Quantitative Easing-II and the State of Japanese Banks' Portfolio Rebalancing and Financial Performance

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Abstract: The Bank of Japan (BOJ) started the second quantitative easing (QE-II) measure in 2013 to infuse easy money into the economy to kickstart growth and overcome deflation. The policy was expected to transmit and work in the economy through interest rate, portfolio rebalancing, and expectations in the financial markets to affect the economy positively. However, a prolonged low interest rate, a sustained decline in borrowers' loan demand and the huge asset-buying measures under QE-II put pressure on Japanese banks. Lately, Covid-19 has added further stress on them to affect their financial performance as BOJ has continued to pursue the loose monetary policy to lower the economic impact of the pandemic. This paper makes an attempt to find how Japanese banks have been trying to address these challenges through rebalancing their portfolios of assets and liabilities. It also analyzes the changes in their financial performance in the post-2013 period. Financial variables like profits, productivity (return on asset or ROA and return on equity or ROE), net interest margin (NIM) and non-performing loans (NPLs) have been accepted for the performance measurement of the banks. The research finds that there is no substantial rebalancing of banks' financial portfolios while their financial performance has been adversely affected during QE-II. Covid-19 has added further pressure on their performance variables as well. Internal and external economic developments, however, suggest that the BOJ may now seriously reconsider its negative interest policy and opt for tapering the QE policy.

Keywords: Japan; Quantitative Easing; Banks; Portfolio; Financial performance

1. Introduction

Japan, the third-largest global economic power, has developed a large and sophisticated financial industry for the smooth operation of its economy. In this industry, there is a high degree of connectivity between the central bank, commercial banks, and industry. Due to banks' strong and critical involvement in monetary, financial and growth-related activities, Japan has still remained a bank-dominated economy[1]. The economic power of banks may be substantiated by the existing 'ratio of bank assets to GDP' of Japan. In 2017, the Global Economy ranked Japan in 5th place when banks' assets stood at 160 percent of its GDP, while the US was ranked 62, making it an economy dominated by the market. (Fig. 1).

Indeed, the banking sector of Japan has transitioned from a human-based to a technology-based service sector in the last three decades. In that journey, this industry faced many challenges including economic recession and the global financial crisis (GFC) of 2007-08. To overcome the economic and financial fallouts of GFC, BOJ initiated a massive monetary easing under the quantitative easing

policy for the second time in 2013 to infuse $1.4 trillion to make large-scale purchases of financial assets from the markets.
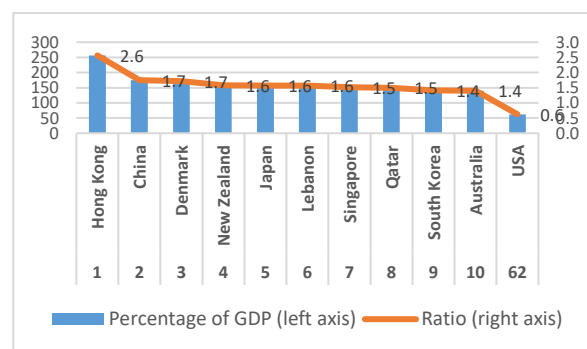

Fig. 1: Rank and Bank Assets to GDP Ratio and Country Rank, 2017. (Source: https://www.theglobaleconomy.com/rankings/bank_assets_GDP/)

The whole QE-II mechanism was expected to transmit and work in the economy through three interconnected channels: interest rate, portfolio rebalancing, and

expectations[2]. Indeed, gaps between long-term and short-term interest rates had shrunk as the QE-II progressed. Their gaps became negligible after the negative rate interest announcement in 2016[3]. Similarly, BOJ has crowded out financial markets by purchasing relatively safe assets, including Japanese Government Bonds (JGBs), and even increased buying of Exchange Traded Funds (ETFs) to prop up Nikkei 225. Moreover, as a response to Covid-19, BOJ had to step up its QE operations, making it the longest QE program in the world. In all, the bank is estimated to have spent more than \$5 trillion in asset buying under QE-II by 2020[4].

These measures of BOJ also coincided with a continuing shrinking population and a drop in loan demand by the non-financial private firms, lately more due to Covid-19. Facing all these challenges, Japanese banks, started rebalancing their portfolios to risky assets by buying corporate bonds, investing in real estate, making foreign portfolio investments, etc., to enhance profitability. They began cross-border lending and investment as an extension, focusing on several Asian emerging markets (AEMs).

However, the steps taken by the Japanese banks have not been able to deflate the adverse effects on their financial performance. Indeed, in most of the performance measures like ROA, ROE, NIM, NPL, operative efficiency, etc., Japanese banks have mostly declined since 2013. The appearance of Covid-19 in 2020 has added further pressure on their various performance indicators. This study has tried to find the state of portfolio diversification and financial performance of Japanese banks since 2010 to see how QE-II has affected those variables have been affected since 2013 up to the interim-Covid-19 period.

The rest of the paper has been divided into six more sections. Section 2 examines the structure of Japanese banking systems, while Section 3 provides a brief assessment of the literature. The methods used in the study are discussed in Section 4. Section 5 examines portfolio diversification and financial performance of Japanese banks to find the impacts of QE-II. A further assessment of the results has been made in section 6. In the whole paper, Covid-19 has been included to find how banks have been doing during this pandemic time. Section 7 concludes the paper.

2. Banking structure in Japan

Commercial banks in Japan fall in the category of private financial institutions. They are divided into major nationwide and smaller regional banks. Japan also houses many foreign commercial banks in its domestic markets. Figure 2 has been drawn to give a brief picture of the Japanese financial and banking system. Though the Japan Post Bank is a vital component of the financial market, it is still treated as a financial institution but not a bank. It was one of the largest financial institutions globally[5] and one of the world's largest savings institutions. However,

JPB is a subsidiary of Japan Post Holdings, a government-owned company. As a result, it has yet to be classified as a commercial bank. Going by the size, we find that City Banks and Trust Banks are the two major clusters of banks in Japan that have nationwide presence. Two associations, Regional Banks I and Regional Banks II, represent regional banks. It should be noted that since 1989, all regional banks have been operating as commercial banks[6]. Let us have a short discussion about the types of banks in Japan for a better understanding of the sector.
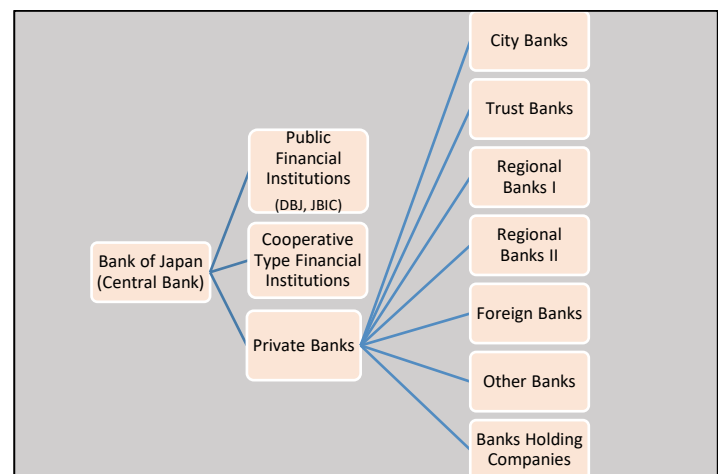

Fig. 2: Japanese Financial and Banking Structure. (Source: Constructed. Japanese Bankers Association, https://www.zenginkyo.or.jp/en/banks/financial-institutions/)

2.1 City banks

They are 4 large commercial banks with a nationwide presence through 2,781branches to serve primarily major corporations with full banking services (traditional and non-traditional). They have headquarters in large cities and have a comprehensive range of financial and banking services. City banks dominate most of the domestic market segments and are also engaged in overseas operations[7,21] In the 2020, they had a total deposit of more than ¥352 trillion[8].

2.2 Regional banks I

There are 65 small-sized commercial banks in this category. They offer retail banking and primary financial services to their regional customers. By their wide geographical presence through 7,606 branches in major prefectural cities of Japan, they also maintain strong ties with local governments. Local small and medium-sized firms (SMEs) make for more than 80 percent of their borrowers, and individual deposits account for over 70 percent of total deposits[6]. In 2020, they accumulated more than ¥268 trillion of deposits[8].

2.3 Regional banks II

The Second Association of Regional Banks began as

mutual (Sogo) banks, but under the 1992 Banking Act, they were turned into regional banks[7]. These banks focus on providing the financial needs of local individuals, corporations, small businesses, and government entities as their primary goal is to contribute to the region's social and economic development[6]. There are 38 smaller Regional Banks II with 2,967 branches that serve smaller companies and individuals within their immediate geographic regions. These banks have a total deposit of about ¥61 trillion in 2020[8].

2.4 Trust banks

They are big banks that provide trust services, long-term financing, fund management for big businesses, and pension fund advice. Participation in the real estate lending market is also part of their business portfolio. In 2020, there were 13 trust banks with 270 branches that had a total deposit of about ¥45 trillion[8].

Japanese banks maintain a wide range of accounts for their customers. Figure 3 gives an idea of the types of bank accounts and levels of deposits these accounts had in 2020 in different banks. Seemingly, the depositors in Japan prefer to maintain more ordinary and time deposits in banks[1].
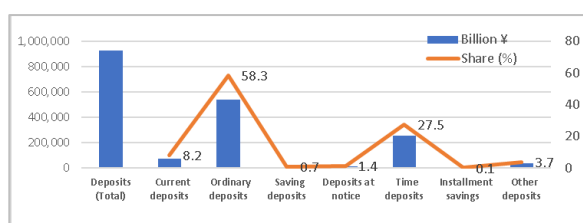

Fig. 3: Types and amount of bank deposits, 2020. (Share in %) (Source: Constructed. Japanese Bankers Association, https://www.zenginkyo.or.jp/en/stats/year2-01/)

3. Literature review

The review of literature focuses on the background of quantitative easing, and performance issues of Japanese banks. As we know, in addition to a proactive government, the financial and banking sector aided Japan's rise to global economic power. Not only that, but Japan's economy is also still considered bank dominated. Indeed, during the "catching-up" phase that typified the postwar years until roughly the mid-1970s, the Japanese main bank system played a vital role in the postwar reconstruction and development process[9]. According to Aoki, Patrick, and Sheard (1994 33–35), the main banks functioned as quasi-insider monitors of the borrowing firm and mediator

when borrowers were stressed.

Following World War II, the main bank became the epicenter of the Keiretsu business model developed by Japanese firms. Numerous Japanese businesses maintained extremely close ties with the main bank, typically a City Bank or occasionally a Regional Bank, from which they borrowed working capital. Interestingly, a close and symbiotic relationship known as the convoy system between the Ministry of Finance (MOF) and the major banks contributed to lessen uncertainty for both lenders and borrowers during this period[9].

The partnership between corporations and banks, as well as the global demand for Japanese products, increased thereafter. In doing so, a large number of Japanese companies become household names worldwide[2]. In 1990, Japan had the six largest banks in the world, as measured by Tier 1 capital[3]. After the stock market crash of 1990, Japan's economy remained stagnant throughout the 1990s. According to Abe[10], concurrent corporate expansion demonstrated that Japan suffered from "three excesses": surplus equipment, excess employment, and excess debt. There was a connection between banks and the third excess in the business sector.

To overcome the 1990s economic recession, BOJ launched first QE in March 2001 when the term Quantitative Easing was coined. QE-I lasted five years to end in March 2006. the BOJ's asset-purchasing objective reached 35 trillion over this time period, and this policy drove short-term interest rates to zero (Spiegel, 2006). Again, as part of Abenomics[4], the BOJ resorted to QE measures in April 2013 to address persistent deflation and a rolling recession. QE-II was implemented to mitigate the effects of the global financial crisis of 2007-2008[5]. Since then, the BOJ has pursued a policy of loose money that has become the longest-running quantitative easing program in the world. William estimated that the BOJ's balance sheet has been extended by more than $5 trillion in QE-II asset purchases[4]. Covid-19 has assured the continuation of cheap monetary policy (QE) for the foreseeable future.

Since the 2008 financial crisis, central banks of major economies have, on a regular basis, begun studying the effects of quantitative easing (QE) after beginning bailout packages. The review of literature shows that there are alternative theories in place to deal with this kind of issue. They include portfolio balance theory or segmented market theories, preference habitat theory, signaling theory, and so on. This study has not followed any particular strand of theories to deal with the QE-II of Japan and its tentative impacts on Japanese banks' portfolio diversification and their financial performance.

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[1] The most common types of bank accounts in the United State include Checking accounts, Savings accounts, Money market accounts (MMAs) and Certificate of deposit accounts (CDs)[37].
[2] They include firms Sony, Toshiba, Sharp, National, Mitsubishi, Toyota, Honda, Nissan, Panasonic, etc.

[3] They included Sumitomo Bank (#1), Dai-Ichi Kangyo Bank (#2), Fuji Bank (#3), Sanwa Bank(#4), Mitsubishi Bank # 6 and Industrial Bank of Japan (#10) (The Banker, 1990).
[4] Abenomics had three arrows: (i) aggressive monetary policy, (ii) fiscal consolidation, and (iii) growth strategy).
[5] In Japan, the global financial crisis of 2007-08 is known as the 'Lehman Shock.'

A review of the literature revealed no substantial research addressing the implications of Japan's QE-II on the rebalancing of banks' portfolios or their financial performance. Nevertheless, Williamson[11] tried to examine and understand how well quantitative easing as a monetary policy tool works in the economy. The portfolio rebalancing channel in the United States, United Kingdom, and Eurozone is supported by studies such as Albertazzi et al. [12], Gagnon et al.[13], and Jouvanceau[14]. Chari et al.[15] examine the disproportionate flow of funds and their interest rates during the United States' quantitative easing and tapering phases in relation to the tapering issue. The Bank of Japan's Financial System Report for October 2019[16] mentions the banks' overseas portfolio diversification due to QE. Shirai[17] examined how the unconventional monetary policy "since 2013 has contributed to the yen's depreciation, higher stock prices, and higher corporate profits." But the study missed the banking sector altogether for any assessment. Kihara[18] explains how the BOJ is removing QE stimulus gradually through a variety of techniques.

Academic research on the profitability and cost effectiveness of Japanese banks has been limited, particularly since 1996. Utilizing parametric and nonparametric approaches, the vast majority of research has studied the cost and overall technical efficiency of Japanese banks[6]. According to Fukuyama[19], the majority of large (City) banks operated at or near their maximum levels of efficiency. In contrast, Altunbas[20] demonstrated that, when risk and quality variables were taken into account, the Japanese banking system revealed scale inefficiencies and that banks should have been smaller than they were at the time. IMF[21] stated that the low profitability of the Japanese banking sector was mostly attributable to low revenues rather than high expenses. Loukoianova used data envelopment analysis (DEA) to examine the cost and revenue effectiveness of banks[6]. The study concluded that despite the fact that Japanese bank profitability is low compared to other developed nations, their performance has gradually increased since 2001. However, within the banking industry, regional banks are less cost- and revenue-efficient than City and Trust banks.

Non-performing loans (NPLs) or problem loans have clogged the Japanese banking system for so long that their impact on bank efficiency has been the exclusive subject of research. Drake and Hall[22] and Liu and Tone[23] analyzed the efficiency of Japanese banks in terms of NPAs and problem loans. Fukuyama and Weber[24] contend that problem loans should be considered undesirable because they only manifest after the loan has been made. The measurement of the technical efficiency of Japanese banks (2000-2007) by Barros et al.[25] utilizing a non-radially oriented methodology resulted in the emergence of problem loans. Glass et al.[26] measured the technical efficiency of Japanese cooperative banks (Shinkin and Shinkumi) between 1998 and 2009 and viewed nonperforming loans as an undesirable outcome.

It should be emphasized that more studies on the efficiency of Japanese banks have employed nonparametric methods, notably DEA, than have employed parametric methods[27]. Examples of parametric studies include Altunbas et al.[28], Uchida and Satake[29], Assaf et al.[30], and Glass et al.[26]. According to Assaf et al.[30], only about 28 percent and 43 percent of Shinkin banks experienced productivity and efficiency, respectively, between 2000 and 2006. Other studies, like Liu and Tone[23], Drake et al.[31], and Fukuyama[32] employed a slack-based metric to measure technical inefficiency. Glass et al.[26], utilizing Cuesta et al.[33] augmented hyperbolic output distance function, demonstrate that Japanese credit cooperative banks are too small and operate with growing returns to scale. More efficient banks have a lower return on assets and a higher capital adequacy ratio.

This literature review demonstrates that no other study has examined the state of the portfolio diversification and financial performance of banks in Japan after the implementation of QE-II. Consequently, this research is intriguing, and pertinent to the current circumstance.

4. Objectives and methodology of the study

The study has a broader objective to find the state of the portfolio diversification and financial performance of banks in Japan after Japanese QE-II policy implemented in 2013. The state of portfolio diversification has been explained by looking at the changes in various components of assets and liabilities of all four major types of domestic banks. Similarly, to assess the financial performance in the aftermath of QE-II, changes in variables like ROA, ROE, NIM, and NPL have been calculated and included in the study. Of the four variables, as we know, the first two measure the financial productivity of assets while the latter two indicate the efficiency of asset management of the firm.

Secondary data from the Japanese Bankers Association (JBA) and the databank STATISTA has been extensively used in this study. JBA maintains data for all domestically registered commercial banks of Japan. That includes the clusters of City Banks, Trust Banks, Regional Banks I, and Regional Banks II, comprising about 112 banks. It also maintains a combined balance sheet for all these banks. Data from the STATISTA, a data bank, has been extensively used to analyze various financial ratios. For assessing the state of portfolio rebalancing and changes in portfolios of banks, the study covers a period from 2010 to 2021.

There are various research approaches that can be used to study the issue of portfolio diversification of banks as a response to the quantitative monetary measures of the BOJ and the consequential changes in their financial performance. They may be approached like event studies, regression or VAR modeling, calibrated model simulation method, etc. However, this study has employed

exploratory and descriptive methods to conducting qualitative and quantitative analysis to attain the objectives of the study as followed by other studies too[34),35),36)]. The adoption of this method has been influenced by the fact that since the beginning of 2020, banks in Japan have been facing the economic consequences of Covid-19 too. But any separation of the impact of Covid-19 from that of QE-II on the performance of banks is still a difficult proposition. So, the study has tried to elaborate on the state of banks' portfolio diversification and financial performance by using exploratory and descriptive methods.

As indicated, the analysis period has crossed into the 1st year of Covid-19 when QE-II was also placed with full capacity, data that proves or reflects the effects of Covid-19 on the performance of banks has been included. Even though this is primarily a descriptive study, it has adopted a hybrid approach that includes a framework derived from the literature to identify research objectives and make arguments.

5. QE-II in 2013 and state of portfolio rebalancing and financial performance

BOJ has used interest rates as one of the channels of transmission of QE effects in the economy. So, it may be helpful to discuss the interest rates scenarios of Japan for a better understanding of the subsequent developments in banks' portfolios and their financial performance. Indeed, interest rates can play a significant role in affecting the financial health of the banking sector by influencing their investment and financing decisions.

5.1 Interest rates since QE-II

The QE-II of Japan in April 2013 under Abenomics was to combat protracted deflation and the rolling-recession. Since then, the BOJ has been following the same policy, making it the world's longest-running QE program. BOJ's balance sheet is believed to have been stretched by more than $5 trillion in asset purchases under QE-II[4)] The principal policy variables BOJ used for the QE-II are interest rates. Other programs included in the policy are loan and fund support and buying of assets of different terms from the markets to affect the financial markets and the economy (Table 1).

In fact, Japan had one of the world's lowest interest rates since 2002 when QE-I was implemented. However, since QE-II in 2013, interest rates have fallen even further. Furthermore, since January 2016, BOJ has offered a negative interest rate of -0.1 percent on new deposits made by financial institutions to persuade them to engage in more aggressive lending in the economy instead of keeping their money with the central bank. The uncollateralized call rate of interest has remained negative since 2016 (Fig. 4).

To mitigate the Covid-19 effects, BOJ offered financial support to institutions at a rate of just 0.1 percent interest rate. It also continued buying exchange-traded funds (ETFs), real estate investment trusts (J-REIT), government and corporate bonds, commercial papers (CPs), etc., from the markets (Table 3). Thus, Covid-19 has guaranteed a longer duration for the easy monetary policy and its implication for financial institutions, including banks.

Table 1. BOJ – Monetary Policy Before and During the Covid-19 Crisis.

Post-2010 to Covid-19 Crisis				During the Covid-19 Crisis		
Policies and Objectives		Date	Policy Rate (in pc)	Policies and Objectives	Date	Policy Rate, Quantity, etc.
Loan Support Program	Strengthen the Foundations for Economic Growth	2010.6	0.0	Special Funds-Supplying (Facilitating) Finance in Response to COVID-19	2020.3	¥120 trillion (until Sep 2021) 0.1pc interest on current account according to balance
	Stimulate Bank Lending	2012.12	0.0	Annual purchase of ETFs and J-REITs	2020.3	＜ETF＞ Maximum annual ¥12 trillion ＜ J-REIT ＞ Maximum annual ¥180 billion
Short-term interest rate guidance target		2016.01	▲0.1	Purchase of corporate bonds, commercial paper (CP), etc.	2020.3	Balance upper limit total about ¥20 trillion
				Purchase of government bonds	2020.3	Unlimited (increase after February is ¥50 trillion)
				US dollar funding operation	2020.3	Unlimited Lending interest rate reduced by 0.25pc

Source: Modified [37)].

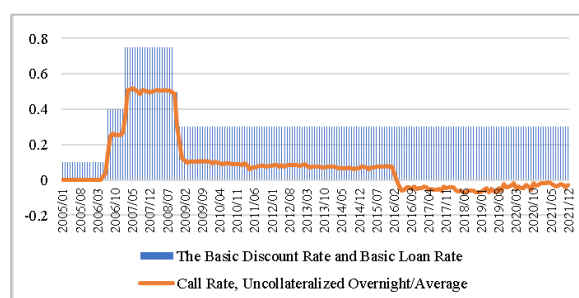Notes: ETFs - exchange-traded funds, J-REITs - real estate investment trusts, and pc – percent.

Fig. 4: Japan - Basic Discount Rate and Call Rate, 2005-2021 (Source: BOJ, https://www.stat-search.boj.or.jp/ssi/cgi-bin/famecgi2?cgi=$ap181g3f_en)

The World Development Indicators (WDI) of the World Bank (WB) provides statistics of three interest rates, including the interest rate on deposits, the interest rate on lending, and the real effective interest rate well as the interest rate spread. In 2014 and 2015, the real interest rate in Japan was -0.46 and -0.95, respectively (Fig. 5). Furthermore, in 2017, the loan interest rate fell to 0.99 percent, the lowest in the data period shown in the graph. As we know, interest received from lending is the conventional way of higher income for banks. So, Japanese banks feel the pinch in this ultra-low interest climate.

However, BOJ seems to have realized the stress Japanese banks, particularly smaller regional ones, are facing due to the QE-induced prolonged low interest rate and challenges of portfolio rebalancing. In November 2020, it announced to pay 0.1% interest to regional banks that consolidate or act to boost profitability[38] BOJ is also offering 0.2% interest to financial institutions that tap its loan programs. Covid-19 has ensured that the QE policy will remain in place for a while with the same key rate.
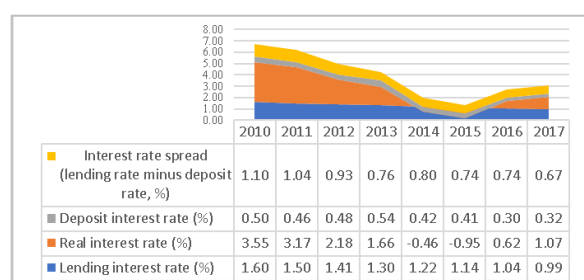

Fig. 5: Interest structure in Japan, 2010 – 2017. (Source: WB, https://databank.worldbank.org/source/world-development-indicators)

5.2 Diversification of portfolios of Japanese banks since QE II

One of the goals of QE-II in 2013 was to encourage banks to rebalance their business portfolios so that Japan could overcome prolonged economic recession and rolling deflation due to the global financial crisis of 2007-08[2]. Our discussion on the impacts of QE-II begins with the analysis of the portfolios of assets and liabilities of banks in Japan to see whether any remarkable shift or diversification has taken place between the ex-ante and post-2013 periods. Relatedly, a portfolio shows the combination of assets and liabilities of a business entity. So, any rebalancing in the portfolios may have ramifications of any business entity's financial, efficiency, and risk-related matters.

Figure 6 shows that the total assets of Japanese banks have been steadily growing from 2010 to 2019. At the same time, the trend maintained a slow but almost linear line, though a higher level of growth was followed in 2013, 2016, and 2019.
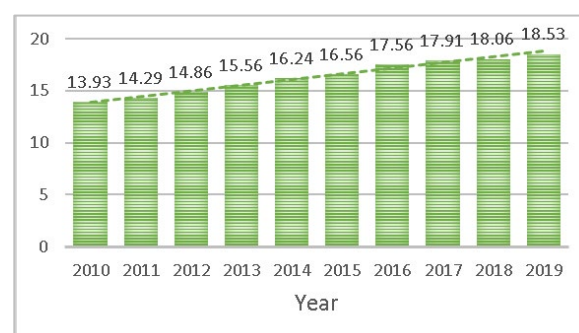

Fig. 6: Value of total banks assets in Japan, 2010 – 2019 ($ Trillion)

Actually, loans constitute a significant part of the portfolio assets of banks. Part of the asset growth in Japan may be explained by the increase in the loan amount of banks, reaching ¥543.9 trillion in 2021 from ¥419.8 trillion in 2012. Figure 7also shows that loans grew all the years, though at varying rates, and never declined below 2 percent. However, 2021 saw the highest growth of 4.8 percent. The loan growth in 2021 may be explained by the people's expectation of recovery from Covid-19, as Japan managed the pandemic better. However, another wave of infection began in December 2021, which may slow down the growth of bank loans.
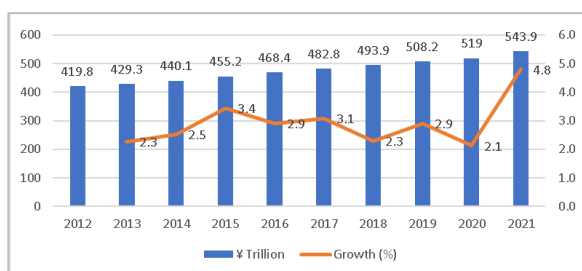
Fig. 7: Loans outstanding, 2012 – 2021 (¥ Trillion). (Source: Statista)

A further brake-up of the loan portfolio shows banks' involvement in the real estate sector, including housing (Figs. 8, 9, and 10). An analysis of data from Fig. 8 and Fig. 9 shows that banks have remained highly involved in the real estate sector. For example, in 2016, about 15 percent of the total loan outstanding was real estate. In 2020, this went up to 16.8 percent of the total. When we look at the industry-wise loan outstanding, the real estate share is the highest, as is evident in Fig. 8.

Though outstanding loans for housing were still increasing till 2019, outstanding consumer loans peaked in 2016 and started declining thereafter. Interestingly, both new consumer loans and housing loans declined in 2019 (Fig. 10), even though Covid-19 was not in the picture to disrupt everything.
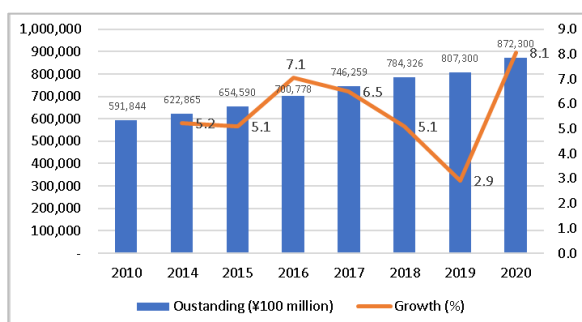

Fig. 8: Outstanding bank loans in the real estate sector and rate of growth, 2020 – 2020. (Source: Constructed. Data from Statista)
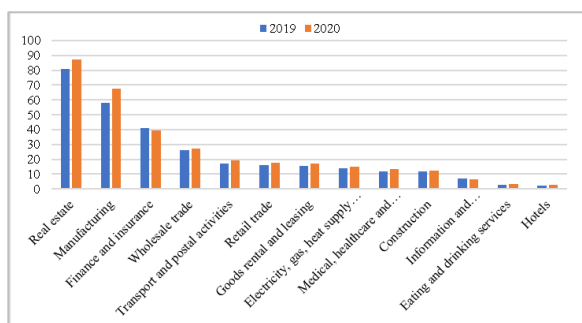

Fig. 9: Outstanding bank loans in Japan 2019 – 2020 by industry (¥ Trillion).
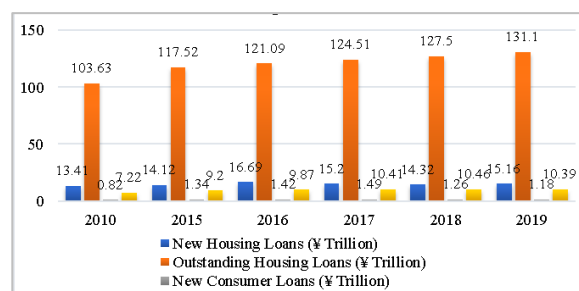(Source: Constructed. Data from Statista)

Fig. 10: Housing and consumer loans of banks in Japan, 2010 – 2019. (Source: Constructed. Data from Statista Note: Figures of Domestically Licensed Banks only.)

The QE-II planners in Japan envisioned domestic banks to be more involved in the stock market to create or maintain a market bullishness. As expected, the value of stock holdings of financial institutions (FIs) in 2014 jump up. There was also a repeat increase in the involvement in 2017 and 2020 (Fig. 11). But this increase did not constitute a major portfolio rebalancing of the commercial banks. For further investigation, we have constructed Fig. 11, which shows banks' securities holdings, including Japanese Government Bonds, Local Government Bonds, short-term corporate bonds, stocks, and other securities. Two perceptible rebalancing acts of Japanese banks are seen here. First, they started reducing their holding of JGBs in 2013 and increased the holdings of local governments' bonds. Second, their holdings of corporate bonds declined, stocks holding maintained ups and downs, but holdings of other stocks increased. Interestingly, there was a big jump in banks' purchase of JGBs in FY 2020-21. The reason for this jump needs further investigation.
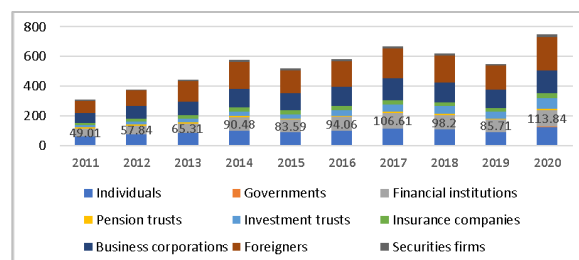

Fig. 11: Value of stockholdings in Japan FY 2011 – 2020 by investor type (¥ Trillion). (Source: Data from Statista Note: Figures of Domestically Licensed Banks only.)
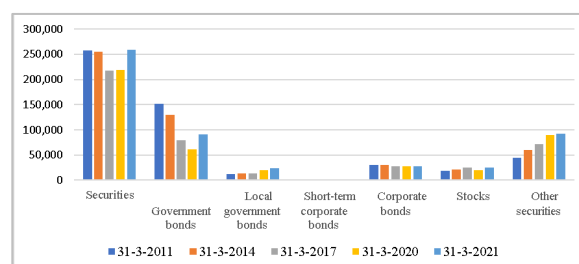

Fig. 12: Securities holdings of all banks 2011 – 2021 (¥ Billions). (Source: Constructed. Data from Japanese Bankers Association)

We have prepared Fig. 13 that gives a 'Labilities Picture' of the distribution of liabilities of Japanese banks to provide a broader view on the state of their portfolios for 2010 to 2018. In that way, it does not capture any impact of Covid-19 on the liabilities part of banks' balance sheets. Nonetheless, the figure shows that the amount of deposits has been growing during the discussion period. At the same time, negotiable certificates of deposit, trading liabilities, net assets (stockholders' equity), call money, etc., of bank liabilities had seen declines in their values. In contrast, banks appear to have increased their borrowing from the markets. This may be due to the interest rate differential of market borrowing than that of other borrowing instruments.

One major area concern in the Japanese banks' portfolio is the unfavorable growth of deposits amount against the loan the banks are disbursing. Since 2017, the loan-to-deposit ratio of Japanese banks has progressively deteriorated.

After QE-II, Japanese banks began cross-border lending and investment as an extension, focusing on several Asian emerging markets (AEMs). For instance, Australia, the Philippines, South Korea, and Indonesia have more than 20 percent of each's foreign borrowing from Japan[39]. Also, as a hedge, Japanese banks started buying overseas collateralized loan obligations (CLOs) of AAA-rated borrowers. As of September 2019, 13 major Japanese banks collectively held ¥13.8 trillion CLOs, up from ¥5.1 trillion in March 2016[40]. So, Covid-19 has caused us to hypothesize that this product has exposed banks to systematic external risks.
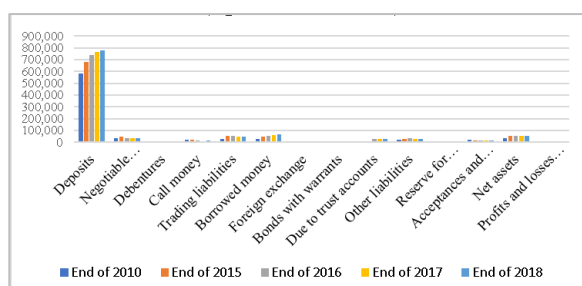

Fig. 13: Liabilities of domestically licensed banks from 2010 – 2018 (¥ 100 million)

5.3 Financial performance of Japanese banks

The section has lined up some performance variables like productivity of assets and stockholders' equity, profitability positions, efficiency, and level of digitization of banks in Japan to depict an overall state of their financial performance in the pre-and post-2013 periods.

5.3.1 Productivity of assets and stockholders equity

Banks' return on assets and equity in Japan and Korea have been used to evaluate their productivity. In a sense, this measures the ratio of a bank's net income to its total assets and stockholders' equity, the two most essential

components in bank portfolios. A higher return on shareholders' assets or invested money suggests better performance or productivity, and vice versa.

Figures 14 and 15 show the return on assets and equity, respectively, for banks in Japan. However, the net profits they produce appear to be quite low compared to their high asset base, resulting in a very low ROA position. The Financial Year (FY) 2013-14 stood out as a unique year, with the highest ROA for all the banks in the cluster, both individually and collectively. Trust banks had the highest ROA of 0.40 percent in this category. However, ROA for all banks decreased in 2016-17 and 2019-2020. Nevertheless, ROA in 2020-2021for all banks went up marginally when Covid-19 was at its most disruptive best.

The ROE of Japanese banks, on the other hand, was significantly higher than their ROA. In 2013-14, for example, all banks' ROE stood at 8.17 percent while that declined to 2.41 percent in FY2019-2020. In 2020-2021, all banks' ROE increased (Fig. 15). Two big incidents took place in 2013-14 and 2020-2021, respectively. While QE-II was implemented in the former, Covid-19 became a pandemic in the latter. Nonetheless, Japanese trust banks seem to have a more stable performance than their market peers regarding ROE. However, ROEs of Regional Banks I and II have remained lower than other categories of banks in most of the years since 2010.
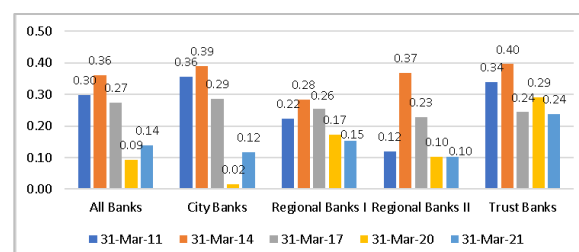

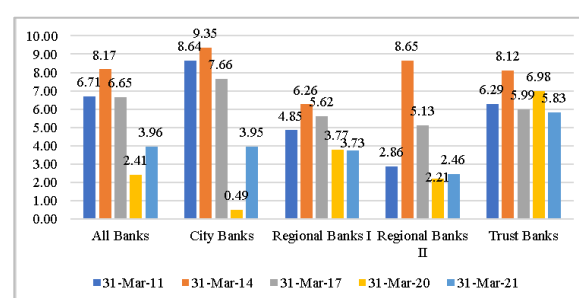**Fig. 14:** Japan – return on assets (ROA %)[41].

Fig. 15: Japan – return on Equity (ROE %)[41].

5.3.2 Profitability

Profitability is the rate at which a bank has been able to turn its (gross) revenues into income. It is an important measure of a bank's financial performance.

Banks in Japan maintain several forms of profit in their income statements. Some of them, viz. Ordinary Profits, Operating Profit, and Net Income positions of banks have been included in Figure 16. The graph shows that banks' ordinary profits had grown since 2011 for three years to

peak in 2014 at 7.39 percent. Since then, the rate has been declining every year. But the operating profit figures from 2015 to 2020 have formed a U-shaped curve to indicate a revival of performance, particularly in 2020. However, when we look at their net income figures, we can see that they are far lower than their operating rates. This very low-profit level is a key source of concern for the banking sector of Japan where the historic low-interest rates under QE-II since 2013 has a major role. However, the explanation for the increase in the rate to 1.84 percent in 2020 from 1.11 percent in the previous year may require more examination as this happened in the first year of Covid-19.
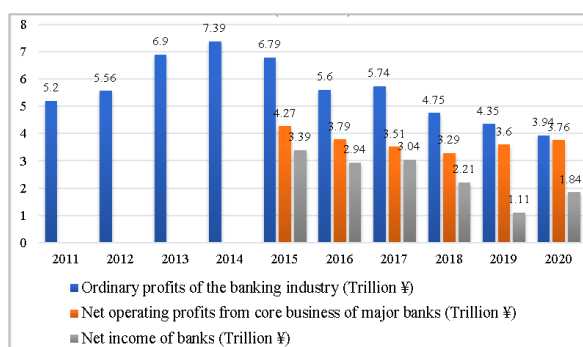

Fig. 16: Profit position of Japanese banks, 2011 – 2020 (¥ Trillion). (Source: Constructed. Data from STATISTA)

5.3.3 Operating efficiency

The efficiency ratio is an important performance parameter for the banking industry. The ratio of noninterest expenses to revenue is the efficiency ratio for banks. By some measures, it is also the ratio of operating expenses to operating income. This demonstrates how the bank's executives handle overhead, sometimes known as 'back-office costs'[41]. Commonly, an efficiency ratio value of 60 percent or less is considered effective for banks[42].

So, the situation isn't particularly rosy when it comes to banks' operating efficiency in Japan. From 2011 to 2021, none of the Japanese clusters of banks could achieve the benchmark to be considered effective in terms of efficiency. For example, the City Banks cluster had an efficiency ratio of 63.8 percent, close to the standard of 60%, only in 2014 (Figure 17). Though Covid-19 (2020) theoretically could have reduced their operational costs, this appears to have not occurred for Japanese banks when their overall efficiency ratio stood at 83.9 percent.
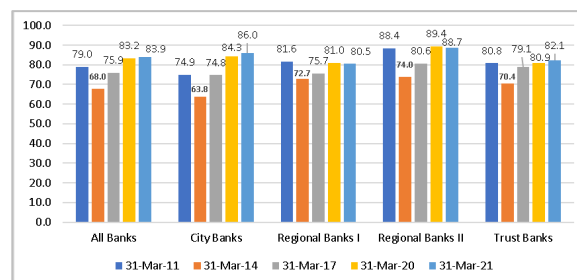

Fig. 17: Japanese banks' efficiency ratio (%), 2011 – 2021. (Source: Calculated. Data from[41])

6. Portfolio rebalancing and financial performance: An analysis

The discussion so far in Japan, all types of banks in Japan seem to have experienced changes in their portfolio combinations and financial performance after QE-II of 2013. Of late, Covid-19 seems to have affected those parameters as well.

6.1 Portfolios of banks

The portfolios of assets and liabilities, including loans to various sectors, investment in government securities, corporate stocks, deposits, and money borrowings of banks in Japan have got changed since 2013. However, the available evidence reveals no significant changes in their portfolio activities with QE-II and even during Covid-19. In fact, Japanese banks' purchase of JGBs increased in 2020, contrary to the intended outcome of Japan's QE-II program (Fig. 12).

However, Japanese banks have received more deposits than their disbursement of loans over time. This unfavorable growth of deposits amount against the loan the banks are disbursing. Since 2017, the loan-to-deposit ratio of Japanese banks has progressively deteriorated, as seen in Fig. 18. The trend in the ratio also indicates that Covid-19 has not impacted the situation otherwise as the loans constituted only 66.2 percent of the deposits. This is very unfavorable for the banking business as the investment options for Japanese banks of this surplus fund are also limited.

This loan-deposit imbalance has two financial implications. First, this requires banks to incur additional interest expenses, even though the rate of interest payment in Japan is extremely low. Moreover, this may have created an over-liquid situation for banks, influencing their risk-bearing behavior.
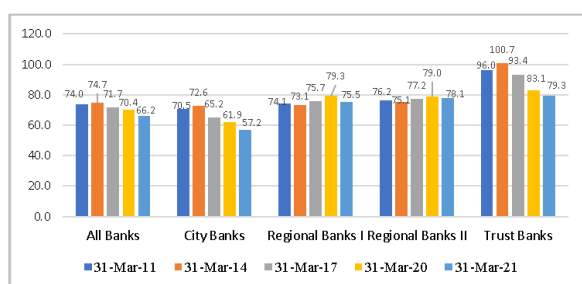
Fig. 18: Japanese banks' loan to deposit ratio (%)[41]

6.2 Productivity of Banks

The very persistent low-interest rates appear to have affected Japanese banks the most, as indicated by their ROAs, notably after QE-II in 2013. The poor productivity of City Banks, the largest group of banks in Japan, is impacting the macro banking performance indicator as well. When their respective ROEs are examined, Japanese banks, interestingly, appear to have a stronger position. A low or high proportion of shareholder equity to total assets base is the primary driver of this disparity. However, as assessed by ROA and ROE in 2020, asset productivity and shareholder equity show that Covid-19 may have negatively impacted the banking sector in Japan.

6.3 Profitability

As we know, the net interest margin (NIM) is computed as the difference between the interest earned and interest paid relative to the average earning assets, and it represents the profitability of banks and financial institutions. We have constructed Fig. 19 to see the profitability position of Japanese banks since 2010. In the same figure we have drawn the NIM for Korean banks as well to have a relative idea on the same issue.

Interestingly, NIMs of domestic banks in Japan have been declining since 2013. The historic low base rate resulting from QE-II could be the principal factor behind this in Japan. Though the situation improved to some extent in 2018, the line has declined since then. NIM of 0.83 percent in 2020 may reflect further the impact of Covid-19 disruption. On the other hand, Korea's NIM reached 1.42 percent, owing to Bank of Korea's (BOK's) decision to keep the base rate at a record low following the COVID-19 outbreak (Statista, 2021).
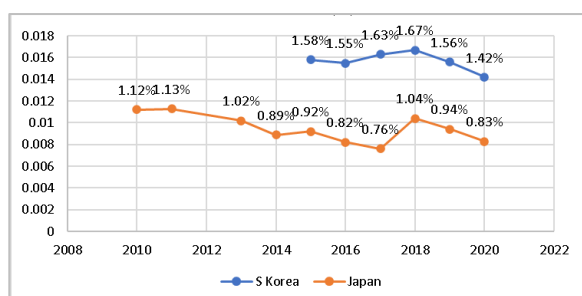

Fig. 19: Net interest margin in Japan and South Korea, 2021 – 2020 (%). (Sources: Constructed).

Note: STATISTA data has been used for Korea. For Japan, data from 2010-2017 have been collected from GRED Graph and 2018-2020 from Trendingeconomics.com)

6.4 Operating efficiency of banks

Figure 20 demonstrates that Japanese banks have effectively lowered their non-performing loan ratio to their total loans since 2012. The ratio has decreased from 2.4 percent to 1.1 percent between 2012 and 2020. The NPL ratio rose slightly to 1.2 percent in 2021, which may be due to Covid-19. Overall, the decline of NPL ratios reflects a level of Japanese banks' operational and asset management efficiency.
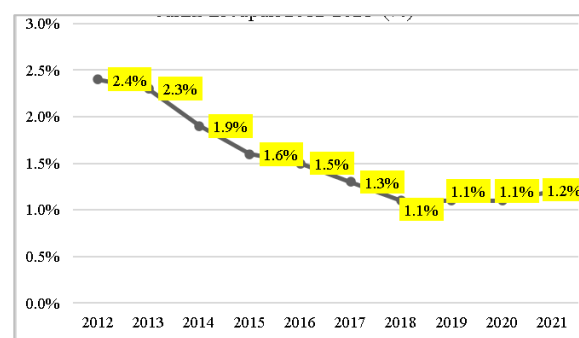

Fig. 20: Non-performing loan (NPL) ratio of banks in Japan, 2012 – 2021 (%). (Source: Calculated. Data from Statista[44])

However, the capital adequacy ratio may indicate the conservative approach taken by Japanese banks in maintaining higher capital. The capital adequacy ratios of Japanese banks from 2015 to 2020 in Fig. 21 show CAR ratios of banks have been declining for Japan since 2017 to reach 16.98 percent in 2020. However, the Basel Committee on Banking Supervision (BCBS) of the Basel III accord mandates that all banks have a Capital Adequacy Ratio of at least 8 percent[45]. On that ground, CARs of Japanese banks look healthy over the period, and they were played at a much higher position than Korean banks.
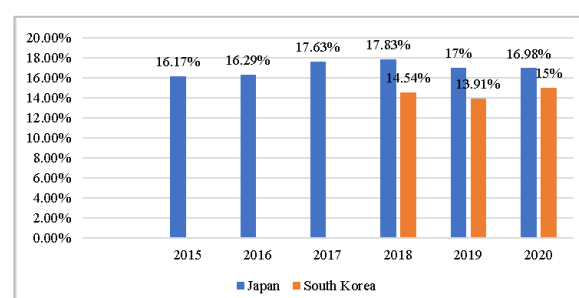
Fig. 21: Capital adequacy ratio (ACR) of Japanese and Korean banks, 2015 – 2020. (Source: Complied. Data from Statista[44])

However, the capital adequacy ratio may indicate the conservative approach taken by Japanese banks in maintaining higher capital. The capital adequacy ratios of Japanese banks from 2015 to 2020 in Figure 20 show

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6.5 An area of concern for Japanese banks

Though not covered elsewhere, the level of digitization is an area of concern for Japanese banks that require attention, though QE-II but may have a direct bearing on it. In fact, digitization is rapidly viewed as a source of efficiency and strength by banks worldwide. Though Japanese banking system has become highly technology based, in terms of the digitization of their financial services, they seem to be falling behind of comparable countries.

We have constructed Fig. 22 to show the comparative number of automated teller machines (ATMs) per 100,000 adults in Japan and Korea. Korea has more than double ATMs per 100,000 adults than Japan by that count. Japan had achieved the peak in 2011 when there were 129 ATMs per 100,000 individuals. In 2013, the figure reached 289 for the same number of adults in South Korea. However, after 2011, Japan's figure began to decrease, and the downward trend continued until 2020.

In Japan, Rakuten Bank seems to be spearheading a campaign to increase the popularity of digital banking. In 2020, it was ranked second in the index score among Asia Pacific's leading digital banks (Fig. 23).

We attempted to understand Japanese banks' digitization level by examining the ratio of intangible assets (such as software and network value) to tangible assets as a proxy measure. While the two clusters of nationwide banks, namely City Banks and Trust Banks, have exhibited a reasonably high ratio in our estimates, both Regional Banks I and II have shown a low ratio in this area (Fig. 24).
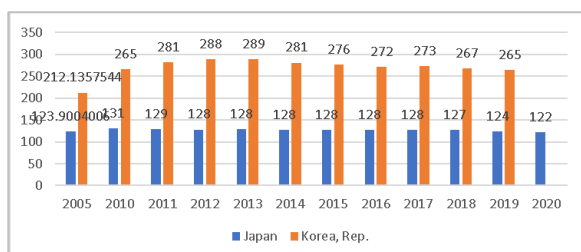

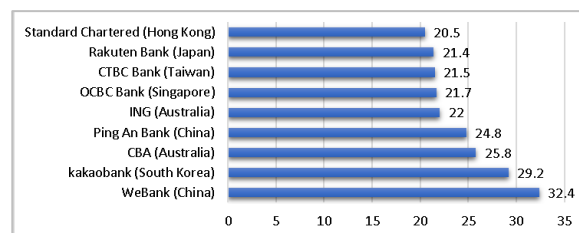**Fig. 22:** Automated teller machines (ATMs) (per 100,00 adults)[46]

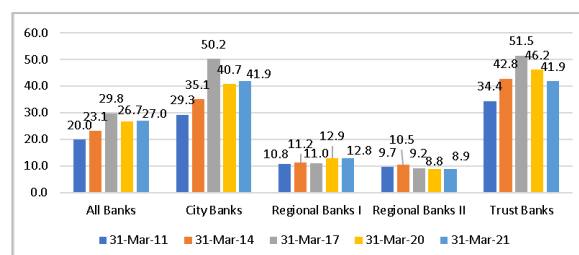**Fig. 23:** Leading digital banks in Asia pacific in 2020, by index score. (Source: The Asian Banker, https://retailfinance.theasianbanker.com/)

Fig. 24: Intangible assets to tangible assets ratio (%)[41]

7. Conclusion

The broader goal of the study was to examine the impacts of Japanese QE-II by using a descriptive technique for discussion. The study has found that Japan is a bank dominated economy. However, banks in Japan are particularly struggling to perform and maintain better financial health due to various challenges posed by QE-II since 2013. Covid-19 has simply aggravated the situations.

Several variables have been examined in this analysis to find the changes that have taken place in banks portfolios and financial performance after QE-II was initiated. They are - interest rates, asset and liability portfolios, asset productivity and stockholders' equity, profitability, operating efficiency, and the amount of digitization of banking activities.

The disadvantages that Japanese banks stem mainly from the extremely low-interest rates that have prevailed in Japan for a long time. This is putting a strain on most of the banking activities. QE-II has compounded their condition, as seen by the fact that they have reverted to their previous level after initially improving their profitability. However, Japanese banks have demonstrated one essential characteristic so far is their ability to survive in the face of adversity.

Covid-19 has severely impacted the economic and banking sector across the world too. Japan's banks are no exception. However, the extent of the impacts of Covid-19 on the banking health of Japan is yet to emerge for a better understanding.

8. Recommendations

Based on the analysis, and findings, the following policy recommendations are made.

1. Banks in Japan banks are encountering a problem with excess funds as deposits continue to climb

but their investment options become increasingly limited. Therefore, the transfer of funds from BOJ reserves to investments and loans is becoming increasingly difficult. In this regard, the government's financial support system associated with Covid-19 may have accelerated the inertia of the negative interest rate policy. As a consequence, the Bank of Japan should reconsider the rationale for its negative interest rate policy and may start to reverse it.

2. The asset size of the BOJ's balance sheet seems to have reached a disproportionate level already. Also, QE-II has become one of the longest similar measures in the world. Though the tapering of QE-II is still a difficult choice, the time may have become mature for reversing the QE policy.

3. The rising digitalization of banking services may have expedited the need for bank mergers. If consolidation of banking activities can improve indices of banking health, authorities may draft a policy statement to that effect. This may be delicate, as limiting banking activities in various regions of the country could have an impact on employment and make it difficult for senior citizens to transact financial transactions in both countries.

4. BOJ should prepare independent contingency plans in light of the possibility that Covid-19 dangers are not over. Also, the strategic effects of the Ukraine War could have an effect on the local and global economic and banking systems. This makes it even more important to have these kinds of backup plans.

Acknowledgements

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