Credit and Capital Markets, Volume 54, Issue 1, pp. 1 – 16
Policy Issues

The Japanese Banks in the Lasting Low-, Zero- and Negative-Interest Rate Environment

Taiki Murai* and Gunther Schnabl**

Abstract

The bursting of the Japanese bubble economy in the early 1990s put the stage for a lasting low-, zero-, and negative-interest rate environment, which fundamentally changed the business environment for the Japanese commercial banks. On the income side, with interest margins becoming increasingly depressed, net interest revenues declined, which forced the banks to expand revenues from fees and commissions. The banks had to cut costs by reducing the number of employees, closing branches and merging into larger banks. The gradual concentration process has most recently cumulated in the relaxation of the monopoly law. With the capital allocation function of banks being undermined, the Japanese economy has become zombified, suffering from anemic growth.

Keywords: Japan, Bank of Japan, monetary policy, banks, interest margin, financial repression, concentration, regional banks

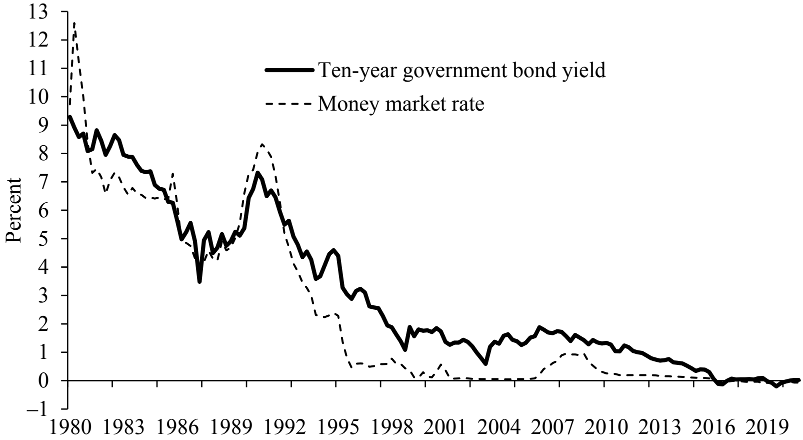
JEL Classification: E50, E52, G21

1. Introduction

Commercial banks have a crucial role for the allocation of capital in the economy. They receive deposits from households and provide credit to enterprises. The credit allocation by banks includes a selection process in favor of investment projects with high expected future returns and a low probability of default (*Diamond* 1984). In this selection process of investment projects banks are argued to be better able to overcome information asymmetries in providing funds to small and medium enterprises than financial markets (*Berger/Udell* 1998). The efficient credit allocation ensures from a macroeconomic perspective a high average return on investment. The resulting productivity gains are the prerequisite for real wage increases and the expansion of the social security system.

* Taiki Murai, Leipzig University, Institute of Economic Policy, Grimmaische Straße 12, 04109 Leipzig, Germany. Email: murai@wifa.uni-leipzig.de.

** Gunther Schnabl, Leipzig University, Institute of Economic Policy, Grimmaische Straße 12, 04109 Leipzig, Germany. Email: schnabl@wifa.uni-leipzig.de.



Source: Bank of Japan.

Figure 1: Japan: Money Market Rate and Ten-Year Government Bond Yield

Following the bursting of the Japanese bubble economy (1985 – 1989), the Bank of Japan has gradually cut the short-term interest rate from around 8 % in 1991 to zero by 1999 (Figure 1) to stabilize the Japanese economy. Since February 2016 the Bank of Japan has kept the interest rate on excess reserves in current accounts of financial institutions at minus 0.1 %. Shifting its policy framework to "yield curve control" in September 2016, the Bank of Japan additionally kept the yield on ten-year government bonds at around 0 %. The current global crisis (coronavirus crisis) has strengthened the expectations that the interest rates will be kept by the Bank of Japan and other central banks close to or even below zero for a long period of time. At the same time, concerns about the stability of the banking system have emerged.

The paper examines the origins of the persistent low-, zero- and negative-interest rate policy of the Bank of Japan and its impact on the aggregated balance sheet of commercial banks as well as the adjustment process evolving in the banking sector. The analysis incorporates the structure of the Japanese banking sector, which is characterized by a small number of large supra-regional city banks and a large number of smaller regional and shinkin banks.[1] It shows that

[1] The city banks (都市銀行) are large banks with supra-regional operations, whose business activities are concentrated in the economic centers. During three decades of the Japanese banking crisis, the city banks have undergone a merger process with trust banks, securities firms and banks for long-term loans to so-called megabanks (Mitsubishi UFJ, Sumitomo Mitsui and Mizuho). The regional banks of the first rank (第一地方銀行) are the leading banks in the region with headquarters in the capital of the prefecture (Japan is administratively subdivided in 47 prefectures). They maintain close business re-

the gradual shift towards so-called forbearance lending has been accompanied by a concentration process among Japanese banks, which has most recently cumulated in an easing of the Japanese monopoly law.

2. The Origin and the Macroeconomic Environment of the Persistent Banking Crisis

The origin of the lasting Japanese banking crisis is the Japanese bubble economy (1985 – 1989). The bursting of the bubble led to a deep crisis and to a large stock of (potentially) non-performing loans. The persistent crisis triggered increasingly expansionary fiscal and monetary policies. Credit provision to enterprises became more and more lenient, leading to a zombification of growing parts of the Japanese economy.

2.1 The Japanese Bubble Economy

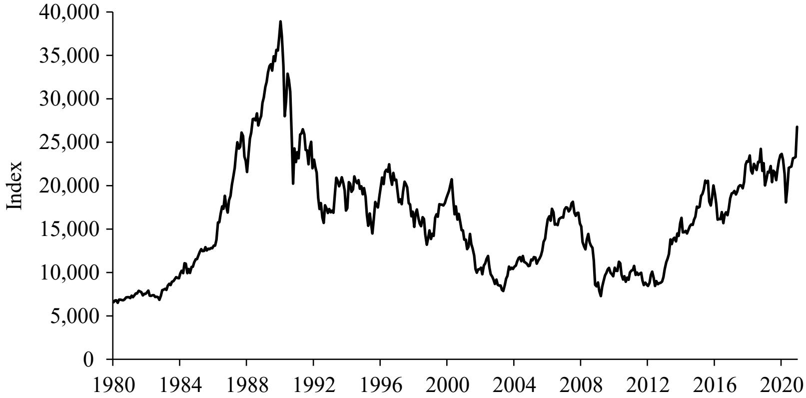
The Plaza-Agreement of September 1985 appreciated the Japanese yen drastically, which led to a deep recession in the export-dependent Japanese economy (*Funabashi* 1989). The Bank of Japan cut short-term interest rates to halt the yen appreciation and to mitigate its adverse effect on the Japanese economy. The monetary loosening not only helped the Japanese economy to recover; it also became the breeding ground for a credit-financed bubble in the Japanese stock and real estate markets. Figure 2 shows the sharp increase of the Nikkei 225 from 12,727 points in September 1985 to close to 40,000 points in December 1989. When the Bank of Japan increased interest rates in the late 1980s, the stock market bubble burst in December 1989 (*Bayoumi/Collyns* 2000). In 1991, the real estate bubble burst. The stock and real estate prices declined until the start of the so-called Abenomics in 2013.

2.2 Macroeconomic Responses to the Lasting Crisis

With the sharply falling stock and real estate prices, Japanese banks were faced with a large stock of non-performing loans as the collateral for credit lost in value. The high-growth period of Japan ended, with growth not recovering

---

lations with regional enterprises (usually small and medium-sized enterprises) and regional authorities (usually as their principal bank). The smaller second-tier regional banks (第二地方銀行) have today a very similar business model but have undergone more mergers than the first-tier regional banks. Shinkin banks (信用金庫) are non-profit cooperatives. Their members are mainly small- and medium-sized enterprises and natural persons from the region. They have in contrast to the regional banks an umbrella organization, the National Federation of Shinkin Banks.



Source: Nikkei.

Figure 2: Japanese Stock Prices: Nikkei 225

and consumer price inflation remaining low (*Schnabl* 2015). The Bank of Japan cut interest rates to zero to facilitate the economic recovery and to allow the Japanese banks to grow out of the bad loan problem. Until 1997, Japanese banks could generate profits by borrowing cheap at the Bank of Japan and lending at high interest rates in Southeast Asia. When the Southeast Asian economic miracle ended with the 1997/98 Asian crisis, new non-performing loans emerged. The resulting Japanese financial crisis constituted the final starting point for the long-lasting suffering of the Japanese banks.

Large debt-financed fiscal stimulus packages of the Japanese government could help only temporarily to soften crises, but could not deliver the promised long-term solution for the problem. With the household savings rate gradually declining along with interest rates (*Latsos* 2019a), the persistent government deficits were financed by growing government bond purchases of the Bank of Japan. The bond purchases have accelerated since 2013 with the so-called Abenomics, a policy mix of expansionary monetary and fiscal policies combined with – hesitant – structural reforms (*Yoshino/Taghizadeh-Hesary/Miyamoto* 2017). Japan's general government debt increased from 64 % in 1990 to more than 260 % in 2020. The balance sheet of the Bank of Japan expanded from 10 % of GDP to about 135 % of GDP in 2020. By 2020, roughly 50 % of the outstanding Japanese central government bonds were held by the Bank of Japan.

As the domestic economy did not recover, growth impulses came increasingly from abroad, which favored export-oriented (large) enterprises rather than domestically oriented (small and medium) enterprises (*Schnabl* 2020: 11–13). The economic activity of Japan's economic centers such as the greater Tokyo area, where large enterprises are clustered, remained comparatively stable. In contrast, the Japanese periphery, where economic activity is dominated by small and medium enterprises, suffered from the lasting slump, with young people increasingly migrating to the economic centers.

2.3 Credit Guarantees and Public Credit

The increasingly lenient credit conditions in the prolonged crisis since the 1990s can be seen as the result of policy decisions. Members of parliament from all regions of the country feared the discontent of their voters in the event of bankruptcies. Because the gradual loosening of the monetary policy stance by the Bank of Japan depressed the profitability of banks, they were reluctant to price in growing default risks and to close credit lines of economically weak firms. For firms in financial distress the government provided credit guarantees via the public Federation of Guarantee Corporations (信用保証協会), and introduced legislation to soften the requirements of banks with respect to lending to firms (*Schnabl* 2020: 17–20).

In the wake of the crises of 1998, 2001 and 2008, many small and medium-sized enterprises received public loan guarantees. The Small and Medium-sized Enterprises Financing Facilitation Law (2009) gave banks an incentive to grant generous credit facilities and credit extensions to small and medium-sized enterprises; the rollover of bank loans required merely a business plan that promised to improve the situation (*Ross* 2016). Many non-performing loans were thus reclassified as healthy. In 2012, a further package of measures ensured that the credit burden of small and medium-sized enterprises was kept bearable.

Uesugi/Sakai/Yamashiro (2006) argue that credit guarantees have alleviated the credit crunch in Japanese economy. Yet, since collateral conditions were eased, entrepreneurs had no longer incentives to restructure. *Uchida* (2010) argues that the criteria were too lax, having kept non-viable firms alive or at least delayed their bankruptcy. *Sekine/Kobayashi/Saita* (2003) consider the "forbearance lending" of Japanese banks to be made possible by the increasingly expansionary monetary policy. *Peek/Rosengreen* (2005) describe the practice of Japanese banks to extend loans to weak and insolvent firms as "evergreening". *Caballero/Hoshi/Kashyab* (2008) argue that "zombie banks" that depend on the Bank of Japan's low-cost credit provision keep "zombie firms" alive, with loans not priced adequately with respect to risk.

3. Development of the Japanese Banking Sector in the Persistent Crisis

The worsening in the macroeconomic environment in post-bubble Japan had a significant impact on real and financial side of the Japanese economy. Japanese small- and medium-sized enterprises became hesitant about borrowing, while large enterprises expanded internationally. Japanese banks gradually consolidated the balance sheets as their traditional income sources became undermined under the persistent low interest rate environment.

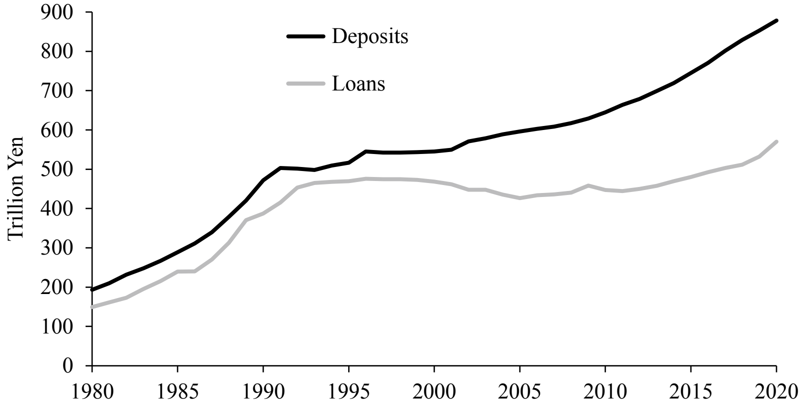
3.1 Credit Crunch and Increasing Deposits

The amount of outstanding credit to the private sector increased strongly during the 1980s and even in the first half of the 1990s (Figure 3). There are three reasons for its decrease from 1996 up to the Abenomics.[2] First, banks were forced to consolidate non-performing loans. The consolidation started in 1996 with the liquidation of the ailing jusen, seven private home-mortgage lenders, through the public Resolution and Collection Corporation. The clean-up of other non-performing loans accelerated with the 1998 Japanese financial crisis: the share of bad loans out of total bank lending in the balance sheets of Japanese commercial banks was substantially reduced since 2004, largely supported by recapitalizations by the government (*Schnabl* 2020: 84–91).

Second, in the persistent low-interest environment, with economic perspectives remaining gloomy, the credit demand of firms stagnated or even declined. As firms did not expect a sustained recovery of the Japanese economy, they hesitated to expand capacities. Large enterprises tended to invest their retained earnings internationally, inter alia in stocks of foreign firms and Japanese affiliated firms operating abroad as well as in international mergers and acquisitions. Small and medium enterprises to a large extent increased their bank deposits. Third, the rapid increase of government debt tempted the commercial banks to substitute credit to the private sector by credit to the public sector which requires no risk-provision for them.

Whereas bank lending tended to stagnate, deposits substantially increased (Figure 3), as firms hesitated to invest in production facilities or real estate (*Schnabl* 2020: 46–49). In particular, the smaller regional banks and shinkin banks were faced with fast rising deposits and a loan-deposit ratio far below unity. Their deposits were increasingly allocated to government bonds until the start of the Abenomics in 2013. Since then, the government bond purchases of

[2] See also *Ishikawa/Tsutsui* (2006), *Koo* (2003), *Posen* (2000) and *Schnabl* (2015) on the determinants of post-bubble credit growth.



Source: Shinkin Central Bank Research Institute, Policy Research Institute of Japanese Ministry of Finance. Banks with domestic license including shinkin banks.

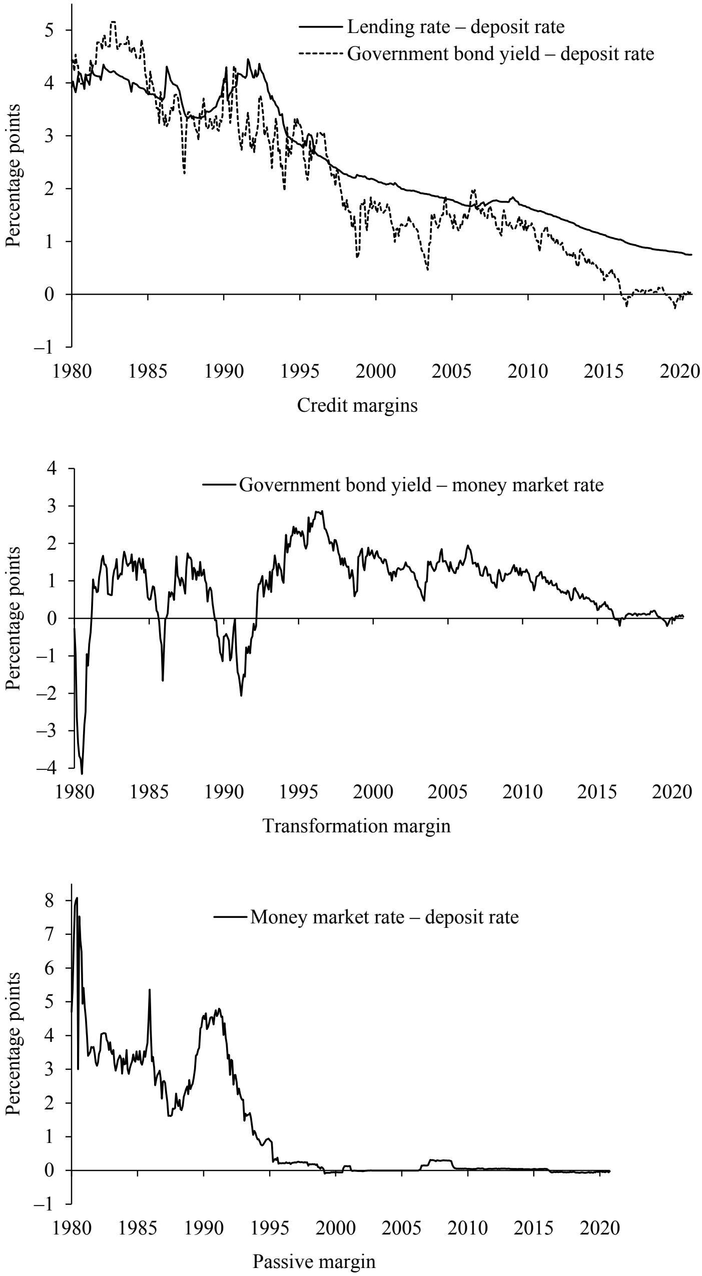
Figure 3: Deposits and Loans at Japanese Banks

the Bank of Japan have inflated the current account deposits of the commercial banks at the Bank of Japan. Furthermore, international lending was boosted.

3.2 Interest Margins

The main determinant of the profitability of commercial banks are the interest margins, which became gradually depressed in the persistent low-interest rate environment (Figure 4). The increasingly loose monetary policy of the Bank of Japan depressed both short-term interest rates (via conventional monetary policy) and long-term interest rates (via unconventional monetary policy) gradually to and below zero. As a result, the credit margin – defined as average interest rate for newly issued credit minus the average deposit rate on new deposits – declined from four percentage points in the 1980s to one percentage point most recently (see upper panel of Figure 4). Also, the difference between the ten-year government bond yield and the deposit rate was gradually depressed to zero. Up to the start of Abenomics investment in government bonds was attractive for banks, as – in contrast to credit to the private sector – no risk assessment was necessary. This changed with the yield-curve targeting, as interest rate on government bonds became depressed to zero.

The transformation margin – defined as difference between the ten-year government bond yield and the money market rate – was volatile and in average positive in the 1980s and the 1990s. Since the Japanese financial crisis, it gradually declined from around two percentage points in the late 1990s to close to



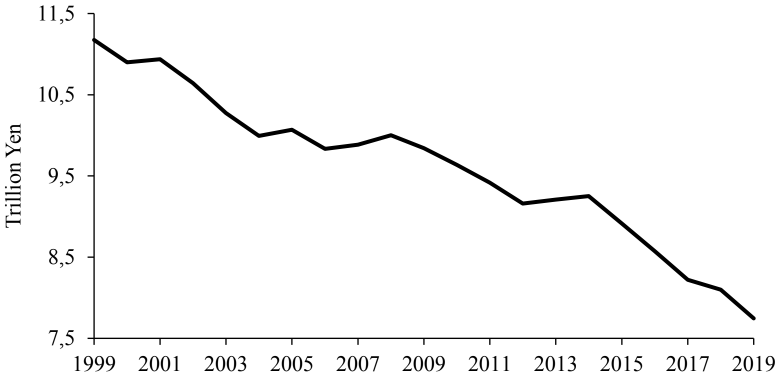
Source: IMF. Ten-year government bond yields.

Figure 4: Interest Margins in the Japanese Banking Sector

zero in the course of the yield curve targeting (see center panel of Figure 4). The passive margin – i. e. the money market interest rate minus the rate on new deposits – was around three percentage points in the 1980s and a particularly important source for regional banks which are able to collect a substantial amount of deposits through nationwide branch networks. The passive margin declined to zero by 1996, where it has remained since then (see lower panel of Figure 4).

3.3 Net Interest Income

Due to the structural decline of the interest margins as the most important traditional source of income, the net interest revenues of Japanese banks gradually declined (Figure 5). This is the case for all banks, i. e. the large supra-regional city banks, the regional banks and the shinkin banks. Between 1998 and 2019 the net interest income of city banks declined by 39 %, of tier-one regional banks by 19 %, of tier-two regional banks by 42 % and of shinkin banks by 26 %. The continuous decline of the net interest income put all Japanese banks under strong adjustment pressure. The need to generate alternative sources of income and to reduce costs was during the first decade of the new millennium further enhanced by the high costs for write-downs on non-performing loans (*Montgomery/Shimizutani* 2009).



Source: Japanese Bankers Association.

Figure 5: Net Interest Income by Japanese Banks

4. Adjustment to Declining Net Interest Incomes

The declining net interest incomes in the Japanese banking sector were compensated by the promotion of revenues from fees and commissions and the reduction of costs. The consolidation of income and expenses came along with an intensive concentration process in the Japanese banking sector, which seems to be terminated in the case of the city banks, but is continuing among small and medium banks; regional banks and shinkin banks.

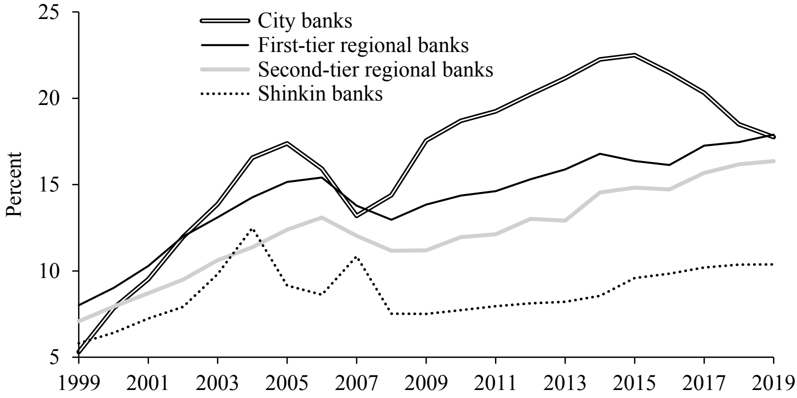
4.1 New Business Models, Increasing Fees and Commissions

The possibilities to generate additional profits were to a substantial degree determined by the distribution effects of the persistently loose monetary policy.[3] The zombification of the Japanese industry had a negative impact on real wages in Japan, which continued to fall since the Japanese financial crisis (*Latsos* 2019b). At the same time asset prices in other countries such as the United States increased and domestically picked up again in Japan in the course of the Abenomics. This had a positive impact on the welfare position of rich and qualified people (*Saiki/Frost* 2014, *Latsos/Israel* 2020).

Starting from the 1990s, Japanese banks increased fees on bank services such as on withdrawals from ATM machines and on bank transfers (*Schnabl* 2020: 93 – 100). The scope for increasing bank fees was, however, constrained by the emergence of competition for instance by the Seven Bank (セブン銀行). This subsidiary of the Ito-Yokado retail chain, which operates some 40,000 small supermarkets in Japan under the 7-Eleven label, can offer a very dense ATM network covering whole Japan (more than 25,000 ATMs). The balance sheet of the Seven Bank, which does not have to maintain an expensive branch network like the regional and city banks reveals low personnel and administrative costs. This advantage can be partly passed on to customers in the form of low fees (*Schnabl* 2020: 99 – 100).

The "Private Bank" business model is aimed at wealthy customers. The aim is to manage and increase the growing wealth of rich people against fees (Nihonkeizai Shinbun 22.5.2005). At the same time, as wages tended to decline, lending to people without collateral at high interest rates has become lucrative. To strengthen this market segment many banks have taken over small shadow banks (e. g. PROMISE and ACOM), which are specialized in gaining quickly information about the creditworthiness of their customers.

[3] On details on the distribution effects of Japanese monetary policy see *Latsos/Israel* (2020).



Source: Japanese Bankers Association, Shinkin Central Bank.

Figure 6: Share of Fees and Commissions Out of Total Gross Profits

Low or even negative real interest rates on deposits combined with fast rising asset prices made a shift towards selling investment products an important alternative source of income for commercial banks. In the investment segment the Mega banks have a major competitive advantage as they have branches in international financial centers and can acquire foreign exchange at lower costs. In contrast, regional and shinkin banks, of which activities are mainly regionally constrained, had a major competitive disadvantage. The share of fees and commissions out of total profits – albeit increasing – lagged behind the city banks (Figure 6). Therefore, seven regional banks decided to establish a joint asset management company in March 2016 (Nikkei Asian Review 2016).

4.2 Cost Reductions

As the room for additional revenues was limited, Japanese banks were forced to strongly reduce costs, particularly for personnel and administration (*Schnabl* 2020: 71–84). All groups of banks – city banks, regional banks and shinkin banks – continued to reduce the number of employees. The decline of the number of employees was most pronounced for the tier-two regional banks, by more than 50 % between 1990 and 2019. Whereas city banks kept since 1998 costs for staff widely constant, the personnel costs were strongly reduced by the smaller regional and shinkin banks.

Administrative costs were cut by closing branches.[4] The number of branches of city banks fell by 33 % from the peak in 1993 with 3,068 branches to 2,063 branches in 2019.[5] Second-tier regional banks reduced the number of branches by 40 % from the peak in 1993 of 4,440 to 2,685 in 2019. The small shinkin banks, with the business model being focused on local lending, reduced the number of branches by 11.3 % from 7,664 in 1999 (the year with the most branches) to 6,800 in 2019. Only first-tier regional banks have kept the number of branches widely constant.

4.3 Mergers

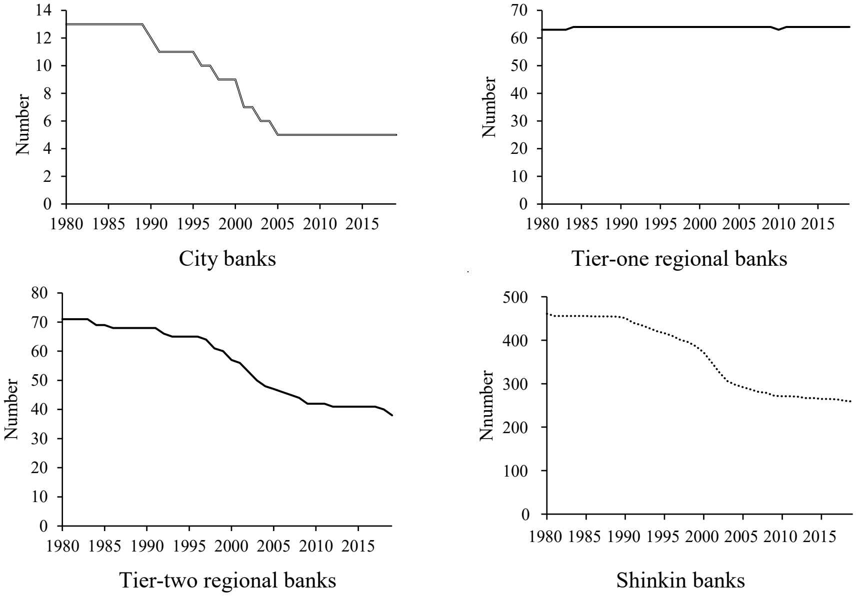
Together with the closing of branches a strong concentration process in the Japanese banking sector has set in (see *Hosono* et al. 2007 and *Shimizu* 2000). The concentration among the city banks was accelerated by bankruptcies such as by the Hokkaido Takushoku Bank during the Japanese financial crisis (1998), reducing their number from 13 in 1990 to 5 today (Figure 7). The city bank mergers also included other types of banks such as investment banks, which led to a qualitative expansion of the business. Banking conglomerates with a wide range of business activities were created, which are able to take advantage of economies of scale in foreign exchange and international securities trading.

The economic pressure on regional banks came in particular at the expense of the smaller second-tier regional banks, whose number fell by 44 % from 68 in 1990 to 38 in 2019 (Figure 7), whereas the number of tier-one regional banks remained constant. Due to their different historical development, the second-tier regional banks have low capital, which proved to be an obstacle. Also, among the small shinkin banks a strong concentration process evolved, reducing the number of banks from 451 in 1990 to 259 in 2019 by 43 %. Despite the concentration process, there is not clear evidence that the mergers among banks have increased their productivity (*Gerstenberger/Schnabl* 2017).

---

[4] There are two types of branches: Branches with employees who accept banking transactions, sell investment funds and insurances, conclude loans and open accounts are called "shiten" (支店) or "honshiten" (本支店). On the other hand, branches where services are limited (e. g. ATM machines) are called "shuchoujo" (出張所).

[5] The increase in the number of branches in 2015 is a special effect associated with the Tokyo Olympics in 2020: the Mitsui-Sumitomo Bank significantly expanded the number of ATMs in the area, where a large influx of visitors was expected to generate additional fee business.



Source: Japan Financial Yearbook (日本金融名鑑).

Figure 7: Number of Banks by Bank-type

5. Outlook

The bursting of the bubble in the Japanese stock and real estate market in the late 1980s triggered an increasingly expansionary monetary policy by the Bank of Japan. The Japanese banking sector was urged into a fundamental transformation process, which has been driven by increasingly compressed interest margins and declining net interest incomes. Japanese banks were forced to increase revenues via fees and commissions and to cut costs by reducing personnel and closing branches. The outcome has been a gradual concentration process in the Japanese banking sector which is likely to continue as long as the ultra-expansionary monetary policy persists.

In March 2020, the Japanese monopoly law was amended to facilitate mergers between regional banks (*Nihonkeizai Shinbun* 2020). Since regional banks have been suffering from the persistent low interest rate environment and a continuing decline in population, the measure is intended to strengthen the regional banks. With competition being reduced, banks will be able to more easily raise interest rates for households and local enterprises. The exemption period is ten years. The Financial Services Agency shall ensure that no unreasonably high interest rates are charged.

Although the Bank of Japan did not embark on a comprehensive negative interest policy[6], the allocation function of the Japanese banking sector has become undermined. The conditions of credit provision have become gradually softened, which has come along with the zombification of large parts of the Japanese economy. The resulting decline in productivity growth has contributed to declining real wages and growing inequality. Instead of investing, Japanese enterprises have used retained earnings for the international acquisition of enterprises and stocks as well as for deposits at banks. Given declining loan-deposit ratio, Japanese banks were forced to lend abroad, which has made them vulnerable to exchange rate fluctuations and international financial crisis.

The experience of the Japanese banking sector implies that policy makers are advised not to continue the persistent low-, zero- and negative interest rate policy, as it has become via its negative impact on the profitability of banks and the productivity of firms the breeding ground for the erosion of wealth in Japan. A diligent and gradual increase of key interest rates in Japan would not only restore the allocation function of interest rates, but would also reconstitute the credit selection function of banks. The resulting restructuring of enterprises and government would be the prerequisite for a lasting recovery. In the face of the increasingly loose monetary policy of the European Central Bank, Japan can be seen as a role model for the possible consequences.

References

Bayoumi, T./*Collyns*, C. (2000): Post Bubble Blues. How Japan Responded to Asset Price Collapse. International Monetary Fund, Washington D.C.

Berger, A./*Udell*, G. (1998): The Economics of Small Business Finance: The Roles of Private Equity and Debt Markets in the Financial Growth Cycle. Journal of Banking and Finance Vol. 22(6 – 8), 613 – 673.

Caballero, R./*Hoshi*, T./*Kashyap*, A. (2008): Zombie Lending and Depressed Restructuring in Japan. American Economic Review Vol. 98(5), 1943 – 1977.

Diamond, D. (1984): Financial Intermediation and Delegated Monitoring. The Review of Economics and Statistics Vol. 51(3), 393 – 414.

Funabashi, Y. (1989): Managing the Dollar: From the Plaza to the Louvre. Institute of International Economics, Washington D.C.

Gerstenberger, J./*Schnabl*, G. (2017): The Impact of Japanese Monetary Policy Crisis Management on the Japanese Banking Sector. CESifo Working Paper 6440.

Hosono, K./*Sakai*, K./*Tsuru*, K. (2007): Consolidation of Banks in Japan: Causes and Consequences. NBER Working Paper 13399.

[6] The share of negative interest-bearing deposits in the total deposits of commercial banks at the Bank of Japan is only about 5 %. Thus, the Bank of Japan has de facto not implemented the negative interest rate policy in contrast to the European Central Bank.

Ishikawa, D./*Tsutsui*, Y. (2006): Has a Credit Crunch Occurred in Japan. RIETI Discussion Paper 06-E-012.

Koo, R. (2003): Balance Sheet Recession: Japan's Struggle with Uncharted Economics and its Global Implications, Wiley and Sons.

Latsos, S. (2019a): The Low Interest Policy and the Household Saving Behavior in Japan. University of Leipzig, Faculty for Economics and Management Science Working Paper 159.

Latsos, S. (2019b): Real Wage Effects of Japanese Monetary Policy. ORDO Vol. 69, 177 – 215.

Latsos, S./*Israel*, K.-F. (2020): The Impact of (Un)Conventional Expansionary Monetary Policy on Income Inequality – Lessons from Japan. Applied Economics Vol. 52(40), 4403 – 4420.

Montgomery, H./*Shimizutani*, S. (2009): The Effectiveness of Bank Recapitalization Policies in Japan. Japan and the World Economy Vol. 21(1), 1 – 25.

Nihonkeizai Shinbun (日本経済新聞) (22.5.2005): プライベートバンク (Private Bank).

Nihonkeizai Shinbun (日本経済新聞) (3.3.2020): 地銀、合併しやすく独禁法除外へ特別法案 閣議決案. (Regionalbanken: Kabinett beschließt Sondergesetz für Ausnahmen vom Monopolgesetz, die Fusionen erleichtern.).

Nikkei Asian Review (18.3.2016): Japan's Regional Banks Team Up in Asset Management.

Peek, J./*Rosengren*, E. (2005): Unnatural Selection: Perverse Incentives and the Misallocation of Credit in Japan. American Economic Review Vol. 95(4), 1144 – 1166.

Posen, A. (2000): The Political Economy of Deflationary Monetary Policy. In: Mikitani, Ryoichi/Posen, Adam (eds.): Japan's Financial Crisis and Its Parallels to U.S. Experience, Institute for International Economics, Washington D.C., p.194 – 208.

Ross, S. (2016): Japan's Nonperforming Loans Cap Future Growth. *Investopedia* 5.6.2016, 90.

Saiki, A./*Frost*, J. (2014): Does Unconventional Monetary Policy Affect Inequality? Evidence from Japan. Applied Economics Vol. 46(36), 4445 – 4454.

Schnabl, G. (2015): Monetary Policy and Structural Decline: Lessons from Japan for the European Crisis. Asian Economic Papers Vol. 14(1), 124 – 150.

Schnabl, G. (2020): Japans Banken in der Krise: Folgen von 30 Jahren Niedrigzinspolitik. SpringerGabler, Wiesbaden.

Sekine, T./*Kobayashi*, K./*Saita*, Y. (2003): Forbearance Lending: The Case of Japanese Firms. Bank of Japan Institute for Monetary and Economic Studies Vol. 21(2), 69 – 92.

Shimizu, Y. (2000): Convoy Regulation, Bank Management, and the Financial Crisis in Japan. in: Mikitani, Ryoichi and Posen, Adam (eds.), Japan's Financial Crisis and Its Parallels to U.S. Experience, Institute for International Economics, Washington D.C., p. 57 – 97.

Uchida, H. (2010): 緊急保証制度とかつての特別保証制度の違い (The Difference between the Emergency Guarantee System and the Special Credit Guarantee System), 立法と調査 Vol. 301, 160 – 168.

Uesugi, I./*Sakai*, K./*Yamashiro*, G. (2006): Effectiveness of Credit Guarantees in the Japanese Loan Market. Journal of the Japanese and International Economies Vol. 24(4), 457 – 480.

Yoshino, N./*Taghizadeh-Hesary*, F./*Miyamoto*, H. (2017): The Effectiveness of the Negative Interest Rate Policy in Japan. Credit and Capital Markets Vol. 50(2), 189 – 212.