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Review Article

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COVID-19 Easing Monetary Policy and Expected Consequences of Credit Guarantee to SMEs

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Introduction

The purpose of this paper is to examine easing monetary policy after COVID-19 in comparison to monetary policy after the bubble in Japan and the US. Significant increases in base money after COVID-19 can be observed in many developed countries, and this may cause bubbles in the future.

Japanese banks faced with huge non-performing loans (NPLs) after the bust of the bubble in 1990s. Number of bank failures in 1990s and 2000s are mainly explained by collateral-based lending, by which land price fluctuations affected banking behaviors significantly. US sub-prime loan crisis is related to housing bubble. Common phenomena can be observed both in Japan and the US. There were four reasons why banks accumulated NPLs and went into bankruptcy. First, collateral value of land suddenly declined after the burst of the bubble. Second, inexperienced securities investment by banks brought big losses after a sudden decline in the stock market. Third, bank lending concentrated to certain sectors in the region, lacking in diversification of borrowers. And fourth, fraud and miss management by senior staff of the bank.

The bubble phenomenon of Japan in late 1980s and the US housing bubble around 2000 to 2006 that led to Lehman crisis show similarities in banking behavior. Such behavior are: (i) banks lent too much to real estate and housing market; (ii) growth rate of loans to the real estate sector exceeded what was needed in real production of both manufacturing and services industries; and (iii) housing prices went up too much compared to the growth of income of general public.

In a property market, banks can lend to both suppliers and demanders. When the economy enters into recession, the central bank lowers its policy rate to encourage investment. Banks can lend more money to various sectors including housing and real estate suppliers. Lower interest rate encourages buyers of commercial property and buyers of housing. Therefore, both supply and demand in property market exceeds the level of equilibrium. This is why bubble phenomenon can be seen in property market.

The paper is constructed as follows. First, it examines background to Japanese banks' accumulation of NPLs in the bubble economy. Based on this examination, the paper considers indicators for detecting signs of bubbles in the economy. Then, we look for signs of bubble that might develop after COVID-19. The paper discusses the difference in mechanisms for policy transmission between a bubble economy and COVID-19. In conclusion, we point out that three indicators examined in this paper will apply not only to Japan but also to the US. The paper warns that an increase in credit guarantee to support SMEs in Japan after COVID-19 may lead to regional shocks after lifting the blanket guarantee to SMEs, given that SMEs suffering structural problems have been aided by financial support. From the policy stand point of view, SMEs who are being damaged temporarily and who have structural issues have to be clearly differentiated in applying credit guarantee policy.

Non-Performing Loans (NPLs) of Japanese Banks

In late 1980s, the Bank of Japan lowered its policy rate in order to encourage imports from the US to cope with trade surplus between Japan and the US. Easy monetary policy lasted too long as land prices and stock prices went up more than three times in the 5 years between 1984 and 1989. Burst of the bubble had significant impact on the Japanese economy. Table 1 summarizes the number of Japanese bank failures and the amount of financial assistance by the deposit insurance cooperation. The number of bank failures increased significantly after 1998 when the government made bank examination much tighter than before. Purchases of bad assets held by banks increased significantly in 1998 and in 1999.

Japanese bank data for September 2020 does not show any increase in NPLs. The most current data of March 2021 will be disclosed in August 2021. Therefore, simple empirical analysis is carried out based on past data of bank failures in Japan. As shown in Table 1, there has been 182 cases of bank failures in Japan in total. Most of them are regional small banks except for few large ones.

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Table 1: Financial assistance in the resolution of failed financial institutions (as of the end of March 2016)
i) Financial assistance on afiscal year basis

Fiscal year	Number of cases	Monetary grants		Purchase of assets	Lending	Debt assumption
		To assuming financial institutions	To failed financial institutions (equitable financial assistance)			
1992	2	20.0		—	8.0	—
1993	2	45.9		—	—	—
1994	2	42.5		—	—	—
1995	3	600.8		—	—	—
1996	6	1,315.8		90.0	—	—
1997	7	152.4		239.1	—	4.0
1998	30	2,674.1		2,681.5	—	—
1999	20	4,637.4		1,304.4	—	—
2000	20	5,153.0		850.1	—	—
2001	37	1,639.4	—	406.4	—	—
2002	51	2,332.5	—	794.9	—	—
2003	0	—	—	—	—	—
2004	0	—	—	—	—	—
2005	0	—	—	—	—	—
2006	0	—	—	—	—	—
2007	0	—	—	—	—	—
2008	1	256.4	—	1.7	—	—
2009	0	—	—	—	—	—
2010	0	—	—	—	—	—
2011	1	46.2	115.3	53.0	—	—
2012	0	—	—	0.1	—	—
2013	0	—	—	—	—	—
2014	0	—	—	—	—	—
2015	0	—	—	—	—	—
2016	0	—	—	—	—	—
2017	0	—	—	—	—	—
2018	0	—	—	—	—	—
Total	182	18,916.5	115.3	6,421.0	8.0	4.0
		19,031.9				

Source: Annual Report of Deposit Insurance Corporation of Japan, Various issues

Table 2

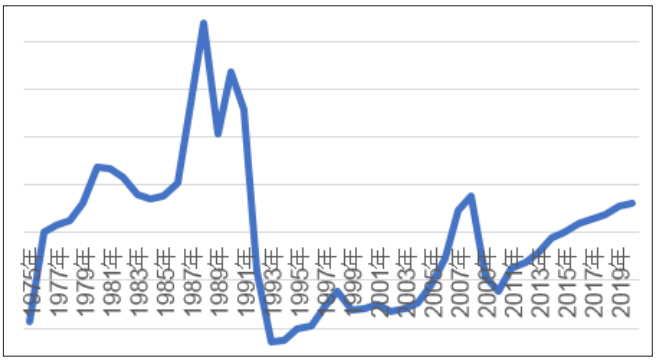
Factors of bank failures by size and sector 1992-2002

	cases	Average Asset Size (yen)	Deterioration of Loan Assets				Failure in Investment on Securities	Criminal Conducts
				Real Estate Lending	Concentration Lending other	Recession of Local Economy		
Credit Unions	134	100 billion	91.80%	44	28.4	28.4	29.9	5.2
Credit Associations	27	230 billion	85.20%	37.0	18.5	37.0	37.0	7.4
Banks	19	3.5 trillion	100.0%	73.7	21.1	5.3	0.0	0.0

Source: Deposit Insurance Corporation of Japan

Table 2 reviews causes of bank failures in Japan in 1992 to 2002 based on the data of Deposit Insurance Corporation of Japan. There are five reasons why banks, credit associations and credit unions went into bankruptcy. The first reason is collateral based lending, in which banks used land as collateral. This kind of lending is common in many Asian countries. During the bubble period of Japan, land prices went up to be about four times higher, and after the burst of the bubble, land prices fell down by about 1/3. With the plunge in land prices, bank lending that was collateralized with land became non-performing, and resulted in the NPL problem.

Figure 1: Growth rate of land price (commercial properties)

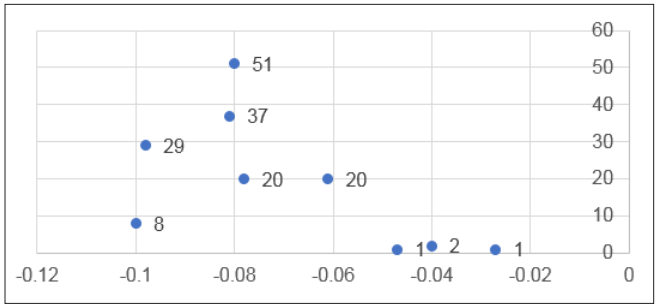


Source: Ministry of Land, Infrastructure and Transport (Japan)

The second reason is the concentration of lending to certain sectors by regional financial institutions, which made banks easier to accumulate their loan default losses. Thirdly, the recession in regional economies and declines in sales in the regions made banks difficult to gain profits. Fourth, many banks started to invest in securities in the situation where demand for bank loans became smaller compared to absorption of deposits. And the fifth reason is that connected lending and fraud made banks into default. As for banks in Japan, the first reason, collateral-based lending, explains 73.7% of bank failures. As for credit associations and credit unions, not only collateral-based lending but also other reasons brought them into bankrupt.

Figure 2 shows the number of bank failures in vertical axis and horizontal axis is falling rate of land prices in Japan. There are negative correlations. Simple regression where dependent variable is the number of bank failures and explanatory variables are (i) growth rate of land prices and (ii) growth rate of the economy (GDP growth rate).

Figure 2: Number of Bank Failures vs Price Decline in Commercial Properties



Number of Bank Failures = -8.99 - 408.85(Land Price)

(-0.59) (-1.95) R2 = 0.36

Source: Deposit Insurance Corporation of Japan and Ministry of Land, Infrastructure and Transport (Japan)

Figure 2 shows the relation between NPLs and land prices. It shows negative correlations between NPLs and land prices. Coefficient is -408.85 and t-value is significant in 90% level.

Three Bubble Indicators in Bank Based Economy

Three bubble indicators are proposed in this section. These three indicators are examined in both the Japanese bubble and the Lehman crisis in the US. In both economies, the indicators showed similar movements. The three indicators are:

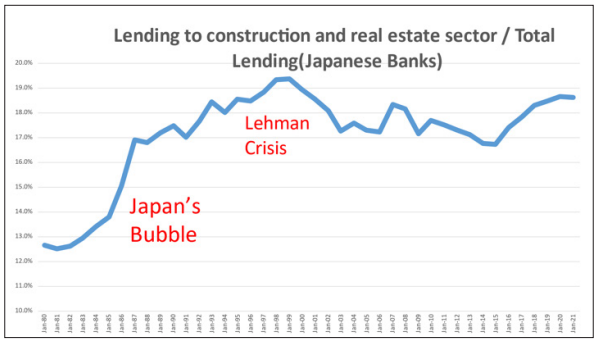
1. The ratio of banks' real estate loans to total bank loans;
2. The growth rate of banks' real estate loans in comparison to growth rate of the economy; and
3. Housing prices in comparison to average income.

Ratio of Banks' Real Estate Loans to total Bank Loans

Figure 3

Source: Yoshino-Nakamura-Sakai (2013)

Figure 4



Source: Bank of Japan

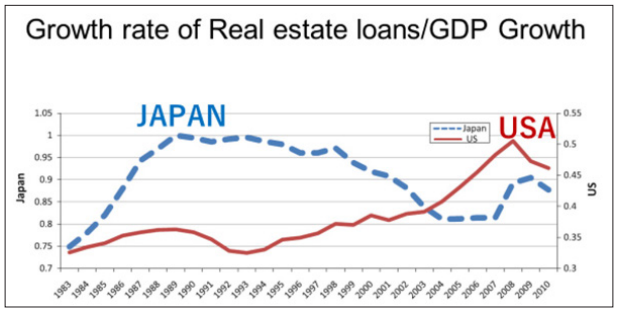
Figure 3 shows the rate of US mortgage loans to total bank loans. The ratio was lower than 30% in 1980-1985. However, it started to rise from 1998 to 2010 where it reached to more than 50% of total bank loans.

Figure 4 shows the rate of Japanese banks' loans to construction and real estate to total bank lending. It went up from 12.5% in 1980 to 17% in 1987.

In both cases, due to rising mortgage prices and property prices banks were inclined to increase mortgage loans and real estate loans.

Ratio of Growth Rate of Real Estate Loans to Growth Rate of GDP

Figure 5



Source: Yoshino-Nakamura-Sakai (2013)

$$Y = F(K, N, K_L) = K^{\alpha} N^{\beta} K_L^{\gamma}$$

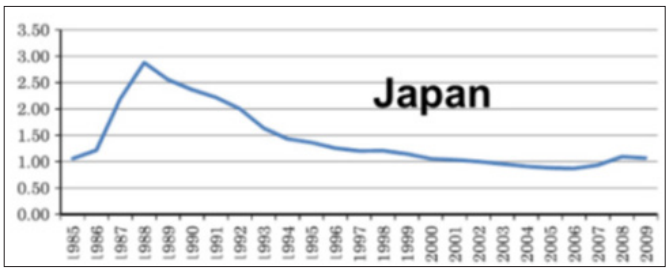
$$\frac{\Delta Y}{Y} = \alpha\left(\frac{\Delta K}{K}\right) + \beta\left(\frac{\Delta N}{N}\right) + \gamma\left(\frac{\Delta K_L}{K_L}\right)$$

$$= \frac{\alpha\left(\frac{\Delta K}{K}\right) + \beta\left(\frac{\Delta N}{N}\right) + \gamma\left(\frac{\Delta K_L}{K_L}\right)}{\frac{\Delta Y}{Y}}$$

Suppose the production function consists of capital (K), labor input (N) and office space (KL). When Cobb-Douglas production function is assumed, the growth rate of office space in comparison to growth rate of GDP is γ and constant. Therefore, the ratio of real estate loans to GDP growth rate must be stable. When these numbers are compared in Japan and the US, they fluctuate significantly. In case of Japan, growth rate of real estate loans went up from 0.75 to 1 from 1983 to 1989, the period matches to the Japanese bubble in late 1980s. In the US, this ratio went up from 0.75 to about 1.0 in 1993-2008. Both countries show significant increases in the growth rate of real estate loans during housing bubble.

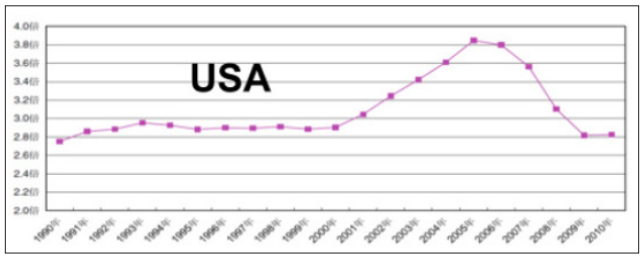
Comparison between Housing Prices and Income

Figure 6: Housing Prices/Income (Japan)



Source: Yoshino-Nakamura-Sakai (2013)

Figure 7: Housing Prices/Income (USA)



Source: Yoshino-Nakamura-Sakai (2013)

Ratios of housing prices to income are computed for both Japan and the US. In case of Japan, house price-income ratio went three times larger during bubble period. The ratio increased about 40% in the US. In both countries, after the burst of the bubble, the ratio returned to pre-bubble level. It shows housing prices cannot keep rising beyond the growth of average income. Buyers are general public. They cannot buy too expensive housing compared to their annual income both in Japan and in the US.

$$\max_H U(C, H) = u(c_1, H) + \beta u(c_2, H),$$

subject to

$$C_1 + P_H H = Y_1 + L$$

$$C_2 = (1 + r)L = Y_2 + \theta \Delta P_H^e H$$

$$Y_2 = (1 + \alpha)Y_1$$

$$C_1 = cY_1$$

$$C_2 = cY_2 = c(1 - \alpha)Y_1$$

If $\Delta P_H^e = 0$, then the following condition is obtained:

$$\frac{P_H H}{Y_1} = (1 - c)\frac{(1 + \alpha) + (1 + r)}{1 + r}.$$

If $\Delta P_H^e > 0$, then we have the following equation:

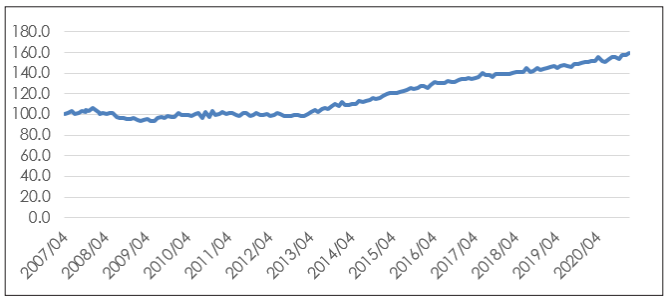
$$\frac{P_H H}{Y_1} = \frac{1}{1 + r}\left\{(1 - c)[(1 + \alpha) + (1 + r)] + \theta\frac{\Delta P_H^e H}{Y_1}\right\}.$$

The above point can be shown in a simple two period model where households' utility consists of consumption (C) and housing services (H). In the long run, the housing price/income ratio ($P_H H/Y$) depends on marginal propensity to consume (c), growth rate of income (α) and interest rate (r), where $\Delta P^e_H H=0$. Therefore, convergence in housing price/income shows the long run value where expected capital gains from home ownership will be zero.

Can We Find any Bubble Symptom after COVID-19?

Figure 4 shows bank loans to real estate/total bank loans. After the introduction of negative interest rate policy by the Bank of Japan and huge supply of base money from 2016, bank loans to real estate and construction business have been rising. Figure 8 shows property price index of condominiums in Tokyo, Japan, which increased by about 60% in 2020 compared to 2010.

Figure 8: Residential Property Price Index (Condominiums, Tokyo) (Arithmetic mean of 2010 = 100)



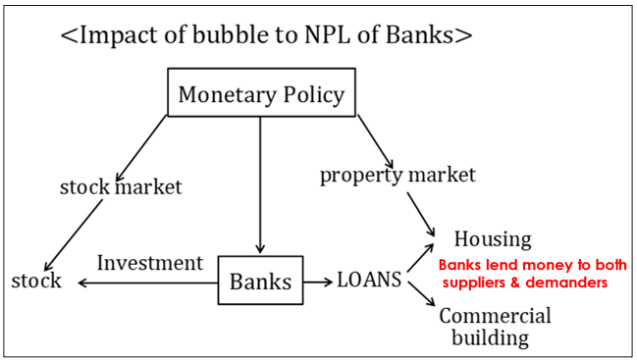
Source: Ministry of Land, Infrastructure and Transport (Japan)

Property market has its own characteristics, which is that it strongly reflects monetary policy. When the central bank eases monetary policy, banks can supply much more credit to customers at lower rate of interest. Banks provide loans to constructing companies and they also lend money to buyers of housing. Banks can lend money to both suppliers of properties and demanders of properties which will push up real estate prices and increase real estate loans in total.

Other indicators of bubble phenomena shown in prior section are yet to be disclosed.

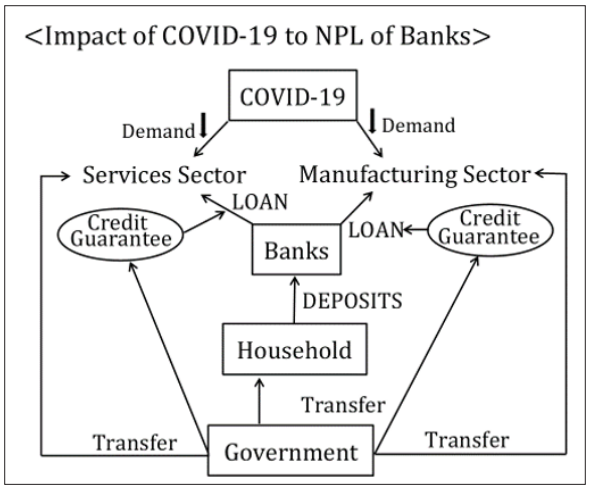
Policy Transmission in Bubble Economy and COVID-19

Figure 9



Source: Authors' own

Figure 10

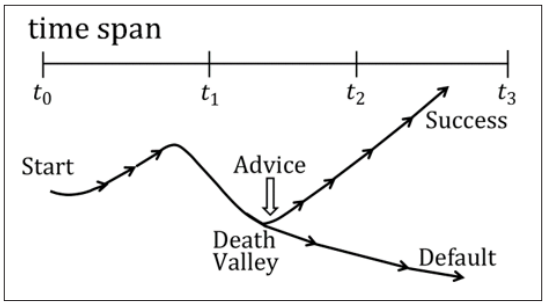


Source: Authors' own

Figure 9 and Figure 10 compare the transmission mechanism of macroeconomic policy in property bubble and COVID-19 cases. In bubble period, easy monetary policy affected banking behavior significantly by injecting huge amount of money stock into the economy. It induced an increase in stock prices and property prices.

Policies taken during COVID-19 is not only an increase in money supply but also government cash transfers (stimulus payments) and credit guarantee to bank loans. There are two types of borrower companies. One group are those temporarily affected by COVID-19, and recovery of their activities are expected. These companies will return to normal after COVID-19. Another group of companies are those that faced declining sales, even before COVID-19, due to structural problem in their business. They might not be able to recover their declining trend even after COVID-19. Credit guarantee applied to bank loans are covering both group of borrowers. In case of emergency, banks are not easy to differentiate group 1 and group 2. Furthermore, governments encouraged banks to use credit guarantee so as not to cut banks' lending to SMEs.

Figure 11



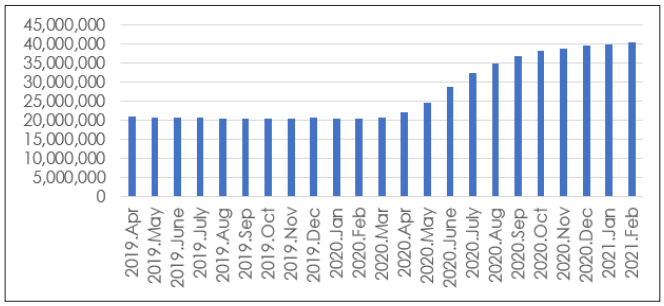
Source: Authors' own

There are concerns about the future performance of the banking system. One is about the situation when the government credit guarantee to support SMEs ends. Reduction of credit guarantee will squeeze loans to SMEs and the number of bankruptcies by Japanese businesses are likely to rise. The second is the negative impact of changes in land prices. Working from home is increasing among Japanese companies. People do not necessarily need to live closer to the central district of large cities, and this may lower housing prices of big cities. Weakening business activities may also lower property prices in commercial district of cities. Decline in land prices will work to increase NPL ratio based on data on bank failures in 1990s and 2000s. The third concern is the changes in monetary policy. The negative interest rate policy and the quantitative easing policy made Japanese banks to keep on accepting low interest rate deposits. However, the Bank of Japan cannot continue its negative interest rate policy for a long time. Changes in the monetary policy of the Bank of Japan will affect corporate activities to weaken and may increase NPL ratio of Japanese banks. The fourth concern is bank loans directed to companies with structural problems. Credit guarantee provided by the government made banks easy to lend to them. When credit guarantee to support SMEs is terminated, companies with structural problems may go into bankruptcy. Failed loans will be covered by credit guarantee system. However, the total amount of loans by banks will decline since banks lose group of borrowers who have structural problems. This will lead to a decline in capital supplied by banks. It may result in slower economic recovery and total welfare will go down shown by dynamic mathematical model below.

In August 2021, the new Japanese banking data will be available where NPL ratios of various banks of Japan become apparent. At this point, the paper is still on going as to the impact of COVID-19 on various regions of Japan and on Japanese banks.

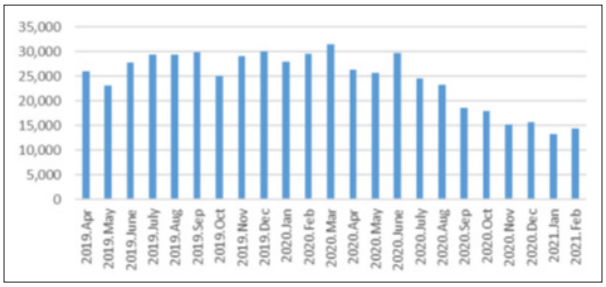
Total amount of credit guarantee increased about two times, reducing banks' NPLs.

Figure 12: Accumulated amount of credit guarantees (monthly, million yen)



Source: Japan Federation of Credit Guarantee Corporations

Figure 13: Actual amount of default (monthly, million yen)

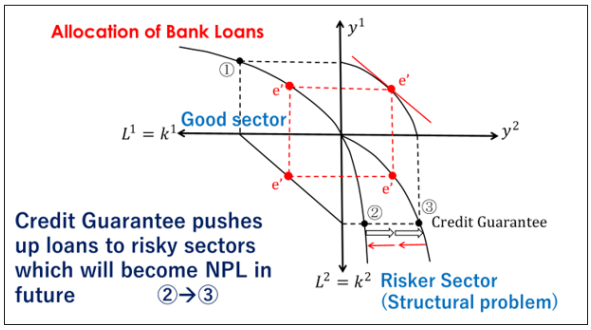


Source: Japan Federation of Credit Guarantee Corporations

Reduction or termination of credit guarantee will not only affect banking behavior but also force banks to face with declined amount of bank loans to customers. It will lead to lower stocks of capital and will end up in lower production of the region.

In order to avoid these issues, screening between temporarily affected companies and structurally difficult companies is necessary. Decline in capital stock in the region will lead to lower consumption and lower welfare.

Figure 14

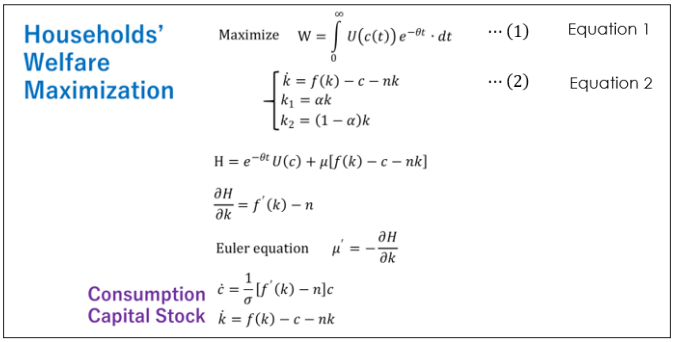


Source: Authors' own

SMEs who are facing with structural problem and SMEs who are temporarily affected by the COVID-19 pandemic have to be differentiated. Those who are facing with structural problem needs loans to restructure their business activities rather than keep on continuing their current business style. Structurally weakened SMEs who are temporarily supported by credit guarantee will face defaults after emergency credit guarantee ends. Figure 14 shows that eventually loans to structurally weak sectors will not be able to support their business, and their production will go down in the fourth quadrant. Actual production function will shift down after the termination of credit guarantee from ③ to ②.

Households' welfare maximization in equation 1 is explained by three constraints in equation 2. Three constraints explain capital dynamics of two sectors (k_1 and k_2).

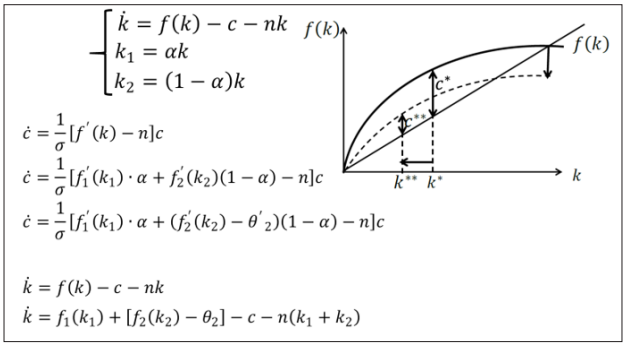
Figure 15



Source: Authors' own

Due to a decline in capital stock after the termination of credit guarantee, optimal capital stock will decline from k^* to k^{**} where capital allocation to k_2 will decline. The bank loans to 2nd sector might face with default losses after the termination of credit guarantee of current policy after COVID-19.

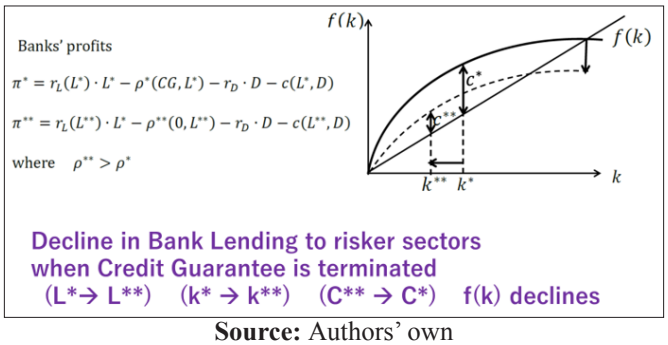
Figure 16



Source: Authors' own

An increase in default risks of sector 2 (k_2) will lead to a decline in bank loans to sector 2 where optimal capital allocation declines from k^* to k^{**}. Total amount of consumption declines from C* to C**. Households may face with declined welfare. In order to avoid future expected high default losses in sector 2, banks have to be cautious about keep on lending to sector 2. Roles of banks are to provide loans that firms can use to restructure their business to cope with changes in business conditions. If banks keep on providing loans to sector 2 without encouraging to revitalize their business structure, this can lead to higher default losses in sector 2.

Figure 17



Source: Authors' own

Conclusion

This paper examined bubble period of Japan and the US, and monetary easing measures taken to address COVID-19. Common factors are found in both countries. However, COVID-19 crisis will bring different economic impacts. Especially the spread of COVID-19 will lead to a decline in bank lending to firms facing structural problems. Termination of negative interest rate policy and credit guarantee will have a big impact on regional economies. In order to achieve economic recovery, banks must identify borrowers who are facing temporal decline in business and those that have structural problems. Measures to address borrowers differ depending on the causes of their downturn.

Disclaimer

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