figure 3.3**



Source: State Bank of Pakistan

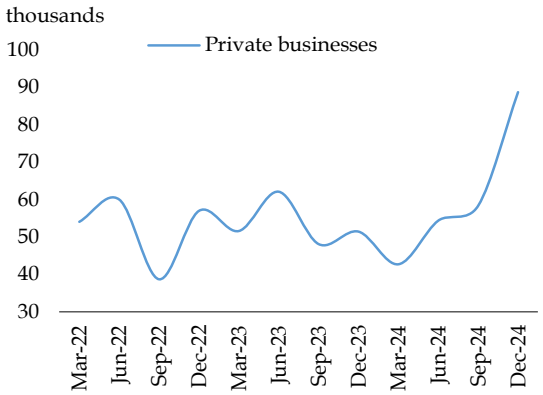
Within overall advances, domestic private sector advances, which constitute around 72 percent of the total loan portfolio of banks, witnessed a broad-based increase and grew by 35.8 percent (or Rs 3.2 trillion) in CY24; the increase was particularly concentrated in Q4CY24 as around 98 percent of YoY increase occurred in this quarter. The underlying factors for the growth in advances can be ascribed to both demand and supply side factors. On demand side, economic recovery, improvement in business confidence, easing financial conditions in the wake of disinflation and cut in policy rates (**Figure 3.4**) led to a strong revival in private sector demand for bank loans (**Figure 3.5**).

LSM, WALR and Private Sector Advances (Domestic) **Figure 3.4**



Source: State Bank of Pakistan and Pakistan Bureau of Statistics

Loan Applications of Private Businesses **Figure 3.5**



Source: State Bank of Pakistan

A number of sectors including Textiles, Insurance, Agribusinesses and Cement,

increased their advances in Q4CY24, much higher than their offtakes in Q4CY23 (**Table 3.2**). Bank lending survey conducted by SBP during October to December 2024 period showed that among other factors, businesses highlighted inventories and working capital requirements and fixed investment needs as the major factors for their loan demand. This was consistent with the Q4CY24 flow of segment wise data on advances of corporates and SMEs businesses, as most of these businesses borrowed for working capital needs as well as long term financing.

Domestic Private Advances of banking sector — Table 3.2

	9MCY23	9MCY24	Q4CY23	Q4CY24
	Flows in billion Rupees			
Chemical and Pharmaceuticals	-115	33	43	117
Agribusiness	33	-39	68	175
Textile	10	6	14	480
Cement	-27	-20	-8	115
Sugar	-68	102	71	62
Shoes and leather garments	-5	-10	2	3
Automobile and transportation equipment	-49	8	19	37
Financial	-140	59	-16	845
Insurance	1	-1	-1	263
Electronics and electrical appliances	-44	10	22	27
Production and transmission of energy	-217	-100	22	119
Individuals	-66	-51	30	112
Others	-84	74	289	793
Total	**-772**	**71**	**554**	**3,148**
Total (excluding Financial)	**-631**	**12**	**570**	**2,303**

Source: State Bank of Pakistan

On the supply side, retirement of bank borrowings by the government and increased reliance on non-bank financial sector created cushion for lending to private sector. Moreover, the policy of ADR-linked tax rates on income from government securities provided a significant incentive to banks to improve their ADR by increasing their loan portfolio.[1] To improve their ADRs, banks aggressively expanded loans to different sectors. Among these sectors, a much higher uptick in 'Financials', was noted, as its borrowing rose by Rs 845 billion during Q4CY24, much higher than net retirements of Rs 16 billion in the same period last year. This significant rise in advances of Financials mainly reflects banks' lending to financial institutions other than banks.[2]

Besides businesses, consumer financing, which recorded a net retirement of Rs 81 billion last year, strongly rebounded and rose by Rs 29 billion in CY24.[3] Just like advances to businesses, the major rise in consumer portfolio was during the fourth quarter of CY24, driven mainly by one category i.e., credit cards.

As a result of sharp increase in private sector advances vis-à-vis a muted growth of 9.2 percent in public sector advances, the share of domestic public sector advances in total loans declined to 21.2 percent of in CY24 (25.7 percent in CY23). Though a large state-owned entity availed significant financing (due to its debt restructuring), the net retirements by a few energy related PSEs suppressed the overall increase in advances of PSEs during CY24.

Deposits mobilization took hit from ADR-related taxation policy…

On funding side, deposits mobilization slowed

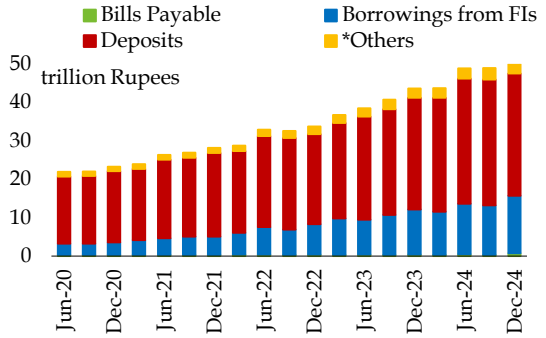
[1] Under the Finance Act, 2021, income attributable to investment in the Federal Government securities of banks was made taxable at tax rates of 40 percent, 37.5 percent and 35 percent, if ADR was up to 40 percent, between 40 to 50 percent and above 50 percent respectively. The Finance Act 2022 introduced enhanced rates of tax on taxable income of banks attributable to investment in federal government securities. The enhanced rates of tax for tax year 2022 are 55 percent, 49 percent and 39 percent for these ADR slabs, respectively. For tax year 2023 and onwards; tax rates would be 55 percent, 49 percent and 39 percent for these ADR slabs, respectively. The changes have been incorporated by substituting sub-rule (6A) of rule 6C of Seventh schedule of the Income Tax Ordinance. Source: FBR Circular C.No.4(21) IT-Budget/2022 dated July 21, 2022 available at: https://download1.fbr.gov.pk/Docs/20227211772414 69circular15of2002-23.pdf Though, this policy of ADR-related tax on income from government securities was withdrawn for tax year 2024 through FBR S.R.O 226 (I)/2023, it again went into effect in tax year 2025.

[2] In order to improve their ADR amid applicability of ADR-related taxation policy, banks increased lending to non-bank financial entities. This was a one-off phenomenon in Q4CY22 and normalized in CY23, as the applicability of this taxation policy was withdrawn for Tax year 2024. However, as the policy again became applicable in CY24, the ADR-related push to advances was again observed in Q4CY24.

[3] These numbers reflect domestic portfolio of banks.

during CY24, rising by Rs 2,664 billion or 9.1 percent in CY24.[4] Barring the 8.0 percent growth in CY22, this was the lowest growth in 21 years. The major drag on deposits mobilization was the ADR-related taxation policy, as banks strategized to shed deposits towards the end of the year (**Figure 3.6**).

Funding Composition of Banking Sector **Figure 3.6**

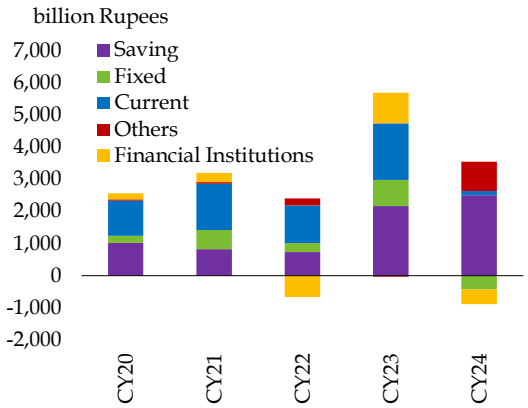


*Other include Sub-ordinated loans, Liabilities against Assets subject to Finance Lease, deferred tax liabilities and other liabilities
Source: State Bank of Pakistan

CY24 remained another year[5] after CY22, when the applicability of the ADR-related taxation on banks' income from government significantly affected deposit mobilization.

The prescribed level of ADR can be achieved either via an expansion in advances (numerator) or shedding the deposits (denominator). This strategy, though improves banks' ADRs and saves them their tax charges, it however distorts the long term trends of advances and deposits in the economy. This year, in an effort to shun large size deposits, several banks announced service charges on these deposits; nevertheless, timely intervention by SBP helped in reversing such moves. Nonetheless, saving deposits increased amid high (though falling) rates and supported deposit growth in CY24. Accordingly, the share of savings deposits also rose to 40.8 percent by end CY24 from 35.9 percent in CY23 (**Figure 3.7**).

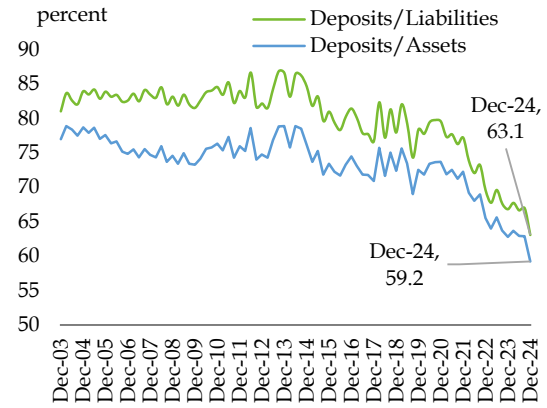
Composition of Deposit Mobilization **Figure 3.7**



Source: State Bank of Pakistan

With the drag in deposit mobilization, the share of deposits in overall funding further declined by end CY24 from last year (**Figure 3.8**).

Deposits to Total Liabilities and Total Assets of Banking Sector **Figure 3.8**



Source: State Bank of Pakistan

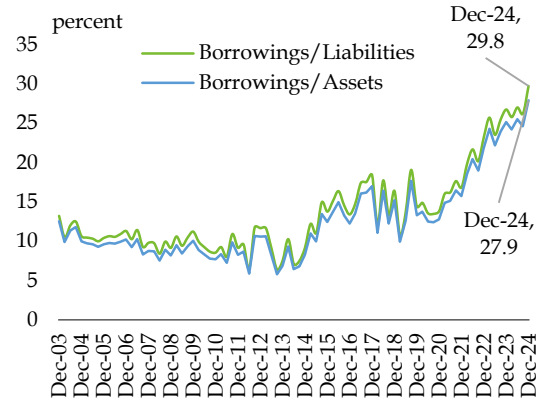
while reliance on borrowings sharply rose in Q4CY24…

As asset growth outpaced deposit mobilization for the fourth consecutive year since CY20 (Covid-19 pandemic), banks' reliance on borrowings got further traction in CY24. Borrowings rose by 28.5 percent to Rs 15 trillion. Though the growth was lower than last year, the share of borrowing in funding base further rose

[4] Deposits rose by Rs 5,667 billion in CY23
[5] Last time, the deceleration of 8.0 percent in CY22 was also observed in the wake of a similar tax policy.

to 29.8 percent by end December 2024 (**Figure 3.9**). Around 82 percent of the additional borrowing was availed from central bank in CY24.

Borrowings to Total Liabilities and Total Assets of Banking Sector **Figure 3.9**



Source: State Bank of Pakistan

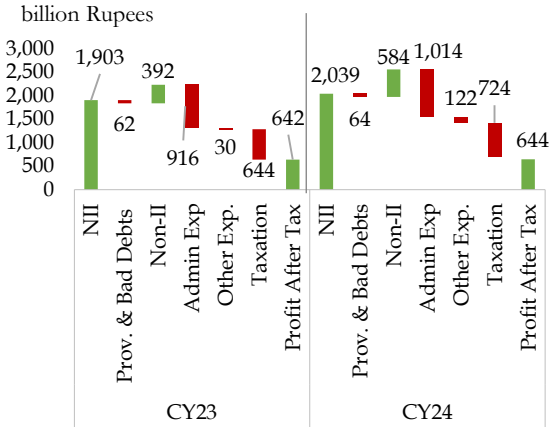
Earnings remained steady…

Earnings of the banking sector remained almost stable at the last year level; after-tax profit of the banking sector inched up to Rs 644 billion in CY24 from Rs 642 billion in last year. As this modest growth in earning came on the back of strong growth in assets and equity, the bottom line indicators i.e. ROA moderated to 1.3 percent (1.6 percent in CY23) and ROE contracted to 21.5 percent (27.1 percent in CY23). ROA reverted back to its long term average of 1.2 percent, however, ROE for CY24 was still above its long term average of 15.0 percent.[6]

On YoY basis, earnings growth fell to 0.2 percent in CY24 from 90.9 percent in CY23. The major drag on earnings came from deceleration in net interest income, as the fall in benchmark interest rates such as SBP policy rate started translating into returns on earning assets and contracting the net interest margin (NIM).[7] Moreover, the burden of income tax on banking companies also increased during the year under review and a one-off extra ordinary expense booked by a major bank also contributed in moderation of the overall earnings of the sector.

However, non-interest income especially the trading gains supported earnings,[8] as the fall in interest rates led to appreciation in the values of fixed income securities (mainly government securities) which form a major part of the banks' earning assets (**Figure 3.10**).

Composition of Profit After Tax **Figure 3.10**

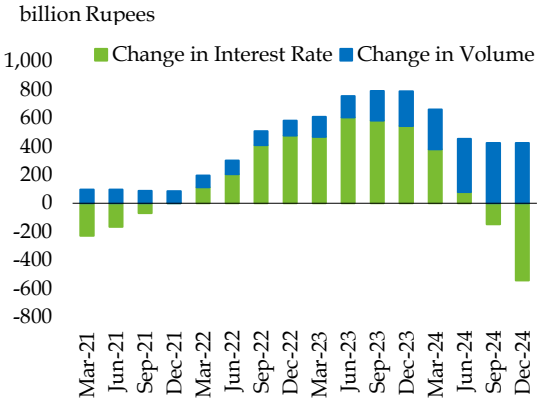


Source: State Bank of Pakistan

A rate-volume analysis of YoY changes in interest earnings and interest expenses shows that the rate component was more pronounced and drew down both income and expenses on earning assets and interest bearing liabilities, respectively, specifically during last two quarters of CY24 (**Figure 3.11 and Figure 3.12**).

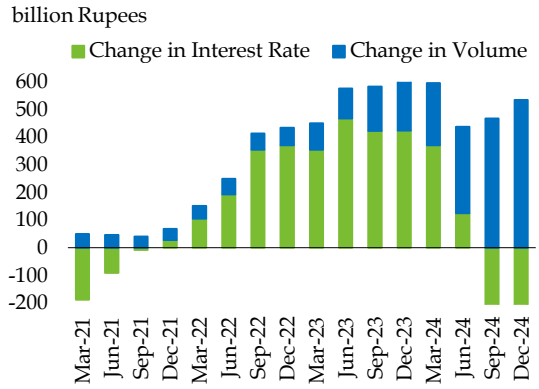
[6] Average of quarterly ROA and ROE from March 2010 to December 2024.
[7] The Weighted Average Lending rate (excluding zero-markup and excluding interbank) fell by 707 bps in CY24, while Weighted Average Deposit rate (excluding zero-markup and excluding interbank) fell by 836 bps in CY24. Further, the 3-month KIBOR was 56 bps lower than the policy rate, on average, during CY24, suggesting that the market was factoring in the fall in policy rate somewhat more quickly. This behavior translated to a relatively quicker repricing of loans, which are generally repriced at some lags.
[8] Gains on sale of government securities amounted to Rs 94 billion in CY24 as compared to gains of Rs 6 billion in same period last year.

Change in Interest Earned on Average Earning Assets due to .... **Figure 3.11**



Source: State Bank of Pakistan

Change in Interest Earned on Average Interest bearing Liabilities due to .... **Figure 3.12**



Source: State Bank of Pakistan

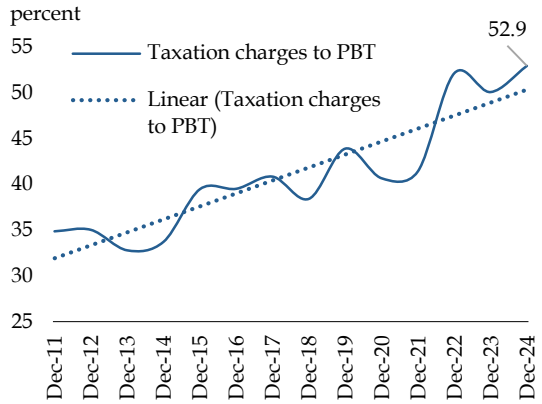
In line with rising share of investments in balance sheet of the banking sector, the proportion of interest/markup earnings from investments is on a consistent rise since March 2019 and has reached around 69 percent of total interest income, manifesting concentration in earnings from one major source i.e., government securities.

On the expense side, growth in operating expenses decelerated to 20.1 percent in CY24, from 32.5 percent in CY23, as strong disinflation in the economy kept growth in administrative expenses in check though the branch network recorded an elevated growth during CY24 compared to last year.[9]

Provisioning expenses rose in line with the movement in gross NPLs and their impact remained relatively contained.

However, there was significant rise in income tax charges which rose to 52.9 percent of pre-tax profit for CY24. Consequently, taxation charges were an important factor in moderating the after tax earnings in CY24. It is important to note that taxation charges for banks have been rising in recent years (**Figure 3.13**). This argument is also supported by the extended DuPont analysis of after tax ROE of the banking sector in **Table 3.3**.

Trend in Taxation Charges to Profit Before Tax of Banking Sector **Figure 3.13**



Source: State Bank of Pakistan

Extended Du Pont Breakup of Banking Sector's after-tax ROE **Table 3.3**

	CY22	CY23	CY24
Impact of tax i.e. PAT/PBT (a)	0.48	0.50	0.47
Operating efficiency i.e. PBT/NII (b)	0.60	0.68	0.67
Interest Margin i.e. NII/Interest Income (c')	0.34	0.30	0.27
Yield on Assets i.e. Interest Income/Assets	0.10	0.16	0.15
Leverage i.e. Assets/Equity (e)	16.65	17.31	16.75
ROE (f = a x b x c x d x e)	16.9%	27.1%	21.5%

Source: State Bank of Pakistan

A stable and objective taxation policy for banks is vital for financial stability and financial inclusion ….

Banking sector in Pakistan is subject to relatively high tax rate and an uncertain tax policy

[9] By adding 1,105 new branches, the banking sector expand its network to 17,708 branches by end December 2024. Data source: https://www.sbp.org.pk/publications/Quarterly/2024/Dec/List-of-Banks-and-Microfinance-Banks-Branches.xlsx

environment. The corporate tax rate for banks is relatively higher. Banks are subject to a minimum paid-up capital requirement of Rs 10 billion, accordingly the amount of banks' earning is generally higher than other corporate sector firms, which in turn involves additional tax commonly known as super tax.[10] Moreover, banks' earnings from government securities for CY22 and CY24 were subject to another tax, the rate of which would progressively increase depending upon the level of a bank's ADR.[11] Besides generating additional tax revenues for the exchequer, this ADR-linked tax policy could have a potential incentive for banks to expand their loan portfolio and support economic activities in the economy.

However, it has been observed that due to limited private sector demand for bank credit in first three quarters of CY24, in the backdrop of stressed macro-financial conditions and government's high demand for bank credit, it was difficult for banks to increase advances. In order to achieve desirable ADR for rationalizing their tax burden, banks actively strategized their asset-liability-management by aggressively increasing advances and, more importantly, shedding deposits towards the end of CY24. Accordingly, the ADR of the banking sector improved to 53.2 percent in December 2024 (39.7 percent in September 2024). However, the government withdrew the ADR-linked tax policy and raised the tax rate for banking companies to 44 percent (for tax year 2025) from 39 percent.[12] However, this policy affected saving mobilization in the economy and shifted banks' funding mix away from stable source i.e. from deposits to borrowings.

This phenomenon underlines the fact that income tax policy can significantly influence the scale and scope of banking business as well as the level of financial deepening and stability in the economy. Earning is particularly important for financial institutions, as it helps a financial institution in building buffers against unforeseen future shocks and provide incentive to invest in human resource and technologies to achieve efficiency in operations and increase the outreach and utility of business products.

Key risks to financial stability subsided over the year

The banking sector stability map (BSSM)[13] shows that risks to financial stability have subsided along various dimensions, including Asset Quality, Capital Adequacy and Interconnectedness as the year 2024 progressed (**Figure 3.14**). However, the dimensions of Deposits, and Liquidity showed some rising strain in December 2024 quarter, as deposits growth fell and growth of liquid assets

[10] Under section 4C of ITO 2001, introduced through Finance Act 2021, persons earning more than Rs 150 million are subject to additional tax ranging from 1 percent to 4 percent depending on income, for the tax year 2022 and onwards. However, for tax year 2023, this super tax on income of banking companies will be 10 percent, if the income for the year exceeds Rs 300 million. Source: Circular 2 of 2023 dated July 26, 2023 available at: https://download1.fbr.gov.pk/Docs/2023726177262062ExplanatoryCircular.pdf

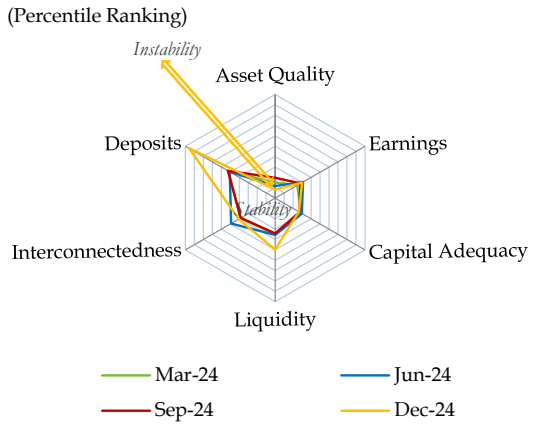
[11] The Finance Act 2022 increased the corporate rate of tax for banking companies to 39 percent (from 35 percent). A super tax (Section 4B) at rate of 4 percent was applicable to banks for tax year 2022 (only). However, the Act under a new section (4C), introduced a 10 percent super tax on banking companies earning income of more than Rs 300 million, for tax year 2023. Earlier through Finance Act, 2021, income attributable to investment in the Federal Government securities of banks was made taxable at tax rates of 40 percent, 37.5 percent and 35 percent, if ADR was up to 40 percent, between 40 to 50 percent and above 50 percent, respectively. The Finance Act 2022 has further enhanced these rates i.e. for tax year 2023 and onwards, tax rates will be 55 percent, 49 percent and 39 percent for these ADR slabs, respectively. Source: FBR Circular C.No.4(21) IT-Budget/2022 dated July 21, 2022 available at: https://download1.fbr.gov.pk/Docs/2022721177241469circular15 of2002-23.pdf Though, this policy of ADR-related tax on income from government securities was withdrawn for tax year 2024 through FBR S.R.O 226 (I)/2023, it again went into effect in tax year 2025.

[12] The Income Tax (Amendment) Ordinance 2024, dated December 28, 2024

[13] BSSM ranks the Financial Soundness Indicators of the current period vis-à-vis their historical level. It is based on percentile rankings (scaled from 1 to 10) of various indicators, and the summary score of these indicators in a particular dimension e.g. asset quality. A ranking close to 10 value on the summary statistic suggests increased risks but not necessarily immediate stability concern. This is because the summary statistic is based on percentile rankings of historical series and the actual indicators for the quarter may still be in comfortable position or above the minimum regulatory requirement. Methodology of BSSM is based on Dattels, P., McCaughrin, R., Miyajima, K., & Puig, J. (2010). "Can you map global financial stability?" IMF Working Papers, 1-42

moderated. The dynamics of key risks are discussed in the next sections.

Banking Sector Stability Map **Figure 3.14**

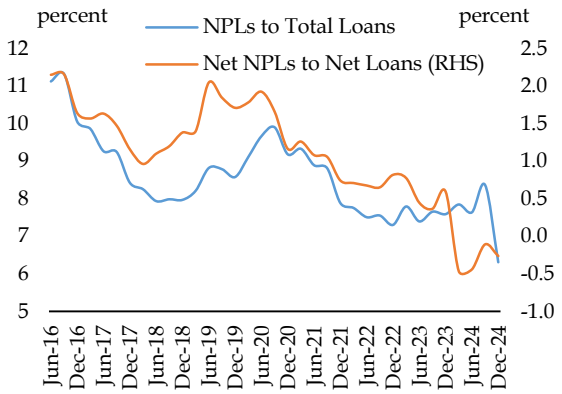


Source: State Bank of Pakistan

3.1 Credit risk

Credit risk is the major financial risk of the banking sector, as it constitutes around 70 percent of the banks' total risk weighted assets. Nevertheless, the asset quality indicators manifested no serious concerns. The non-performing loans (NPLs) to loans ratio fell to 6.3 percent in December 2024 from 7.6 percent in December 2023. However, it is important to note that the around 130 bps improvement in infection ratio mainly emanated from sharp rise in loan portfolio of banks in last quarter of CY24. Nonetheless, the banks are holding adequate amount of provisioning against the existing stock of NPLs and the total Credit loss allowances and provisions exceeds the NPLs i.e. provisioning to NPLs ratio is 103.9 percent (**Figure 3.15**). Gross NPLs recorded an increase of Rs 73 billion during CY24 slightly higher than Rs 71 billion increase in the same period last year. The rise in gross NPLs in CY24, mainly pertained to domestic operations, reflecting the major role of local factors as well as idiosyncratic factors, though the stability of PKR-dollar parity contributed to a lower rise in NPLs of overseas operations of Pakistani banks.

Asset Quality Indicators of Banking Sector **Figure 3.15**



Source: State Bank of Pakistan

Credit loss allowance and General provisions rose by Rs 187 billion in CY24 – higher than Rs 95 billion increase last year. A leading reason of this increase was the introduction of IFRS-9 during CY24, which led to creation of Expected Credit Loss allowance on prospective basis.[14] It is expected to enhance both the risk management practices and loss absorbency capacities of banks.

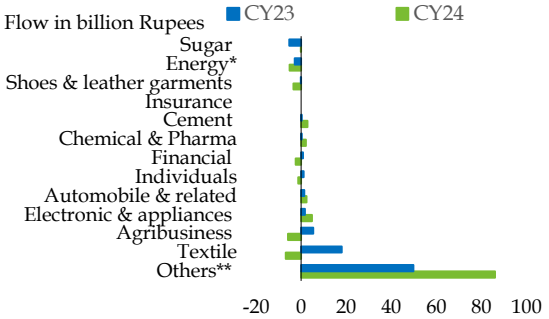
Sector wise changes shows that textile sector, which had recorded the major increase in NPLs in CY23, observed a substantial decline of Rs 7 billion in its NPLs. The better exports earnings of textiles in CY24 helped the sector reduce its NPLs.[15] Among other major sectors, the increase in cement and chemicals & pharmaceuticals recorded around Rs 3 billion and Rs 2 billion increase in their NPLs, respectively. In case of cement, the YoY decline in cement dispatches

[14] International Financial Reporting Standard (IFRS) 9 requires provisioning against financial instruments (loans and investments) on Expected Credit Loss (ECL) approach, instead of Incurred Credit Loss approach

[15] Textiles' exports rose by 5.9 percent in CY24 to US$ 16.7 billion in CY24 as compared to YoY decline of 15.0 percent in CY23. Data source: SBP

and lackluster construction activity in CY24, translated into a rise in NPLs of few borrowers in the cement sector (**Figure 3.16**).[16] Various other sectors such as iron & steel, construction, food processing also recorded rise in their NPLs due to sector specific difficulties as well as idiosyncratic factors associated with few borrowers.

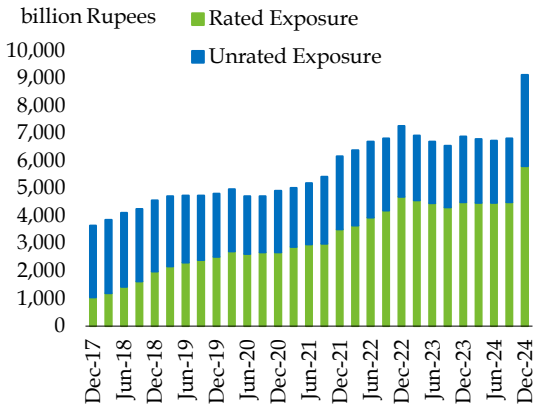
Sector wise Change in Gross NPLs **Figure 3.16**



*Production and Transmission of Energy
**Others mainly include manufacturers of food products, paper & paper products, coke & refined petroleum products, basic metals, construction, wholesale & retail trade, and communication
Source: State Bank of Pakistan

It is worth mentioning that the major loan portfolio of the banks comprises of credit to large corporate borrowers. Rated borrowers constitute around 64 percent of the corporate and commercial credit portfolio at end December 2024 (**Figure 3.17**). Moreover, within rated exposure, 54 percent carries credit risk weight of 20 percent, reflecting better credit worthiness of borrowers which usually have an established business track record and well established corporate governance framework.

Rated and Unrated Exposure of Banks **Figure 3.17**



Source: State Bank of Pakistan

These high rated borrowers have the option to access the capital market for their financing needs, however, they prefer bank borrowings due to a number of reasons including more flexible credit lines with banks and limited outreach of capital market in the country.

The central bank (SBP) recognizes the importance of a developed capital market for financial stability and sustainable economic growth. That is why SBP is not only coordinating with Securities and Exchange Commission of Pakistan (SECP) for the development of capital market, but has also tailored its regulations to promote corporate governance regime and incentivize firms to access capital market for funding.[17]

Stress test results shows that banking sector in general has adequate resilience to credit risks factors ….

SBP regularly conducts and publishes the results of stress tests analyses for credit, market, and liquidity risks. The results of latest stress test results show that the banking sector in general has adequate resilience to extreme but plausible

[16] Quarterly GDP data shows that Construction sector GDP has recorded fifth consecutive decline in October to December 2024 quarter on YoY basis. Data source: Pakistan Bureau of Statistics

[17] For instance, as per SBP's prudential regulations, audited financial statements of the borrower is a pre requisite for corporate sector lending by banks/DFIs. Similarly, lending to large unrated borrowers (with total exposure of more than Rs 3 billion) involves higher capital charge for banks/DFIs, thus incentivizing the large borrowers to get themselves rated which is also essential for accessing the capital market funding in the form of shares, bonds, and Sukuk.

shocks to different credit risk factors, reflecting both contained risk exposures as well as adequate capital cushions that banks have for unforeseen losses (**Table 3.4**).

Stress Testing (Sensitivity Analysis) of Banking Sector (Credit Shocks) Table 3.4

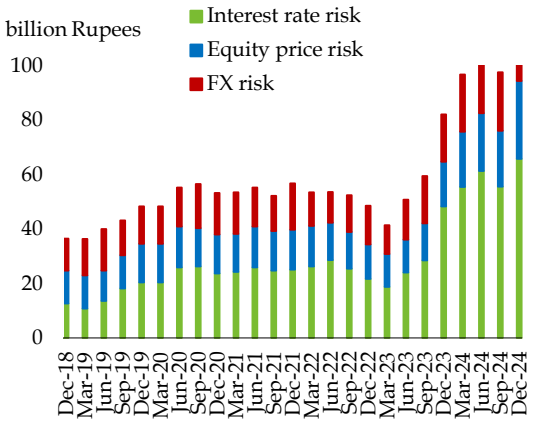
Description of shock	Number of Banks with CAR*			
	< 0%	0% - 8%	8% - 11.50%	> 11.5%
Pre-Shock Position	**2**	**0**	**0**	**28**
Post-Shock Position	**< 0%**	**0% - 8%**	**8% - 11.50%**	**> 11.50%**
10% of performing loans become non-performing, 50% of substandard loans downgrade to doubtful, 50% of doubtful to loss.	2	-	-	28
Default of top 3 private sector borrowers/Groups (fund based) exposures, including outstanding or limit which ever is higher and investments in borrowers' TFCs, equity etc., as defined under Revised PRs, net of deductions.	2	1	1	26
Default of top 3 private sector borrowers/Groups (fund based and Non-Fund based) exposures, including outstanding or limit which ever is higher and investments in borrowers' TFCs, equity etc., as defined under Revised PRs, net of deductions.	2	1	1	26
All NPLs under substandard downgrade to doubtful and all doubtful downgrade to loss.	2	-	-	28
Increase in provisions against NPLs equivalent to 25% of Net NPLs.	2	-	-	28
Increase in NPLs to Loans Ratio (NPLR) equivalent to the historical maximum quarterly increase in NPLs to Loans Ratio of the individual banks.	2	-	1	27
Increase in NPLs of all banks equivalent to the historical maximum quarterly rise	2	-	-	28
Increase in NPLs to Loans Ratio of Textile Sector equivalent to the historical maximum quarterly increase in these banks.	2	-	-	28
Increase in NPLs to Loans Ratio of Consumer sector equivalent to the historical maximum quarterly increase in these banks.	2	-	-	28
Increase in NPLs to Loans Ratio of Agriculture & SME Sector equivalent to the historical maximum quarterly increase in these banks.	2	-	-	28

Source: State Bank of Pakistan

3.2 Market Risk

The capital charge for market risk accounts for only 7.0 percent of the regulatory capital requirements at end December 2024. This low capital charge is due to limited exposure of the banking sector in FX and equities. Due to substantial increase in banks' holdings of government securities, the capital charge for market risk increased over the year under review; however, this increase remained muted – compared to growth in the stock of government securities – as these securities on average had quite short repricing maturity, reflecting banks' preference to invest more in short-term or floating rate instruments (**Figure 3.18**) (For details see the **Chapter 2**).

Capital Charge for Market Risk **Figure 3.18**



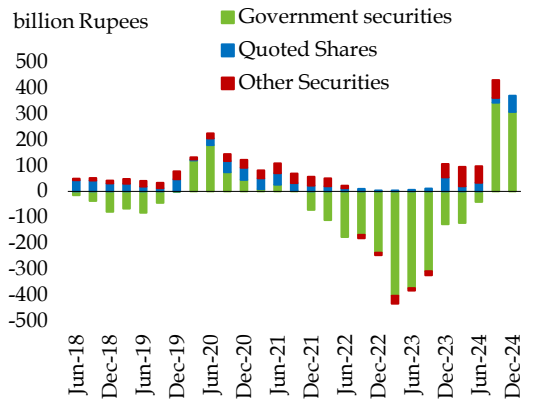
Source: State Bank of Pakistan

Revaluation losses subsided and turned into surplus by end of CY24

It is important to note that more than 90 percent of the government securities were held in Fair Value through Other Comprehensive Income (FVOCI), commonly known as available for sale, and Fair Value through Profit and Loss (FVTPL), commonly known as held-for-trading categories. Both categories are subject to regular mark-to-market adjustment for any changes in interest rates to represent the fair value of these instruments in equity and capital cushions of banks. The application of IFRS-9 has further strengthened the assessment of fair market values of these instruments, thereby complementing the assessment of market risk by banks.

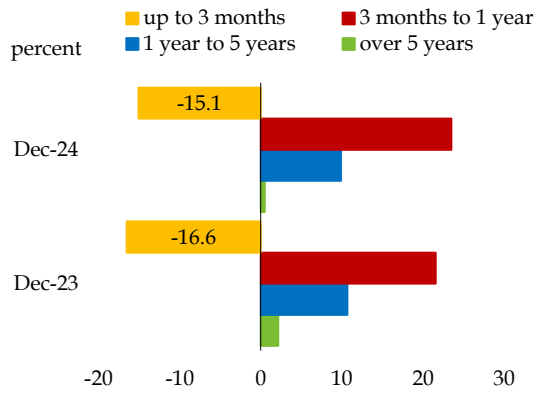
SBP reduced the policy rate by a cumulative of 900 bps in last seven months of CY24, accordingly the value of fixed income securities rose and by the end of CY24, the aggregate amount of revaluation surplus on FVOCI or AFS government securities rose to Rs 307 billion by end CY24 (from revaluation deficit of Rs 127 billion at end CY23). With revival in equity market and surge in equity prices, total surplus on revaluation of all securities rose to Rs 480 billion by end CY24 (**Figure 3.19**).

Revaluation Surplus/Deficit on Securities **Figure 3.19**



Source: State Bank of Pakistan

Gap of Rate Sensitive Assets and Liabilities as Percent of Total Assets **Figure 3.20**



Source: State Bank of Pakistan

Exposure to floating rate securities increased…

Banks have also strategized to increase the combined share of floating rate portfolio in their government securities. Floating rate securities constitute 58.3 percent share of the government securities at end CY24 (55.7 percent at end CY23). It reduces the effective duration and sensitivity to changes in interest rates that bodes well for market risk management. The weighted average duration of government securities held in FVOCI (AFS) category with fixed rate is 1.26 years and that of floating rate securities is just 0.23 years, while the weighted average duration of government securities held in FVTPL category with fixed rate is 0.44 years and that of floating rate securities is only 0.19 years.

Similarly, banking sector maintained quite contained repricing gaps between rate-sensitive assets (RSA) and liabilities (RSL) (**Figure 3.20**).

Banks show strong resilience to changes in market rates …

Banking sector maintains adequate resilience to severe shocks in markets prices i.e. yield curve, equity prices and exchange rates. The results of the latest stress testing exercise show that the banks in general remain compliant with the minimum CAR requirement even in the face of severe movements in prices (see **Table 3.5**).

Stress Testing (Sensitivity Analysis) of Banking Sector (Market Shocks) **Table 3.5**

Description of shock	Number of Banks with CAR*			
	< 0%	0% - 8%	8% - 11.50	> 11.5%
Pre-Shock Position	2	0	0	28
Post-Shock Position	< 0%	0% - 8%	8% - 11.50	> 11.50%
Parallel upward shift in the yield curve - increase in interest rates by 300 basis points along all the maturities.	2	-	-	28
Upward shift coupled with steepening of the yield curve by increasing the interest rates along 3m, 6m, 1y, 3y, 5y and 10y maturities equivalent to the historical maximum quarterly increase.	2	-	-	28
Downward Shift plus flattening of the yield curve by decreasing the interest rates along 3m, 6m, 1y, 3y, 5y and 10y maturities equivalent to the historical maximum quarterly increase.	2	1	-	27
Impact of Increase in interest rate by 100bps on investment portfolio only	2	-	-	28
Depreciation of Pak Rupee exchange rate by 30%.	2	-	-	28
Depreciation of Pak Rupee exchange rate by 25.3% equivalent to the historical quarterly highest depreciation of rupee against dollar.	2	-	-	28
Appreciation of Pak Rupee exchange rate by 7.10% equivalent to the historical quarterly highest level of appreciation of rupee against dollar.	2	-	-	28
Fall in general equity prices by 36.1% equivalent to maximum decline in the index.	2	-	1	27
Fall in general equity prices by 50%.	2	1	-	27

* Excluding SME and PPCBL

Source: State Bank of Pakistan

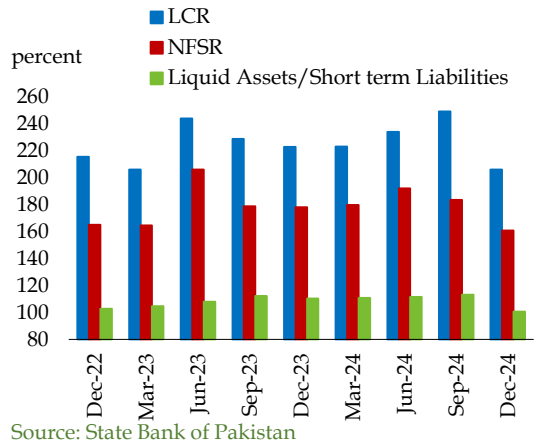
3.3 Liquidity Risk

Balance sheet based indicators suggest a comfortable liquidity profile during CY24…

Balance sheet based liquidity indicators moderated slightly, on the back of lower increase in government securities relative to assets. However, the banking sector maintained a comfortable liquidity profile during CY24, that is also reflected in liquidity-related FSIs of the sector (**Figure 3.21**). Liquid assets fully covered total deposits and short-term liabilities at end December 2024. The satisfactory liquidity profile reflects significant investments in liquid (government) securities by banks. The treasury instruments have a reasonably developed and active secondary market, which helps banks in managing daily liquidity needs.

The Basel-III standard liquidity ratios i.e., Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR) showed that the banking sector complied with the prescribed benchmarks. The LCR of the banking sector stood at 206.0 percent at end December 2024, which was well above the regulatory requirement of 100 percent. Similarly, the NSFR also remained at comfortable level of 161 percent at end December 2024 (**Figure 3.21**), suggesting a satisfactory liquidity profile.

Liquidity Indicators of Banking Sector **Figure 3.21**



Source: State Bank of Pakistan

Liquidity condition of market came under pressure due to relatively contained growth in deposits vis-à-vis assets base …

Since the growth in deposits could not match the growth in assets, the market faced a liquidity gap that could have put upward pressure on interest rates. In this backdrop, the average OMOs injections remained quite high during CY24. There were a few conspicuous spikes in OMOs injections especially in December 2024, when banks were actively trying to manage their ADR by extending loans and containing deposit mobilization. Detailed analysis shows that banks shed a significant part of their deposits base (especially large size deposits from financial institutions and PSEs).[18] Accordingly, banks' reliance on borrowings especially from SBP significantly increased over the year under review. However, due to SBP active monetary policy operations, the money market functioned smoothly without any significant disruption or deviations from the policy rate (for details see the section on Money Market in **Chapter 2**).

The stress testing results (from single factor sensitivity analysis) of hypothetical liquidity shocks also suggest that most of the banks can survive withdrawal of up to 10 percent of customer deposits beyond five days. However, in a more severe hypothetical shock of withdrawal of up to 50 percent wholesale deposits and unsecured borrowings, a few non-systemic banks (with low market share) may face liquidity constraints beyond three days.[19]

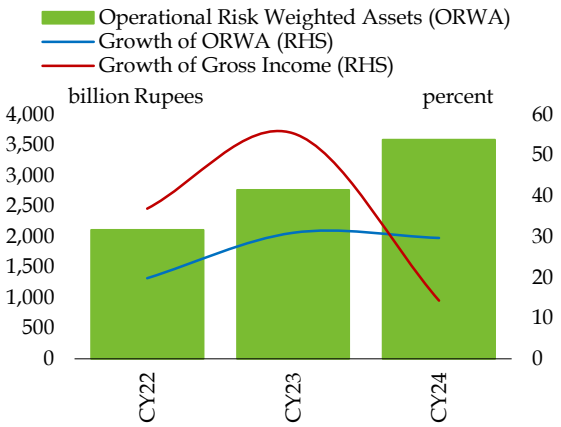
3.4 Operational Risk

Operational risk is the second major driver of banks' risk weighted assets. Operational Risk Weighted Assets (ORWA) posted an accelerated growth during the year under review and their share in total risk weighted assets inched up to

[18] This argument is based on Q4CY24 flows of Deposits distributed by category of deposit holders' data available on SBP website
[19] The results of stress testing (sensitivity analysis) are available at: https://www.sbp.org.pk/ecodata/fsi/qc/2024/Dec.pdf

22.0 percent at end CY24 (19.9 percent in CY23) (**Figure 3.22**). The underlying factor behind the consistent high growth in ORWA is the healthy gross income of the banking sector in recent years.[20]

Operational Risk Weighted Assets **Figure 3.22**



Source: State Bank of Pakistan

The increased use of technology and digitization of financial services has provided convenience of availing financial services to users and helped in enhancing financial inclusion in the country. However, at the same time, there have been rising incidents of cyber security risks and frauds, as miscreants are using a variety of social engineering and fraudulent methods to obtain important financial information of customers. Moreover, the increased usage of digital platforms makes financial institutions vulnerable to multiple types of cyberattacks, such as phishing, ransomware, and data breaches. The market participants have also identified cyber security risk among the top five prevailing risks to financial stability (**see Box 1 on SBP's Systemic Risk Survey**).

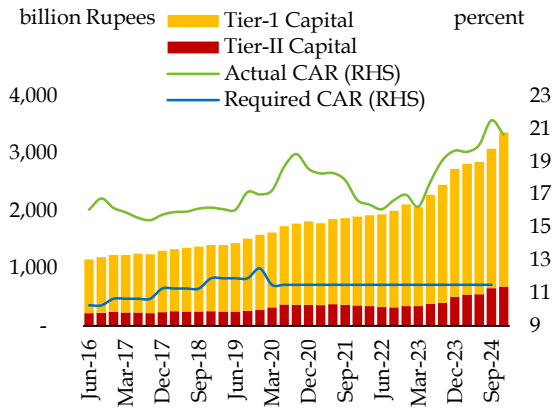
SBP remains vigilant to cybersecurity concerns and has been taking a number of measures to strengthen cyber resilience of banks. In this regards, a detailed stock taking of the Cybersecurity related emerging trends, Challenges and Policy Response was also carried out in FSR 2021.[21] Technological Innovation is now a strategic theme under SBP's Vision 2023-28 and a particular emphasis has been accorded to the promotion of innovation and use of technologies as well as to cybersecurity and privacy of data. For this purpose, SBP has recently established a dedicated Cyber Risk Management Department **(CRMD)** to perform proactive supervision of cyber security risks of regulated entities with greater focus on improving cyber threat intelligence and incident response mechanism, cyber risk monitoring, and implementation of international best practices, among others.[22]

3.5 Solvency

Headline solvency indicators of the banking sector such as CAR further improved to 20.6 percent by end December 2024, when compared to 19.7 percent by end December 2023. The uptick in CAR emanated from higher growth in regulatory capital that outpaced growth in total risks weighted assets. Detailed analysis shows that while the Tier-I Capital increased due to steady earnings and profit retentions, the Tier-II capital rose due to revaluation gains on securities (**Figure 3.23**) (**see the section on Market Risk for details**).

[20] Gross income forms the basis of calculating the ORWA under Basic Indicators approach (BIA) of Basel-III standards and is used by most of the banks in Pakistan. Capital charge for operational risk under the BIA is a fixed percentage of the average annual gross income of a bank over past three years.
[21] https://www.sbp.org.pk/FSR/2021/Box-8.1.pdf
[22] https://www.sbp.org.pk/bsd-1/2024/C1.htm

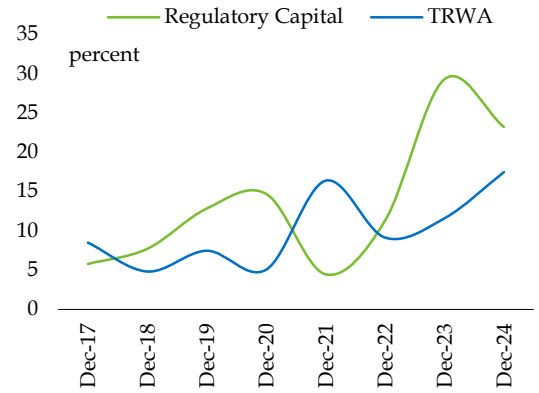
Solvency Indicators of Banking Sector **Figure 3.23**



Source: State Bank of Pakistan

On the other hand, the significantly accelerated growth in advances and government securities led to increase in CRWAs and MRWAs, which together form around 80 percent of the TRWAs, on average. However, higher growth in regulatory capital led to an inch up in the CAR (**Figure 3.24**). The prevailing CAR remains well above the domestic and international minimum benchmarks of 11.5 percent and 10.5 percent, respectively.

Growth in Regulatory Capital and Total Risk Weighted Assets (TRWA) of Banking Sector **Figure 3.24**

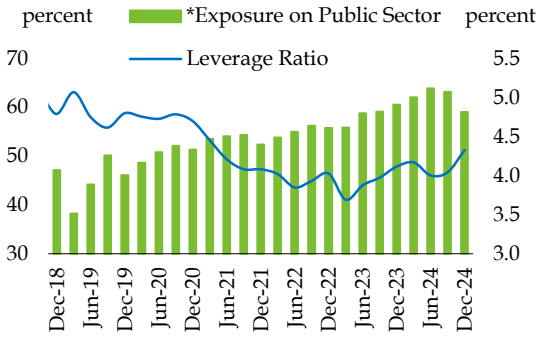


Source: State Bank of Pakistan

A major part of banks' exposure is in government securities which are treated as per Basel framework to reckon the adequacy of capital for credit and market risks. These securities require no capital charge (involving zero risk weight) for credit risk and relatively low capital charge in respect of market risk, however, to prevent the build of excessive leverage even in non-risky assets and address any model issues in calculating the relative riskiness of assets, a non-risk based regulatory requirement i.e. Leverage Ratio is also applicable on banks in Pakistan as a backstop tool.[23] Banks are required to maintain minimum leverage ratio of 3.0 percent as per Basel standards.

The leverage ratio of Pakistan's banking sector has come down in the last few years due to increase in assets base and exposure, particularly the investment in government securities. The ratio declined from 4.8 percent at end December 2018 to 4.0 percent at end September 2024 – has revived to 4.3 percent in December 2024 (**Figure 3.25**). However, the ratio is still higher than the minimum requirement of 3.0 percent and remained almost stable around 4 percent in recent quarters.

Banks' Exposure to Public Sector and Leverage Ratio **Figure 3.25**



*Exposure to Public Sector = Investment in Government Securities + Public Sector Advances
Source: State Bank of Pakistan

[23] Leverage ratio, a non-risk based constraint on banks' exposures vis-à-vis capital levels, was introduced by the Basel Committee on Banking Supervision in 2014. It is defined as LR = Tier 1 Capital/Total Exposure. Exposure means On and Off balance sheet exposures at their nominal value, without assigning any lower risk weight to government exposures. The Basel III Leverage Ratio (LR) is designed to restrict the build-up of leverage in the banking sector, and to backstop the existing risk-weighted capital requirements (RWRs) with a simple, non-risk-weighted measure. In this context, it is often referred as non-risk backstop measure.

The fiscal consolidation efforts of government remained on track especially in second half of CY24 and during this period, the government also retired a sizeable part of its debt to domestic banking sector. This development has helped in reduction of banks' exposure on government and resulted in increase in private sector credit. However, a sustained reduction in government exposure is essential for a more optimal balance sheet structure of banking sector and increasing the share of private sector in the overall financial intermediation.

Banking sector shows adequate resilience to key financial risks in terms of both contained risks exposures and capital buffers. Besides the results of stress tests (sensitivity analysis), this resilience is also validated by detailed scenario analyses (macro stress tests) which assesses impact of emerging economic environment and severe macroeconomic shocks that could emerge in next three years (**for further details on the scenario analysis, see chapter 4 i.e. "Resilience of the Banking Sector" of this review**).

Box 3.1: Islamic Banking Institutions: Financial Performance and Recent Initiatives to Promote Islamic Finance

The network of IBIs consists of twenty-two (22) Islamic Banking Institutions (IBIs) including six (6) full-fledged Islamic banks and sixteen (16) conventional banks having standalone Islamic banking branches. During CY24, IBIs branch network grew by net 1,062, reaching a total of 6,017 branches by end of December 2024. This expansion was driven by the addition of 750 new Islamic branches and the conversion of 322 conventional branches into Islamic ones. It is important to highlight this was the highest ever increase in branch network of IBIs in any year. Furthermore, Islamic banking windows (dedicated counters at conventional branches) also increased by 331 to reach 2,253 by end December 2024. The expansion of the Islamic banking branch network highlights the continued focus on offering Shariah-compliant products and services and addressing the needs of faith-sensitive customers.

Table 3.1.1: Performance of Islamic Banking Institutions

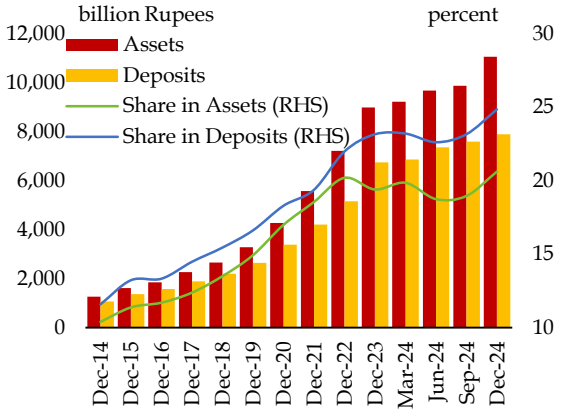
	CY22	CY23	CY24	CY22	CY23	CY24
	IBIs			Conventional Banks		
billion Rupees						
Total assets	7,229	8,994	11,070	28,567	37,369	42,623
Investments-net	3,051	4,235	4,988	15,349	21,784	24,803
Advances-net	3,113	3,335	4,037	8,705	8,843	11,768
Deposits	5,161	6,749	7,905	18,301	22,379	23,887
Borrowings	1,115	872	1,405	6,730	10,801	13,600
YoY Change (percent)						
Total assets	29.6	24.4	23.1	16.7	30.8	14.1
Investments-net	64.8	38.8	17.8	20.8	41.9	13.9
Advances-net	19.9	7.1	21.1	15.7	1.6	33.1
Deposits	22.6	30.8	17.1	4.5	22.3	6.7
Borrowings	66.1	-21.8	61.1	65.5	60.5	25.9
Share within Total Assets (percent)						
Investments-net	42.2	47.1	45.1	53.7	58.3	58.2
Advances-net	43.1	37.1	36.5	30.5	23.7	27.6
Deposits	71.4	75.0	71.4	64.1	59.9	56.0
Borrowings	15.4	9.7	12.7	23.6	28.9	31.9
FDR/ADR*	60.3	49.4	51.1	47.6	39.5	49.3

*FDR=Financing to Deposits ration and ADR=Advances to Deposits ratio

Source: State Bank of Pakistan

Islamic banking sector has seen significant growth, with full-fledged Islamic banks dominating the market. By end of December 2024, full-fledged Islamic banks accounted for 65.6 percent share of the total assets of IBIs, while Islamic banking branches held 34.4 percent share. In terms of deposits, full-fledged Islamic banks held around 63 percent of the total, while Islamic banking branches held around 37 percent of IBI's deposits. With further growth, IBIs now constitute one-fifth share in total assets and one-fourth share in total deposits of the banking sector in CY24 (**Figure 3.1.1**).[24]

Figure 3.1.1
Share of Islamic Banking Institutions in Assets and Deposits of Banking Sector



Source: State Bank of Pakistan

Islamic Banking Institutions (IBIs) experienced significant growth over the last few years and the growth momentum continued during the period under review (**Table 3.1.1**). During CY24, assets of Islamic banks increased by Rs 2,076 billion (or 23.1 percent growth) to reach Rs 11,070 billion by end December 2024. On the funding side, deposits of IBIs rose by Rs 1,156 billion (or 17.1 percent growth) during the period under review and reached Rs 7,905 billion by end December 2024.

The growth in IBI's assets was primarily driven by a rise in investments (mainly Government of Pakistan Ijarah Sukuk), which increased by Rs 753 billion (or 17.8 percent) during CY24, reaching Rs 4,988 billion by end December 2024. On the other hand, IBI's financing also witnessed a significant increase of Rs 702 billion (or 21.1 percent

[24] The market shares of assets and deposits of IBIs in overall banking sector improved to 20.6 percent (19.4 percent in CY23) and 24.9 percent (23.2 percent in CY23), respectively.

growth), totaling Rs 4,037 billion by end December 2024. However, the major increase was in advances of the corporate sector.

Islamic Banking Institutions maintained their soundness

IBIs maintained a sound financial position and contributed to the overall financial stability of banking sector. The non-performing financing (NPF) to total gross financing ratio improved to 3.5 percent in December 2024 and the overall asset quality indicators remained at a comfortable level with provisioning coverage of more than 100 percent and negative net NPF ratios, suggesting muted credit risk to solvency from the delinquent portfolio of IBIs.

Earning indicators such as ROA and ROE showed a mixed trend. After tax profit rose to Rs 273 billion in CY24 from Rs 225 billion in the same period last year. The pace of earnings growth, however, decelerated on year-on-year basis due to falling yields on earnings assets. However, IBIs contributed 42.3 percent of the after-tax earnings of the banking sector in CY24 (around 35 percent share during CY23), much higher than their market share in the overall banking sector.

Liquidity profile of IBIs remained comfortable on the back of increased investments in Sukuk.

Solvency indicators such as CAR slightly moderated to 19.8 percent by end CY24, as higher growth in risk weighted assets on the back of significant increase in advances outpaced the growth in capital. Nonetheless, the CAR which mainly comprised Tier-I capital was well above the minimum regulatory requirement of 11.5 percent as well as higher than the overall CAR of the banking sector (**Table 3.1.2**).

Financial Soundness Indicators of Islamic Banking Institutions **Table 3.1.2**

percent

	Dec-22	Dec-23	Dec-24
Asset Quality			
NPFs to Total Financing	2.6	3.8	3.5
Provision to NPFs	96.1	91.5	117.7
Net NPFs to Net Financing	0.1	0.3	-0.6
Net NPFs to Capital	0.8	1.7	-3.0
Earnings			
ROA before Tax	2.9	4.9	5.1
ROA after Tax	1.7	2.8	2.8
ROE before Tax	51.4	75.5	65.6
ROE after Tax	30.5	43.2	36.0
Liquidity			
Liquid Assets to Total Assets	41.6	49.1	47.1
Liquid Assets to Total Deposits	58.2	65.4	66.0
Liquid Assets/Short term Liabilities	88.6	112.1	101.4
Financing to Deposits	60.3	49.4	51.1
Customer Deposits to Total Financing	149.5	177.1	171.5
Capital			
Total Capital to Total RWA	17.8	20.7	19.8
Tier 1 Capital to Total RWA	15.0	17.3	16.3
Capital to Total Assets	5.9	7.3	7.9

Source: State Bank of Pakistan

B. Update on implementation of FSC's judgement

It may be recalled that the Federal Shariat Court (FSC) announced its judgement with respect to 'Riba' case on April 28, 2022. In pursuance of FSC's judgement, the federal government constituted a high-level Steering Committee (SC) in December 2022, entrusted with the vital task of providing strategic guidance for the effective implementation of FSC's judgment on Riba. State Bank of Pakistan (SBP) also established a high-level Committee for Transformation (CT) of conventional banking into Islamic. Under the Committee, seven working groups and their 35 work streams/sub-work streams are actively engaged and meeting frequently to perform assigned tasks.

The path is beset with some challenges, including full conversion of public debt to Shariah-compliant instruments, need of Shariah-consistent framework for implementation of monetary policy, need to reform laws and judicial system, scarcity of skilled human resources, among others (For details see **"Box 3.2 - SBP's Strategy to transform the banking sector to Islamic mode – key challenges and opportunities" in FSR 2022**). Various working groups and work streams under CT have made major progress in their respective areas. Some key developments include: complete assessment of legal and regulatory framework to ensure its alignment with the Shariah principles; launch of a comprehensive campaign to create awareness about Islamic banking , roll out of capacity building strategy for key stakeholders for improving and developing the skilled workforce for the Islamic banking industry, developing

hybrid Sukuk structure, issuance of broad guiding parameters to facilitate banks in their conversion from conventional to Islamic.

C. Policy Initiatives:

i. Guidelines for conversion of conventional banks into Islamic - Broad parameters

In order to facilitate banks in their conversion from conventional to Islamic, SBP vide IFPD Circular No. 03 of 2024 prescribed broad guiding parameters, which will help banks to devise their own conversion plans.

ii. Facilitation in conversion of conventional banking branches into Islamic banking branches

In order to facilitate banks and streamline the process for conversion of their conventional branches, SBP has revamped the criteria in October 2024 vide SBP IFPD Circular No. 05 of 2024. The revised criteria mainly include disclosure requirements for conversion of accounts, permission for use of digital channels/ means for seeking consent from customer for conversion, permission for conversion of current accounts from conventional to Islamic after exhausting all measures for seeking customers' consent, flexibility in conversion process by allowing permission to establish virtual conventional cost center(s), flexibility in safekeeping of securities/collaterals during phase out of conventional portfolio and facilitation in reporting line.

iii. Shariah Governance Framework for Islamic Banking Institutions (IBIs)

To align with international best practices and recent developments in the Islamic banking industry, SBP has further strengthened Shariah Governance Framework (SGF) in November 2024 vide IFPD Circular No. 8 of 2024.

iv. Profit Sharing on Saving Deposit of Islamic Banking Institutions (IBIs)

SBP issued instructions on profit sharing on saving deposits of IBIs in November, 2024 vide SBP IFPD Circular No. 09 of 2024. As per aforesaid instructions, with effect from January, 2025, all IBIs have been advised to pay profit on their PKR saving deposits (excluding deposits of financial institutions, public sector enterprises and public limited companies) equivalent to at least 75 percent of the weighted average gross yield of all pools of an IBIs.

v. Adoption of AAOIFI Shariah Standards

In order to further strengthen standardization and to harmonize Shariah practices in the IBIs, SBP adopted 15 additional Shariah standards of Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) during CY24. With adoption of these standards, total number of AAOIFI Shariah standards adopted by SBP stood at 38 by end December, 2024. All the adopted standards are also available in compendium of Shariah standards vide IFPD Circular No. 07 of 2024 to provide ease of access to the end users.

vi. Awareness Creation and Capacity Building Initiatives:

SBP through its subsidiaries (i.e. SBP BSC and NIBAF) intensified its efforts to engage with the business community, government officials and academia to promote Islamic banking. As part of these initiatives, over 20 sessions were held with leading chambers of commerce and industries across Pakistan, more than 30 sessions were conducted nationwide with university students and faculty, along with an equal number of sessions for Madaris students. Further, various specialized capacity-building programs were organized for government departments, Shariah scholars, academia, bankers and judiciary. These programs aimed to equip stakeholders with essential knowledge of Islamic finance, enabling them to contribute effectively to the industry's development.

Box 3.2: Artificial Intelligence's interaction with Climate Change and Supervisory Objectives

Background:

Digital transformation and climate change[25] are the two most powerful trends that appear to re-shape global economy over the coming years. These forces are not only posing serious challenges to the globe independently, their increasing interaction also involves both positive and negative implications for economic and financial stability. Artificial Intelligence (AI)—the science of making computers perform complex tasks typically associated with human intelligence—is a powerful tool for advancing and scaling up transformative climate action. It can improve the effectiveness of decision making and can also help in mitigating risks arising from climate change, by efficiently handling the complex and large size datasets and scenarios involved.[26] However, energy intensive aspect of AI technology involves environmental concerns and its ineffective use in the financial sector may pose supervisory challenges relating to operational failures, cyber-attacks, conduct, and increased volatility in financial markets, among others.

AI is helping to address climate challenges and improve efficiency:

AI is already contributing in climate-resilient and low-emissions development in several ways. For instance, it is helping to measure changes in icebergs with incredible pace (10,000 times faster than humans could do).[27] Besides providing more advanced warnings for extreme weathers, AI is supporting to map the impact of deforestation on the climate crisis. Further, AI technology is being utilized to make waste management more efficient. In addition, AI is being utilized to reduce plastic pollution from ocean.[28] Particularly, AI has impressive capacity to gather, complete, and interpret large datasets thus supporting data driven decisions for climate action.

AI and environmental concerns:

Nonetheless, AI could be a double edged sword. The concerns arise from the fact that the infrastructure required to run AI is energy and resource intensive.[29] For example, training a large language model (LLM) such as OpenAI's Generative Pre-trained Transformer (GPT)-3 consumes thousands of megawatts of electricity and emits 300,000 KG of carbon dioxide equivalent.[30] Besides consuming substantial quantum of electricity, the data centers then need a significant amount of water to cool, leading to strain on local water resources. Moreover, these data centers—which run AI systems—often rely on non-renewable energy sources.[31] Worryingly, rapid growth in AI technology is leading to increased number and size of data centers and consequently amplifying their impact on the environment. The extent of growth is manifested by a recent international survey, which indicates that around 75 percent of organizations have adopted AI for one or more business operations.[32] According to International Energy Agency , the AI, cryptocurrencies, and data centers together accounted for two percent of world's power demand in 2022 which could double and match electricity consumption of Japan by 2026.[33] Nonetheless, Chinese AI DeepSeek R1 technology, introduced in January 2025, may offer significant help in addressing climate concerns if it proves to be energy efficient.

In addition to the energy intensive nature of AI, another serious environmental concern relates to electronic waste generation. Rapid technological advancement is resulting in high turnover rate leading to increased accumulation of

[25] According to World Health Organization (WHO), almost four billion people are living in areas highly vulnerable to climate change

[26] What opportunities and risks does AI present for climate action?

[27] 9 ways AI is helping tackle climate change

[28] Ibid

[29] AI is supposed to make us more efficient – but it could mean we waste more energy

[30] AI can help us fight climate change. But it has an energy problem, too

[31] Zhuk, A. (2023). Artificial Intelligence Impact on the Environment: Hidden Ecological Costs and Ethical-Legal Issues. Journal of Digital Technologies and Law, 1(4), 932-954.

[32] Artificial intelligence: a central bank's view

[33] The environmental cost of AI

electronic waste. As per Global E-Waste Monitor 2024, 62 million tons of *e*-waste was produced in 2022, showing a staggering increase of 82 percent from 2010. This is likely to increase by another 32 percent in 2030.[34]

AI and supervisory concerns with regard to conduct and financial soundness

A highly important aspect of AI is to assess the systemic risks on financial institutions and their customers. For instance, high technological penetration[35] and supplier concentration[36] could expose financial institutions to losses arising from operational failures, cyber-attacks and supply chain disruptions affecting key vendors.[37] Further, increased use of AI models with similar characteristics could augment asset price vulnerabilities due to increased correlations in financial markets.[38] Furthermore, AI models may have implications for the integrity of financial institutions resulting from discriminatory customer treatment due to algorithmic biases.[39]

In this regard, financial sector regulators and supervisors need to ensure responsible use of AI by adequately managing the risks of AI applications without compromising innovative efforts. It is important to note that European Artificial Intelligence Act—the first comprehensive Act worldwide—has entered into force from August 01, 2024.[32] It prohibits AI systems that pose "unacceptable risks" such as social scoring[33] that threaten fundamental rights of citizens. The Act, however, authorizes a wide range of AI systems that entails "high risks" to public health and safety, subject to a set of requirements and regulations.

In Pakistan's case, '*Guidelines on the Responsible use of Artificial Intelligence* (***AI***) *in Financial Services*' are at an advance stage of finalization at SBP, with the objective to foster trust, transparency and accountability in AI-driven financial services, while safeguarding the rights and interests of the consumers.

AI and the banking industry:

With AI adoption surging across different sectors, the global banking industry is also increasingly embracing these technologies.[40] The most commonly adopted AI technologies by banks include robotics, process automation (for structured operational tasks), virtual assistant (for customer service), and machine learning techniques (for fraud detection and risk management).[41] In case of Pakistan, financial institutions are also embracing AI technology. The results of the SBP's first survey on use of AI in banks reveal that about half of the regulated entities have either deployed AI in financial services, or are in the process of development. Moreover, survey indicates that the AI is being used for a variety of financial services, including fraud detection, customer services, marketing, credit risk assessment, process automation etc. In this context, banks need to take care of associated risks of AIs and incorporate carbon footprint of AI into their risk management frameworks, introducing it as a specific risk category. This requires relevant risk identification, assessment, development and implementation of adequate risk mitigation strategies.

The foremost step is to recognize the potential environmental risks associated with the adoption of AI systems. It is imperative to note that the most commonly used AI technologies in the banking sector are among the most energy intensive owing to real time processing and high accuracy requirement. After risks identification, banks need to measure the emissions associated with AI models throughout their life cycle.[42] Carbon accounting tools such as GHG

[34] The global E-waste Monitor 2024
[35] When AI is widely adopted across different financial entities for an increasing number of processes and applications
[36] When a majority of financial institutions use the same or very similar foundation models provided by a few suppliers
[37] Leitner, G., Singh, J., van der Kraaij, A., & Zsámboki, B. (2024). *The rise of artificial intelligence: benefits and risks for financial stability. Financial Stability Review,1*.
[38] Board, F. S. (2024). *The financial stability implications of artificial intelligence*.
[39] Algorithmic bias *results in unfair outcomes due to skewed or limited input data, unfair algorithms, or* exclusionary practices during AI development
[40] According to McKinsey Global AI Survey in 2021, almost 60 percent of the financial sector's respondents revealed that their firms were using at least one AI capability.
[41] McKinsey (2021). Building the AI Bank of the Future
[42] Tkachenko, N. (2024). Integrating AI's Carbon Footprint into Risk Management Frameworks: Strategies and Tools for Sustainable Compliance in Banking Sector. arXiv preprint arXiv:2410.01818.

Protocol Toolkit[43] and OpenLCA[44] could help assess the concrete environmental impact. Finally, banks must implement risk mitigation strategies to contain the environmental impact of their AI systems. The energy efficient AI models and algorithms could help address climate concerns. Another way is green cloud computing practices — data centers that are powered by renewable energy sources. Incorporating AI carbon concerns into existing risk management frameworks and treating emission risks with same level of importance along other traditional risks is critical. It is noteworthy that International Financing Reporting Standards (IFRS) S1 and S2 also require companies to disclose information about all sustainability-related risks and opportunities specifically about climate related exposures.[45] In Pakistan, the adoption of these standards have been proposed in a phased manner, initially starting with listed companies on the basis of certain criteria, such as total assets, turnover and number of employees.[46] It deserves emphasis that banks must define risk appetite and tolerance level for AI's carbon footprint. By setting thresholds, banks would ably deploy AI system balancing operational efficiency with environmental concerns.

[43] GHG Protocol tools enable companies and cities to develop comprehensive and reliable inventories of their GHG emissions, and help countries and cities track progress toward their climate goals.
[44] OpenLCA is a free and open-source software tool for conducting Life Cycle Assessments (LCAs) and other sustainability assessments.
[45] Introduction to the ISSB and IFRS Sustainability Disclosure Standards, available at: https://www.ifrs.org/sustainability/knowledge-hub/introduction-to-issb-and-ifrs-sustainability-disclosure-standards/
[46] SECP Press Release: adoption of IFRS Sustainability Disclosure Standards, available at: https://www.secp.gov.pk/wp-content/uploads/2025/01/Press-release-on-Jan-1.pdf