HIDDEN POWER OF THE JAPANESE ECONOMY

"CREDIT GUARANTEE CORPORATIONS"

İsmet Gergerli

ABOUT THE AUTHOR

He was born in Kâhta, Adıyaman in 1969. After graduating from primary, middle and high school in Kâhta, he earned a Bachelor's degree from the International Relations Department of the School of Political Sciences of Ankara University. He later completed his post-graduate studies in sociology.

He began his professional career in Pamukbank. After Pamukbank was taken over by Halkbank, he transferred to Halkbank, where he held managerial positions for almost 12 years.

He served as the head of Tradesmen's Banking Department, the head of SME Banking Department, the head of Training Department and as Regional Coordinator in Ankara and Istanbul, in chronological order.

He served as a Member of the Board of Directors of the Credit Guarantee Fund from 2008 to 2011 while working for Halkbank.

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ABBREVIATIONS

KGF : Kredi Garanti Fonu A.Ş.

KODIT : Korea Credit Guarantee Fund

GDP : Gross Domestic Product

SME : Small and Medium-Sized Enterprises

USSR : Union of Soviet Socialist Republics

USA : United States of America

OECD : Organisation for Economic Cooperation and Development

S&P : Standard and Poors

CRD : Credit Risk Database

GDP : Gross Domestic Product

TCG : Thailand Credit Guarantee Corporation

SBC : Small Business Corporation (The Philippines)

BSP : Bangko Sentral ng Philipinas (Central Bank of the Philippines)

ADB : Asian Development Bank

BoJ : Bank of Japan

FSA : Financial Services Agency (Japan)

NPL : Non Performing Loan

CGC : Credit Guarantee Corporations (Japan)

JFC : Japan Finance Corporation

CGI : Credit Guarantee Institution

RDB : The Risk Data Bank of Japan

P2P : Peer-To-Peer Direct Lending Platforms

PD : Probability of Default

JFG : Japan Federation of Credit Guarantee Corporations

JASME : Japan Finance Corporation for Small and Medium Enterprises

CGS : Credit Guarantee System

FOREWORD

The author, who has been serving as the General Manager of the Kredi Garanti Fonu A.Ş. since the end of 2015, working together with his team, has been carrying out an intensive investigation of the role of Credit Guarantee Systems in different economies so as to enable the KGF to reach its maximum potential in support of Turkey's economic development.

The macroeconomic outcomes in 2017 and 2018 resulting from the fundamental structural changes made to the Credit Guarantee Fund in recent years, as well as unexpectedly large impacts of these outcomes on the Turkish economy, has demonstrated the importance of the Credit Guarantee Systems' role within different economies. Yet, our efforts to identify the optimum structure continue, with a view to keeping up with the rapid change required under the new world order. To this end, in 2017 we first visited South Korea, one of the largest economies in the world, and KODIT, the Credit Guarantee Institution of South Korea, for on-site examinations. The guarantee support provided by KODIT, which was for many years recognized as the largest-volume guarantee institution in the world, has been one of the key elements in the South Korean economy, in which it has played an active role in the establishment and development of world-leading technology brands. Although we, as the KGF, equaled this long-term title of KODIT in 2017 and 2018, their sustainable presence and their impact on the South Korean economy were of particular interest to us.

After leaving South Korea, we set out to examine the Credit Guarantee System in Japan, as the world's third-largest economy. During this one week trip, we visited all of the stakeholders in the country's Credit Guarantee System mechanism and obtained detailed information from their managers.

I would like to once again express my sincere thanks to Prof. Naoyuki Yoshino, the Dean of the Asian Development Bank Institute, and his deputy Farhad Taghizadeh-Hesary, Ph.D., as well as the precious team who accompanied us with great hospitality during our trip to Japan.

We present our study of the Japanese model for the perusal of our distinguished readers, and hope it will contribute to the development of the Credit Guarantee System in our country, ensuring that it has a lasting and sustainable effect on our economy.

Ankara, March 2019

INTRODUCTION

The new economic order that emerged after the industrial revolution has continuously called for new structures among the stakeholders of the economy, along with new ways of doing business, and their constant transformation and development. The global economic crisis of 1929 witnessed in the wake of World War I and the destruction wrought by World War II necessitated that these changes to be more radical, and it is possible to observe these changes in other geographies being Europe in the first place.

The dynamics that are intrinsic to every country resulted in similar models as a result of these changes, but with different applications.

Various systems can be perceived, such as Co-operative Banking, Public Banking and Credit Guarantee Systems, which are implemented based on the models that meet the requirements of individual countries in Europe, particularly in Germany, and different versions of these systems can be identified in the Far East and Latin America.

The new international order that emerged after 1945 led to a bipolar world order in Europe as well as in Asia. The Asian nations were basically divided into two groups: the socialist countries following the Soviet economic model, and the other countries that were receiving support from the United States and that were implementing its economic system.

Korea was divided into two, with one part controlled by the Soviets and the other that embraced Western values with US support. The Korean example is actually a concrete manifestation of two different economic systems, and the economic performance achieved by South Korea, the 10th largest economy in the world, is worth examining and assessing. South Korea's success is a result of a very efficient economic system that was designed in detail to meet the needs of market players of every size, and was achieved despite its small geographic area and small population.

China has made its mark on the past two decades through its successful production capabilities, its integration with the global economic system and its vast population, in spite of its socialist system.

India may also be considered another success story, which is based on its demographic advantage.

Indonesia, Malaysia, Thailand and other Asian countries should all be regarded as part of the bigger picture, although

Japan is undoubtedly one of the most successful among them.

Japan's gross domestic product (GDP) of over 5 trillion dollars, its status as the third largest economy in the world and the development model implemented after the devastation of World War II, and especially in the 1960s and 1970s, mean that it always deserves to be analyzed and viewed as a successful example.

Japan has managed to maintain its key role in the global economy and its sustainable growth amid global competition despite numerous economic fluctuations at both global and regional levels, as well as a challenging geographical environment (earthquakes, tsunamis, etc.) in which it is located.

In this brief study, we explain how the Credit Guarantee System in Japan facilitated SME access to finance and the subsequent total value-added created for the Japanese economy, along with the methods and institutions applied for that purpose.

Turkey has for the last two centuries been Western-oriented, having generally copied and applied Western macro-concepts in its management systems,

technologies, economic models and access to finance, believing that there is no model other than the Western one, and that there is no civilization other than the West, and leading us to make decisions based on that assumption for a long period.

We should analyze and interpret the monopolar world order that emerged after the disintegration of the Union of Soviet Socialist Republics (USSR) in the 90s and its effects on the economy in a manner that would provide a perspective for Turkey's future.

The rise of the East that began after the 90s, and that made its mark on the global balance of power after the 2000s, effectively opened an alternative door to us. Understanding and learning about the fundamental dynamics of this rise and the advent of benchmarking solutions compatible with our own system have become even more vital today.

As mentioned above, the aim in this study is to provide an in-depth analysis of the credit guarantee system behind the rise and sustainment of Japan's economic power, as one of the Eastern economies that managed to remain successful amid the rising global competition for the longest period, and as the most effective mechanism in the economic system as a whole, and to explain how it can benefit Turkey. While outlining the credit guarantee system in Japan, which, in our view is one of the best models in the world, we intend also to analyze and assess the system.

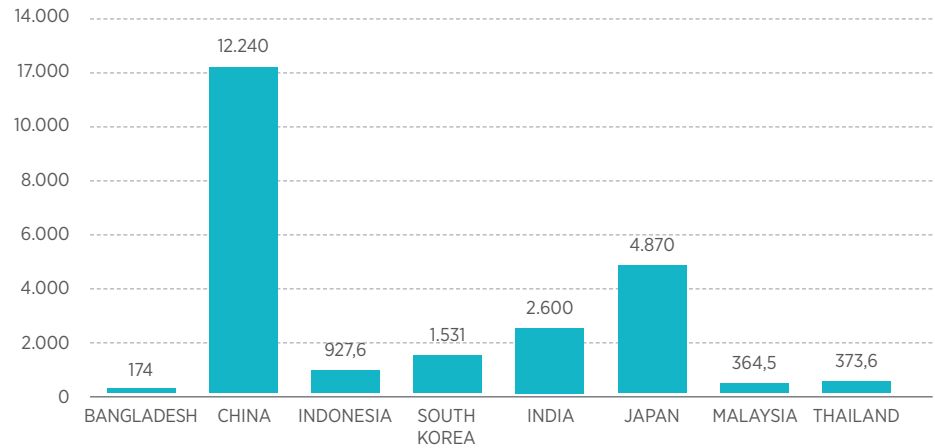
1 GENERAL SITUATION IN ASIA

Led by China and Japan, the Asian nations have been the engine of global economic growth in the recent past, although economic growth in Asia has slowed compared to the past. Today, SMEs account for almost half of economic activity in the Asian economy.

It is quite important to boost SME efficiency in order to overcome the demographic challenges faced in many Asian countries. Access to finance is one of the main problems facing industrialization and growth in Asia.

GROSS DOMESTIC PRODUCT

Figure 1. Gross Domestic Product in Asian Countries (billion US Dollars)

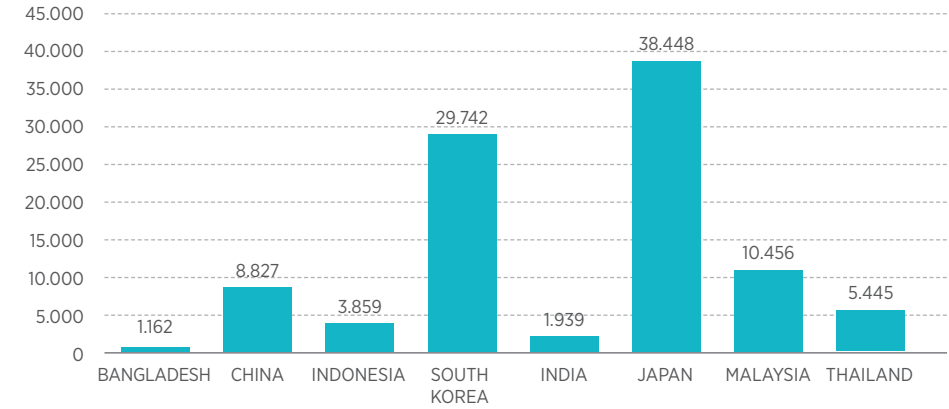


Based on 2017 data

A look at the annual GDP of the major countries in the Asian economy shows that China has a significant share at over US$ 12 trillion, and is the second largest economy in the world after the United States, followed by Japan as the third largest, with a GDP of US$ 4.8 trillion. Japan is followed by India with US$ 2.6 trillion and South Korea with US$ 1.5 trillion. Far East countries make up almost one-third of the global GDP, which is over US$ 80 trillion, and these countries are expected to further increase their share of the global economy over the next 15 years, with their high populations being envisaged as an advantage. Furthermore, their share could well go beyond expectations with the contribution of training. There is, for instance, an expectation that the Indian economy will grow at a rapid pace over the next decade thanks to its well-educated population, despite its large population and its various economic problems.

According to 2012 figures, Indonesian SMEs, including micro-businesses, accounted for 59.1% of GDP, and this figure has increased gradually in the ensuing years. SMEs and micro-businesses accounted for 37% and 32.7% of the GDPs of Thailand and Malaysia, respectively, according to data from the same year. Thailand's national strategy for 2012 was intended to ensure that the contribution of SMEs to GDP would increase to 40%, or even more.

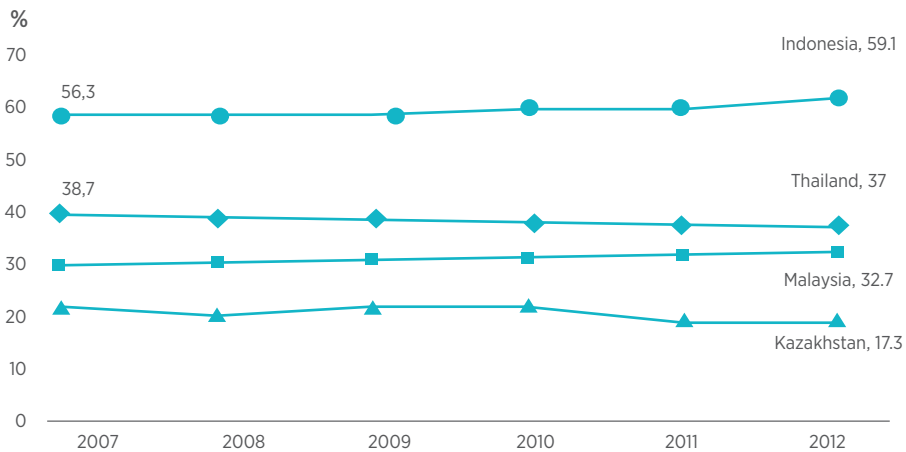
Figure 2, GDP Per Capita in Asian Countries (thousand US$)



Based on 2017 data

It goes without saying that all developed and developing countries in the world would like to increase their per capita income, although the need to make improvements in order to rectify the unequal distribution of income has become a key issue in the economic policies of countries, with Japan and China being two different examples in the Far East in this regard. While the distribution of per capita GDP in Japan intends to rise, the likelihood of the same trend being followed in China is low. Per capita income in Japan is US$ 38,000, compared to US$ 9,000 in China. Despite its GDP size, China faces such problems as low per capita income and an unequal distribution of income.

Figure 3. SME's Share of Gross Domestic Product in Asian Countries

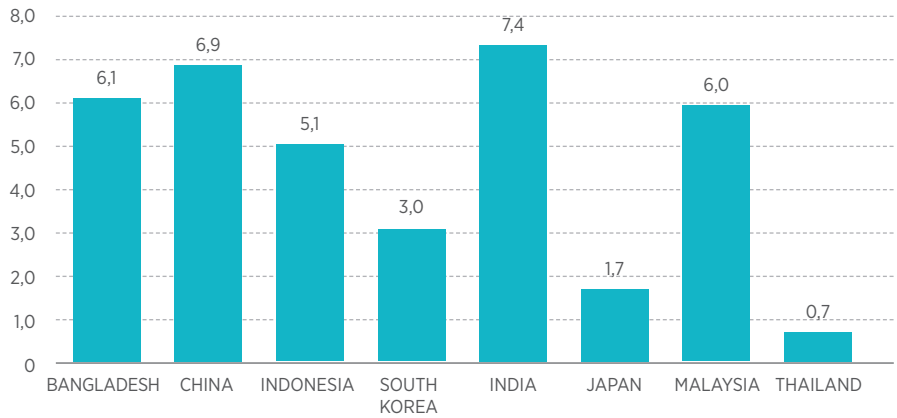


Source: ADB (2014).

A look the share of SMEs in GDP in Asian countries shows values of 37% for Thailand, 32.7% for Malaysia and 17.3% for Kazakhstan, whereas the greatest contribution is made in Indonesia with 59.1%, as the highest among the Far East countries. Developed or developing countries use SMEs effectively and efficiently for their development and to ensure a dynamic economy, and Indonesia stands as a successful example of SME efficiency.

GROWTH

Figure 4. Growth Rates of Asian Countries (%)

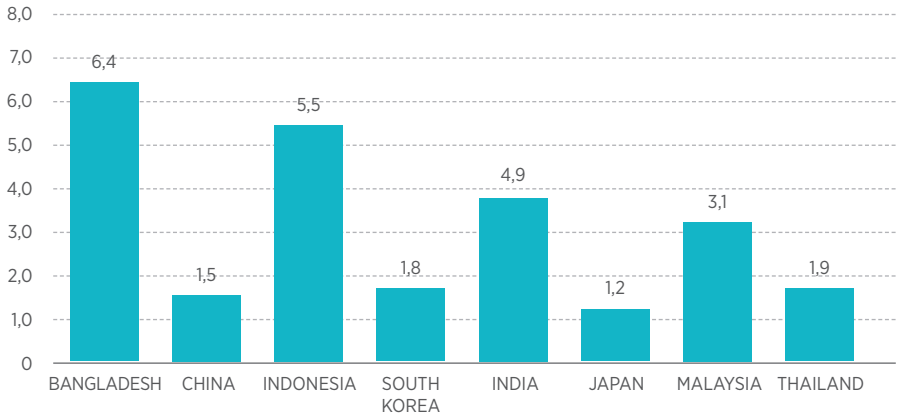


Based on 2017 data

With an annual growth rates well above other countries around the world, Far East countries have grown to outperform many European countries, joining the ranks of many of the major economies in the world. The annual growth rates of other Asian countries, particularly China, over at around the 5% mark. With such high growth rates, China, India, Japan, Malaysia and Bangladesh retain a significant share of global trade and are increasing their share of the global economy with their high total GDP. The support provided by SMEs to economic development play a key role in the rapid growth of the countries in the Far East.

INFLATION

Figure 5. Inflation Rates in Asian Countries (%)

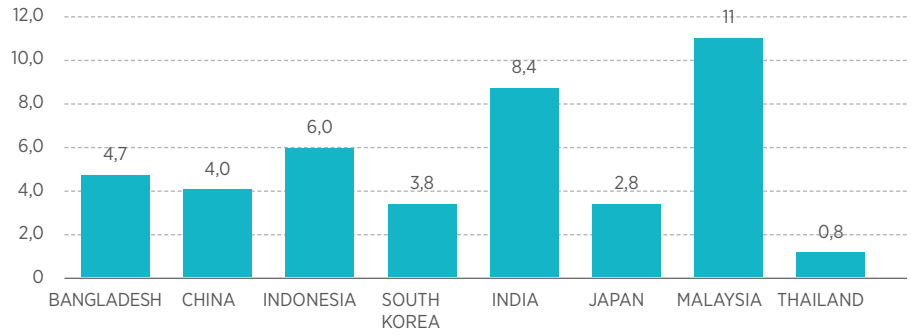


Based on 2017 data

Inflation rates in the Far East are at around 2–3%, with 1.5% in Japan and China, but as high as 4–5% in India, Malaysia and Indonesia. The dynamism in the economic growth and development of those countries also leads to a certain rise in inflation.

UNEMPLOYMENT

Figure 6. Unemployment Rates in Asian Countries (%)



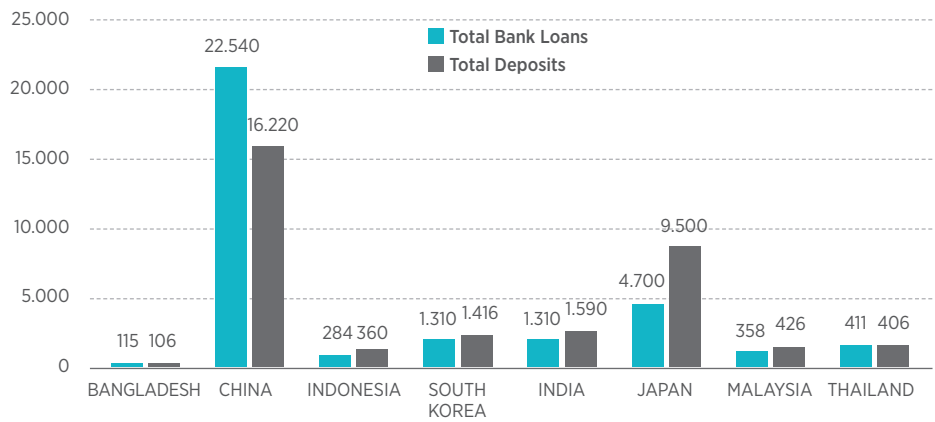
Based on 2017 data

Unemployment in these countries stands at around 4–5%. With an unemployment rate of 2.8%, Japan has a more positive trend than the other countries. While labor force participation is gradually falling, it is surmised that the high average age of the population may become a problem in the future.

The level of employment provided by SMEs varies from country to country. The share of employment in SMEs in total employment varies between 28.0% (Kazakhstan) and 97.2% (Indonesia), according to 2012 data.

DEPOSITS/LOANS

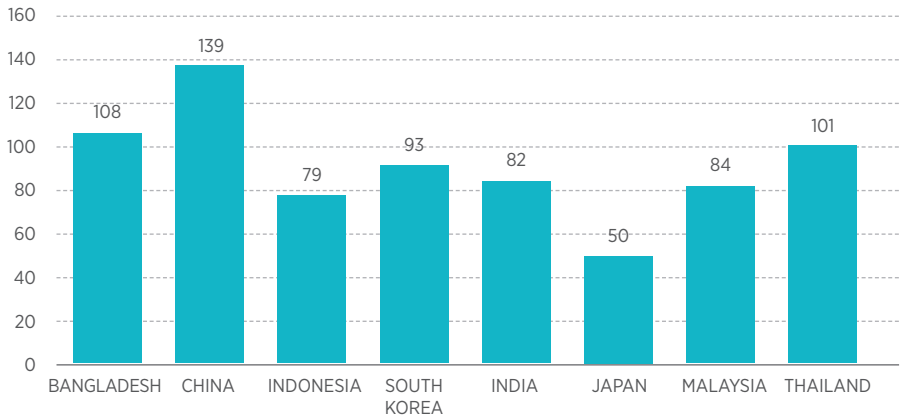
Figure 7. Distribution of Deposits and Loans in Asian Countries (billion US Dollars)



Based on 2017 data

China has the highest loan-deposit ratio in the banking systems of the Far East countries, with deposits totaling US$ 16.2 trillion and loans totaling US$ 22.5 trillion. The sum of deposits is twice the amount of loans in Japan, while the deposit-loan balance is 100% in India and South Korea.

Figure 8. Loan-Deposit Ratio in Asian Countries (%)



The highest loan-deposit ratio is in China among the countries in the Far East, standing at 139%, compared to 100% or lower in the other countries, indicating high deposits. Countries in the Far East can easily access the necessary funds for growth and development thanks to people's tendency to save, which stems from their sociological and cultural systems. Accordingly, these funds are constantly increasing.

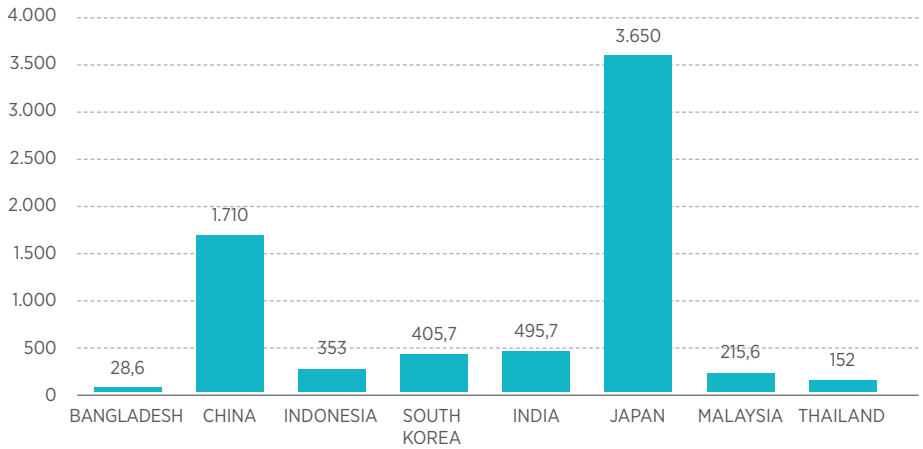
Figure 9. Financial Markets in Asian Countries

Source: Kashiwagi, S.2011.FSA Presentation at the International Conference at the Centre for Financial Studies. Tokyo. February 3.

A look at the financial markets in the Far East indicates that there is significant share of bank loans, although Japan and South Korea differ from other countries in this regard, where the share of bonds is higher than in other countries, and there are some share certificates in circulation in the markets. Other countries in the Far East mostly use bank loans for investments and financing.

FOREIGN DEBT

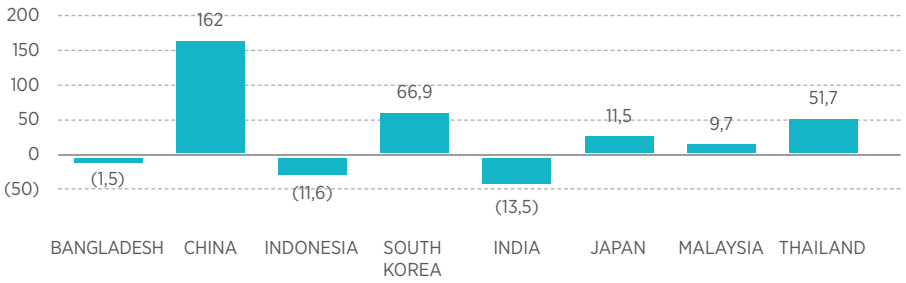
Figure 10. Total Indebtedness of Asian Countries (billion US$)



Japan stands out with a foreign debt of US$ 3.6 trillion, based on figures detailing loans from other countries. Japan is followed by China with US$ 1.7 trillion, while the foreign debts of India and South Korea are respectively close to US$ 500 billion and US$ 400 billion. A look at the ratio of the sum of foreign debts of those countries to total gross domestic product indicates that only Japan has an indebtedness of over 50%, compared to figures below 50% in other countries.

CURRENT ACCOUNT BALANCE

Figure 11. Current Account Balance in Asian Countries (billion US Dollars)

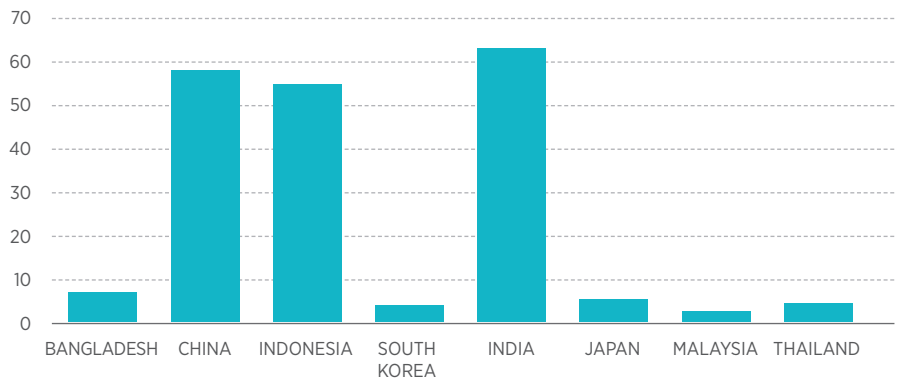


Based on 2017 data

China's current account surplus in excess of US$ 150 billion is particularly noteworthy. South Korea is another country with a current account balance of over US$ 60 billion, which is followed by Thailand with a surplus of US$ 50 billion. It can be concluded that the majority of countries in the Far East run a current account surplus and owe their economic growth to an export-based production model.

TOTAL NUMBER OF BUSINESSES

Figure 12. Total Number of Businesses in Asian Countries (million)

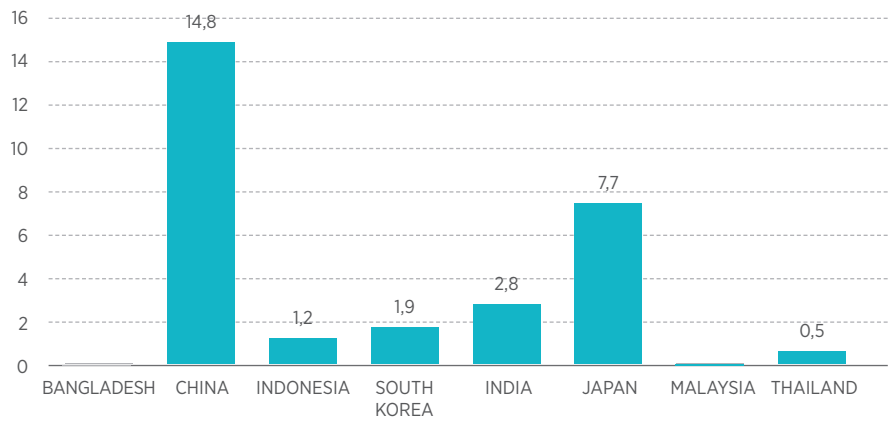


Based on 2017 data

SMEs make up the bulk of the real sector in the countries in the Far East, particularly in China and India. SMEs mostly consist of micro and small-sized businesses, and supporting businesses with fewer than five employees is at the core of government policies in those countries, given that such businesses assume the most important functions in direct employment.

PRODUCTION

Figure 13. Total Share of Asian Countries in Global Production

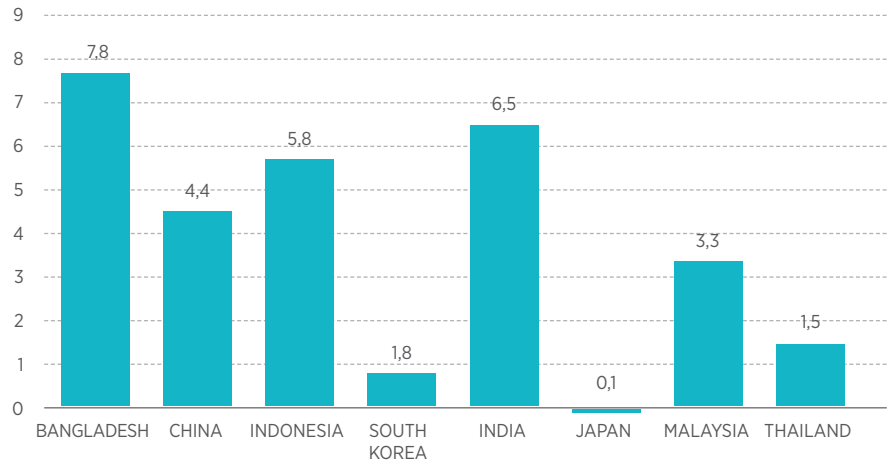


Based on 2017 data

The share of the Far East in total global production has grown rapidly over the past two decades, with first Japan and then China becoming the engines of rapid growth in the region. It is foreseen that this trend will continue over the next two decades, with China in particular, and then India, Indonesia, Bangladesh and Thailand, rapidly increasing their share of production.

CENTRAL BANK INTEREST RATES

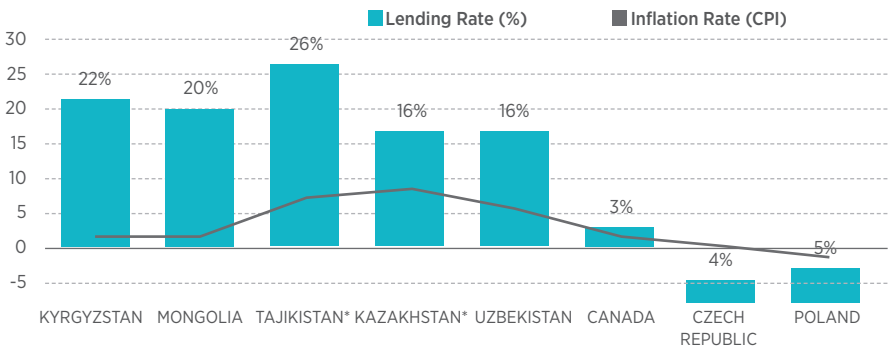
Figure 14. Central Bank Policy Interest Rates in Asian Countries (%)



Based on 2017 data

We see that policy interest rates are in the range of 2–3 points above the average inflation rate in the Far East, and these can be expected to rise to a certain extent in the coming period, leading to lower growth rates when compared to the past.

Figure 15. Loan Interest Rates and Inflation Rates in Asian Countries

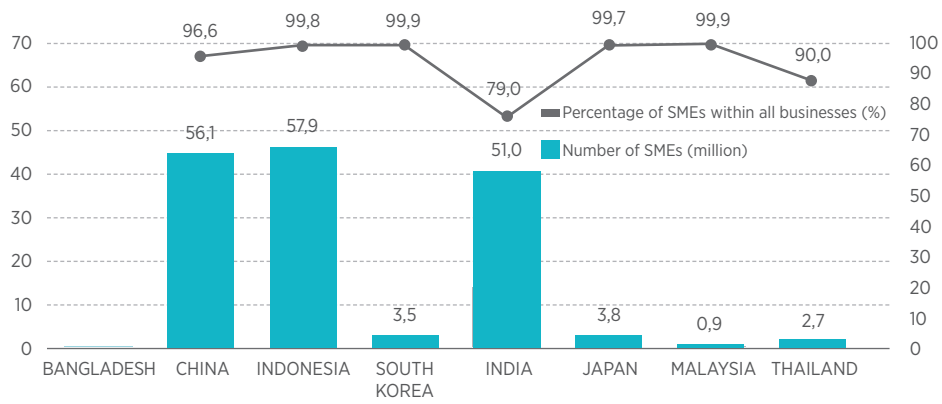


PS: *Lending rates for Kazakhstan and Tajikistan (2015)
Source: (World Bank, 2017: CIA, 2018 State Committee of the Republic of Uzbekistan on Statistics, 2018; Ministry of National Economy of the Republic of Kazakhstan, 2017; OECD, 2018)

The very high interest rates in many Asian countries is one of the major obstacles to financing, and the lack of a well-established credit guarantee system is a noteworthy situation in countries facing such problems. This problem is not being experienced only in countries where a credit guarantee system is in active and effective use, as the absence of a fully fledged credit guarantee system in countries like Kyrgyzstan, Mongolia and Tajikistan is exposing SMEs to very high interest rates, despite the low inflation rates. SMEs suffer from high lending rates when accessing financing due to their unmeasurable and unpredictable risks. A credit guarantee system comes into play in such situations, emerging as a major instrument for companies seeking access finance. Despite its strong economy and low interest rates of around 1%, even Japanese SMEs face financing at rates of up to 20% when borrowing from outside the credit guarantee system, while this rate is as low as 2–3% for loans borrowed through the credit guarantee system.

NUMBER/SHARE OF SMES

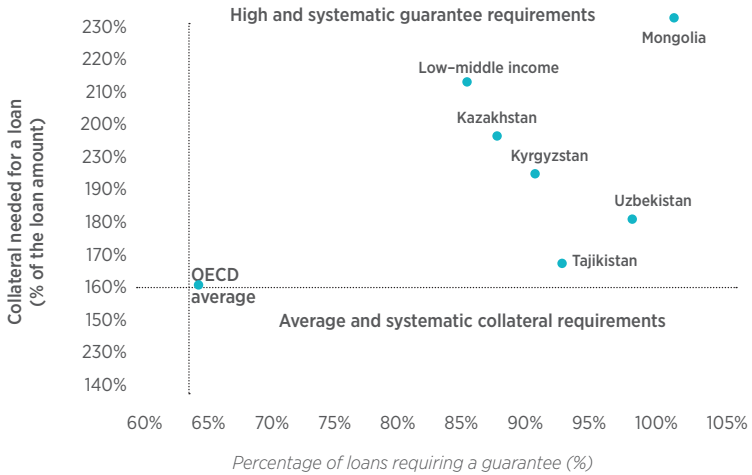
Figure 16. Number of SMEs in Asian Countries and their percentage within All Businesses



Almost all businesses in the countries in the Far East are SMEs, and this high number of SMEs makes a positive contribution to a dynamic set of economic activities through rapid growth, adaptation to new conditions and rapid solutions to unemployment. In Japan, for example, the country's 3.8 million SMEs made the largest contribution to the recovery of the Japanese economy after a recession, alleviated of the impact of a financial crisis in 2008 and increased employment rates.

COLLATERAL ISSUE

Figure 17. Collateral Needed in Asian Economies



Source: (EBRD, 2017, World Bank, 2017, OECD, 2018)

Another dimension in the finance issue is the high collaterals lenders ask SMEs to provide, which can amount to considerably more than the loan that they are seeking. The collateral required for borrowing US$ 100 in the OECD (Organisation for Economic Co-operation and Development) is US$ 160, and almost 65% of loans made in those countries are made in exchange for a collateral. Mongolia is undoubtedly the most interesting country in this regard, where around US$ 230 collateral is required for a loan of US$ 100, and this is the rate applicable to all loans.

The lack of data that would allow lenders to make a prudent assessment is at the root of the collateral problems faced by SMEs. Various credit rating institutions, such as Standard and Poors (S&P), rate large companies, and while banks may provide loans to large companies based on such ratings, it is not possible to do make a reliable rating of SMEs, which obstructs their access to loans. SMEs face difficulties in accessing finance due to the lack of reliable SME databases in many countries, although the model established in Japan has significantly eliminated such difficulties. Thanks to this model supported by the government, 51 credit guarantee institutions in Japan have transferred SME-related data to the CRD (Credit Risk Database), and the resulting database has allowed all SMEs to benefit from the banking system. If models similar to the one established in Japan can be developed also in other countries, it will be easier for SMEs

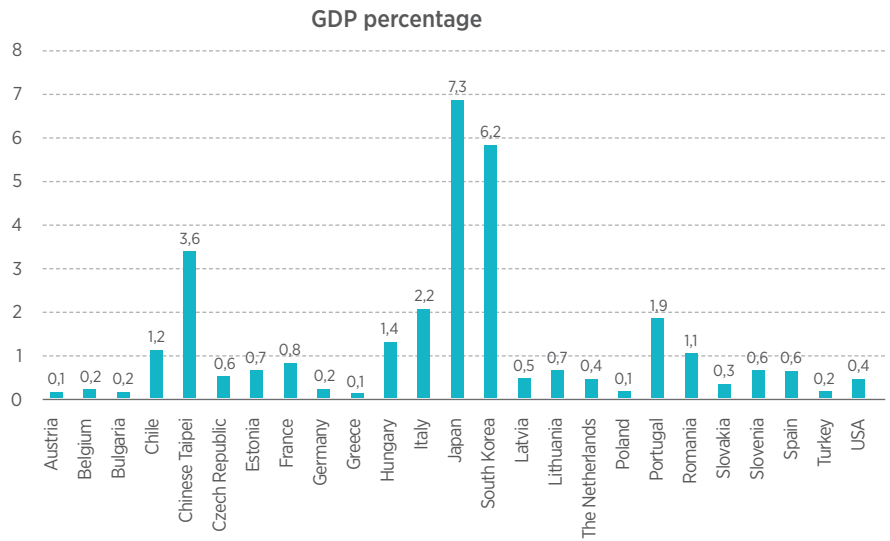
to access finance, as such databases permit more reliable ratings. The support to be provided by governments for the creation of credit risk databases in countries with no such tool would also aid SMEs in accessing finance.

More efforts should be made to facilitate the access of SMEs to finance, considering their key role in many economic activities in Asia. It can be difficult to assess the financial and non-financial status of SMEs, however the Credit Risk Database in Japan rates SMEs based on both financial and non-financial data. Extensive data on SMEs is collected in a database and then used to rate SMEs through a statistical analysis.

Finance should be accessible not only through the banking system, but also from other sources. The "Sovereign Investment Fund" in Japan sets a good example in this regard, detailed information of which can be found in the following sections of this study.

CREDIT GUARANTEE CORPORATIONS AND THEIR PORTFOLIO SHARES

Figure 18. Credit Guarantee Institutions in the World and their Share of Guarantee Risks



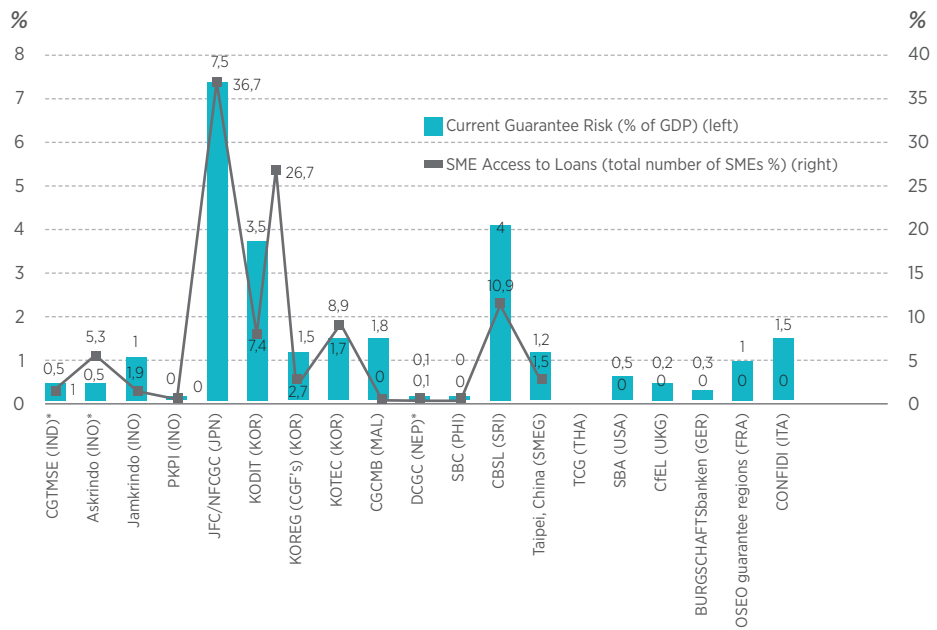
Notes: 1. Members of the European Association of Guarantee Institutions for European countries, including mutual public and special public plans. 2. Data for Chile, China, Japan and the United States is from 2010.

Source: AECM (2012), Pombo (2010).

Credit guarantee systems that permit access to loans with advantegous conditions through guarantees provided by the Credit Guarantee Institutions are used extensively in many countries. Some countries use the system very efficiently, while others use it mostly for specific projects and at a lower scale. Loans made via the Credit Guarantee System in Japan represent 7.3% of GDP, which is the highest rate among all countries, and more than 1.5 million businesses are receiving guarantee support. Accordingly, credit guarantee institutions can be considered the most important building blocks of the economic system. Japan is followed by South Korea with 6.2% and China with 3.6%.

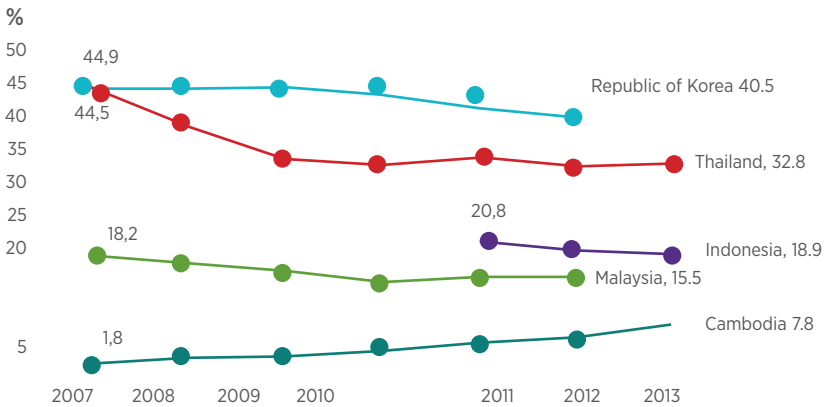
SME ACCESS TO LOANS

Figure 19. SME Access to Credit Guarantees in the World



The ratio of loans extended through the credit guarantee system to GDP is 7.3% in Japan, where 36.7% of SMEs make use of the system. In other words, Japan makes the most effective use of the credit guarantee system in the world in terms of the number of SMEs benefiting from the system, as well as in terms of its size. In South Korea 26.7% of all SMEs make use of the system.

Figure 20. Ratio of Loans Provided to Small and Medium-Sized Businesses to All Loans in Asian Countries



*Data for Cambodia, Indonesia and Thailand are from the third quarter, end of August and the second quarter, respectively. Source: ADB (2014).

The ratio of loans to SMEs within total loans in Asian Countries is 12% on average. With 40% of all loans, South Korean SMEs are the largest loan share among all Asian countries SMEs, which can be attributed to the presence of a fully-fledged credit guarantee system in the country that allows SMEs to obtain a higher share in total loan portfolio.

MACROECONOMIC SITUATION IN SELECTED ASIAN COUNTRIES

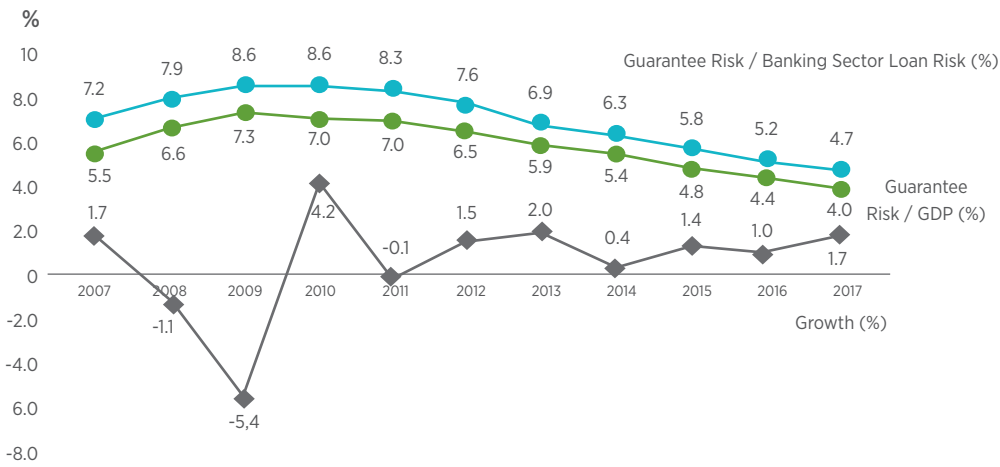
JAPAN

Figure 21. Japanese Banking Sector and GDP

JAPAN (BILLION DOLLARS)						
YEAR	BANKING CREDIT RISK	GUARANTEE RISK	GUARANTEE RISK / BANKING CREDIT RISK (%)	GDP	GROWTH (%)	GUARANTEE RISK/GDP (%)
2007	3,855.40	276.1	7.2	4,978.50	1.7	5.5
2008	4,758.40	376.9	7.9	5,669.10	-1.1	6.6
2009	4,632.00	397	8.6	5,445.80	-5.4	7.3
2010	4,994.90	427.2	8.6	6,094.20	4.2	7
2011	5,435.20	451.9	8.3	6,486.60	-0.1	7

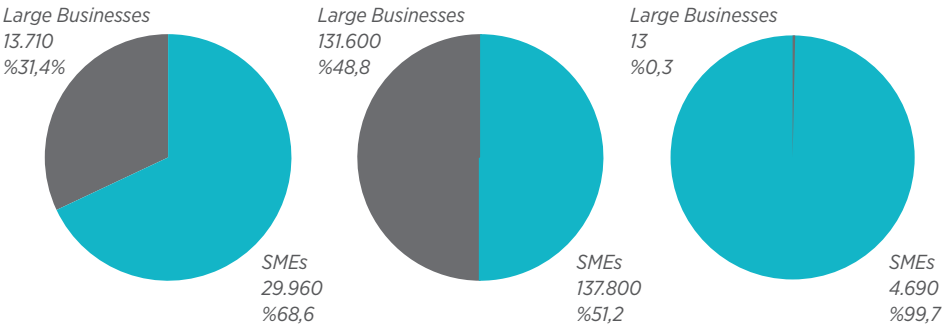
JAPAN (BILLION DOLLARS)						
2012	4,575.00	349.7	7.6	5,375.00	1.5	6.5
2013	4,216.40	291.9	6.9	4,967.60	2	5.9
2014	3,716.50	235.9	6.3	4,403.40	0.4	5.4
2015	3,679.30	212.8	5.8	4,389.90	1.4	4.8
2016	4,060.50	211.6	5.2	4,762.00	1	4.4
2017	3,319.00	203.5	4.7	5,044.00	1.7	4

Figure 22. Credit Guarantee Risk and Growth in Japan



The Japanese economy contracted by 1.1% in 2008 as a result of the financial crisis, and contracted by a further 5.4% in 2009. Credit Guarantee System (CGS) loans were raised from US$ 270 billion to US$ 450 billion in order to ensure access to finance, making it easier for businesses to acquire loans. The guarantee rate, which was 80% prior to the crisis, was raised to 100% to ease the crisis, and remained unchanged until 2014. The ratio of CGS loans to total banking loans rose to 8% in that period. Meanwhile, the ratio of CGS loans to GDP went up to 7% in total. The amount of loans extended by using Credit Guarantee System declined after the crisis. Their share of all banking loans dropped to 5% and their ratio to GDP fell to 4%, representing the usual levels.

Figure 23. Employment Rates in Japan



Source: Government of Japan, Ministry of Economy Trade and Industry 2011. Official Report on Small- and Medium-sized Enterprises in Japan, Tokyo.

SMEs make up 99.7% of all businesses in Japan. SMEs account for 68.6% of total employment and 51.7% of total production.

To stop the widespread bankruptcy among SMEs in Japan, two changes were made in 2003: a cap was placed on interest rates; and the amount that could be borrowed by a SME was limited to a third of its turnover.

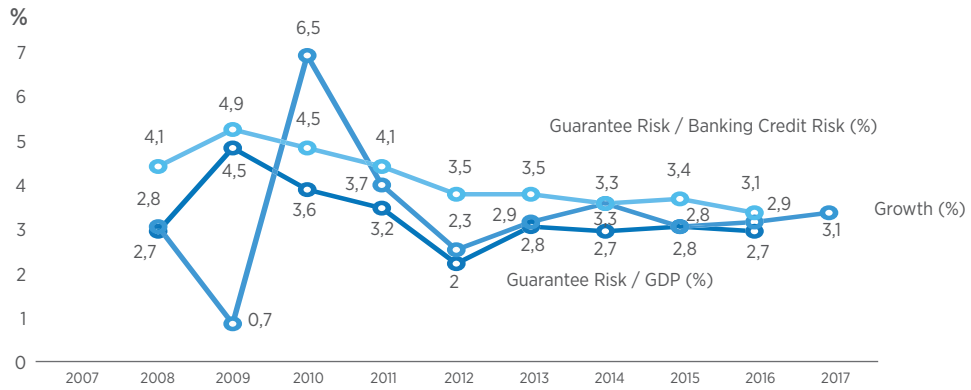
South Korea

Figure 24. South Korean Banking Sector and GDP

SOUTH KOREA (BILLION DOLLARS)						
YEAR	BANKING CREDIT RISK	GUARANTEE RISK	GUARANTEE RISK / BANKING CREDIT RISK (%)	GDP	GROWTH (%)	GUARANTEE RISK / GDP (%)
2007	851.5					
2008	663.9	26.9	4.1	1,002	2.8	2.7
2009	822.8	40.5	4.9	902	0.7	4.5
2010	881.5	39.7	4.5	1,094	6.5	3.6
2011	944.1	38.7	4.1	1,202	3.7	3.2

SOUTH KOREA (BILLION DOLLARS)						
2012	1,003.00	35.2	3.5	1,223	2.3	2.9
2013	1,067.90	37.1	3.5	1,306	2.9	2.8
2014	1,134.00	37.6	3.3	1,411	3.3	2.7
2015	1,114.80	38.1	3.4	1,383	2.8	2.8
2016	1,236.60	38.3	3.1	1,415	2.9	2.7
2017	1,405.80			1,531	3.1	

Figure 25. Growth and Credit Guarantee System in South Korea



The share of loans extended through the Credit Guarantee System during the 2008 financial crisis in South Korea rose to 5%, representing 4.5% of GDP. KODIT, South Korea's guarantee agency was one of the most effective tools in alleviating the impacts of the 2008 crisis. KODIT provided the real sector with strong support throughout the crisis, assisting in the efforts to find a solution to the problems faced by SMEs in accessing finance, and to save businesses from bankruptcy. Meantime, big businesses alongside SMEs, accessed loans with KODIT's guarantee support.

China

Figure 26. Small- and Medium-sized Enterprises in the People's Republic of China

YEAR	2007	2008	2009	2010	2011	2012
Number of SMEs						
SMEs (number)	333,858	422,925	431,110	449,130	316,498	334,321
SMEs' Share of Total (%)	99.1	99.3	99.3	99.2	97.2	97.3
SMEs' Role in Employment						
SME employees (000)	60,521	68,671	67,877	72,369	59,337	....
SMEs' Share of Total (%)	76.8	77.7	76.9	75.8	64.7	.....
SMEs' Role in Exports						
SME exports (million US$)	645,450	715,950	622,800	737,850	621,300	663,450
SMEs' share of total exports (%)	58.6	57.9	57.6	54.7	41.6	41.5

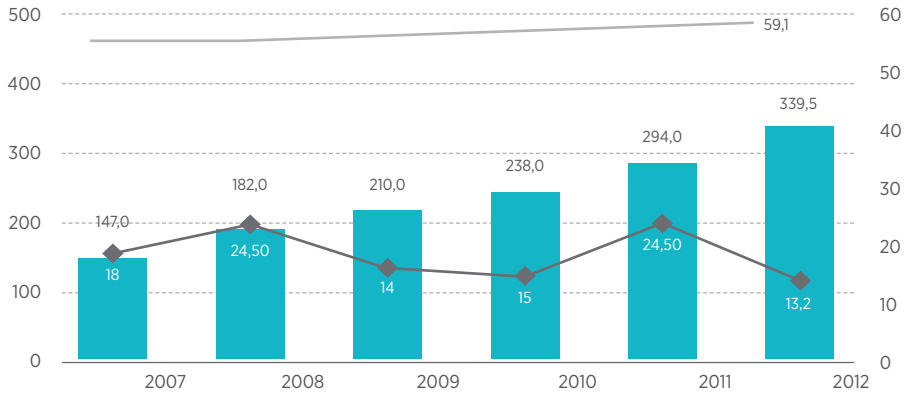
Notes: The data includes industrial enterprises with operations over a certain threshold.
Source: ADB. 2014. Asia SME Finance Observer 2013 Manila.

The number of SMEs soared rapidly in China in parallel to the economic transformation after 1978, and came to play a key role in the revitalization of the economy, creating new jobs, and establishing the industrial base. According to figures for the end of 2011 released by the Chinese Ministry of Trade, there are 12.5 million businesses (SMEs) and 37.6 million privately or individually owned enterprises registered with the Ministry. Accounting for 50% of all tax revenues and 60% of GDP, SMEs produce 75% of all new products and own 65% of patents and inventions in China.

Indonesia

The credit guarantee system in Indonesia is composed of central and regional guarantee institutions. Credit guarantee institutions provide products of different kinds, including Islamic guarantees for SMEs and co-operatives via banks and other financial institutions. The Credit Guarantee Institution assumes 70–80% of the risk, while the bank accepts the remaining 20–30%.

Figure 27. Micro-SME Contribution to Gross Domestic Product in Indonesia



GDP = gross domestic product, MSME = micro-small- or medium-sized enterprise.
PS: Data refers to micro-businesses.
Source: ADB 2014.

SMEs account for almost 50% of the GDP in Indonesia. SMEs play a crucial role in economic growth and development in Indonesia.

Thailand

Thailand's 2.7 million SMEs account for 97.2% of all businesses. The global financial crisis in 2008 had a negative effect on SMEs in Thailand, and forced 9% of them to leave the system, although a recovery was seen in 2011 due in part to the support provided by the credit guarantee system. SMEs employed 81% of the total workforce, equating to 11.4 million people, in 2013. The services sector ranked first in terms of employment provided by SMEs with 44.7%, followed by the trade sector with 31.7%.

Founded in 1991, the Credit Guarantee Institution (CGE) of Thailand provides services to SMEs. Fully supported by the government, the Institution adopted a full guarantee system from 1992–2004, a partial guarantee system from 2004–2009 and a portfolio guarantee system after 2009. The portfolio guarantee system (PGS) was part of the economic measures implemented in Thailand after the global financial crisis in 2008–2009. Portfolios were created by providing banks with a 100% guarantee, and a 15.5% cap was placed on portfolio NPLs (non-performing loans) that was applied to the participating banks for each portfolio. Loans with terms ranging from 5–7 years were extended under the project.

Extended loans backed by the guarantee institution to SMEs represented 0.8% of the total in 2008, rising to 6.1% in 2014.

The Thai government set up a loan registration office during the Asian crisis in 1997–1998. After determining that a significant part of loans that remained unpaid during the crisis are resulted from insufficient information and data, it was concluded that such an organization was necessary to gather and use accurate information and thus established database was made available to all banks.

The Philippines

SMEs registered in the Philippines account for 99.6% of all businesses, according to 2012 data. SMEs employ 64.9% of the total workforce, according to the same data.

There are two major loan guarantee programs for SMEs: one is run by the government-owned Small Businesses Corporation (SBC); and the other is a credit guarantee program managed by the Central Bank of the Philippines (BSP). With a guarantee rate of 70%, the SBC guaranteed US$ 7 billion in loans between 2002 and 2014.

BSP Credit Guarantee System provided credit guarantee support to 10,000 beneficiaries from 2008 up until October 31, 2014. There were 37 credit guarantee agencies operating in 27 provinces and 10 cities across the country as of December 18, 2014.

SPECIFIC CHARACTERISTICS OF ASIAN ECONOMIES

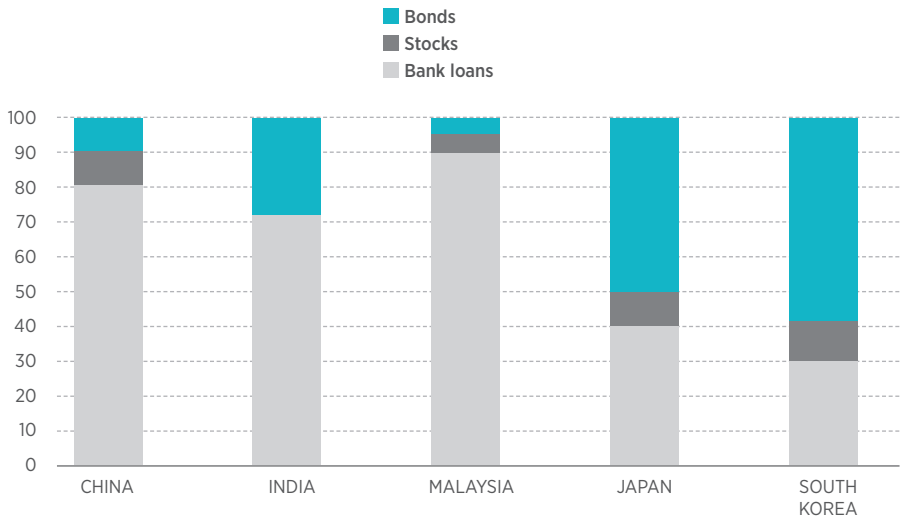
High Potential Growth

An analysis of Asian countries reveals very high economic growth rates for the past 20 years, and this trend is expected to continue in the near future, albeit at a somewhat lower pace. The relatively young population in those countries is anticipated to contribute to strong economic growth with a high rate of return on investments, meaning that Asia has high potential for growth and financial investments.

Financial Systems Dominated by Banks and Economic Importance of Small and Medium-sized Enterprises

Figure 28. Financial Markets in Asia

(Bonds, stocks, and bank loans as a percentage of the total)



Source: Kashiwagi, S.2011.FSA Presentation at the International Conference at the Centre for Financial Studies. Tokyo. February 3.

Bank loans in Asian countries have a greater share of the financial market than alternative instruments, although there are more alternative financing instruments in Japan and South Korea than in other Asian companies.

SMEs in Japan, China and Indonesia play a relatively important role in their respective national economies in terms of numbers and the employment they provide.

Accounting for more than 99% of all businesses in Japan, SMEs employ the majority of working population and represent a significant economic output.

The number of SMEs and their contribution to the economy rapidly have grown as a result of the reforms applied in China after 1978. There were 12.5 million SMEs and 37.6 million individual businesses (tradesmen) in the country in 2011, according to official figures, and these businesses account for 50% of all tax revenues and 60% of GDP. SMEs own 65% of the patents and inventions in China.

SMEs are the largest employers in Asia, making significant contributions to local economies, although it is apparent that SMEs experience significant problems in accessing finance. As banks are the main sources of funding for SMEs, it is important for them to be able to distinguish between businesses that are in a sound financial condition and those that are risky when deciding whether or not to provide financing. It is, therefore, essential to classify SMEs based on a rating system and to extend them loans accordingly. This model can function if a SME database is created, and a lending system that is supported by this database. Successful results can be achieved if such systems are set up and managed by Credit Guarantee Systems.

The banking system was rehabilitated after the crisis in Asia in 1997–1998, leading to a strengthening of financial structures and an increase in lending capacity. Such actions and the related international standards and rules (Basel III, etc.) have made it even more difficult for SMEs to obtain loans from the banking system. The credit guarantee system, the credit exposure database and the rating system, along with its complementary elements, were harmonized with this structure, giving SMEs the opportunity to access loans with better conditions.

SMEs in Asian countries are experiencing difficulties in gaining access to the funding necessary for growth, for numerous reasons. The financing needed by SMEs that could not be obtained amounted to US$ 706 billion in East Asia and US$ 2,060 billion in South Asia at the end of 2014, according to a study conducted by the International Finance Corporation. The obstacles faced by SMEs in gaining access to sufficient financing include their inability to provide collateral, the complexity of procedures, loans that do not meet needs and high interest rates, among others. There is a great information asymmetry concerning SMEs, particularly in underdeveloped countries, as well as problems with the reliability of the scarce financial data.

A public loan database has been established in eight out of the 20 member countries of the Asian Development Bank (ADB) aimed at eliminating problems relating to information asymmetry. The information gathered by loan database agencies contains data about businesses and their banking records, as well as financial data related to those businesses. Information about bank customers is shared at a limited level in most of these countries, which prevents the formation of a reliable database detailing the borrowing history of businesses, and this is another hurdle preventing SMEs from gaining access to the banking system.

2
JAPAN'S ECONOMIC DATA

Japan covers an area of 378,000 square kilometers and has a population of 126.7 million. Its GDP and per capita income are US$ 4.8 trillion and US$ 38,400, respectively. Unemployment was 2.8% in 2017, and growth was 1.74%.

Japan's central bank is the Bank of Japan (BoJ) and its banking system authority is the Financial Services Agency (FSA). The Bank of Japan was founded in 1882 and the banking law has been amended twice, once in 1942 and again in 1997, in line with the principles of independence and transparency. The BoJ is responsible for ensuring price stability and for implementing monetary policies in the country, and is the sole establishment authorized to print banknotes. The Financial Services Agency (FSA) is another key establishment, being responsible for regulating and supervising the banking system and the financial environment. FSA was established in 1998 and it also tasked with regulating and supervising private finance institutions and the financial environment. There are a total of 218 banks in Japan, and also 261 small local banks that are referred to as SHINKIN banks.

The total amount in loans lent through the Japanese banking system was US$ 5.2 trillion as of the end of August 2018. Of those loans, commercial loans amounted to US$ 3.6 trillion, while individual loans amounted to US$ 1.6 trillion.

National banks provided 40% of the loans while regional banks accounted for 46%, and 13% were lent by SHINKIN banks.

The ratio of non-performing loans to total loans in the Japanese banking system was 1.1% in March 2018.

Japan is host to the third largest economy in the world, and ranks fourth in terms of purchasing power parity.

Despite its resounding defeat in World War II, the country was able to recover in a short period, and this success story, referred to as "the Japanese Miracle", set an example for many developing countries.

It is apparent that SMEs are obtaining a larger share of the total loans following the structural "Abenomics" reforms instigated by Prime Minister Shinzo Abe after 2011.

Japan and the Banking System

Figure 29. Statistical Data about Japan

JAPAN and the BANKING SYSTEM	
Land area	378,000 square kilometers
Total population (2017)	126.75 million
GDP (2017)	US$ 4.87 trillion
Per capita income (2017)	US$ 38,448
Unemployment rate (2017)	2.83%
Economic growth (2017)	1.74%

Figure 30. Number of Japanese Banks

BANKS	NUMBER	EXAMPLE
City banks	4	Mizuho, Sumitomo, MUFG, Resona
Company banks	24	Sony, JTC, Aeon
Regional banks	105	
Trust Banks	14	
Other banks	15	
Foreign banks	56	
TOTAL	218	
Shinkin Banks	261	Loan Associations
		2018 data

Figure 31. Total Bank Loans in Japan (billion US$)

	2017 December	August 2018
Total Bank Loans	4,745	4,790
Commercial	3,218	3,227
Personal	1,436	1,454

Figure 32. Distribution of Loans by Bank Types in Japan

October 2018 - Billion US$	
National banks	1,939 (40%)
Regional banks	2,247 (46%)
Shinkin banks	628 (13%)
Foreign banks	24
Other	46
Total	4,859

Figure 33. Data on Japanese Banking System

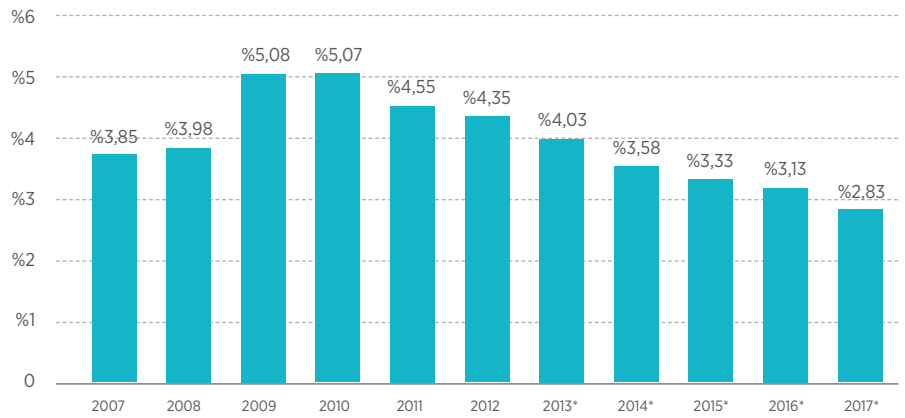
Total Bank Loans	2011 /03	2012 /03	2013 /03	2014 /03	2015 /03	2016 /03	2017 /03	2018 /03
Total Loans (billion US$)	4,318	4,424	4,626	4,820	5,061	5,179	5,325	5,412
Those under FSA (billion US$)	105	107	108	93	83	76	70	61
Non-performing Loans	22	18	16	14	11	12	11	10
Doubtful Debts	60	65	66	58	50	47	41	36
Close Monitoring	23	24	25	22	22	17	18	15
NPL Ratio (%)	2,4	2,4	2,3	1,9	1,6	1,5	1,3	1,1

With a land area of 378,000 square kilometers, a population of 126 million and GDP close to US$ 5 trillion, Japan is one of the most important economies in the Far East. It has achieved an annual growth of 1.5–2%, with SMEs numbering close to 4 million, while ensuring the sustainability of its growth. Unemployment is at 3%, and its rapidly ageing population may be cited among the risks that the Japanese economy may face in the future. The loan volume of the 218 banks (both national and local) in Japan is approximately US$ 6 trillion. The rate of non-performing loans (NPL) in the Japanese banking system rose to 2.5% after the 2008 crisis and declined to 1.1% in 2018.

Figure 34. Japan's population

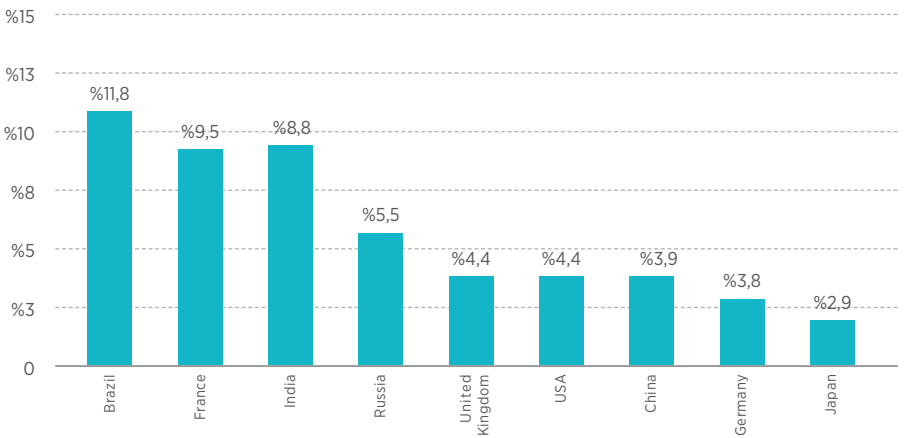
The negative population growth rate and the rapidly ageing population are the most significant problems facing the Japanese economy in the near future. The fact that the owners of SMEs tend to be old means that there is a risk for the future, and this is considered to be a major problem that should be addressed by the Japanese government and to solve this problem, credit guarantee corporations are trying to develop projects.

Figure 35. Unemployment Rates in Japan



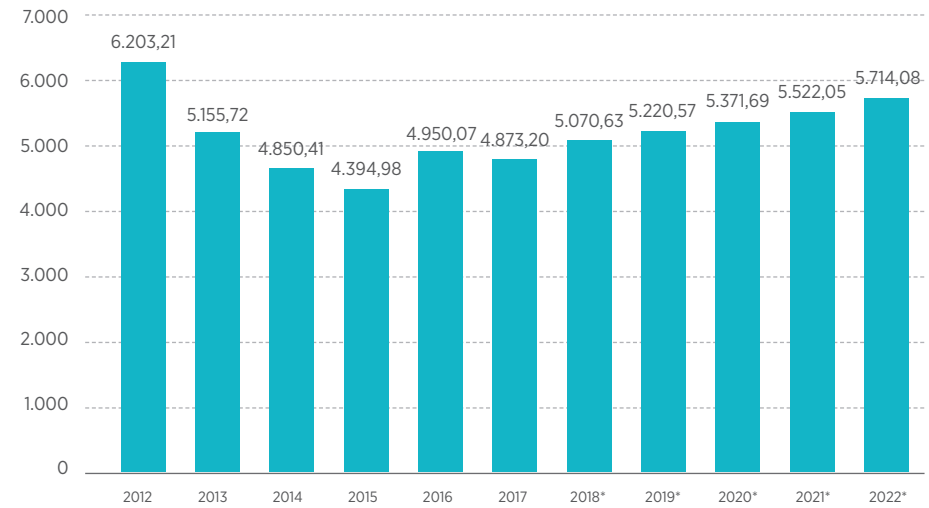
Employment fell sharply in the wake of the 2008 financial crisis, and unemployment rates soared. Unemployment figures returned to pre-crisis levels after 2013, and eventually dropped to 2.8%.

Figure 36. Comparison of Japan's Unemployment Rate



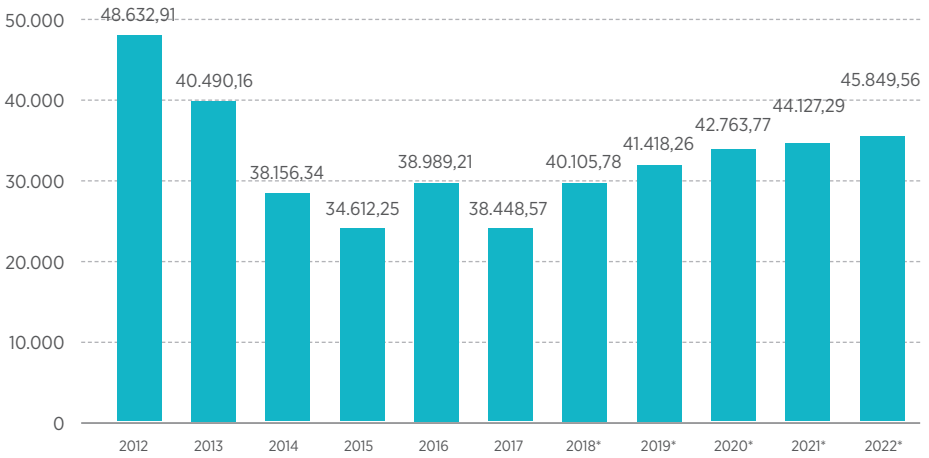
Unemployment is the most pressing problem in every country, and policies and instruments aimed at addressing issue are at the top of the agenda of all governments. Coming up with solutions that ensure labor force participation is the number one issue in all developed or developing countries. Despite the high economic growth, high labor force participation and new production methods in the Far East, employment opportunities are still in short supply. A comparison of Far East countries reveals that Japan has one of the lowest unemployment rates.

Figure 37. Gross Domestic Product in Japan (Billion US$)



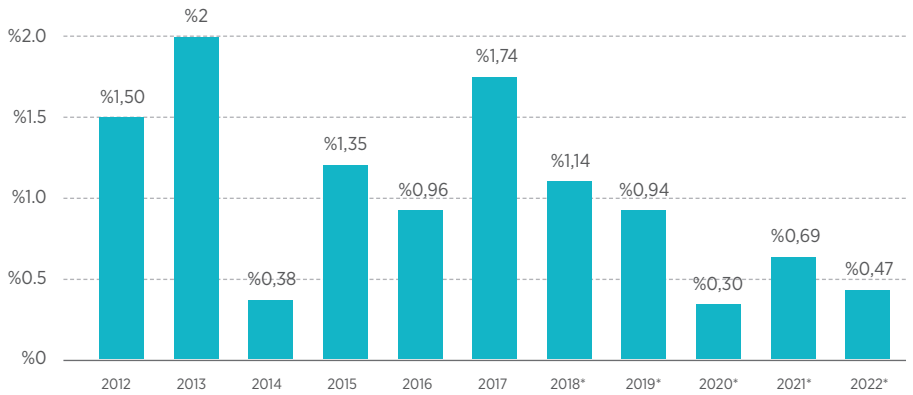
Following negative growth over two consecutive years after the 2008 financial crisis, GDP once again rose after 2016 to reach US$ 4.8 trillion in 2017. Japan's GDP goal for 2022 was US$ 5.7 trillion.

Figure 38. Per Capita Income in Japan



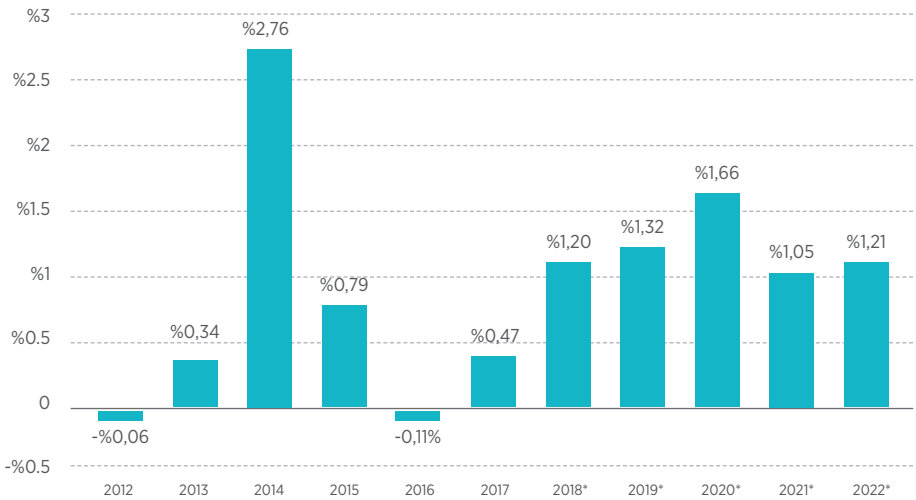
The financial crisis in 2008 led to significant decreases in employment rate and per capita income. Per capita GDP was US$ 38,000 in 2017, and the goal for 2022 is US$ 45,000.

Figure 39. Japan's Economic Growth



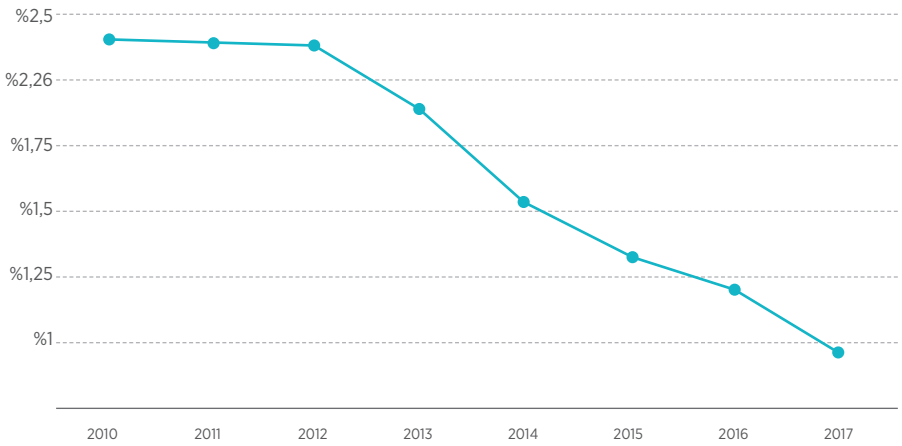
Japan's economic growth is low when compared to other countries in the Far East, and particularly China, all of which have a growth potential of over 5%, and a rapid upward trend is being observed in current account surplus and per capita income as a consequence. With its total GDP and high growth potential, Japan differs from the other countries in its region in a positive sense. The slowdown in its growth rate, however, brings near-term risks to the Japanese economy. Japan registered 1.74% growth in 2017, although this is expected to lose momentum in the coming years.

Figure 40. Inflation in Japan



Inflation in Japan is at 1%, and this is expected to remain unchanged in the near term.

Figure 41. Non-Performing Loans (NPL) in Japan



After increasing to 2.5% in the wake of the 2008 crisis, NPL rates returned to normal and dropped to 1.1% after 2013. This downward trend stemmed in part from the decision to increase the guarantee rate provided by credit guarantee corporations to 100%.

3
SME DATA IN ASIA AND JAPAN

Asian SMEs are regarded as key economic drivers, and are generally expected to play a major role in economic growth, the creation of jobs, increased foreign trade and the reduction of poverty. SMEs account for almost 98% of all businesses, around 40% of gross domestic product (GDP) and 60% of the workforce. SMEs also play a key role in trade, and account for approximately 30% of all exports.

Considering their strategic importance for economic development, finding sustainable solutions to the problems experienced by SMEs in accessing finance is one of the most pressing issues that is yet to be tackled by the governments.

Figure 42. SMEs in Asian Countries

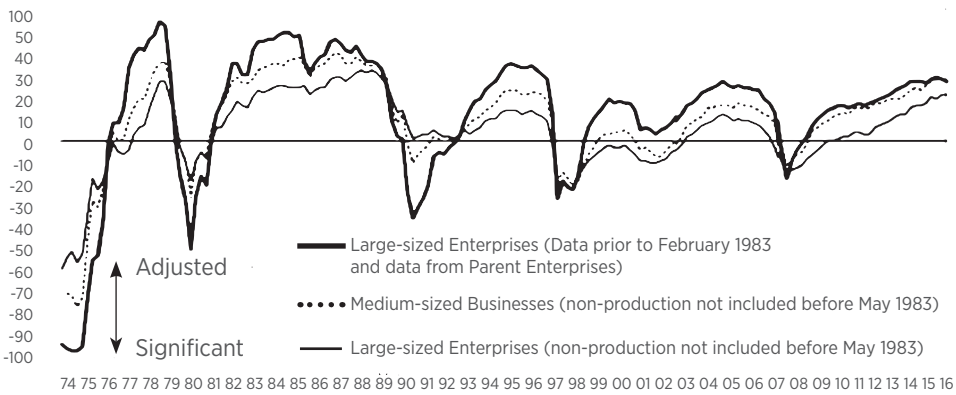
COUNTRY	NUMBER OF FIRMS (% TOTAL)	EMPLOYEES (% TOTAL)	CONTRIBUTION TO GDP	BANK LOANS FOR SMEs (TOTAL)
INDONESIA	99.9	97	60.3	19.7
MALAYSIA	97.3	57.5	33.1	16.3
THE PHILIPPINES	99.6	64.9	35.7	10.3
THAILAND	97.2	81.0	37.4	34.5
CAMBODIA	99.8	71.8	....	18.0
JAPAN	99.7	74.0	40.5	39.7

Source: ADB 2015 ASIAN SME FINANCE MONITOR
Japan data was obtained from the BOJ and the Ministry.

The global shortfall of loans to SMEs is US$ 5.4 trillion, and around US$ 900 billion of that amount represents the loans required in Asian countries. Statistical data indicates that almost all businesses in the country are SMEs, which account for a very high proportion of total employment, while their share of total financing is relatively low, despite their contribution to GDP. This phenomenon may be attributed to the fact that credit guarantee systems are very weak or are completely lacking in those countries.

Access to finance is the largest obstacle faced by SMEs in Asia, as is the case in other countries. The role of SMEs in national development and employment is the most important motivator for national governments in their efforts to support SMEs. It goes without saying that guarantee systems are the most important instruments in efforts to address the financing problems of SMEs.

Figure 43. Challenges Facing Asian SMEs in Accessing Finance



The results of a survey conducted by the Bank of Japan (BoJ) indicate that access to finance during times of crisis becomes even harder. Interestingly, large-sized enterprises face greater challenges in accessing finance than SMEs. The fact that SMEs are supported by the credit guarantee system during such periods means that it is easier for SMEs to access finance than larger companies.

Figure 44. Ratio of SME Loans to Total Loans in Asian Countries (%)

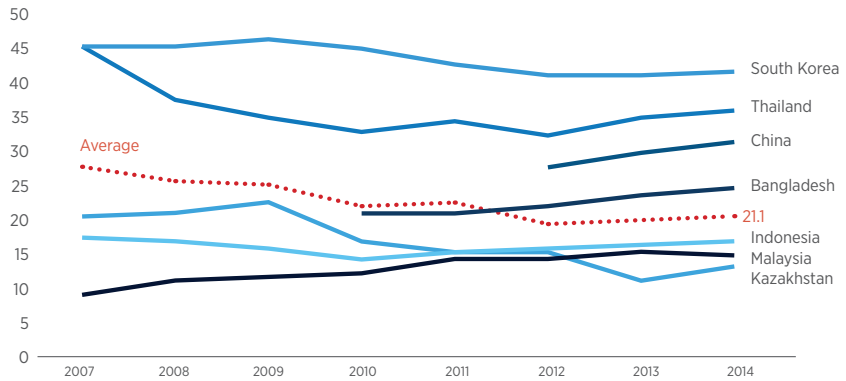
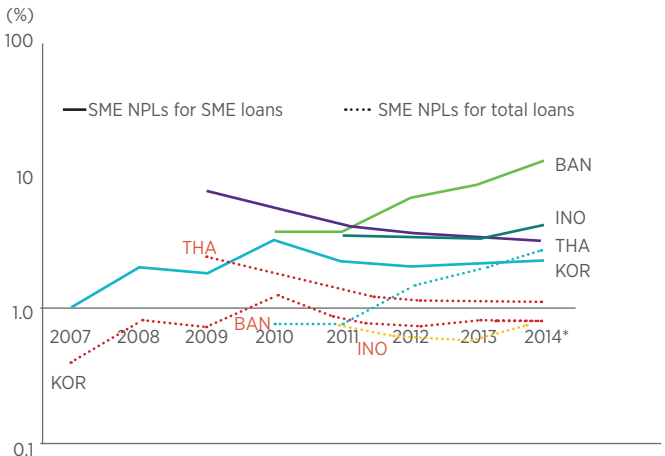


Figure 44 shows the share of SMEs in selected Asian countries within total banking loans. South Korea is of particular note here, as a country where SMEs can make effective use of the banking system, and the credit guarantee system of South Korea (KODIT) plays a key role in this regard.

Figure 45. Non-performing SME Loans in Asian Countries



BAN = Bangladesh, INO = Indonesia, KOR = Republic of Korea, THA = Thailand
Source: Asia Finance Monitor (2015)

Like the rest of the world, the ratios of NPL of SMEs are higher than those of larger companies in the Asian countries. This is the main obstacle preventing the access of SMEs to finance. It is necessary to make an efficient use of credit guarantee systems in order to facilitate the access of SMEs to loans and to minimize NPL probability. NPL rates arising from SME loans are lower, and are at a manageable level in countries with an efficient credit guarantee system.

SMEs can only borrow loans at higher interest rates, as financial institutions believe that they are a greater risk than large enterprises. The reason for this is that the information provided by SMEs is insufficient and unreliable, which leads to increased risk premiums and even higher costs for loans that are already difficult to find.

SMEs play a crucial role in economic growth and in job creation. Supporting SMEs actually means supporting the economy. As SMEs are a part of the supply chain of larger enterprises, any financial support channeled to SMEs indirectly supports also larger enterprises. The access of SMEs to finance became even harder after the financial crisis of 2008. SMEs need more support during crises and post-recovery periods. The support received by SMEs is believed to have made a significant contribution to Japan's emergence from the 2008 crisis. There was a slowdown in the credit guarantee system in the post-crisis period. NPLs within the system are sharply criticized by the media and public at large, as loans that are not repaid during and after crises are paid directly by the government from the central budget. Many groups criticize the government's use of taxpayers' money for the repayment of non-performing loans. In response to such criticism, a look at the national economy as a whole, however, shows that direct or indirect contributions made by SMEs to economic growth and employment.

Figure 46. Problems Faced by SMEs, According to a Survey by the Asian Development Bank

%	People's Republic of China	India	South Korea	Malaysia
(Supply Side)	(Supply Side)	(Supply Side)	(Supply Side)	(Supply Side)
High lending rates	70	63	60	67
Complex procedures	68	72	79	72
Collateral/guarantee	65	80	94	70
Lending policy of financial institution	63	78	85	70
Short loan maturities	60	38	60	50
Finance institution's exclusive lending behavior	60	70	70	66
(Demand side)	(Demand side)	(Demand side)	(Demand side)	(Demand side)
Lack of information	40	42	38	43
Insufficient management	32	9	23	36
Lack of demand for SMEs	30	20	15	37

Source: Study on enhancing financial accessibility for SMEs, USA-OECD: Lessons learned from recent crises. Mandaluyong City, The Philippines: Asian Development Bank, 2013

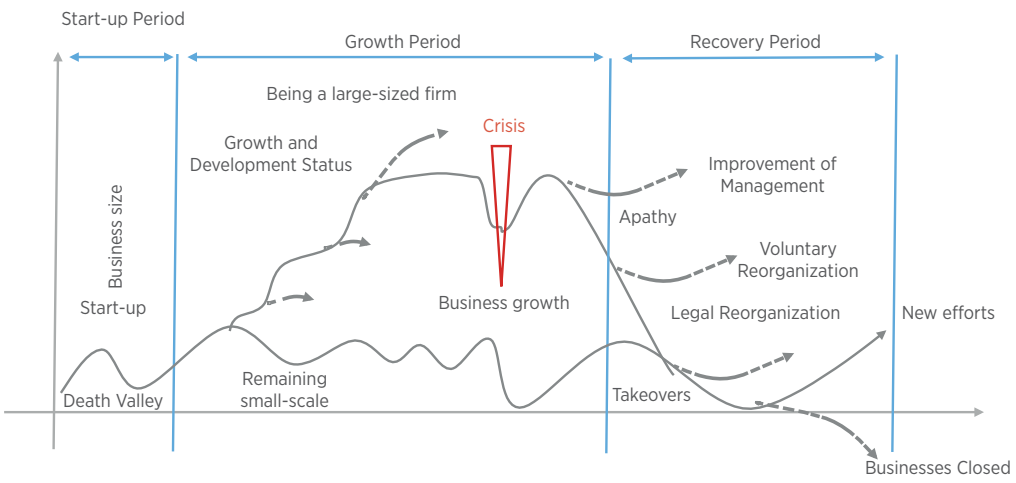
According to survey conducted by the Asian Development Bank in China, India, South Korea, and Malaysia in 2013 on the problems faced by SMEs, high borrowing costs ranked number one among Chinese SMEs, while guarantees and the complexity of procedures were the main problems cited in South Korea and Malaysia, respectively. Aside from these, other fundamental problems faced by SMEs in the four countries include collateral/guarantees, complex and stringent procedures, high costs, short loan terms, unreliable data on SMEs that does not reflect the true situation, and an inability to access appropriate markets.

SMEs in Japan

The ageing of business owners is one of the main problems facing SMEs in Japan.

Given the importance of SMEs within the Japanese economy, it is essential to find a solution to this problem. The shortage of labor and the need to increase profitability are other issues faced by Japanese SMEs. The owners of some 2.5 million SMEs will be older than 70 between 2018 and 2027, and almost half of those business owners have no plan for the maintenance of their businesses following their eventual retirement. In contrast, large businesses rejuvenate themselves by employing younger people when replacing managers and teams, aiming to boost their economic output, but following a similar approach is difficult for SMEs. This represents a major threat to almost 6.5 million jobs and US$ 2 trillion in gross domestic product in the Japanese economy.

Figure 47. Life Cycles of SMEs



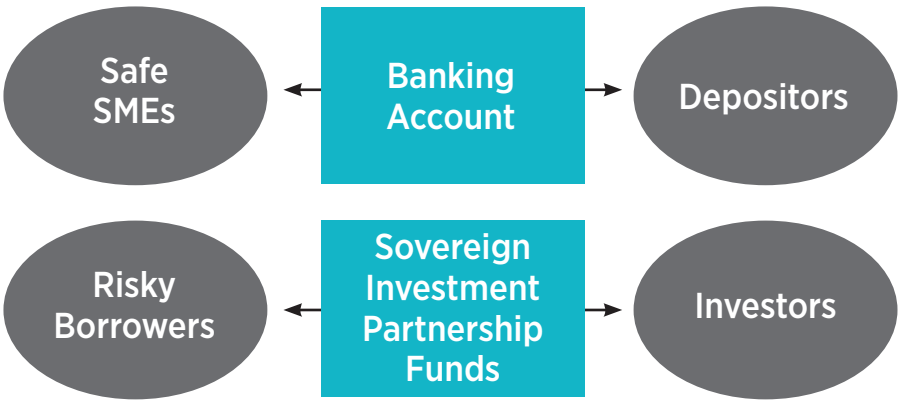
Studies focusing on the life cycles of SMEs in Japan indicate that a significant number of SMEs terminate their operations within a specific period following their establishment. A proportion of SMEs continue their operations in a stable manner without development or growth, while others may change categories after gaining momentum. Some SMEs are able to turn crises into opportunities and to expand the scope of their operations. Credit guarantee corporations take steps to make significant contributions to SME growth, particularly in such periods. Sony, for instance, was granted loans through a CGC guarantee when it started its operations as a SME in Tokyo, growing eventually beyond its SME scale to become an international brand.

Other financing instruments are also used as a solution instead, rather than satisfying the needs of SMEs in accessing finance in Japan only through the banking system. One such instrument is the Hometown Investment Trust Fund, which is a model that is intrinsic to Japan.

"Hometown Investment Trust Fund" focus on purchasing or investing in start-up businesses in the agricultural sector in Japan, and allow such businesses to grow and develop.

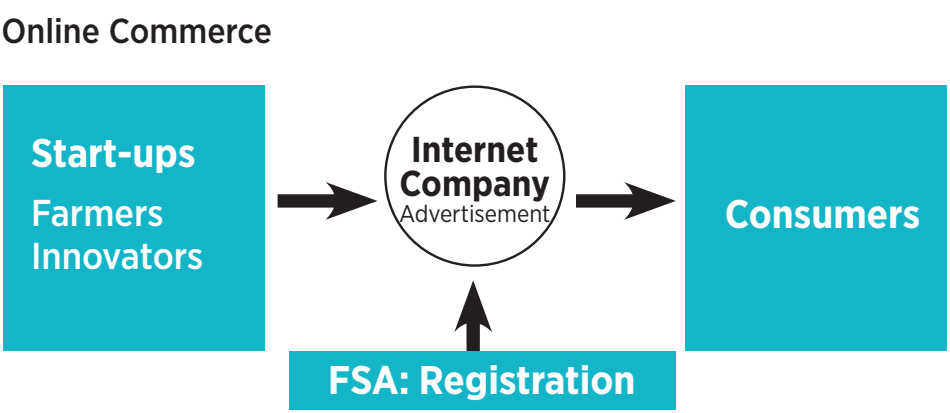
Hometown Investment Trust Fund ensures that financial resources are made available for the beneficiary, i.e. the business owner, while providing a guarantee for the sale of products by a purchasing guarantee prior to the commercialization of the product manufactured by the business that is part of the Fund.

Figure 48. Structure of the Hometown Investment Trust Fund



SME = small- and medium sized enterprise
Source: Yoshino and Taghizaden - Hesary (2014)

Figure 49. Business Flow of the Hometown Investment Trust Fund



Commercialization of a product that is produced or sold by an investor or producer that is supported by the Hometown Investment Trust Fund is supported in terms of delivering such product in to the market and consumers. Start-ups or farmers always face problems in developing ways to offer a successful product to consumers. The government-owned Financial Support Agency (FSA) provides aid to SMEs that receive support from the Hometown Investment Trust Fund while keeping and managing the registration of these SMEs.

Quarterly meetings are held with producer SMEs, and their products are promoted and marketed via the Internet. While recommendations are made with regards to the innovative ideas of SMEs at those meetings, thus enhancing their reputation in the eyes of the public. A SME can easily sell its products through the Internet after determining payment and delivery methods, and thus gain the confidence of the customer and the public at large.

Financial Literacy Training in Japan

Financial training is provided to SMEs in Japan through programs organized by the Ministry of Education and the FSA. Japanese SMEs can achieve substantial profits and business growth in a short period of time, which necessitates support and training in many areas, such as assessments of the necessary funds for new investments to be made by SMEs. Initial training is provided in daily income-expense planning, long-term planning, correct reporting and asset management.

It is essential to use financial technologies during training. Training is also provided in the marketing of products through mobile phones, and in appropriate marketing for targeted customers through mobile phone applications.

The Financial Training Council designs SME training programs, with members of the Council including representatives of the Bank of Japan (BoJ), the Financial Services Agency (FSA), the Ministry of Education, the Consumer Protection Agency, the Japanese Bankers Association, the Insurance Association and other financial institutions. The Council holds quarterly meetings to report on activities and to make decisions.

Financial education is included in the academic curriculum from primary school in Japan. School children regularly attend classes focusing on financial literacy in the first and second grades of primary schools and in the following years. Training is based on the premise that resources are limited and should be managed in the best possible way. Solutions for the best utilization of scarce goods and funds are taught to school children in the "Home Economics" class, and this education is continued in middle and high school. The topics covered include the scarcity of goods and services, and purchasing methods for making better decisions. Ethics education explains students how to establish the most appropriate lifestyle, making use of limited resources within a limited period of time. Managing household income and outgoings is another topic, while the proper selection and efficient use of goods and services is the main topic of the Technology and Home Economics class. Practices related to management of income and spending, proper budgeting and spending, and the utilization of credit cards are taught in detail during school trips. One of the objectives of these training programs is to ensure that the participant is aware of his/her cost within the household budget. The importance of long-term and well-planned financial management is also explained in these classes. In addition, the practical balancing of income and expenditures is taught through school events.

The central government is devising policies that allow the design and operation of an efficient system in order to maintain and increase prosperity while paying maximum attention to training activities, in order to transfer this system to future generations and to maintain its sustainability. Financial education is provided to all students, from primary school to higher education, in Japan where economic literacy has been institutionalized and is regarded as an important issue by all segments of society, whether or not they have an interest. Committees made up of representatives of the leading financial institutions in the country are established for these training programs, which are sponsored and supervised by the government. As can be seen in the Japanese example, designing a proper system in the economic

field and operating it efficiently was not considered sufficient for a prosperous future, and time and effort continues to be spent to provide financial education to subsequent generations and such time and effort was probably higher than those spent for the system.

4

FUNCTIONING OF CREDIT GUARANTEE SYSTEM IN JAPAN

One of the oldest examples in the world, the credit guarantee system of Japan was founded in 1937. The first guarantee institution in Japan was established in Tokyo in 1937, and different countries followed suit, establishing similar institutions afterwards. Credit guarantee systems were first used in Europe and the United States in the 1950s, followed by Africa, Asia and Oceania in the 1960s and 1970s.

There are a total of 51 credit guarantee corporations (CGC) in Japan, including one in each province and one each in Nagoya, Yokohama, Kawasaki and Gifu.

Figure 50. SMEs Using the Credit Guarantee System in Japan

	2009	2010	2011	2012	2013
Number of SMEs	4,197,719	4,197,719	4,197,719	4,201,264	3,852,934
Number of SMEs using CGF	1,591,726	1,573,067	1,543,847	1,502,972	1,458,434
Rate of CGF utilization	%37.9	%37.5	%36.8	%35.8	%37.9

xcerpt from "Informational Article on Small- and Medium-sized Enterprises in Japan" compiled by the Agency for Small- and Medium-sized Enterprises.

Source: Japan Federation of Credit Guarantee Corporations (JFG)

There are close to 4 million SMEs in Japan, of which almost 38%, or 1.5 million, use the systems of Credit Guarantee Corporations. Japan is one of the most successful examples in the world in terms of the number of SMEs benefiting from the system and in total credit volume.

Conditions for the Use of the Credit Guarantee System in Japan

SMEs in Japan can make use of credit guarantee systems if they comply with the criteria established for their respective industries, turnover and number of employees.

Figure 51. Conditions for the Use of the Credit Guarantee System in Japan

Small- and Medium-sized Enterprises			Micro-businesses
Industry	Capital	Number of Full-Time Employees	Number of Full-Time Employees
Manufacturing	Up to US$ 2.7 million	Up to 300	Up to 20
Wholesale Trade	Up to US$ 900,000	Up to 100	Up to 5
Services	Up to US$ 450,000	Up to 100	Up to 5
Retail Trade	Up to US$ 450,000	Up to 50	Up to 5

Source: Japan Federation of Credit Guarantee Corporations (JFG)

Industries that have benefited from the credit guarantee system have been identified under the Law on Small-and Medium-sized Corporate Credit Insurance. SMEs operating in the agriculture, forestry, fishery and finance sectors are not eligible to use this system.

Figure 52. Guarantee Caps in the Japanese Credit Guarantee System

million US$	Individual/Businesses	Co-operatives and similar
General Guarantees	up to US$ 1.8 million	US$ 3.6 million
Guarantees without Collateral	up to US$ 0.7 million	US$ 0.7 million
Bond Guarantees	up to US$ 4.1 million	

Source: Japan Federation of Credit Guarantee Corporations (JFG)

The maximum guarantee that a SME can obtain in Japan varies between US$ 1.8 million and US$ 4.1 million. The amount that a SME can borrow may vary depending on the sector in which it operates, the amount of loan being sought and the collateral it can provide, and on the condition that it is within the maximum limits.

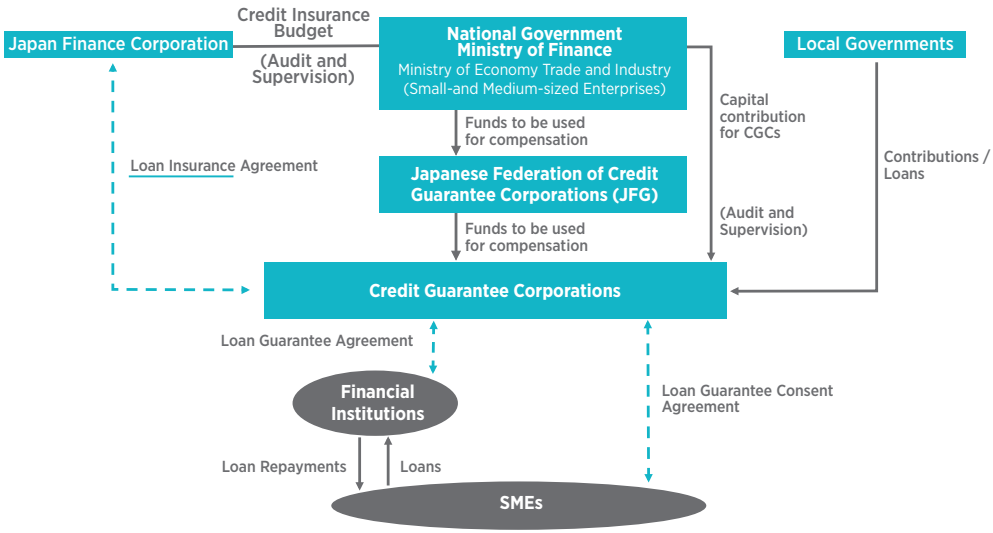
Figure 53. Classification of Credit Guarantee Fee Rate

CLASSIFICATION	1	2	3	4	5	6	7	8	9
Ratio of Credit Guarantee Fee Under Liability Sharing System	1.90	1.75	1.55	1.35	1.15	1.0	0.80	0.60	0.45
(Special Guarantee)	1.62	1.49	1.32	1.15	0.98	0.85	0.68	0.51	0.39
Ratio of Credit Guarantee Fee, Excluding the Liability Sharing System	2.20	2.00	1.80	1.60	1.35	1.10	0.90	0.70	0.50
(Special Guarantee)	1.87	1.70	1.53	1.36	1.15	0.94	0.77	0.60	0.43

The guarantee commission to be paid by SMEs that are to receive guarantee support from the Credit Guarantee System is determined according to the credit score identified in a rating assessment. The commission may vary between 0.45 and 2.20%. The guarantee rate is based on the bank and risk-sharing system. In other words, if the guarantee ratio of the Credit Guarantee Corporation (CGC) is 80% and the bank's risk is 20%, the commission to be charged, depending on the rating score, will vary between 0.45 and 1.90%. If the SME's credit score is 1, the rate of commission it will pay will be 1.90%, and 1.15% and 0.45% for credit scores of 5 and 9, respectively. In other words, a well managed business is considered to be category 9, and so the guarantee commission charged is 0.45%, which is a low level, as the likelihood of default is low. The CGC's guarantee rate may be 100% during a crisis or emergency. In such cases, the bank's risk is 0 (zero). The guarantee commission can vary between 0.50 and 2.20% in respect of loans secured with a 100% guarantee provided by CGC. The guarantee commission paid by a SME in the first category is 2.20%, compared to 0.50% paid by a SME in category 9.

These commissions are paid by SMEs to the CGC. The CGC receives part of the commission on behalf of the agency, and transfers part of it to the Credit Guarantee Insurance Corporation (JFC). To illustrate, 0.17% of a 1.15% commission to be charged to a SME in category 5, which has been provided with a guarantee based on a 20%–80% share of risk, is transferred to the CGC, and 0.98% to the JFC.

Figure 54. Structure of the Japanese Credit Guarantee Corporation (CGC)



The importance of SMEs within the Japanese economy has made it imperative to apply the best method to tackle the problems experienced by SMEs in accessing finance. Thus, the structure of the system has undergone constant development the in light of the experience gained and the emerging needs since 1937, resulting in the current model.

SMEs that wish to benefit from the Credit Guarantee System in Japan may directly approach the Credit Guarantee Corporation or banks. SMEs are first required to answer a set of 100 questions, which are used to garner private data, for example: “Are you married?” and “Do you have children?” The data provided by the SMEs are communicated by the bank or guarantee corporation to the Credit Risk Database (CRD). The CRD sends the outcome of its assessment, which is based on its database, the Credit Guarantee Corporation and the bank. In addition, it compares the gathered data with existing data, and corrects discrepancies. The Bank and Credit Guarantee Corporation initiates the lending process based on the information received from the CRD.

Fundamental principles of the Credit Guarantee System in Japan:

1. To provide support to SMEs that are at the incorporation and development phase;

2. To improve the management capacity of SMEs and to enhance their creditworthiness, while facilitating their access to finance;

3. To offer consultancy, analysis and information services to SMEs, as well as solutions tailored to their needs, providing them with a solid foundation and the ability to grow;

4. To contribute to the growth of SMEs and economic development through the provision of support.

a- Guarantee Model

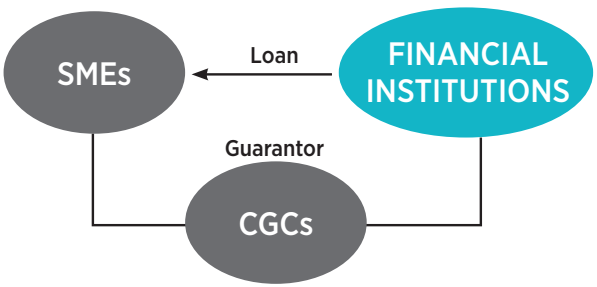
Information asymmetry, high probability of default and insufficient guarantees are the main obstacles preventing SME from accessing finance.

Lenders are more inclined to extend loans to large enterprises, which are considered to be less risky, rather than financing SMEs. Credit guarantee systems are, therefore, used as a tool for bridging the supply-demand gap in SME financing.

The needs of specific countries and the acquired experience are decisive in the design of a system (risk sharing ratios, commission rates, guarantee structures, etc.), ensuring that credit guarantee systems function efficiently and reliably.

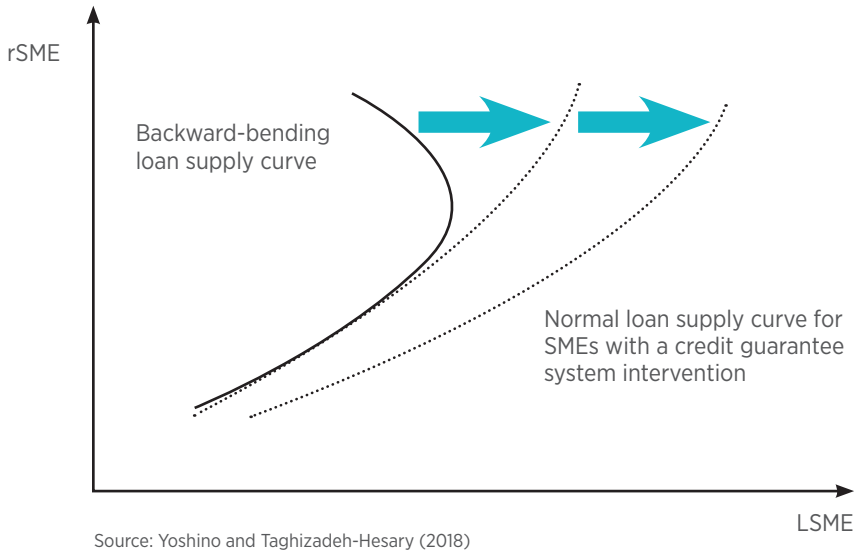
The optimal credit guarantee rate in a guarantee model depends on three variables: the government's SME support policy, macroeconomic variables, and banking system tendencies and behaviors.

Non-performing loans (NPL) are directly affected by macro-variables, although they are not the only factor determining NPLs.



Credit guarantee corporations minimize the anticipated losses of banks arising out of unpaid SME loans, while increasing the amount of loans to be extended by banks to SMEs.

Figure 56. Credit Guarantee Structure and Supply of SME Loans



Source: Yoshino and Taghizadeh-Hesary (2018)
rSME = interest rate for loans lent to SMEs;
LSME = amount of SME loans
SME = Small- and medium-sized enterprises

The vertical axis in Figure 56 shows the interest rate applied to SMEs, while the horizontal axis shows the value of SME loans. It is predicted that loans extended outside the credit guarantee system will slow after a certain amount of loan supply and a parallel rise in interest rates, leading to a decline in loan supply. There is, however, a strong expectation that the Credit Guarantee System will reduce the forecasts of banks regarding non-performing loans, and hence lead to an increase in loans offered by banks.

The legal framework related to the Japanese credit guarantee system is based on the Loan Guarantee Corporations Law that was enacted in 1953, and which has been amended over time in parallel with emerging needs and now constitutes a legal basis for the foundation, operation and supervision of loan guarantee corporations and other concerned organizations, as well as all other processes and formalities. All processes have been legally regulated, and these regulations have been modified over time depending on needs.

A law on SMEs was enacted in Japan in 1963 to promote the creation of inclusive and reliable solutions related to financing and other issues faced by SMEs, in ad-

dition to the Credit Guarantee System. The government provides information on the incorporation of companies, and improves training in this regard, facilitates incorporation costs, and takes any other necessary measures so as to encourage the formation of new SMEs, while also engaging in efforts to raise the public benefit and awareness of the importance of, and need for, incorporated companies.

To increase creative business operations among SMEs, the government also encourages engagement in the research and development of original and noteworthy techniques related to the production or sale of products or the provision of services. It develops systems and takes the necessary action to facilitate the acquisition of the required human resources and financing through such routes as shares and company bonds. To support the accumulation of data for use in the commercial operations of SMEs, the government develops training programs for business managers and supports the supply of information, contributing to the development of new business areas and the accumulation of other information.

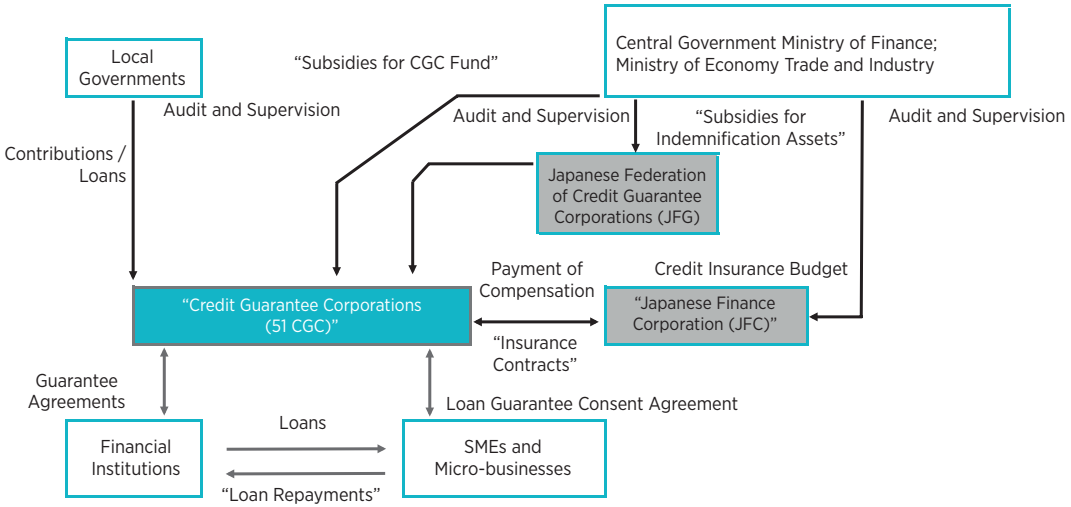
In an attempt to facilitate the financing of SMEs, the government consolidates the roles of public finance institutions, develops credit guarantee systems, supports the system that enables financial institutions in the private sector to extend affordable loans to SMEs, and takes other necessary steps.

Credit Guarantee Systems first entered into operation to facilitate access to finance in Asia, the United States and Europe at the outset of the 20th century.

Successful examples of CGSs emerged in Japan after 1937, with the first being in Tokyo, and such mechanisms started to be used more efficiently in Japan and in other countries after the 1950s (Tradesmen's Guarantee Cooperatives started providing loans to micro-businesses in Turkey in 1951). This mechanism started to be applied efficiently in other Asian countries in the 1960s and 1970s.

A CGS has three components: borrower, lender and guarantor. The borrower is usually a SME that is seeking finance. The guarantor steps in if the SME's credit rating cannot be reliably ascertained which may constitute an impediment for borrowing a loan. The guarantor is usually a non-profit credit guarantee corporation (CGC) supported by a government or trade association.

Figure 57. Diagram of a Credit Guarantee System



SMEs = Small- and medium-sized enterprises
Source: Japan Federation of Credit Guarantee Corporations 2014.
Credit Guarantee System in Japan: Tokyo.

CGCs in Japan are financed by the central and local governments. The central government also provides the Japanese Finance Corporation (JFC), which insures agreements, with funds for credit insurance. Data for 2013 reveals a total of 3.8 million SMEs in Japan, almost 1.4 million of which have borrowed loans backed by CGC guarantees. There are a total of 51 credit guarantee corporations (CGC) in Japan, including one in each province and one each in Kawasaki, Gifu, Nagoya and Yokohama. The guarantees provided by these CGCs amounted to approximately US$ 300 billion by the end of 2013.

At times of emergency, when it has become considerably more difficult for SMEs to borrow from banks, such as in the wake of the Fukushima Tsunami and earthquake of March 2011, the government has provided up to 100% guarantees for loans to SMEs. Such a full guarantee, we believe, would be ethical only during an emergency, given the moral hazard to banks. In the event of a 100% guarantee, the bank would collect the entire amount of the loan from the CGC if a SME defaults. In conclusion, it is believed that risk sharing between banks and credit guarantee corporations would be a more appropriate means of ensuring that banks make more reliable risk assessments and better manage the risks.

Credit guarantee programs are being implemented in various Asian countries, including India, Indonesia, Malaysia, South Korea and Vietnam, although the guarantee rates are different in each country, being, for example, 75% in India and 70–80% in Indonesia. It is thus surmised that every country should fix a guarantee rate based on its own unique situation.

Model Proposed for Ideal Guarantee Rate (Yoshino)

The Asian Development Bank Institute is based in Tokyo, and was founded to provide academic support to development models in Asian countries and to propose development models for different countries based on the results of the studies it undertakes in many countries.

Naoyuki Yoshino, Dean of the Asian Development Bank Institute, has concluded in his studies focusing on the guarantee rates of credit guarantee corporations that the guarantee rate is quite important for a well functioning system. The most important factor to be taken into account regarding a model is that the guarantee rate be based on three factors:

1. The financial strength of the lending institution,
2. Macroeconomic conditions,
3. The government's policy goals.

In this model it is suggested that lenders with an efficient structure be offered higher guarantee rates, and a lower guarantee rate when the macroeconomic situation is good. SMEs are less likely to default in periods when macroeconomic conditions are more favorable.

Below, we will try to explain the structure that formulates the factors including the targets which are suggested by the economy management of Yoshino for SMEs.

$$U = w_1(L - L^*)^2 + w_2(\rho - \rho^*)^2$$

U: Government's goal
L: SME loan
L*: Desired SME loan targeted
p: Existing NPL
p*: Desired NPL target
w_1: Balancing SME loans
w_2: Weight for reducing NPL ratio

U is the government's target function. The government sets a target to raise the current SME loans depending how much increase needed. Another goal of the government is to bridge the gap between the current default risk rate and the rate needed. Thus, w1 and w2 are the policy weights for both goals. w1 represents the weight for the balancing of SME loans and w2 is the weight used to reduce the NPL ratio. The government, therefore, targets the growth rate for SME loans.

$$L^* = (1 + a)L_{t-1}$$

a: Growth rate of SME loans

$p^*=(1-b)p_{t-1}$

b: Anticipated rate of change in NPL

If, for instance, the government wants to increase the current SME loans by 5%, it is the government's goal, and should consider a possible rise in NPL as a consequence of this increasing policy.

$$L = l_0 - l_1 r_L + l_2 Y^e$$

l_0: Demand for loans

L_l: Loan interest rate

Y^e: Anticipated GDP

l_1: Coefficient of loan interest rates (negative)

l_2: The demand for loans increases if the economic conditions are favorable (positive value)

The demand for loans will fall if interest rates go up. There will be an increase in demand for loans if the economic conditions are positive.

Banks' Profit Maximization Behavior

$$\max \Pi = r_L(L)L - \rho(g, Y, P_L, P_S, M, Z)L - r_D D - C(L, D)$$

(1-p)L+Pl=D+A Actual bank balance sheet

r_L: Loan interest rate

L: Loan function

Y: GDP

g: Credit guarantee rate

P_L: Land price

P_s: Price of stocks

M: Money supply

Z: Bank's financial profile

rD: Interest rate on deposits

D: Deposits

C: Employee+Bl+operating expenses

(1-p)L: Performing loans

p_L: NPL

A: Bank's capital

D: Deposits

A bank's profit maximization behavior is driven by the interest rate on loans, the loan guarantee ratio, land prices, share prices, money supply, the bank's financial profile, the interest rate on deposits, outstanding deposit amount and operating expenses.

The loan guarantee rate is a factor that can be used by economic decision-makers for supporting markets. This rate also represents the cost to be assumed by the government, although it increases the burden on governments while alleviating default-related burdens on banks. High GDP growth, most of the time, seems to improve the debt repayment capacity of borrowers. In contrast, when there is an economic slump, high unemployment rates and when borrowers have trouble repaying their debts, the p value is likely to increase. Thus, the credit default risk rate depends on various macroeconomic factors (Y, PL, Ps, M). In other words, GDP growth, and the rise in share and land prices, reduce the probability of default. It is apparent that NPLs are affected by stock prices, and declining stock prices can lead to an increase in defaults.

NPLs are the most important factor in a bank's profitability, and the probability of an increase in NPLs affects loan growth functions. Function g is the most important tool affecting this function, being the credit guarantee rate.

Based on examples in many countries, it has been scientifically proven that the default rates of banks are directly affected by macro-financial data (GDP, unemployment, interest rate, public debts, etc.). In addition, it has been confirmed that different banks may record different results, despite having identical macro data. Accordingly, in addition to macro data, special conditions should also be analyzed and assessed as a variable. It should be noted that each bank operates a different financial model, leading to different results. In other words, the more banking behavior improves, the greater the positive effect on the bank's capital structure and NPL level.

Credit Guarantee Rate

$$g = -\frac{1}{\alpha_1\left(\frac{w_1 l_1^2}{4}+w_2\right)} w_1 \frac{l_1^2}{4}\left(\frac{l_0}{l_1}+\frac{l_2}{l_1}y^e - r_D - \rho_L'\right) + \frac{l_1}{2\alpha_1}L^* - \frac{w_2}{\alpha_1}\rho^* - \frac{\alpha_2}{\alpha_1}Y - \frac{\alpha_3}{\alpha_1}P_L - \frac{\alpha_4}{\alpha_1}P_S + \frac{\alpha_5}{\alpha_1}M + \frac{\alpha_6}{\alpha_1}M$$

The most appropriate guarantee rate is one that takes into account the current loan amount to SMEs, the size of the loan sought, the proposed default risk, the fixed demand for loans, interest rates on deposits, anticipated GDP, marginal increases in NPLs, land prices, stock prices, money supply and the financial profile of the bank. In other words, the macroeconomic situation, the government policies in support of SMEs and diminishing NPLs determine the variability of g. It is noted that a different g value should be applied to each bank.

In conclusion, this modelling suggests that countries should adjust their guarantee rates depending on the current needs and prevailing circumstances, and different guarantee rates should be applied by banks depending on their data set. The most appropriate loan rate depends on banking behavior, and should vary in accordance with the strength of the bank. Strong lenders that efficiently manage their NPLs should obtain a higher guarantee rate, which makes it necessary to classify banks and to determine their guarantee rates accordingly.

New Approaches to SME Finance (Yoshino)

Unreliable financial data on SMEs is one of the main obstacles preventing the access of SMEs to finance in Japan. Financial data received from a SMEs that reflects the past rather than the current situation makes it impossible to determine its current status. Moreover, the various cosmetic changes made to the financial data reported by SMEs seeking loans also prevents the determination of the true situation. Yoshino suggests, therefore, that business account data should also be used in such assessments, in addition to financial data, as this will allow banks to make a more accurate prediction and to make a more accurate calculation of the loan risk of a SME.

A lending model based on bank account data will allow banks to calculate the lending cap more easily. An analysis of the annual cash flow within the borrower's account will permit the bank to make a more realistic estimate of the amount that a borrower can pay back, and the bank can determine an appropriate loan amount taking that estimate into account. The conventional financial scoring model, in contrast, is based on financial statements from the preceding year, and simulations of probable lending amounts, therefore, do not yield a satisfactory result for some transactions, which may lead to over-borrowing.

The utilization of bank account details can be an effective tool in the estimation of the business and financial status of banking customers, and when offering consultation services. Additionally, such an approach may also determine business distribution and potential business opportunities for the customers. The accuracy and speed at which data is provided may also be useful in understanding the effect of macro-shocks, such as natural disasters or loss of monetary value.

The bank account model was applied by the Kumamoto Bank in the Kumamoto province in Japan, which used account details to determine the regions and sectors that took the brunt of the impact of the Kumamoto earthquake, and took a proactive approach in its cooperation with local governments.

This model shows that it may be used to improve the credit risk assessments of financial institutions and to increase service quality. It would be a more efficient approach for different financial institutions to create a common database, and to share data rather than to develop systems peculiar to each individual institution. This would also benefit policy makers, would serve as a guide for financial institutions and would support the development of a credit information system. The utilization of bank account details would aid SMEs in accessing additional finance, thus supporting their growth and productivity.

Figure 58. Comparison of a Financial Model with a Model Based on Bank Accounts

Conventional Approach/Financial Model	Model Based on Bank Accounts
Utilization of year-end financial data (balance sheet and financial statement)	Utilization of information on the balance of liquid deposits in the business' cash account and usage trends
Fixed 3–15 month-old information not updated	Constant screening of customer information
Usually checked by customers, however there is a need for banks to make their own investigations and checks	Manipulation is difficult
Need to work manually	Utilization of a technological system.

Effect of Reducing Loan Risk for Lenders Extending Loans to SMEs by Using Bank Account Details

Hypothesis 1: Bank account data will be used to increase assumed predictability, particularly for small companies.

Hypothesis 2: The bank account model offers equivalent or better predictability when compared to the financial model, as far as small businesses are concerned.

Figure 59. Financial Model, Model Based on Bank Accounts, and the Hybrid Model

The Financial Model combines B/S and PL ratios like debt/capital, interest expenses/EBTDA, etc.

The bank account model takes into account average liquid deposits / total sales, net deposits / growth of total sales, net deposits / total sales and others.

$$1 - p\ln \quad p = \quad \beta 0 + \beta\, 1x1 + \beta\, 2x2 + \cdots + \beta\, kxk$$

p= probability of default

x= dependent variables

Dependent variables **, selected based on principal component analysis. All data obtained from the Japanese Risk Databank (RDB). In conclusion, Yoshino's thesis will enhance the accuracy of the bank account model and the loan model.

This model can provide more accurate results for small businesses when compared to the conventional model. In addition, through this model it is more likely to extend the term of bank loans, and also permits a more flexible assessment of businesses.

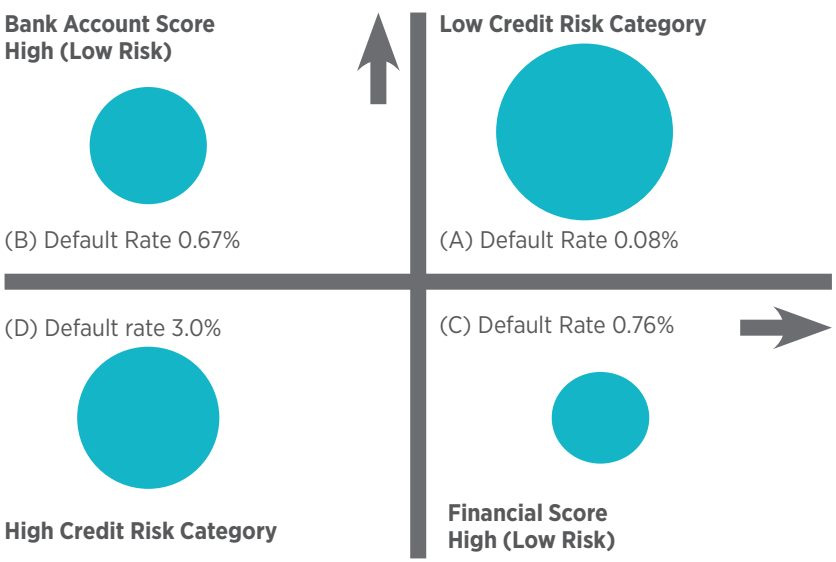
Figure 60. Comparison of Accuracy Rates

Total Sales (million US$)	Default rate	Accuracy rate		
		Financial Model	Bank Account Model	Hybrid Model
Less than 1 M	1.40	60.0	62.9	67.4
Between 1M and 2.7M	1.0	72.6	67.1	78.4
Over 2.7M	0.6	77.8	64.0	79.2
Total	1.00	68.3	65.7	73.9

PS: Average of in-sample and out-of-sample data

An analysis of the study conducted by Yoshino based on samples points to an NPL rate of SMEs with a turnover less than US$ 1 million of 1.4%, and accuracy rates of the financial model, bank account model and hybrid model of 60%, 62.9% and 67.4%, respectively. Yoshino proved in his sample study that the accuracy rate of the hybrid model, as a combination of the financial model and the bank account model, was quite high, and similar results were recorded in other turnover ranges. Figure 60 shows the outcome of the study.

Figure 61. Correlation of Models



Default rate	Pearson Correlations		
	Financial	Bank Account	Hybrid
Financial model	1.000	0.5646	0.8381
Bank account model	0.5646	1.000	0.8885
Hybrid model	0.8381	0.8885	1.0000

Summary

- The growth of the SME sector was generally held back as a result of financial bottlenecks.
- Alternative financial mechanisms, such as peer-to-peer lending platforms (P2P), may extend the scope of financing, albeit at a limited level.
- Based on empirical analyses in Japan, the use of bank account data enhances the accuracy of default projection.
- The results may be applied to other Asian countries in which SME data is of low quality and where the database system is still in use.

It is believed that this model may accelerate the SME loan assessment process in banks, and that a bank's loan portfolio may be subjected to a comprehensive risk assessment. Meanwhile, it is predicted that this model will ensure that the assessment processes of banks will be based on an objective database, and that subjective criteria will be relatively fewer in number, as no assessment will be made based on the statements of the business, meaning that the likelihood of incomplete and false information being provided will be reduced.

b. Credit Risk Database (CRD)

The Credit Risk Database (CRD) was founded in 2001 as a venture of the Ministry of Trade and Industry and the Agency for Small- and Medium-sized Enterprises, with the goal of collecting all necessary data for a reliable assessment of SMEs, as one of the hurdles preventing the access of SMEs to finance. The database was also to serve as a source of information for concerned organizations. Its initial membership comprised 51 credit guarantee institutions as well as both financial and non-financial institutions. The CRD's objective was to facilitate the creation of funds for SMEs while boosting their operational efficiency. The agency's membership was 73 in 2002, which increased to 175 in 2015, and banks began joining after credit guarantee institutions, transforming it into a multi-partner structure. It contained details of 2.21 million limited-liability SMEs and 1.10 million SMEs with a single owner as of

March 31, 2015, and is the largest SME database in Japan. The SME data is retained in the database and is assigned a date.

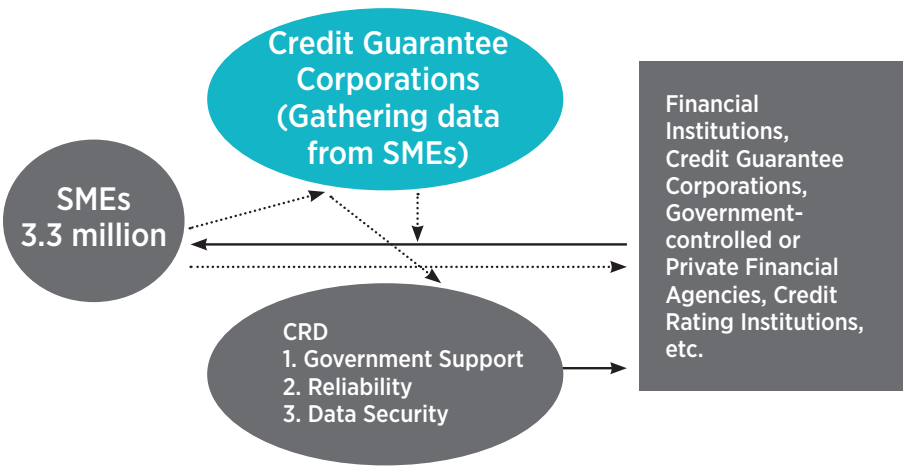
The CRD is one of the best examples of such a model in the world. It offers all members (credit guarantee institutions and banks) a means of assessing SMEs, while managing the outcome of the implementation of the model.

The CRD was established to help regulate the provision of finance to SMEs, to measure credit exposure in the financing of SMEs, and to make the provision of finance more efficient by assessing databased business conditions.

When all credit guarantee institutions and all leading banks in the industry joined CRD, the database expanded, permitting the provision of reliable services to all stakeholders. The CRD was reorganized as a joint-stock company in 2009. The CRD measures SME data through its integrated database and models credit risk measurement.

The CRD receives raw data related to SMEs and subjects it to data cleansing and transfer processes, thus ensuring the data is reliable and assessable. Regional business statistics may, for instance, be analyzed to determine if a problem exists in data pertaining to a specific business. Whether or not the financial data related to a restaurant in a district of Tokyo is consistent with that of other restaurants in the same area is checked, and if it is seen that it does not correspond to the actual conditions in that area, it is concluded that the business has provided false data, or that some "window dressing" has been made in its balance sheet through the use of various methods. After determining such situations, the CRD carries out a rating of the business.

Figure 62. CRD's Function in the Credit Guarantee System

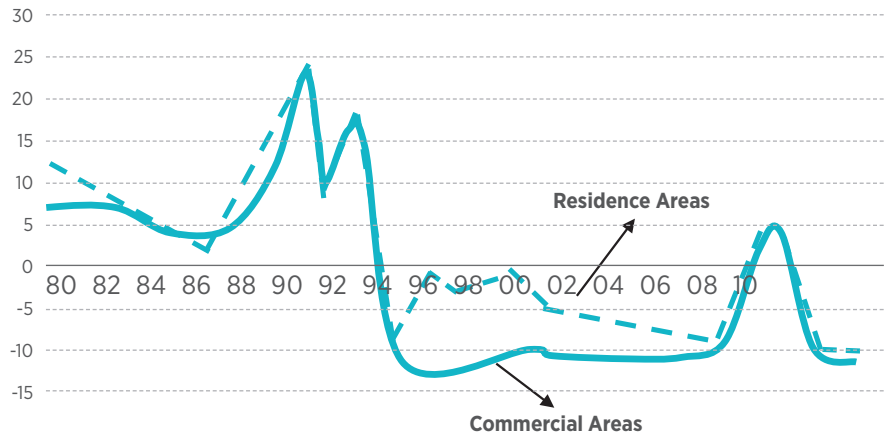


The CRD is intended to make a profit. Its members make an annual membership contribution, no other charges are made. The CRD only serves its members, which included 51 credit guarantee institutions and 100 banks as of 2018.

The CRD was established to eliminate the problem of guarantees arising from data asymmetry, as the main obstacle preventing the access of SMEs to financing in Japan.

Data asymmetry leads financial institutions to demand guarantees as a means of minimizing the risk in lending to SMEs. The pool of data created within the CRD has facilitated reliable risk assessment, minimizing the demand for collateral in the form of real estate from SMEs.

Figure 63. Variation in Value of Real Estate Compared to the Preceding Year (%)



This graph shows the price movements of residential units and commercial property since the 1980s. The price of real estate rose drastically between 1980 and 1990, but then entered a slump period. Banking on the high value of real estate in the 1980s, banks were comfortable in lending loans, but dwindling real estate prices in the 1990s led banks into a collateral deficit, making it impossible to manage risks efficiently. This unpleasant experience showed Japan that credit exposure could not be managed through collateral, and this collateral crisis motivated the Japanese government to seek a solution, and it was eventually understood that a CRD system was necessary. In brief, lenders seek to make an accurate assessment of SMEs, while borrowers want to access loans. The CRD emerged as the most effective solution, meeting the needs of both sides.

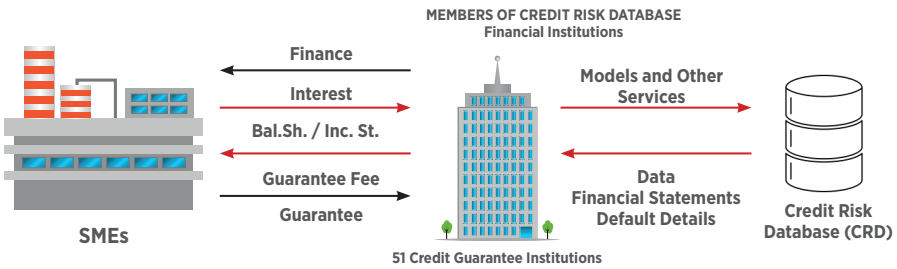
The CRD gathers data from both public and private sources for the creation of a crucial data set. Aside from this data set, the CRD contains unique private data of businesses, thus facilitating a reliable and comprehensive SME analysis.

The public sector led the efforts to establish the CRD in 2000, and it comprised the entire financial system. All public agencies and financial institutions transferred their data to the CRD, and this data was then returned to those entities in the form of a consolidated data set that could be accessed on demand.

The CRD provides a public service, and functions as an independent financial institution, cooperating with such key entities as the SME Agency, the Bank of Japan and the FSA (Financial Services Agency). The CRD's members include credit guarantee institutions, banks, credit rating agencies and other financial institutions.

The CRD database contains industry-wide data, as well as data pertaining to approximately 3 million SMEs. The database also has the ability to store multi-year data.

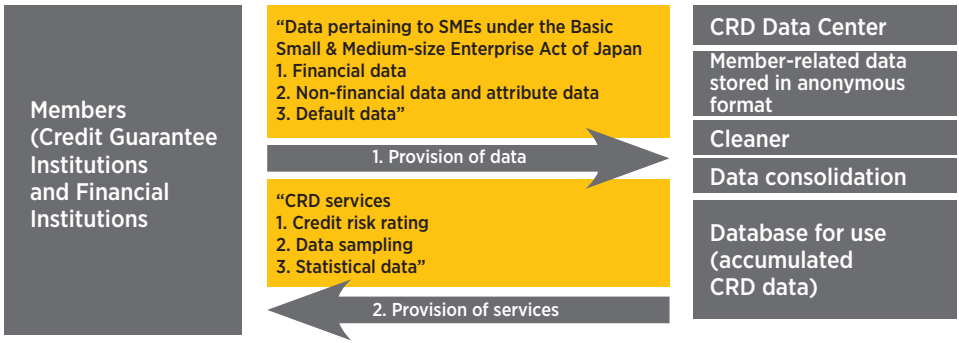
Figure 64. SME Finance Mechanism



The CRD gathers and assesses data from all of its members, and delivers its analyses to its members. In addition, it creates and offers to its membership models for the assessments to be carried out by its members.

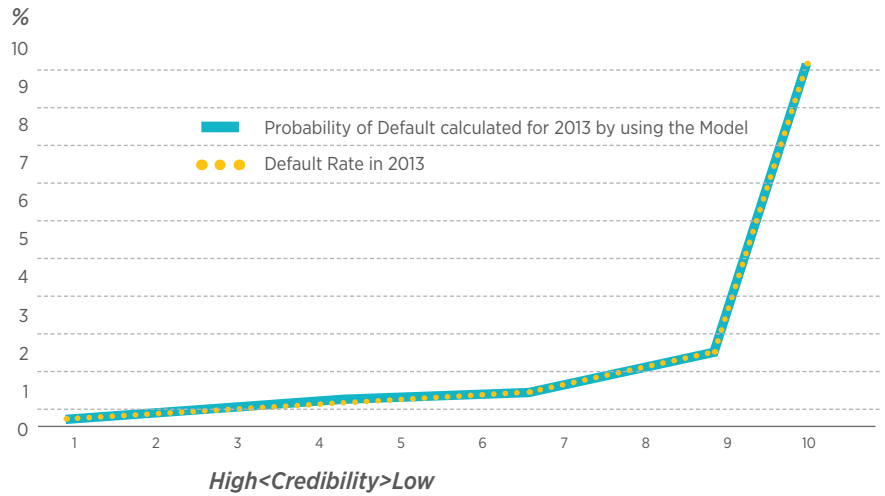
The CRD provides its members with financial indices based on the data set created within its database, alongside regional analyses, ensuring that the rating assessments of businesses yield sound results, permitting accurate calculations of default probability. This method aids SMEs in gaining access to loans in Japan, where it is now possible to borrow up to around 90% without collateral (such as real estate pledges), excluding the guarantees given by guarantee institutions.

Figure 65. Structure of the CRD Database



The CRD model ensures an appropriate correlation between financial indices and defaults. One of the indices relates to the correlation between the capital adequacy ratio and probability of default of a business. A business with a high capital adequacy ratio has a low probability of default, while a business with a low capital adequacy ratio is associated with a high probability of default. Another index indicates that a correlation exists between interest rate and default. It is noted that providing a loan with a high interest rate increases the probability of default, whereas loans bearing a low interest rate have a lower probability of default.

Figure 66. CRD Model Control



The probability of default in the CRD model is calculated through a 10-scale modelling approach. The highest possible rating is 10 and the lowest one is 1. A business with a rating of 10 has a low probability of default, in contrast to a high probability of default for a business with a rating of 1. Figure 66 shows that the model is consistent with the actual situation, meaning that the model functions properly.

The CRD obtains raw data from its members and analyzes its deviation from the data in the pool. It is then delivered to its users who can then make a reliable assessment.

When the CRD receives data from its members, it is checked thoroughly and any deviations are checked and cleaned before being entered into the database. The data is subsequently subjected to a comparative analysis with all of the data in the pool and cleaned again. The cleaning processes are repeated regularly so that the reliability of the data is kept at a maximum level. Thus, the CRD database provides reliable data that has been filtered and subjected to numerous processes to its members, ensuring the security of any assessments to be made.

Quality management guides for the CRD model were developed in 2007, and accordingly third parties are provided with reliable data for CRD Rating Model.

The CRD model is controlled and verified annually, in line with SME Law and FSA legislation. Accordingly, the appropriate use of the model is ensured regularly through:

- A comparison of the database supporting the current model with current data
- The accuracy rate of the model
- A comparison of the current default rate with PD
- The stable structure of the model
- The control of the variables required to predict the probability of default through the organization of regular training for users of the model, and assessments by the Third Party Assessment Committee of the CRD rating model.

The annual operation assessment report compiled by the Third Party Assessment Committee is distributed to its members, and is also made public.

All credit guarantee corporations (CGC) in Japan have been members of the CRD since its formation. The CRD's rating model has been used for the Credit Support System since April 2006. The credit guarantee fee was 1.35% up until that time, but varied between 0.5% and 2.2%, depending on the company's rating note after the CRD rating model was entered into use. Accordingly, healthy SMEs were able to

access finance at lower costs. A business with a CRD rating score of 1 can use the Credit Guarantee System with a guarantee fee equal to 2.2%, whereas a business with a rating of 9 is charged a 0.5% guarantee fee.

Figure 67. Classification of Credit Guarantee Fee Rates

There is no classification	
Until March 2006	Standard 1.35

Classification	1	2	3	4	5	6	7	8	9
Since April 2006	2.20	2.00	1.80	1.60	1.35	1.10	0.90	0.70	0.50

CRD modelling:

• Satisfies the need for data used for assessment with regard to access to finance.

• Scope and size of the database increases the accuracy of the rating model

• The financial statements of SMEs are of crucial importance in an assessment. The verification and supporting of these statements with statistical data is of great importance in the assessment of SMEs. A total of 174 financial ratios are obtained from 26–59 items from the balance sheet and 9–26 items from the income statement.

• The CRD's assessment statistics which are not are not based on businesses and activities conducted by the rating institutions to increase the accuracy and reliability of their ratings for SMEs ensure credit institutions to performe these assessments with minimum damage.

Its members use the CRD's rating model to assess SME ratings. The CRD model is used by both banks and credit guarantee institutions. An institution using the assessment model divides SMEs into different categories based on probability of default (PD). It later develops the system by taking into account internal rating systems and other assessment factors.

Figure 68. CRD Scoring Models

Rating	PD Range
A1	<0.42
A2	<0.65
A3	<0.78
A4	<1.15
B5	<1.86
B6	<2.48

Other Details

A study is initiated by dividing customers into categories through the efficient use of the model.

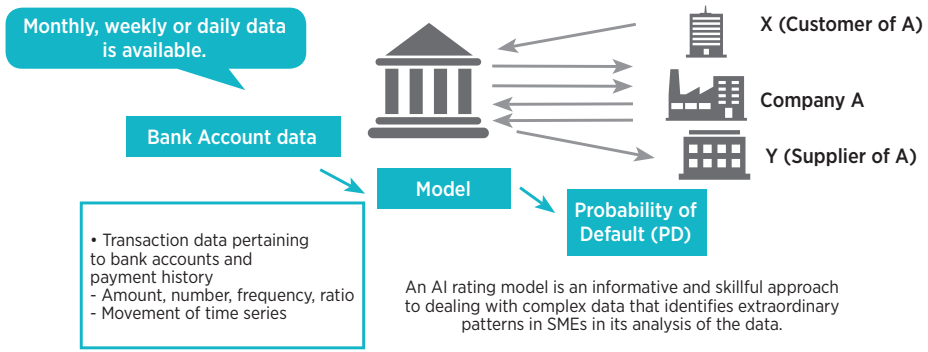
Rating	Number of Customers	Share (%)	Default Rate
A1	326	2.2	0.3
A2	1,568	10.8	0.5
A3	3,248	22.3	0.6
A4	2,653	18.2	0.8
B5	4,832	33.2	1.6
B6	1,325	9.1	2.3
B7	224	1.5	12.5
C	159	1.1	45.0
D	98	0.7	100.0
E	134	0.9	100.0
Total	14,567	100.0	

The CRD model is based on the average risk of a portfolio rather than the credibility of each loan. Thus, the rating model is based on predicting the distribution of the total loan portfolio and the probability of default.

The assessability and predictability of a portfolio in which the CRD model is used may also be a decisive factor in an investor's perspective of those portfolios. This, in turn, allows SMEs to access finance by means of funds to be raised in the financial markets through securitization transactions.

A different example of the utilization of the CRD model in Japan is one for calculating the probability of default in a short period through an analysis of a SMEs bank account activity, based on the application of a devised scoring method (artificial intelligence). As explained in detail in the previous sections of this study, models in which an SME is assessed based only its financial data may lead to an assessment being made based on quite old data. Such an approach does not permit a reliable assessment, as it cannot take into account instantaneous or short-term events. This scoring practice, i.e. a model based on bank account movements, permits a more reliable assessment that follows the cashflow of an SME instantaneously.

Figure 69. CRD modelling



The CRD owes its success primarily to the active support received from the public and private sectors.

The Japanese Government earmarked US$ 130 million from the budget prior to the foundation of the CRD, i.e. in 1990 and 2000, as part of its preparations for the launch of the system to ensure the necessary infrastructure was established.

The financial institutions among the CRD members use rating models for the assessment of loans, for the validation of internal rating systems, and balance loan pricing with credit risk. In addition, the CRD also offers consultancy services to support SME management, based on the assumption that credit risk would be minimized for the member financial institutions, and that the business operations of SMEs would be strengthened managed more efficiently. “Basel II Practices” are among the topics for which consulting services are provided, aimed at promoting the application of Basel II criteria.

The Credit Risk Database permits accurate analyses more efficient assessments of SMEs, and allows SMEs to borrow not only from the banking sector, but also through other financing instruments. It will, for example, be possible to access finance through the issuance of bonds.

In Japan and in other Asian economies it is harder to rate SMEs than big businesses. Reliable data is available for big businesses due to official audits, but this is not the case for SMEs. This situation makes the maintenance of a CRD database and assessments critical issues. The CRD facilitates the recognition of SME-related data by financial institutions, and the access of SMEs to finance.

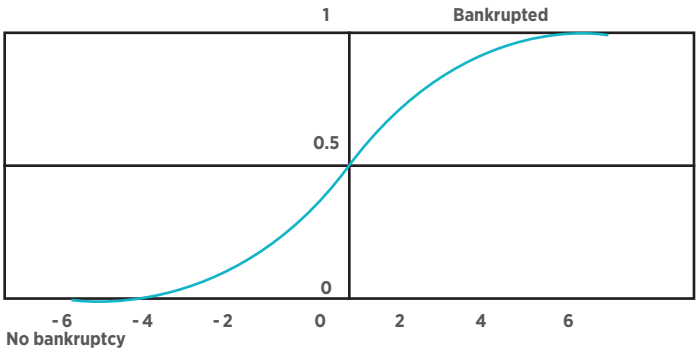
Financially strong SMEs can take out more loans at lower interest rates as a result of a lower default risk, whereas SMEs with weak financial data need to pay higher

interest rates and have a lower borrowing cap. Banks can reduce the amount of non-performing loans made to SMEs by using the credit rating mechanism, which boosts the credibility of the financial system and help SMEs that are healthy and have the potential to contribute to economic growth to borrow from banks.

The CRD analyzes the financial data and the default status of businesses in an attempt to calculate the factors affecting the probability of default through the use of statistical methods. This data is used to calculate a company's probability of default by means of formulae called a default curve.

$$y = \frac{1}{1 + e^{z}}$$

Figure 70. Default Curve



Variable Z in the default curve is computed by multiplying the various ratios that can be used for rating by specific coefficients.

$$z=a+b\_1\ x\_1+\cdots+b\_n\ x\_n$$

bn values represent specific coefficients multiplied by ratios. The coefficients are values that the CRD has calculated based on the data in its possession. These values show a company's probability of bankruptcy when entered into the default curve. The CRD's category, from 1 to 9, relate to intervals on the horizontal axis of the default curve.

This model is updated annually as new financial data is received, and its full conformity with the true situation is confirmed.

If data in the CRD's database, received from its members, differs from and does not match each other, the problem is eliminated by increasing the quality of the data by

subjecting it to a two-phase process. The first step, taken after receiving the data, is to eliminate any discrepancies in the data before uploading it to the database. The data in the member database is reviewed using data on the same SME received from other members, and any discrepancies are rectified.

The CRD has provided guidelines on how the modeling should be carried out and has defined the frequency of updates, based on a study conducted in 2007. A committee that included specialists from outside of the organization was set up to ensure that the model is externally supervised. The committee reviews how the current model works and to what extent it is consistent with the latest data on an annual basis.

The CRD draws up periodical reports on the results of implementations, and submits them to both to governmental agencies and the Central Bank.

The commission rate charged to SMEs for guarantees was 1.35% prior to the CRD's foundation. Today, SMEs pay commission fees at different rates, depending on the outcome of the scoring based on the CRD model.

Figure 71. CRD Scoring Categories and Commission Rates

Category	Commission %
1 (High risk)	2.20
2	2.00
3	1.80
4	1.60
5	1.35
6	1.10
7	0.90
8	0.70
9 (Low risk)	0.60

Its members can create their own rating models based on the CRD's model. Financial institutions are able to develop their own models by combining the financial data received from the CRD with non-quantitative data and other data gathered from within its organization.

The CRD database only covers SMEs, and contains data on more than 50% of the SMEs in Japan, accounting for more than 14 million businesses, and over 1.7 million sole proprietorships in March 2010. The business database includes 3,289,000 companies and owners of sole proprietorships.

c. BANK

The Credit Risk Database (CRD) was founded in 2001 as a venture of the Ministry of Trade and Industry and the Agency for Small- and Medium-sized Enterprises, aiming to collect the necessary data to allow a reliable assessment of SMEs, as one of the hurdles preventing SMEs from gaining access to finance, and to serve as a source of information for concerned organizations. Its initial membership consisted of 51 credit guarantee institutions as well as financial and non-financial institutions. The CRD's objective was to facilitate the creation of funds for SMEs while boosting their operational efficiency. Number of the organization's members 2002

Banks are undoubtedly the most important partners for SMEs in their access to finance in Japan. A SME sends its request for a loan to the bank or the guarantee institution. Any such application received by a guarantee institution should be forwarded to the bank that will make the loan. Let us examine the Credit Guarantee System lending model in Japan by taking a look at two selected banks.

c1- Resona Bank

Taking a look at Resona Bank, one of the leading banks in Japan, in our examination of banks within the Credit Guarantee System, we see that it mostly makes loans based on guarantees given by the guarantee institution in its support of SMEs.

Resona Bank is a national bank that is operating throughout Japan, with operations concentrated mainly in Tokyo and Osaka. The Resona group owns five banks, with a total of 840 branches and 16 million customers. Its deposits total US$ 500 billion, and has provided loans amounting to US$ 350 billion. Some 10% of the loans made by Resona Bank to SMEs are guaranteed by the guarantee institution. Resona Bank's CGC-guaranteed loans total US$ 5.7 billion, in addition to US$ 5.7 billion CGC-guaranteed loans lent by the other banks owned by the Resona Holding. The Resona Group accounts for almost 7% of all CGC guarantees.

The bank performs both the portfolio-based and business-based risk management of the loans it makes. The Credit Risk Management department manages portfolios based on default projections. The bank assesses businesses based on a 12-point rating system. Loans are provided to businesses in the first eight categories of the rating scale, while no loans are extended to those in the last four rating categories. Businesses in the first three of the final four categories may borrow loans only if they have obtained a guarantee from the guarantee institution. Businesses in the last category are barred from taking out any loans.

A SME requesting a loan approaches a branch of Resona Bank. The branch rates the business using the bank's own rating system, and based on the acquired score, decides whether or not to provide the loan. If the bank needs to use the Credit Guarantee System, it forwards the application to the CGC. The bank branch shares the resulting rating score with the SME and determines both the guarantee commission rate and the applicable interest rate accordingly.

The bank rates the business based on financial data for the past five years. A different scoring model is applied for each sector. An annual scoring is made for each business. Resona Bank makes an annual review of the scoring model and makes the necessary updates.

Resona Bank says that obtaining a CGC guarantee is more valuable than receiving a collateral mortgage from a SME, adding that if a CGC guarantee is provided, no collateral mortgage is sought. Seemingly, a CGC guarantee is more valuable than a collateral mortgage, and is preferred by banks as it makes a positive contribution to the calculation of the Capital Adequacy Ratio (CAR) by financial institutions.

A loan application received from a SME can be assessed and processed by Resona Bank within one month. If the business is a customer of the bank and its data is current, this period may be as short as one week. If the guarantee of a guarantee institution is needed, the process in the CGC lasts almost one week.

Even if the financial data of the business is not satisfactory, Resona Bank may make a loan after assessing the profile of the business owner. The reliability of the financial data of SMEs is affirmed, and interviews are conducted with the financial advisor of the business rather than its owner to ascertain its financial status.

c2- Kiraboshi Bank

After our analysis of Resona Bank, which operates at a national level, we analyzed Kiraboshi Bank, which operates as a local bank, as part of our analysis of banks as one of the parties implementing the Credit Guarantee System in Japan.

Kiraboshi Bank is mostly engaged in SME and personal banking. The bank has a total of 160 branches, including 124 in Tokyo, 32 in Karanawa and four in other cities. The bank's total loan volume is US$ 36.5 billion, of which US$ 25.3 billion have been made to SMEs. Almost US$ 1.9 billion, or 7.3% of those loans consist of loans extended under the Credit Guarantee System. The bank has around 100,000 customers, including 26,000 businesses. The CGC has issued guarantees for loans borrowed by 12,500 SMEs, almost half of these 26,000 businesses.

There are similar application processes in Kiraboshi Bank. A SME first submits its loan request to a branch of the bank, which performs a credit rating of the business which it sends along with the application to the bank's head office. Received requests are subjected to a final assessment at the head office, where a decision is made. When a loan application is received, a decision is made on whether or not the business is eligible to receive a guarantee from the guarantee institution, based on its financial condition. Start-ups or businesses in the red are recommended to apply to the guarantee institution. If the outcome of the rating shows that the business is creditworthy, it can take out a loan without seeking a guarantee from the guarantee institution. New entrepreneurs and businesses with a weak financial status are mostly referred to the guarantee institution.

The bank makes a loan after the credit application has been approved. This process is managed entirely by the bank branch. The bank branch carries out all operational transactions, including repayments and modifications to the repayment conditions. If a problem occurs in the repayment of a loan and the borrower defaults, the bank collects the loan from the CGC. When the bank subsequently collects the loan from the customer, the amount collected is shared with the CGC, according to the risk payment rate.

Kiraboshi Bank performs SME ratings based on the CRD model. Businesses are assessed under this model, and any guarantee commissions and interest rates to be paid are notified to the business, depending on the resulting risk rating. After proposing the amount of the guarantee commission and interest rate to the business, the bank informs the CGC and requests a guarantee in favor of the business. If its request for a guarantee is accepted, it provides the loan to the business, subject to the payment of a commission.

The guarantee rate was 100% during the 2008 crisis, however the risk sharing system was restored in 2013 after the effects of the crisis had diminished. Presently, loans are subject to an 80% CGC guarantee and a 20% bank risk. Bank officials say that the risk sharing system is more advisable considering moral hazard.

For instance, if the loan is not repaid within the risk-sharing system where the CGC guarantees the payment of US$ 80 of every US$ 100 borrowed by a SME, the bank claims the entire loan i.e. US$ 100 from the CGC. The bank, however, assumes the risk for US$ 20 after collecting the entire loan, and pays this to the CGC separately.

D. CREDIT GUARANTEE CORPORATIONS (CGC)

The establishment of the Credit Guarantee System in Japan dates back to 1937 when the Tokyo Credit Guarantee Institution was founded. There were only three credit guarantee institutions in Japan prior to World War II, when Credit Guarantee Systems were used as a tool to aid economic recovery after the war. Accordingly, credit guarantee institutions were founded throughout Japan with financial support provided by local governments.

Today, Credit Guarantee Institutions that are founded under the Law on Credit Guarantee Institutions play a key role in providing SMEs with access to finance. Credit guarantee institutions were initially established as foundations and associations with the status of a legal entity, as defined in Civil Law, although the "Law on Credit Guarantee Institution" was subsequently enacted in order to regulate their operations. In addition, the credit insurance offered by the later-established Small Businesses Credit Insurance Agency (now the Japan Finance Corporation - JFC) ensured that the risk assumed by Credit Guarantee Institutions were shared, and the system thus took on a risk sharing form.

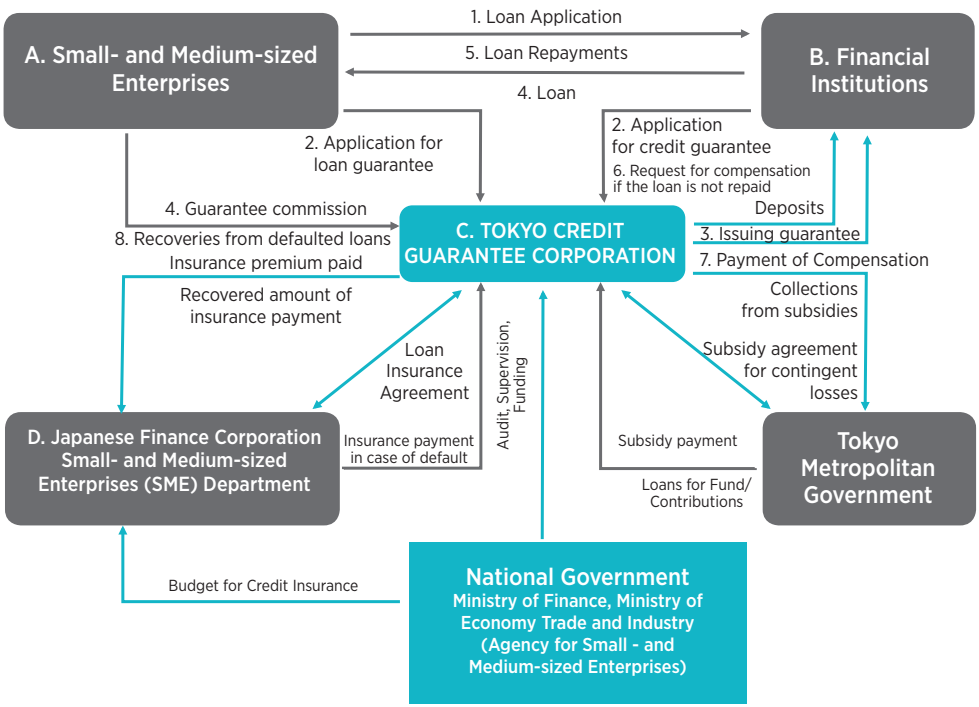
Today, there are a total of 51 credit guarantee corporations in Japan, including one in each province and one each in Nagoya, Yokohama, Kawasaki and Gifu. The total amount of guarantees registered as of the end of 2017 was US$ 220 billion.

Figure 72. History of Japanese Guarantee Corporations

August 1937	Establishment of the TOKYO CGC, Japan's first credit guarantee corporation, and its registration with the trade registry
August 1948	Council of Ministers adopts SME Finance Policy Guidelines (i.e. utilization of the credit guarantee system)
December 1950	Law on Credit Insurance for Small- and Medium-sized Enterprises enters into force (Credit Insurance System established)
January 1951	Foundation of the National Association of Credit Guarantee Corporations (now known as the "Federation of Credit Guarantee Corporations")
August 1953	Law on Credit Guarantee Corporations enacted
July 1958	Foundation of the Small Businesses Credit Insurance Corporation (now known as the "Japan Finance Corporation") – a new organization, founded for the operation of the loan insurance mechanism in place of the special budget earmarked by the central government for SME credit insurance.
July 1963	Enactment of the Basic Small & Medium-size Enterprise Act of Japan
April 2006	Variable guarantee fee ratio system, which takes into account credit risk, enters into operation
October 2007	Liability sharing system launched for the credit support mechanism

September 2008	Law on Credit Guarantee Corporations amended – extending the scope of CGC operations to cover the insurance of the pre-emption right certificates issued by SMEs benefiting from the credit guarantee mechanism, the assumption of receivables from borrowers, and the purchase of shares in economic recovery funds. Standards for organizations providing support to credit guarantee systems established
November 2008	Federation of Credit Corporations designated as the organization providing support to credit guarantee activities.
December 2012	SME support network established
April 2013	The name of the Federation of Credit Guarantee Corporations and its abbreviation JFG finally determined
October 2015	Non-profit organizations established as a legal entity, and included in the Credit Guarantee System.
April 2018	Law on Credit Guarantee Corporations (CGC) revised, cooperation among financial corporations and others, etc.

Figure 73. Example of a CGC Operating in the Credit Guarantee System – Tokyo CGC



If asked to summarize the functioning of the Credit Support System in Japan, it can be said that the Credit Guarantee Corporation is at the heart of the system. CGCs are supported by the central and local governments. The "Federation of Guarantee Corporations (JFG)" is the umbrella organization for all CGCs. A SME seeks a loan from a financial institution (bank), the CGC responds to the request, and the CGC guarantee is insured by the Japan Finance Corporation (JFC). The bank, CGC and JFC – as the stakeholders within the system – assume risks at different levels as part of the obligation sharing system.

Looking at the Tokyo Credit Guarantee Corporation – one of the pioneers of the system – one can see that the bank's risk in a US$ 100,000 transaction is 20%, compared to the 80% assumed by Tokyo CGC. The JFC (Japan Finance Corporation) assumes 80% of Tokyo CGC's risk. In other words, the risk for a US$ 100,000 transaction is shared as follows: US$ 20,000 by the bank; US$ 16,000 by Tokyo CGC and US$ 64,000 by JFC. The SME pays US$ 1,000 to the CGC as the guarantee fee. The CGC will pay to JFC US$ 500 of the commission it receives as the insurance fee. The transaction will be deemed to have been closed if the loan is repaid on time. If the SME fails to pay the loan, in part or in full, the bank will claim the remainder from the CGC. In this example, if we assume that the SME loan has dropped to US$ 70,000, the CGC will pay US$ 56,000 to the bank and collect US$ 44,800 of US$ 56,000 that it has been paid from the JFC.

Objectives and Fundamental Guidelines of the Credit Guarantee Corporation

Credit Guarantee Corporations (CGC) are public agencies that provide guarantees to facilitate the taking out of the loans needed by SMEs for their operations, thus helping SMEs.

SMEs and micro-businesses play a key role in the Japanese economy. The Credit Guarantee System boosts the creditworthiness of SMEs and micro-businesses lack sufficient collateral and that have a low creditworthiness. CGCs help in the transfer of funds from private finance institutions to SMEs, thus facilitating their access to finance.

One of the fundamental characteristics of the Credit Guarantee System in Japan is that a Credit Guarantee System operated by CGCs founded with the financial support of local governments coexists with the Credit Insurance System run by the Japan Finance Corporation, and controlled by the central government. When two systems such as these function together, they are generally referred to as a Credit Support System.

Fundamental guidelines of CGCs

1. Providing support for SMEs that are at the phase of incorporation and development

2. Improving the management capacity of SMEs while facilitating their access to finance

3. Supporting efforts to enhance the analysis and information capacity of SMEs in order to ensure that the business becomes stronger

4. Ensuring that SMEs contribute to economic development through the support provided to them.

System Reform Initiated in 2018

The law on Credit Guarantee Cooperation aims at increasing the efficiency of SMEs and micro-businesses by encouraging cooperations between financial institutions and CGCs.

Main reforms:

- Guarantees related to the crisis

- Increased guarantee limits for start-ups and micro-businesses – Boosting cooperations between financial institutions and CGCs – Increasing the support provided by CGCs to the business community - Revising the guarantee rate in the National Contingency Program 100% 80%.

Initiatives Targeting Businesses Affected by Natural Disasters

The government launched urgent financial support programs through the Disaster Action Guarantee Program and the National Contingency Program in response to the natural disasters (flood, etc.) witnessed in Fukuoka, Oita and Akita in 2017, and in Fukui and Niigata in 2018.

Credit Guarantee Corporations functioned as a national contingency insurance system, making active use of guarantee systems and, for example, providing flexibility in the repayments of guaranteed loans, aiming to rehabilitate and reconstruct of the disaster-hit areas as soon as possible.

Business Support Incentive and Development Supports for SMEs and Micro-businesses

Credit Guarantee Corporations actively provide management support incentives for SMEs and micro-businesses that find it necessary to adjust the conditions of their loans repeatedly. These efforts started to be supported by government policies once "Business Support Incentive and Development Assistance for SMEs and Micro-businesses" programs were launched.

After the 2015 fiscal year, Credit Guarantee Corporations made use of these support tools in their efforts to provide management support, with visits to businesses and sending experts with a view to supporting efforts to improve business management among SMEs and micro-businesses.

Support for startups was included in this program after the 2016 fiscal year. Efforts to boost efficiency and to support businesses have been under way since the 2017 fiscal year. CGCs undertake projects in support of new businesses, taking into account the characteristics of each region, and launching workshops and similar activities for business founders.

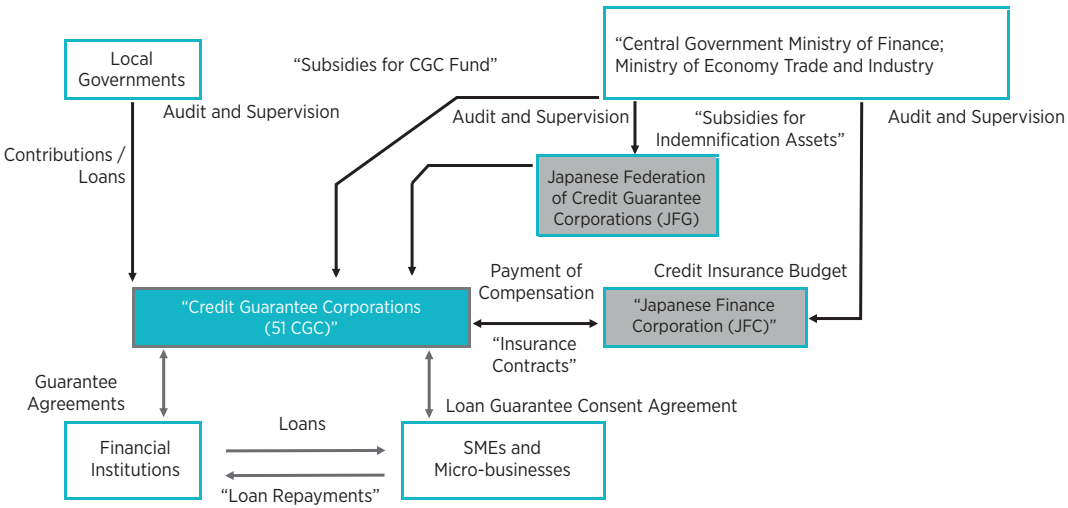
Credit Support System

The Japanese Credit Guarantee System has two functions:

- A "Credit Guarantee" function that ensures that CGCs provide guarantees for financial institutions against risks associated with loans extended to SMEs
- A "Credit Insurance" function, by which the government-funded Japan Finance Corporation provides reinsurance for such credit guarantees

These two functions, when working together, are referred to as a "Credit Support System", as shown on Figure 74.

Figure 74. Credit Support System



SMEs = Small- and medium-sized enterprises
Source: Japan Federation of Credit Guarantee Corporations 2014.
Credit Guarantee System in Japan: Tokyo.

Figure 75. Credit Guarantee System Work Flow

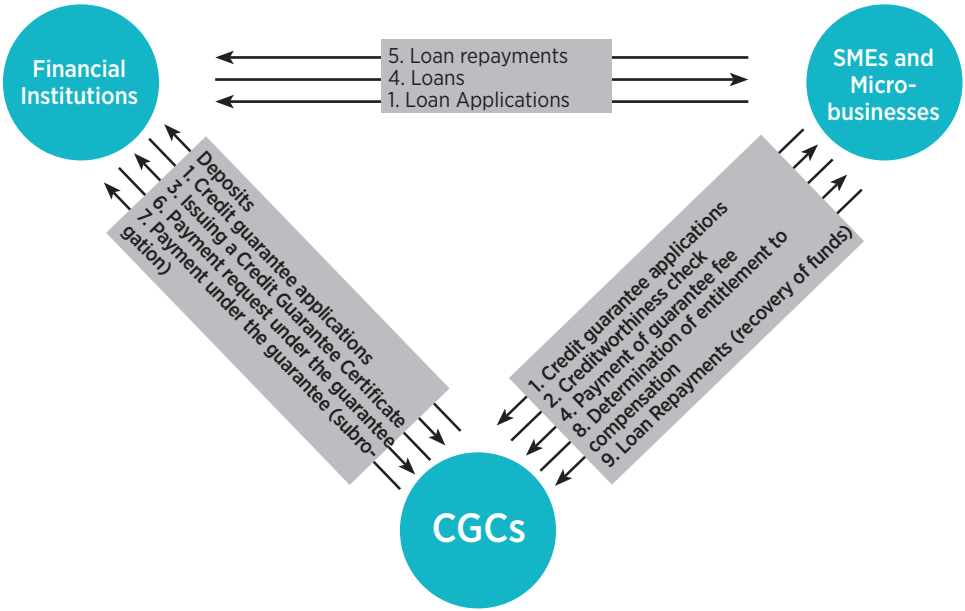


Figure 76. Credit Guarantee and Credit Insurance Systems

Credit System	Credit Guarantee	= CGCs	To guarantee loans borrowed by SMEs and micro-businesses To collect funds, taking into account the current situations of SMEs and micro-businesses Finance and Management Consultancy for SMEs and micro-businesses; providing insurance for credit guarantees issued by CGCs to SMEs and micro-businesses To make loans to CGCs in order to ensure that CGCs issue guarantees to more SMEs
	Credit Insurance System	= JFC	

Credit Guarantee System

1. SMEs may apply to CGCs for a credit guarantee in two ways. The first involves submitting an application through a financial institution, and the second is through a direct application.

2. After receiving an application, the CGC carries out a credit check of the business.

3. If the CGC accepts the application based on the credit check, it will issue a credit guarantee certificate to the financial institution. If the CGC receives a credit guarantee application directly from a SME, the CGC will refer the company to a financial institution that can provide a loan. After receiving credit approval from the financial institution, the CGC will issue a credit guarantee certificate.

4. The financial institution will make the loan to the business based on the credit guarantee certificate, and the business will pay a guarantee fee to the CGC.

5. SMEs repay their loans to the financial institution, in accordance with the loan repayment conditions.

6. If a SME fails to make the repayments, in part or in full, when due, the financial institution will ask the CGC to pay the amount covered by the guarantee.

7. The CGC will repay the loan to the financial institution on behalf of the business.

8. As the payment has been effected on behalf of another entity (based on subrogation), the CGC will be entitled to seek compensation from the business.

9. The CGC will collect the loan from the business while providing support, thus allowing the SME to maintain its operations.

Credit Insurance System

After a credit request from a SME has been accepted and the financial institution has approved the loan, the CGC will have the guarantee fully insured by the Credit Insurance System under the Law on Small- and Medium-sized Businesses Credit Insurance Law, if the SME meets the eligibility conditions (details about the disbursement of the loan and the guaranteed amount, etc.), and shall pay the fixed premium depending on the type of insurance.

If a SME fails to repay a loan borrowed via a CGC guarantee to the financial institution when it becomes due, the financial institution will inform the CGC, which will repay the loan.

Then, 70 to 90% of the amount repaid will be paid by Japan Finance Corporation to the CGC as insurance.

The CGC will pay compensation on behalf of the SME, based on an insured guarantee, but will also begin formalities for the recovery of the compensation payment from the SME.

After recovering the compensation from the SME under the insurance policy, it will then pay part of this amount to the Insurance Corporation, in accordance with the risk-sharing ratio.

Figure 77. Definition of SME Size

Small- and medium-sized enterprises			Micro-businesses
Industry	Capital	Number of Full-Time Employees	Number of Full-Time Employees
Manufacturing	Up to US$ 2.7 million	Up to 500	Up to 20
Wholesale Trade	Up to US$ 900,000	Up to 100	Up to 5
Services	Up to US$ 450,000	Up to 100	Up to 5
Retail Trade	Up to US$ 450,000	Up to 50	Up to 5

CGCs define SMEs that are eligible for a credit guarantee. As shown in Figure 77, the definition of SMEs varies for each sector, depending on the number of employees and paid-in capital.

The sectors covered by the Credit Guarantee System have been determined based on the regulations governing the implementation of the Law on Credit Insurance for Small- and Medium-sized Enterprises. The agriculture, forestry, fisheries and finance sectors are excluded.

Figure 78. Guarantee Cap

million US$		
General Credits	up to US$ 1.8 million	US$ 3.6 million
Guarantees without Collateral	up to US$ 0.7 million	US$ 0.7 million
Bond Guarantees	up to US$ 4.1 million	...

Source: Japan Federation of Credit Guarantee Corporations (JFG)

In addition, different special guarantees are provided based on government actions that are subject to different caps.

Credit Guarantee Fee

The credit guarantee fees paid by SMEs to CGCs in exchange for their guarantees are used for various purposes, including for payment of credit insurance premia, covering losses incurred when compensation is paid in respect of loans and operational expenses, and for the operation of the system.

The rates of such fees (expressed as an annual percentage of the amount of loan) are determined through the use of the rating systems of the Credit Risk Database (CRD). There are nine different guarantee fee rates. The applicable rate is determined based on the financial strength of a SME, which is assessed according to its balance sheet, characteristics and the non-financial factors intrinsic to SMEs. As part of the system for the sharing of liabilities with financial institutions, launched in 2007, different rates are applied to guarantees that are both subject to this system and those that are not.

Figure 79. Credit Guarantee Fee Rates (%)

CLASSIFICATION	1	2	3	4	5	6	7	8	9
Ratio of Credit Guarantee Fee Under Liability Sharing System	1.90	1.75	1.55	1.35	1.15	1.0	0.80	0.60	0.45
(Special Guarantee)	1.62	1.49	1.32	1.15	0.98	0.85	0.68	0.51	0.39
Ratio of Credit Guarantee Fee Excluding Liability Sharing System	2.20	2.00	1.80	1.60	1.35	1.10	0.90	0.70	0.50
(Special Guarantee)	1.87	1.70	1.53	1.36	1.15	0.94	0.77	0.60	0.43

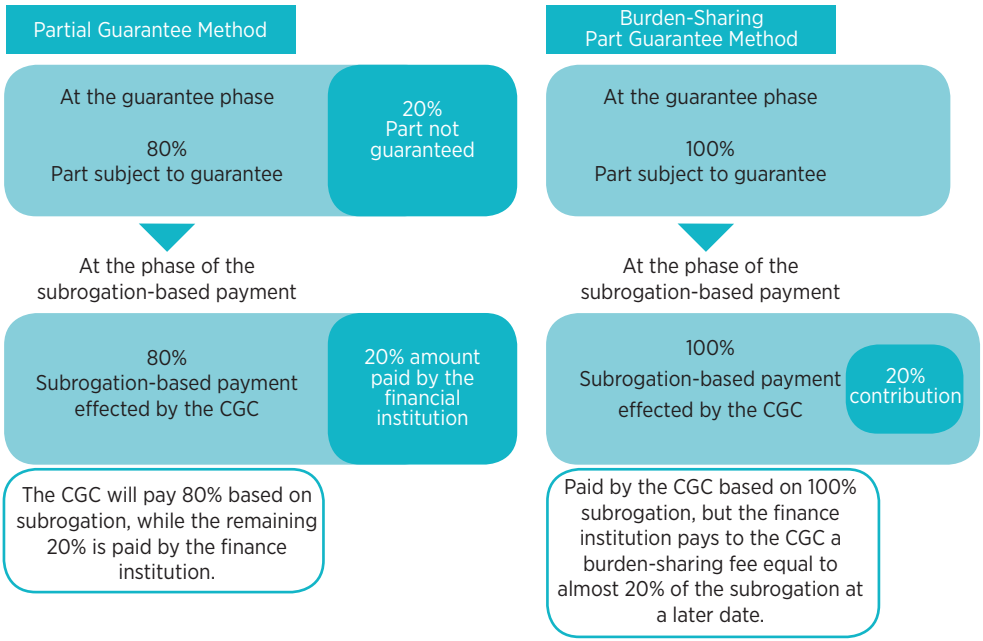
Liability Sharing System

The purpose of the liability sharing system is to ensure that CGCs and financial institutions properly share their liabilities, to encourage them to work together in the monitoring of the commercial needs of SMEs, and to offer appropriate support, such as credit financing, management support monitoring and business revitalization support.

The Liability Sharing System consists of two methods: the partial guarantee method and the shared loss payment method. Financial institutions select one of these two methods.

A CGC provides a guarantee for up to 80% of an individual loan (except for certain guarantees) under the partial guarantee method, whereas a 100% guarantee is provided in the shared loss method. The financial institution provides the CGC with financial assistance in the form of a partial contribution, depending on the payment status, based on subrogation as part of the commitment to provide financial assistance through equal contributions to the partial guarantee.

Figure 80. Liability Sharing System Rates



Credit Risk Database CRD

The CRD (Credit Risk Database) is an organization that gathers and compiles commercial data related to SMEs (financial/non-financial data and default data). It was founded in March 2001 as a voluntary union made up of CGCs operating in different parts of Japan.

The purpose of its foundation was to facilitate SMEs in gaining access to finance by ensuring that credit risk pertaining to businesses is measured based on factual data and on an assessment of the financial condition of SMEs with the aim of boosting their business efficiency.

In parallel with the increase in membership and the volume of data collected, the CRD consolidated its key position as a provider of commercial data pertaining to SMEs. It was reorganized as a limited liability company in April 2005 and changed its name to the CRD in June 2009.

Figure 81. CRD Membership Composition

Membership Composition (as of April 2018)	
Credit Guarantee Corporations	51
Government-controlled finance institutions	3
Private finance institutions	111
Credit rating institutions, etc.	8
Total	173

Main Features of the Credit Guarantee Corporation

Figure 82 shows the structure of an average credit guarantee corporation. While large credit guarantee corporations have more compartmental structures, the underlying structure is identical.

Figure 82. Organizational Diagram of the Credit Guarantee Corporation

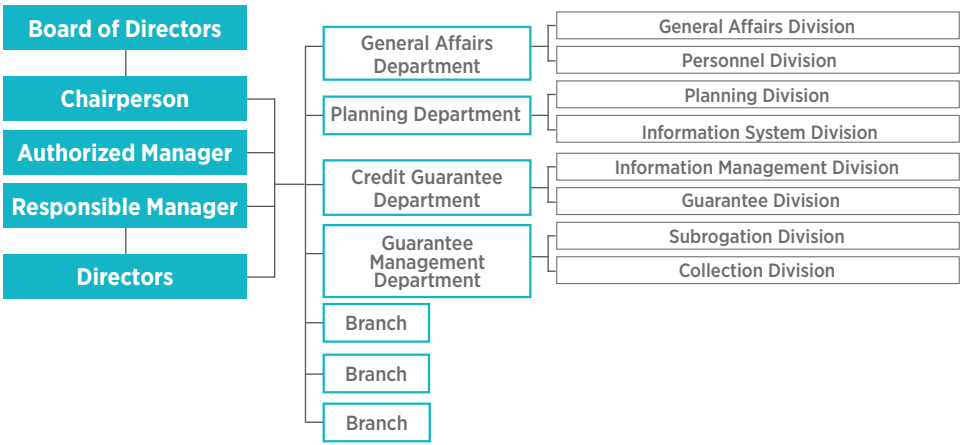


Figure 83. Credit Guarantee Corporation (CGC) Branch Numbers

Branch number	2013	2014	2015	2016	2017
Head Office and Branches	188	186	186	186	186

Figure 84. Number of Executives and Employees

Type	2013	2014	2015	2016	2017
TOTAL	6,166	6,217	6,211	6,211	6,194
Executives	250	244	246	244	246
Male employees	4,270	4,286	4,282	4,288	4,271
Female employees	1,646	1,687	1,683	1,679	1,677

Fund Resources of the Credit Guarantee Corporation

1. Primary Assets

Primary assets consist of the corporation's paid-in capital.

Assets underlying the creditworthiness of CGCs are made up of funds and reserves. The fund has two sources: shared support payments received by CGCs from local governments, financial institutions and companies in the sector, and standard contributions from financial institutions; and standard contributions transferred from financial institutions to CGCs are deducted from tax payments.

Figure 85. CGC Primary Assets

As of March 31, 2018	
Primary Assets	**US$ 17.09 billion**
Funds	US$ 4.70 billion
Reserves	US$ 12.39 billion

Figure 86. Financial Contributions to CGC and Loss Coverage

Financial Assistance + loss share (cumulative)	**US$ 7.34 billion**
From Local Governments	US$ 5.45 billion
From Financial Institutions	US$ 1.86 billion
From Sectoral Chambers	US$ 30 million

2. Guaranteed Liability Cap

It is stipulated that liability caps guaranteed by CGCs should not exceed a specific proportion of the primary assets, as defined in the articles of association of each CGC. This coefficient is called the primary asset coefficient.

The ceiling for the primary asset coefficient should be below 60 if the efficiency of a CGC risk management is to be assured.

3. Borrowing

In addition to primary assets, a proportion of CGC funds consists of loans borrowed from local governments. Borrowed funds are transferred to financial institutions and added to Primary Assets in order to increase the guaranteed loans made to SMEs.

Financial Support for the Credit Support System

While CGC transactions are mostly financed from credit guarantee fees and returns on investments made by using CGC assets, the central government and local governments provide financial support to strengthen the financial positions of CGCs.

Article 25 of the Basic Small & Medium-size Enterprise Act of Japan states that the central government shall provide credit support services and take other actions in order to facilitate the supply of funds to SMEs.

The main types of financial support provided by the central government for the Credit Support System are as follows:

- Government support for the CGC fund: Funds paid by the central government to CGCs in order to strengthen their financial positions and to ensure the smooth supply of funds to SMEs.

- Recoupment of losses: Funds paid by the central government to CGCs in order to ensure that the losses of CGCs arising from the non-insured parts of payments effected on behalf of businesses in response to the funding requests of the central government are recouped by the Japan Federation of Credit Guarantee Corporations (JFG).

- Investment in the Japan Finance Corporation (Credit Insurance Fund): Funds provided by the central government to the Japan Finance Corporation (JFC) in order to strengthen the financial base of credit insurance transactions.

- Credit Fund: Funds lent by the central government to CGCs through the Japan Finance Corporation so that CGCs can increase the guarantees provided for SMEs.

- Business Support Improvement and Development Support for SMEs: Financial support provided in order to boost business support ventures targeting SMEs that have received guarantees from CGCs in collaboration with a regional financial institution. This support aims at offering business development support to SMEs.

Figure 87. Selected Statistical Data

FY	Number	Amount	Rate of Comparison
2013	732	84.6	95.4
2014	714	81.3	96.1
2015	695	81.5	100.3
2016	663	77.6	95.2
2017	633	73.2	94.3

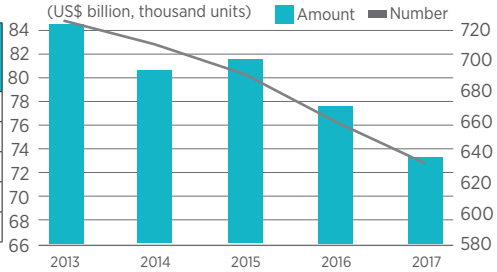


Figure 87 shows the annual number and the amounts of guarantee transactions year by year. A total of 632,000 transactions were made under the Credit Guarantee System during 2017, and guarantees totaling US$ 73,194 million were issued.

Figure 88. Amount of CGC Guarantee Risk and Number of Transactions

FY	Number	Amount	Rate of Comparison
2013	3,069	29.7	92.8
2014	2,950	27.7	93
2015	2,796	25.7	93
2016	2,623	23.8	92.7
2017	2,473	22.2	93.1

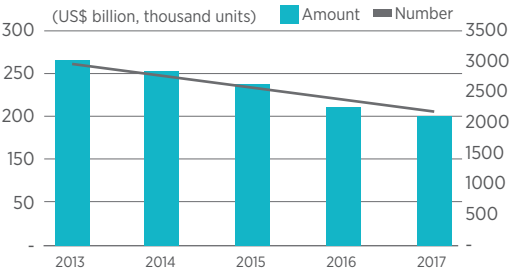


Figure 88 shows the number of year-end transactions holding guarantee risk, and variations in the amounts of guarantee risk. There were 2,473,377 risky transactions in the Credit Guarantee System by the end of 2017, and the balance of total guarantee risk was US$ 201,955.18 million.

Figure 89. Number and Amounts of CGC Compensation

FY	Number	Amount	Rate of Comparison
2013	61	5.9	83.7
2014	49	4.8	80.9
2015	44	4.0	84.6
2016	40	3.6	89.4

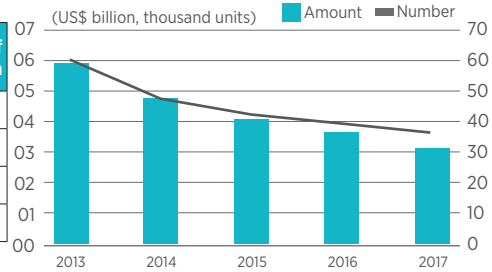


Figure 89 shows the number and amounts of compensation paid under the Credit Guarantee System. For example, compensation was paid on US$ 3,197.18 million worth of loans borrowed by 35,984 businesses in 2017.

Figure 90. CGC Statistical Data from 2008 to 2017

US$ billion

YEAR	APPROVED GUARANTEE APPLICATIONS		GUARANTEE RISK		HONOURED GUARANTEE CALLS	
	NUMBER	AMOUNT	NUMBER	AMOUNT	NUMBER	AMOUNT
2008	1,330,882	178.01	3,432,308	308.36	104,717	9.42
2009	1,179,065	151.14	3,389,640	325.92	107,540	10.38
2010	1,002,990	128.84	3,294,020	318.80	86,796	8.51
2011	869,972	105.03	3,282,380	313.15	77,586	7.83
2012	762,417	88.65	389,748	291.62	71,056	7.07
2013	731,712	84.61	3,068,922	270.71	60,522	5.92
2014	714,340	81.27	2,949,589	251.83	49,771	4.79
2015	694,526	81.52	2,796,391	234.20	44,338	4.05
2016	663,183	77.59	2,623,498	217.03	40,439	3.62
2017	632,930	73.19	2,473,377	201.96	35,984	3.20

Figure 90 contains the total number of transactions from 2008 to 2017, the amount of transactions, the balance of the cumulated guarantee risk and the number and amounts of compensation over years. It can be seen that the system was used intensely in 2008 and 2009, and that the utilization of the system returned to normal once the effects of the crisis had subsided.

Figure 91. Amount of Support to Credit Guarantee System

US$ billion

YEAR	SUPPORT PROVIDED TO CGCs	CONTRIBUTIONS TO JFG COMPENSATION PAYMENTS	FUND FOR CREDIT INSURANCE	CREDIT FUND	CONTRIBUTIONS PROVIDED FOR SUPPORT OF BUSINESSES
2008	38.18	504.32	7,043.64	0.00	
2009	38.18	945.45	18,650.91	.....	
2010	38.18	280.00	5,466.36	.....	
2011	38.18	1,203.64	9,462.73	.....	
2012	38.18	35.45	2,214.09	.....	
2013	38.18	37.27	951.82	.....	
2014	38.18	122.73	989.09	.....	9.09
2015	19.09	63.64	545.45	.....	....
2016	....	83.64	773.64	.....	10.91
2017	....	36.36	763.64	.....	11.82

Figure 91 shows the amounts of support provided to the CGC, JFG and JFC by years. To illustrate, the central government transferred US$ 36 million to the JFG and US$ 763 million to the JFC in 2017.

Figure 92. Levels of Use of the Credit Guarantee System

US$ billion

	2013	2014	2015	2016	2017
NUMBER OF SMEs	3,852,934	3,852,934	3,809,228	3,809,228	3,809,228
NUMBER OF SMEs BENEFITING GUARANTEES	1,458,434	1,411,508	1,366,020	1,313,570	1,262,056
RATE OF GUARANTEE UTILIZATION	%37.9	%36.6	%35.9	%34.5	%33.1

According to Figure 92, there were a total of 3,809,228 SMEs in Japan in 2017, 1,262,056 or 33.1% of which took out loans with the support of the Credit Guarantee System.

Figure 93. Source of Support Provided for Guarantee Institutions

			2013	2014	2015	2016	2017
Financial Support (Total)			7.38	7.31	7.32	7.33	7.33
	Local Governments		5.54	5.46	5.46	5.46	5.46
		Provinces	4.68	4.68	4.68	4.68	4.68
		Counties	0.86	0.78	0.78	0.78	0.78
	Financial Institutions		1.84	1.85	1.86	1.86	1.87
	Trade Unions		0.01	0.01	0.01	0.01	0.01

Figure 93 shows the distribution of the sources of support in the form of funds received by guarantee institutions.

Figure 94. CGC Primary Assets

	2013	2014	2015	2016	2017
Primary Assets	15.37	15.91	16.37	16.76	17.09
Funds	4.50	4.60	4.64	4.67	4.70
Provisions	10.86	11.31	11.73	12.08	12.39

Figure 94 shows the primary assets of CGCs and the distribution of it among provisions and free funds.

e. JAPAN FEDERATION OF CREDIT GUARANTEE CORPORATIONS - JFG

The Japan Federation of Credit Guarantee Corporations (JFG) is engaged in the following activities, aiming to support the robust growth of CGCs, thereby providing problem-free financing for SMEs:

1. To undertake analyses and research aimed at improving credit guarantee activity;

2. To conduct analyses and research into SME financing;

3. To consolidate the financial basis of CGCs, to recoup their losses, and to ensure that they are efficiently managed;

4. To calculate, recognize, and pay its share of the risk paid by the financial institution under the Risk Sharing System;

5. To carry out activities as the Guarantee Activity Support Organization;

6. To liaise among CGCs, JFC financial institutions, and other affiliated institutions; to provide guidance and recommendations for CGCs;

7. To provide recommendations, reports and data to ministries and concerned institutions;

8. To exchange data and cooperate with financial and economic institutions;

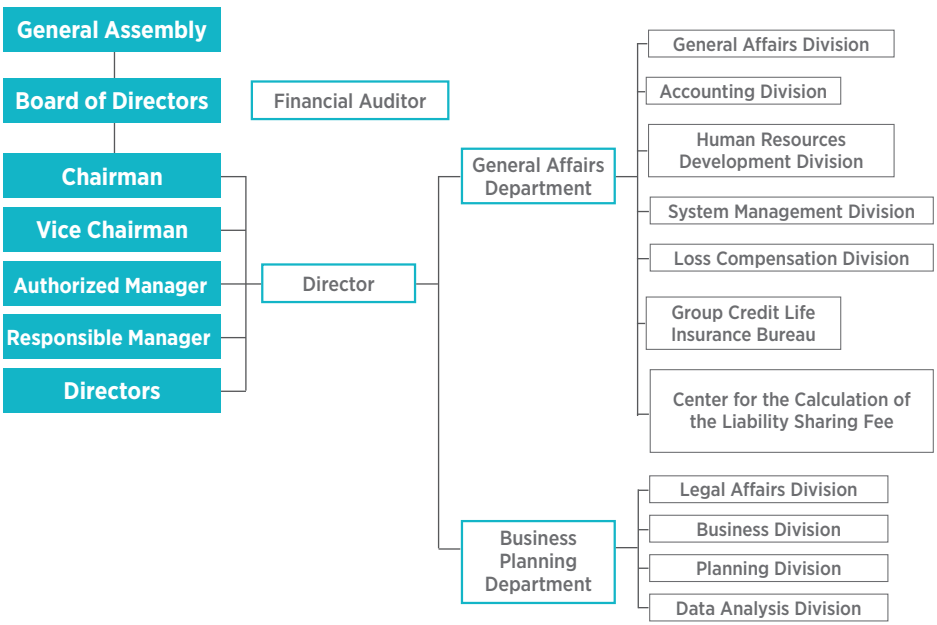
9. To undertake other activities that ensure the JFG can achieve its objectives.

The JFG was assigned as the Guarantee Activity Support Organization in November 2008 under the Law on Credit Guarantee Corporation.

Organization

The JFG organization comprises different committees that complement the roles of the general assembly and the board of directors. It consists of the President's Office, the General Affairs Department and the Business Planning Department.

Figure 95. Organizational Diagram of the Credit Guarantee Corporation

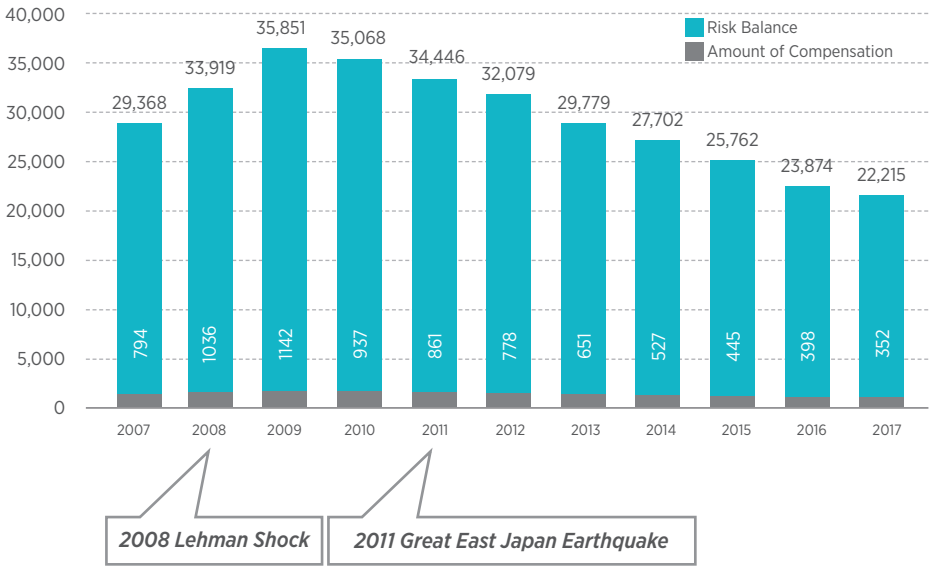


The JFG is organized based on Article 25 of the Basic Small & Medium-size Enterprise Act of Japan which stipulates that "The national government shall improve the Credit Support System in order to facilitate the access of SMEs to finance" and Article 1 of the Law on Credit Guarantee Corporation, which states "It is the objective of the Law to facilitate the access of SMEs to finance."

The JFG's responsibilities include facilitating SMEs in accessing finance, also through the use of government support, and to reduce obstacles in the provision of finance, including extraordinary periods.

SMEs can access finance only with the support of Credit Guarantee Systems, and so supporting SMEs in Japan is among the priorities of the system. Furthermore, the system is regulated and supported during extraordinary periods, such as in times of economic crisis, earthquake and tsunami through the credit guarantee systems. The government's economic policies are also supported via credit guarantee systems.

Figure 96. Utilization and Compensation under Credit Guarantee System (US$ billion)



A analysis of the utilized Credit Guarantee System and the unpaid guaranteed credits over years in Japan indicates that guarantees rose from approximately US$ 293 billion in 2007 to US$ 350 billion during the period dominated by a negative atmosphere in the markets as a result of the global financial crisis of 2008 and afterwards. The Japanese Credit System used the Credit Guarantee System to full effect in order to keep its credit channels open during the crisis; the guarantee rate was 100% in that era. When the crisis subsided after 2012, the guarantee rate returned to normal levels i.e. 80%. The total amount of guarantees was down to US$ 220 billion, which was the normal level, at the end of 2017.

Figure 96 shows that a sharp increase was seen in the percentage of non-performing guaranteed credits, rising to US$ 11 billion from 2008 to 2011. Non-performing credits dwindled rapidly after 2012, and fell to US$ 3.5 billion at the end of 2012.

Figure 97. Guarantee Usage Rates

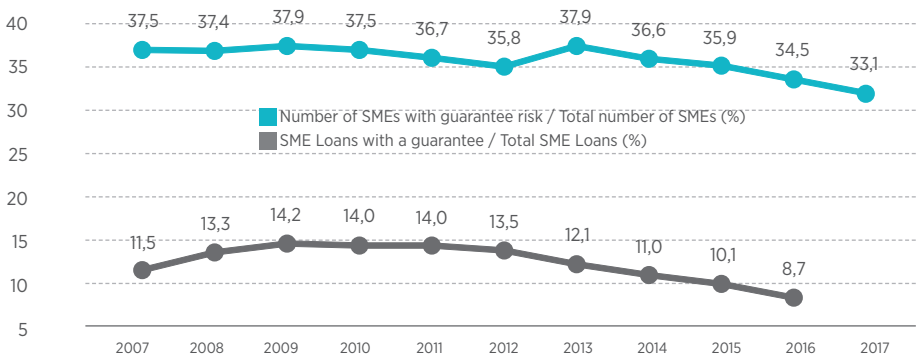


Figure 97 shows that 33% of the 3.8 million SMEs in Japan use the Credit Guarantee System. The Figure also shows that this ratio came close to 38% between 2008 and 2011. The green graph in the figure shows the share of the Credit Guarantee System in the total amount of credits lent in the banking system. Its share of total credits was 8.7% at the end of 2017, but rose to 14% from 2008 to 2011.

System Characteristics

1. CGCs operate in 51 regions, including 47 provinces and four metropolitan cities.

2. Guarantees provided for loans under the Credit Guarantee System are insured by the JFC (at 70–80% rate).

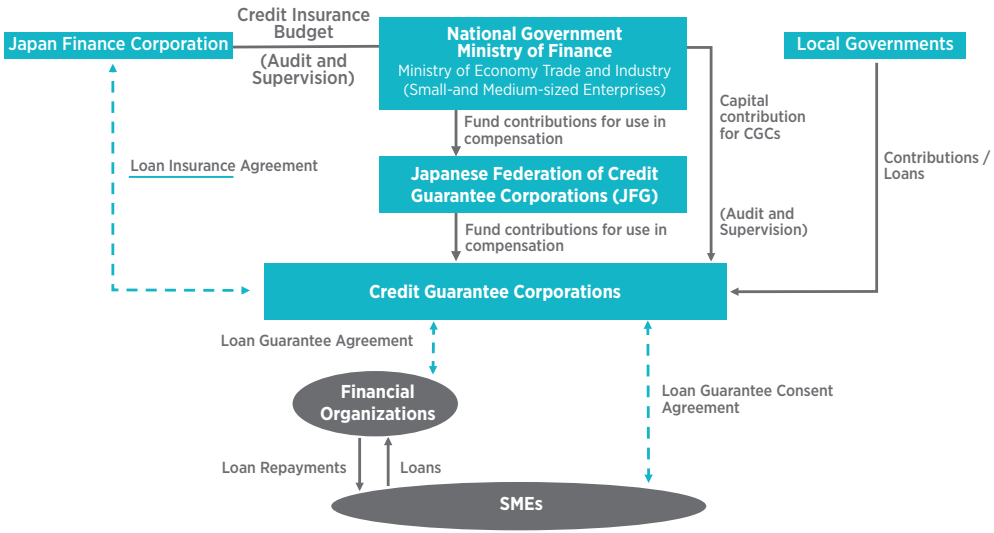
3. The CGCs' primary assets consist of their own resources, as well as support received from national and local governments.

4. CGCs have guarantees based on risk sharing, with risks shared with financial institutions at a ratio of 80% to 20%.

5. There are two ways of submitting an application: via a direct application to a CGC, or via a financial institution.

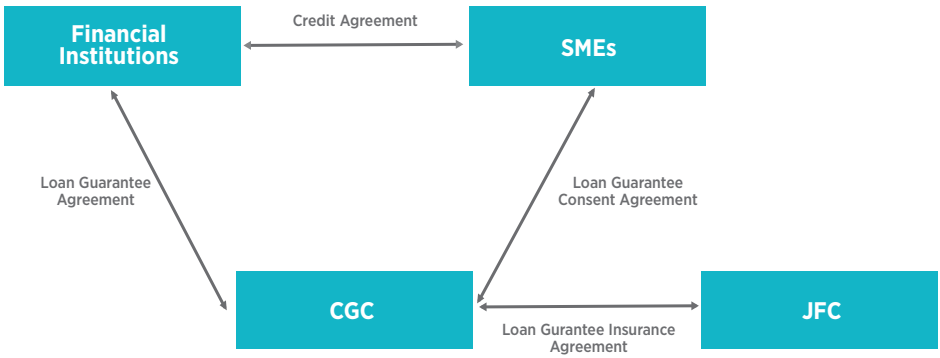
6. Micro-businesses get 100% guarantees. In addition, all businesses enjoy 100% guarantees during extraordinary situations.

Figure 98. General Structure of the JFG System



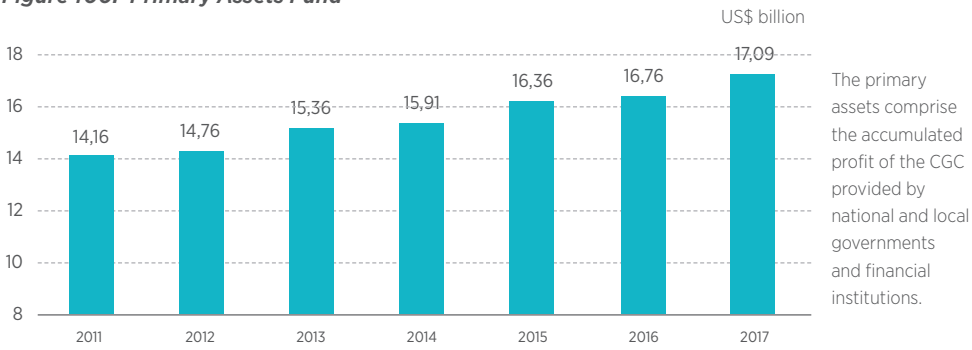
The JFG coordinates 51 CGCs, ensuring that the system functions efficiently and uniformly in Japan. It organizes training programs to this end, and provides consultancy services for the establishment of similar structures in all CGCs. The 51 CGCs employ a total of 6,194 people, compared to the 70 working for the JFG.

Figure 99. Components of the Credit Guarantee System



SMEs, financial institutions and guarantee institutions are the main components of the Credit Guarantee System. The JFC is a supplementary component within the system. The SME enters into a credit agreement with the finance institution, and another with and CGC. In addition, there are agreements between the finance institution and CGC and between the CGC and the JFC. The agreement between the finance institution and CGC takes the form of a loan guarantee. A credit insurance agreement is entered into between the CGC and JFC.

Figure 100. Primary Assets Fund



The primary assets of CGCs determine the total amount of guarantees that they can provide. The components of primary assets are made up of commission fees received by CGCs and the support provided by local and central governments

Ratio of Primary Assets to Total Guarantees

Each CGC determines the amount of guarantees that it can provide based on the risk coverage ratio of the Primary Assets, as defined in its own articles of association. The CGC determines the guarantee coefficient of the Primary Assets to ensure all risks are covered and the fund is sustainable.

The coefficient of the primary assets of each CGC ranges between 35 and 60, and the average of all CGCs is 52.2. The total amount of loans guaranteed by a CGC should be lower than the 18 times of its primary assets (guaranteed debts x 30% <=Primary Assets x 18).

Figure 101 Primary Assets Fund and Total Guarantees

Standards Established for the Preservation of the Financial Structures of CGCs

• Reserve for Bad Loans: The CGC sets aside a reserve to cover doubtful receivables from its own funds. A 0.6% reserve is set aside for insured guarantees, and a 10% reserve for overdue guarantees in each financial year.

• Provisioning for the Compensations: The provisions to be set aside for compensated guarantees is 33% for the first year, 67% for the second year and 100% for the third year.

• Reserve Assets for Compensation Payments: Funds corresponding to 2% of the total amount of guarantees calculated at the end of each year are kept in the form of cash or cash equivalent, deposits or government bonds.

The JFG is responsible for playing the political role of the Credit Guarantee System over the short term. It takes on such short-term responsibilities as properly responding to guarantee requests and securing the national budget in order to bridge any deficits in the system, as well as long-term responsibilities, such as ensuring the economic rationalization of the system. The JFG is also responsible for ensuring the system is sustainable with minimum policy costs, and ensuring resource diversity for SMEs.

f. JAPAN FINANCE CORPORATION-JFC

The Japan Finance Corporation (JFC) consists of a Small- and Medium-sized Enterprise (SME) Unit (Financing Operations), Agriculture, Forestry, Fisheries and Food Business Units, and Micro Business and Individual Units. The JFC was founded in Tokyo on October 1, 2008 pursuant to the Law on the Japan Finance Corporation. It has 152 branches in Japan and two overseas branches, and employs 7,364 people. A total of 200 people work in the JFC's Credit Guarantee Insurance System.

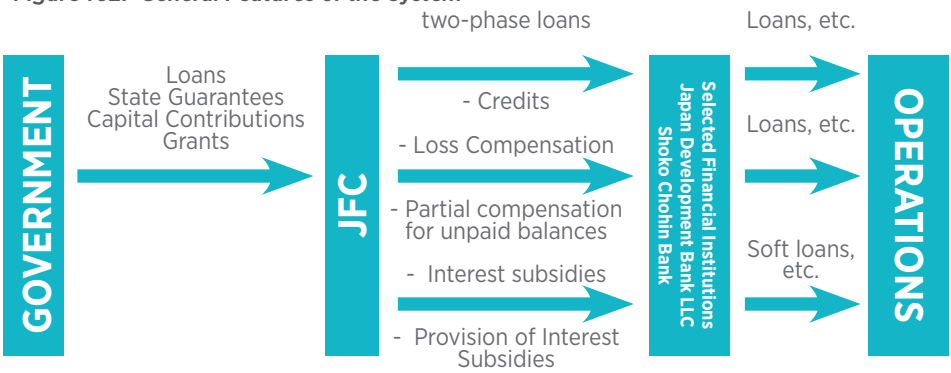
The JFC's operations are aimed at contributing to the growth and development of the Japanese economy, while meeting requirements related to policy-based finance in support of the formation of new businesses; the development of businesses and their expansion into international markets; and the development of forestry and fishery businesses in line with national policies.

The JFC engages in efforts to increase employment and to raise the contribution of SMEs to the economy, in parallel with regional development policies.

The JFC's primary objective is to support financial institutions in line with national polices and their own objectives.

f1- General Functioning of the System

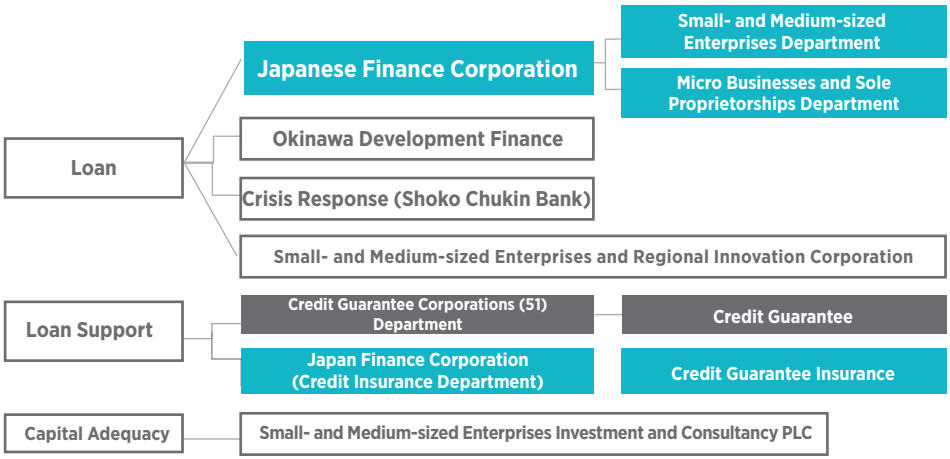
Figure 102. General Features of the System



The JFC is 100% owned by the government. Its resources are primarily budget funds earmarked by the government, in addition to commission fees related to insured credits, which constitute a significant proportion of its budget. The JFC uses these funds for the default payments of loans. In addition to this function, the JFC is also involved in interest subsidies. In Japan, 33% of SMEs make use of the Credit Support System.

The 51 Credit Guarantee Corporations in Japan are regulated by the "Law on Credit Guarantee Corporations", and can be founded only with the approval of the central government.

Figure 103. Components of the Credit Support System



(Source) FY2015 Comprehensive List of SME Actions
Small- and Medium-sized Enterprises Agency

Credit Support System in Japan

The Credit Support System in Japan is made up of the Credit Guarantee System and the Credit Insurance System.

The JFC ensures that SMEs can access finance, and partly assumes any risks related to the probability of default on CGC guarantees.

Figure 104. Structure of the Credit Support System

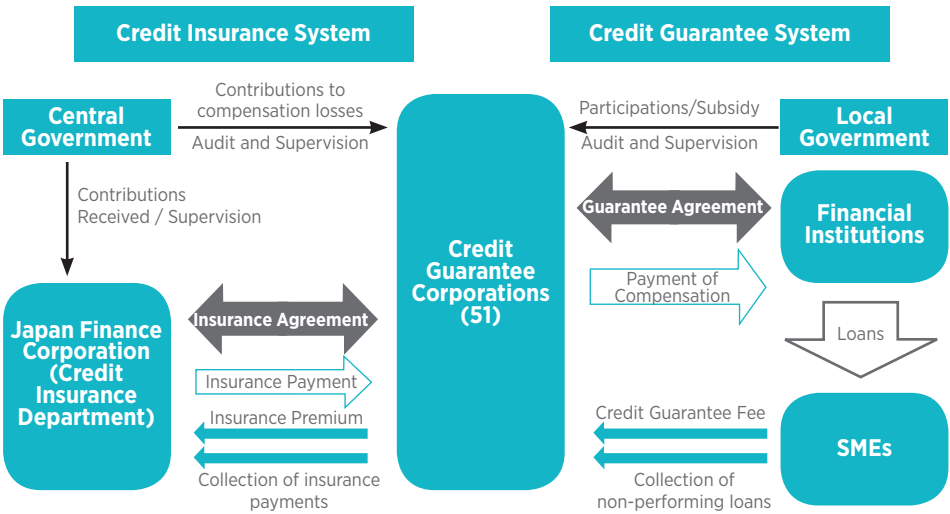
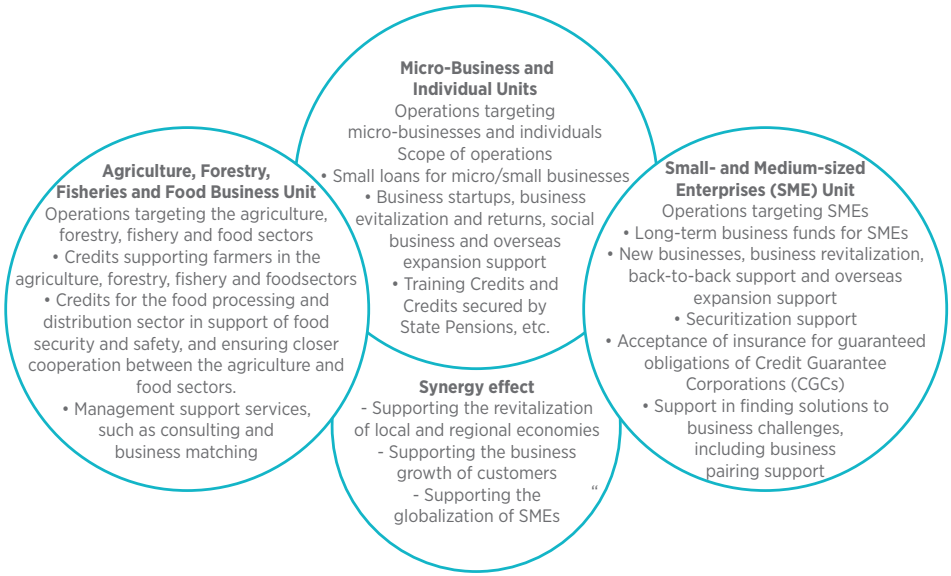


Figure 105. History of the Credit Guarantee System

August 1937	Establishment of the TOKYO CGC, Japan's first credit guarantee corporation, and its registration with the trade registry
August 1948	Council of Ministers adopts SME Finance Policy Guidelines (i.e. utilization of the credit guarantee system)
December 1950	Law on Credit Insurance for Small- and Medium-sized Enterprises enters into force (Credit Insurance System established)
January 1951	Foundation of the National Association of Credit Guarantee Corporations (known later as the "Federation of Credit Corporations")
August 1953	Law on Credit Guarantee Corporations enacted
July 1958	Foundation of the Small Businesses Credit Insurance Corporation (now known as the "Japan Finance Corporation) – a new organization formed to operate the loan insurance mechanism, in place of the special budget earmarked by the central government for SME credit insurance.
July 1963	Enactment of Small & Medium-size Enterprise Basic Act of Japan
April 2006	Variable guarantee fee ratio system, which takes into account credit risk, enters into operation
October 2007	Liability sharing system launched for the credit support mechanism
September 2008	Law on Credit Guarantee Corporations amended - scope of CGC operations extended to cover the insurance of pre-emption right certificates issued by SMEs benefiting from the credit guarantee mechanism, the assumption of receivables from borrowers, and the purchasing of shares in economic recovery funds. Standards established for organizations supporting the credit guarantee system.
November 2008	Federation of Credit Corporations designated as the organization providing support to credit guarantee activities.
December 2012	SME support network established
April 2013	The name of the Federation of Credit Guarantee Corporations and its abbreviation JFG finally determined
October 2015	Non-profit organizations established as a legal entity included in the Credit Guarantee System.
April 2018	Law on Credit Guarantee Corporations (CGC) revised – cooperation among financial corporations and others, etc.

Figure 106. Main Functions of the JFC



The JFC operates in three (3) primary areas: The SME Unit; the Micro-Business and Individual Unit; and the Agriculture, Forestry, Fishery and Food Business Unit. The synergy created among these three business units supports the revitalization of local and regional economies, the growth of businesses, and the expansion of SMEs into international markets.

As the Agriculture, Forestry, Fishery and Food Business Unit and Micro-Business and Individual Unit of JFC are not a part of the Japanese Credit Guarantee System, our focus will be on the JFC's SME Unit.

JFC SME Unit

The JFC's SME Unit was established after taking over the operations of the government-owned Japan Finance Corporation for Small and Medium Enterprises (JASME), which launched operations in August 1953.

With various functions, including Credit Programs and Credit Insurance Programs, the SME Unit works with private financial institutions to support Japan's economic development at both national and regional levels with both financial and training functions, aiming to support the growth and development of SMEs and micro-businesses.

One of the key roles of the SME Unit is to make long-term funds available to SMEs. SMEs should make constant investments commensurate with their capital to ensure growth and development, while also consolidating their financial capabilities.

This necessitates access to long-term funds in a stable manner, and in this regard, more than 50% of the loans taken out by SMEs are credits with a term over 5 years. One of the primary functions of the JFC is to meet long-term financing needs of SMEs.

Regarding the Credit Support System, the "Regulation and Partial Revision to the Law on Credit Insurance for Small- and Medium-sized Enterprises to Improve and Develop SME Management" was passed in June 2017 and entered into effect in April 2018. The SME Unit is steadily intensifying its efforts while maintaining its activities under the revised Credit Support System, and is cooperating with stakeholders to ensure the sustainable functioning of the system.

Presently, 48 different special insurance programs are available aimed at preventing bankruptcies and protecting parties affected by limitations of production, unforeseen accidents, natural disasters and supporting sectors that are more vulnerable to economic downturns. The program related to the major earthquake in Japan has much more advantageous upper insurance limits, insurance rates, insurance premiums and guarantee rates, for both general and unsecured applications.

The JFC applies special programs for the provision of loans to SMEs during extraordinary periods, such as in the aftermath of tsunamis, when guarantee rates may be as high as 100%. In addition, there are special programs for newly founded businesses that operate in areas of strategic importance in terms of economic development and growth.

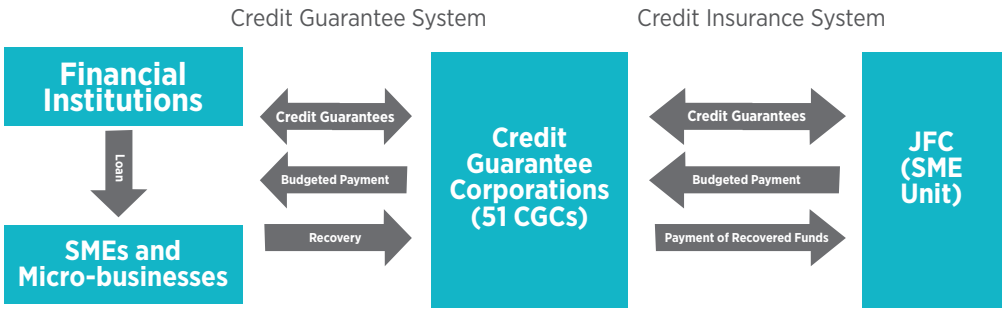
There are also programs implemented by the JFC aimed at managing risks pertaining to the future of SMEs with ageing owners in Japan. The JFC provides support and coordination for mergers, exchanges of shares or the appointment of employees to managerial positions within the business in order to enable SMEs to survive.

The JFC provides training to raise awareness among business managers of success, and to address various issues related to the business community.

The JFC's Credit Programs and Credit Insurance Programs support the growth of SMEs, as the drivers of Japan's economic vitality at both national and regional levels. By supporting businesses through these programs and through long-term and low-interest rate loans and special loans based on national policies, financial institutions are encouraged to make loans to small- and medium-sized enterprises (SMEs). The JFC has supported approximately 30% of SMEs that raise funds through public offerings since 1989.

The Credit Guarantee System in Japan aids SMEs in gaining access to finance, and around 33% (1.2 million) of all SMEs have taken out loans by making use of this system.

Figure 107. General Features of the Credit Guarantee System



CGC lets JFC to insure the credits used by SMEs under CGC guarantee. In this way, the risk is shared by the bank, the CGC and the JFC. There is a comprehensive insurance agreement between the CGC and the JFC under which guarantees and payments are regulated.

The JFC uses its organizational management capacity to ensure transparency, fairness and timely actions, constantly restructuring its business flow processes and improving and updating its technological systems and cyber security measures to this end.

f2 - Insurance Programs

Figure 108. Types of Insurance Programs

Insurance Types	Types of Insurable Funds	Maximum Amount of Insurance	Insurance Rate	Insurance Premium (annual)	Guarantee Rate
Ordinary Insurance (collateralized or, exceptionally, non-collateralized for over 80 million Yen) (approximately US$ 0.7 million)	Trade funds (for equipment fund and working capital)	200 million Yen (approximately US$ 1.8 million)	%70	%0.25 - %1.69	%80
Unsecured Insurance		80 million Yen (approximately US$ 0.7 million)	%80		

The JFC applies eleven (11) types of insurance, the most common of which is the ordinary insurance model referred to as non-limited general insurance, which has a cap of US$ 1.8 million and insurance premium rates in the range of 0.25–1.69%.

Special Insurance Programs

The Guarantee Insurance Program comprises of guarantees granted to SMEs in the event of extraordinary situations, such as the bankruptcy of a business partner, natural disasters or structural recessions.

Figure 109. Summary of the Credit Insurance System

	System Summary	Insurance Conditions	Guarantee Rate	Examples of Application
No 1	To prevent chain bankruptcies	Insurance premium: 0.41%,compared to 0.97% of the average of general events	%100	Initiation of Elpida organization procedures (FY2012)
No 2	For limits applicable to commercial operations			Suspension of production at Mitsubishi Motors (FY2016)
No 3	Unforeseeable events (accidents)			Low harvest of seaweed in Ariake Sea (FY2001)
No 4	Unforeseeable events (natural disasters)			The Kumamoto Earthquake (Kumamoto Vilayeti, Oita Vilayeti, vs.) (FY2016)
No 5	For specific industries affected by economic recession		%80	Allocation to industries affected by economic recession every quarter or six months

Insurance Types	Types of Insurable Funds	Maximum Amount of Insurance	Insurance Rate	Insurance Premium (annual)	Guarantee Rate
Major Eastern Japan Earthquake Emergency Recovery	Trade funds (for equipment fund and working capital)	Any additional cap (nationwide disasters such as Major Eastern Japan Earthquake fall within this scope) is determined alongside the reserve: Determined as 400 million Yen for ordinary insurance (approximately US$ 3.6 million): 160 million Yen for non-guaranteed insurance (approximately US$ 1.5 million)	%90	Ordinary / No-collateral 0.41%	%100

* As of November 2018, there were 48 special types of insurance.

The SME Unit channels funds to sectors in line with policy goals, and implements special credit programs.

Figure 110. Duties of the SME Unit

Socioeconomic Developments		Roles played by the SME Unit of JFC ~Performance of Special Purpose Loans
1964 Tokyo Olympic Games held	1960-	Loans to Export-driven Manufacturers US$ 70 million (FY1964)
1974 World EXPO '70 held in Osaka	1970-	Loans to Promote Modernization US$ 322.7 million (FY1970)
1985 Plaza Accord reached, triggering sharp appreciation of yen 1989 Consumption tax introduced	1980-	Special Loans for the Promotion of Application of Businesses to Changes in the Global Economy US$ 1,692.7 million (FY1986) Loans to Facilitate Introduction of Consumption Tax US$ 3,022.7 million (FY1989)
1995 Catastrophic Great Hanshin-Awaji Earthquake strikes 1997 Hokkaido Takushoku Bank and Yamaichi Securities collapse	1990-	Loans for Disaster recovery US$ 973.6 million (FY1995) Loans to Deal with Changes in Financial Environment US$ 3,062.7 million (FY1998)
2005 Full introduction of "payoff" system 2006 "Zero interest rate policy" removed 2007 Occurence of U.S. Subprime mortgage crisis 2008 Lehan Brothers files fpr bankruptcy	2000-	Loans to Promote IT Use US$ 1,448 million (FY2004) "Loans for Regional Revitalization and Employment Promotion US$ 1,955.4 million (FY2005)" Loans to Promote New Business Activities US$ 1,138 million (FY2007) Safety Net Loans US$ 8,416.3 million (FY2008) US$ 25,623 million (FY2009)
2011 Catastrophic Great East Japan Earthquake strikes	2010-	Safety Net Loans US$ 20,031 million (FY2010) Great East Japan Earthquake Recovery Special Loans US$ 11,050 million (FY2011)

Note: The names of the loans listed above are as of their scheme termination dates, or, for active schemes, as of March 31, 2018

Changes to JFC Insurance Programs over the Past 10 Years

- Major Program Revisions

The revised program enhances support for "start-ups" and facilitates success. It also addresses micro-businesses' access to finance and copes with crises for comprehensive proliferation of crises.

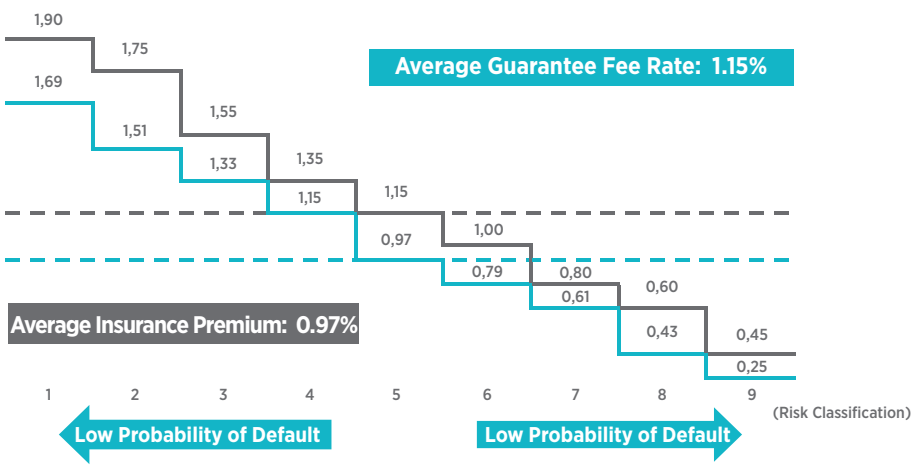
Figure 111. Content of JFC Revision

	Action		Contents of Revision
Start-up Period	1	Special Insurance related to Start-ups	Increase the maximum amount of insurance from 10 million Yen (approx. US$ 91,000) to 20 million Yen (approx. US$ 182,000)
Growth Period	2	Risk sharing system	Combine loans with or without CGC's guarantee and loans without CGC's guarantees
	3	Special Insurance related to Crisis (for large-scale economic crisis or disaster)	Establish new insurance, by limiting its applicable period to 1 year in principle.
	4	Special Insurance related to Safety-Net (for depressed industries)	Reduce the guarantee rate from 100% to 80%
	5	Special Small Sum Insurance (for micro businesses)	Increase the maximum amount of insurance from 12.5 million Yen (approx. US$ 114,000) to 20 million Yens (approx. US$ 182,000)
Recovery Period	6	Special Insurance related to Management Succession	Establish new insurance for the owner (individual)to acquire stock from predecessor.
	7	Guarantee for Voluntary Business Closure	Establish new guarantee for SMEs planning to close their business under the support from inancial institution.

• Flexible Guarantee Fee/Insurance Premium Rate Structure (April 2006)

It is JFC's modelling based on the probability of default of SMEs i.e. rating system. By using this model, the CRD has developed a rating system divided into nine (9) categories for calculation of probability of default and a guarantee fee/insurance premium rate index-linked to that rating system.

Figure 112. Average Guarantee and Insurance Premium Rates in the Liability Sharing System %



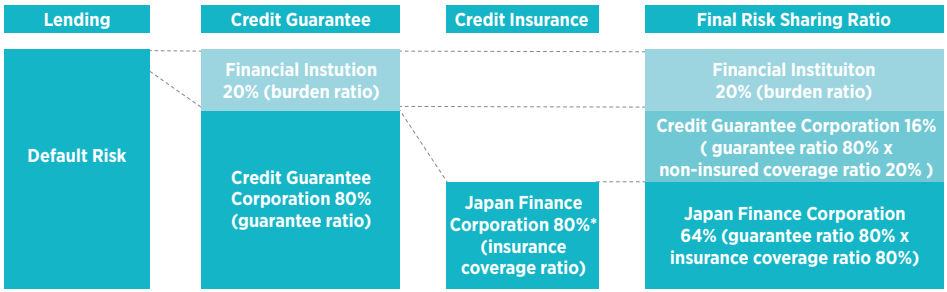
** The guarantee fee rate above is applicable to guarantees eligible for the Liability-Sharing System.*

The CGC determines the guarantee fee based on the rating score of the business seeking the guarantee, which has already passed through CRD modelling. If, for example, the business is in category 1, it charges 1.90% guarantee commission, compared to 0.45% if the business is in category 9. This ratio is 1.15% for category 5. In other words, the average guarantee fee is 1.15%. The CGC retains part of this commission and transfers part of it to the JFC. The distribution ratio in the above example is as follows: if the business is in category 1, 1.90% commission is charged, and of this, 0.21% is retained by the CGC and 1.69% is transferred to the JFC. If the business is in category 5, the CGC keeps 0.18% of the 1.15% commission and 0.97% is transferred to the JFC. If the business is in category 9, 0.20% of the 0.45% commission is retained by the CGC and 0.25% is transferred to the JFC.

- Liability-Sharing System (October 2007)

In the Liability Sharing System, the financial institution assumes 20% of the risk, while the remaining 80% is assumed by the CGC. The CGC retains 16% of the risk it assumes and the JFC covers 64%.

Figure 113. Risk Sharing Rates in the Liability-Sharing System



70-90% under the system.

The risk associated with US$ 20 of a US$ 100 loan lent by the bank remains with the bank, while the risk for the remaining US$ 80 is assumed by the Credit Guarantee Corporation. The JFC covers the risk for US$ 64 of an US$ 80 loan assumed by the CGC, and the CGC retains the risk for US$ 16.

- Revision Based on SME Life Cycle

To improve SME management and efficiency, the Credit Support System in Japan has been adapted to the SME life cycle (April 2018).

Figure 114. Life Cycles of SMEs

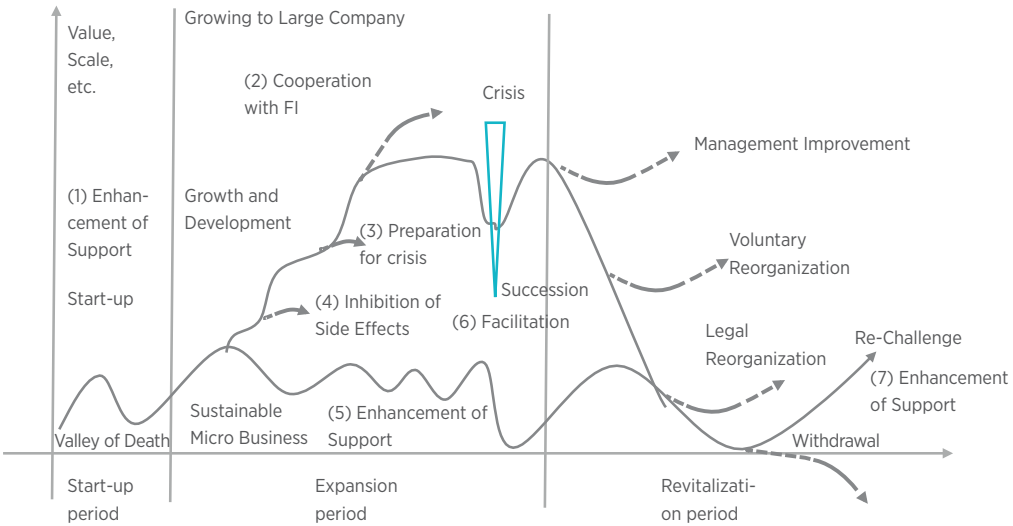


Figure 114 provides details of the methodology of SME life cycles in Japan. A SME's life cycle begins after its formation on the left axis, and subsequently moves into a development period. Some SMEs continue to grow and develop after the development period, whereas the operations of others stall or dwindle. Some SMEs wind up their operations in the wake of a crisis or shock (bankruptcy or downsizing), while others grow during crises. All SMEs are assessed in the life cycle diagram in terms of both their sectors and regions. SMEs can become resistant to shocks and can take related actions at a macro or individual SME levels through the use of this model.

f3 JFC in Figures

FY2017 TOTAL LOANS: US$ 40.79 billion (90% as compared with the preceding financial year)

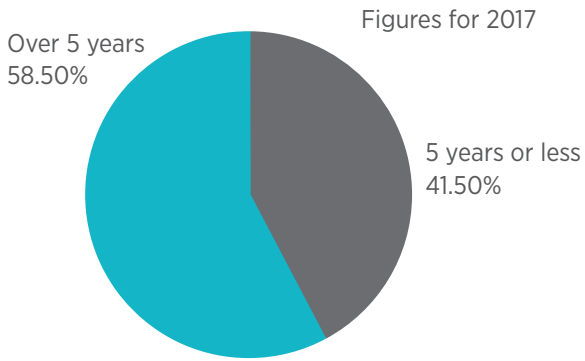
Micro-Business and Individual Unit	21.49
Agriculture, Forestry, Fishery and Food Business Unit	5.01
Small- and Medium-sized business (SME) Unit (finance)	13.50
Sub-total	40.00

Figure 115. General Performance of the Credit Program

	2010	2011	2012	2013	2014	2015	2016	2017
Total Loans (billion US$)	55.84	54.70	52.33	48.05	42.96	40.49	45.36	40.79
Compared with the Preceding Financial Year	%59	%98	%96	%92	%89	%94	%112	%90
This includes sub-total of three business units (US$ billion)	51.97	44.21	45.36	42.87	41.57	39.52	40.54	40.00
Compared with the Preceding Financial Year	%88	%85	%103	%94	%97	%95	%103	%99

The total credit volume in the Banking System was US$ 4.5 trillion in 2017, the total loans insured under the JFC was around US$ 450 billion and the insurance provided to SMEs was valued at approximately US$ 150 billion. The JFC's total share of SME finance is 4.2%.

Figure 116. Distribution of Credits by Terms



The bulk (58.5%) of credits lent under the Credit Guarantee System had a term of over 5 years. One of the primary functions of these systems is to provide credits through the Credit Guarantee System with longer terms. It can be seen in this example that the system is being properly and correctly used.

The total credits not paid under the JFC amount to approximately US$ 180 billion, of which around US$ 70 billion is accounted for by micro-businesses (tradesmen) and individuals, US$ 30 billion by the agriculture, forestry and fishery sector, and US$ 55 billion by SMEs.

Figure 117. Variations in Unpaid Credits

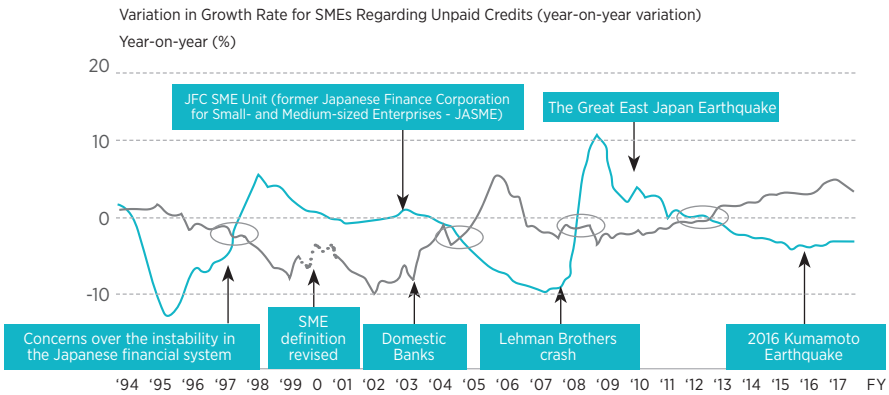
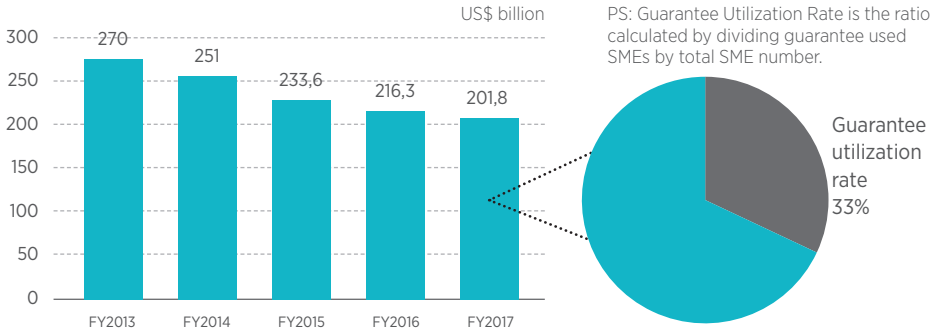


Figure 118. Amount of Compensation and Guarantee Utilization Rates



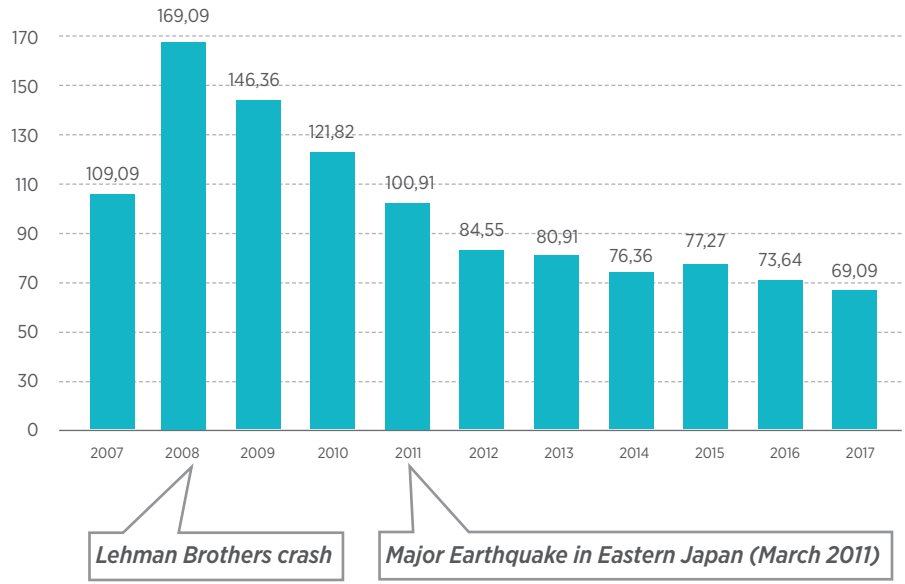
A significant proportion of CGC-guaranteed credits were lent in the 2008–2013 period, aiming to minimize the effects of the crisis on SMEs, and this amount was somewhat reduced after 2013. The total credit guarantees provided in 2017 amounted to US$ 201 billion. Despite this decrease in credit guarantees, around a third of all SMEs in Japan are still taking out loans through this system.

Figure 119. Amount of Unpaid Credits and Insurance by Sectors

Amount of unpaid insurance by sectors (Credit Programs) %		Amount of unpaid insurance by sectors (Credit Insurance Programs)
Manufacturing	46.90	21.60
Wholesale & retail	16.20	30.30
Services	10.60	14.80
Transport & telecommunication	9.70	5
Construction	4.60	22.40
Other	11.90	1.10

A look at the distribution of CGC-guaranteed credits compensated by JFC by sectors indicates that the manufacturing industry account for a significant part of it (46.9%). It is followed by the wholesale and retail industry with 16.2% and services industry with 109.6%. Compensation requests received from CGCs are processed in 2 months in average.

Figure 120. Changes in Insurance Amount



Trends in the amount of insurance provided by JFC with regard to credits provided with CGC guarantees show that insurance was extensive in 2008 and 2009. Insurance levels returned to normal after 2013, and insurance volume now stands at around US$ 70 billion.

Changes in Unpaid Credits for SMEs and Share of Credit Support System

Some 33% of SMEs make use of the Credit Support System, with 1.26 million of the 3.8 million SMEs benefiting. The rate of guarantee utilization increases during crisis periods and drops after markets have normalized.

SMEs account for US$ 2.5 trillion of the Japanese Banking System, while their share of the Credit Guarantee System is US$ 200 billion. (March 2018)

The share of the Credit Guarantee System in total SME loans fell from 13% in 2013, when the effects of the Global Financial Crisis had subsided, to 8% in March 2018.

Figure 121. Share of Credit Support System (US$ billion)

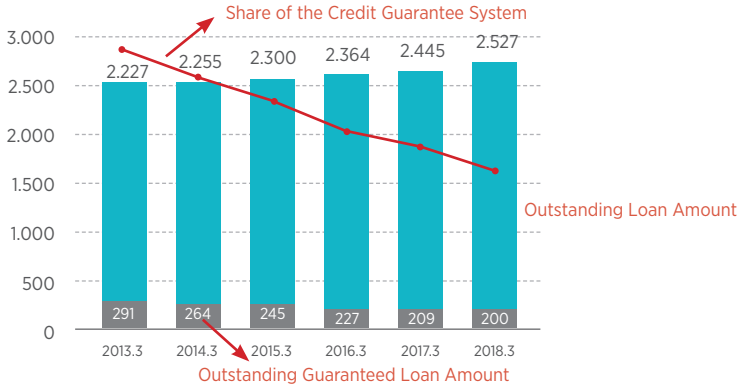


Figure 122. Volume of Approved Insurance Transactions

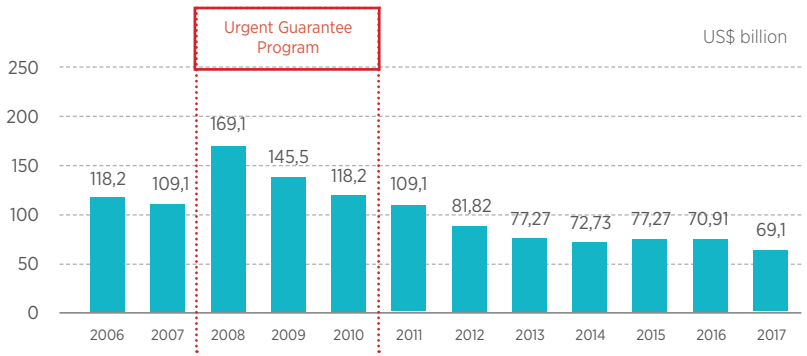
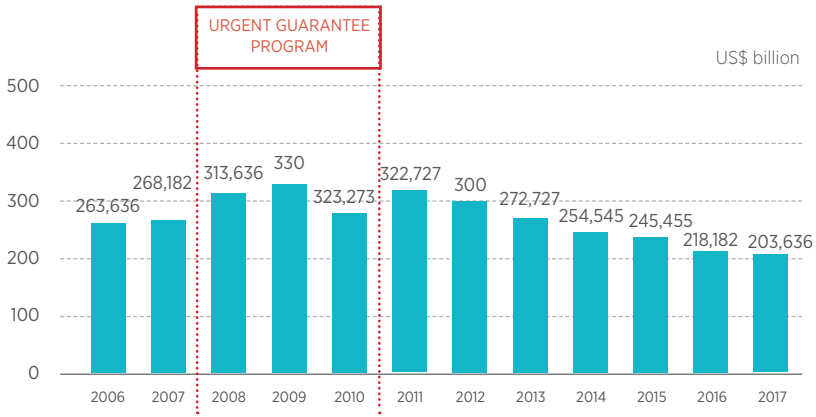


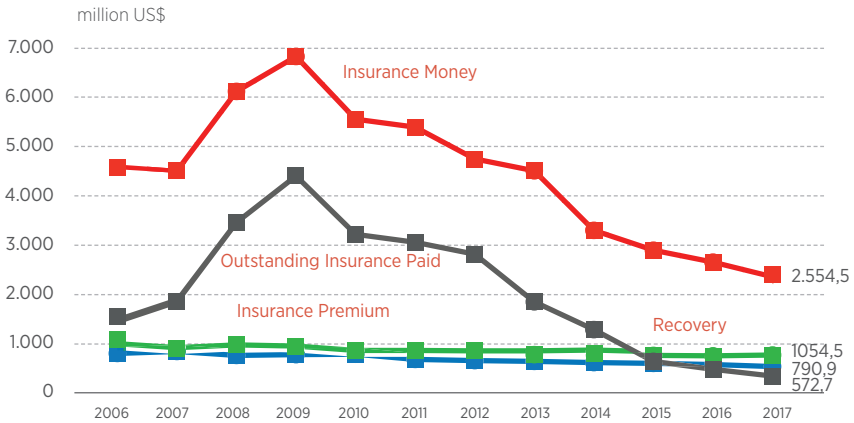
Figure 122 shows that the level of the annual insured credit guarantees was quite high between 2008 and 2010.

Figure 123. Outstanding Insurance Balance



The cumulative risk balance is presented in Figure 123. The balance of insured risks was US$ 224 billion at the end of 2017.

Figure 124. Insurance Balance



The red line indicates the compensation paid out under the insurance scheme by years. The green line under the insurance premiums received, represented by the blue line, details the amounts transferred by the central government. In this example, the total insurance premiums received in 2017 was US$ 1.13 billion and the central government injected US$ 790 million into the system. The amount of insurance compensated for that same year was US$ 2.5 billion. Net insurance loss in 2017 was US$ 572 million.

5
CONCLUSION AND ASSESSMENTS

SMEs constitute the backbone of economies in Asia, as is the case in the rest of the world. Despite their importance, SMEs face serious difficulties when attempting to access finance. The insufficiencies in the loans made to SMEs have been attributed to asymmetric information, high default risk and lack of collaterals, all of which make it harder for SMEs to access finance than big businesses. Lenders prefer to extend loans to big businesses that are not constrained by such factors, and that are deemed do have a lower risk. To address this issue, government have set up Credit Guarantee Programs in developed and developing economies, that are an efficient tool deployed in the finance sector in order to reduce the supply-demand gap in SME finance around the world, but particularly in the emerging Eastern economies.

A credit guarantee program involves at least three parties, being the borrower, lender and guarantor. The borrower is usually a SME seeking debt capital. The SME requests a loan from a lender, which is usually turned down due to information asymmetry. At this point, the guarantor (Credit Guarantee Corporation) plays an important role in facilitating the access of SMEs to finance.

There are three key questions related to credit guarantees:

1. What is the optimal credit guarantee ratio?

2. Should this rate remain fixed, regardless of the macroeconomic situation?

3. Should this rate be the same for all banks, or vary from one bank to another?

The following questions should be answered in when determining the optimum credit guarantee rate applicable to guarantees:

1. What is the government's policy toward the lowering of NPLs and providing support to SMEs?

2. What are the macroeconomic variables?

3. What is the situation in the banking sector?

In economy management, various factors should be taken into account when formulating policies to support SMEs, including the role of current SME loans in the national economy, the level of targeted SME loans, the anticipated default risk rate related to those loans, the percentage increase in loans, the deposit interest rate, the projected GDP, the marginal rise in NPLs after a rise in total loan amount, the real estate price index, stock prices, money supply, and the total financial depth of the banking sector.

The NPL rate of the banking sector is directly affected by macroeconomic variables. The behavior of the banking sector (risk appetite, market expectations, etc.) is another key factor in the NPL rate.

The support provided through credit guarantee funds is undoubtedly one of the most important factors influencing the banking sector's lending behavior. This support mechanism may deeply affect the lending behavior patterns of banks, leading to results that are consistent with the macroeconomic goals of policy makers.

The credit guarantee fund mechanism is used to encourage banks to provide loans in negative economic environments and to meet the market's need for funds. When economic conditions improve, regulation in the markets can be achieved by employing more selective methods (e.g. lowering guarantee rates).

Banks may be more inclined to lend to larger companies, believing that they represent a lower risk, than to SMEs, due to information asymmetry. This has an adverse effect on SMEs, especially in times of economic contraction during a crisis or emergency, when it is harder for SMEs to access finance. The access of SMEs to finance should be facilitated and supported at such times. There is a greater need for recovery mechanisms during an economic contraction. However, even in economic stability periods, supporting not only large scale businesses which are considered as low risky by banks but also SMEs is required to ensure sustainable economic growth.

In short, public credit guarantee systems are used as a tool to bridge the supply-demand gap in SME financing. To ensure the proper and effective use of this tool, the optimum guarantee rate should have a flexible structure that will not create a moral hazard in banks, and that will remain consistent with the size and rate of the guarantees to be given to banks, the economic situation and the expectations of policymakers. The rate of non-performing loans (NPL) is affected by macro-variables, although macro-variables cannot wholly explain this rate, and so banking behaviors should also be taken into consideration. The optimum credit guarantee rate should vary depending on the own financial position of the bank.

In other words, banks that are operating efficiently should receive more guarantees from the system while those that do not should obtain fewer. This rate should also vary according to the current economic conditions. Governments should lower guarantee rates during periods when the risk of NPLs for SMEs are low and the economic situation is good, and raise them when economic risks increase so as to maintain economic growth and ensure the access of SMEs to finance. Credit guarantee systems should thus be used as an efficient tool for the regulation of the economy and for bringing new and energetic players into the system.

It is essential to detect the utilization of credit guarantee systems by users with abusive intentions, and to develop preventive systems to maintain these structures and preserving their reputation in the eyes of the public. SMEs that are not managed efficiently may borrow or increase their borrowing limits through such systems, as these systems also provide flexibility in lender assessments. When we take a look at the factors to be considered so as to prevent improper use or to detect iabusing users, it is apparent that a standardized and sophisticated rating model should be used for the assessment of SMEs, along with a conducive risk sharing system, and for the sustainability of commercial operations of SMEs.

A 100% guarantee within a credit guarantee system may create a moral hazard. The guarantee corporation and the finance institution should, therefore, share the risk.

The inability of banks to make an appropriate and correct assessment of SMEs due to information asymmetry is the biggest obstacle to lending. Designed to eliminate this problem, credit guarantee systems can minimize potential risks only if supported by appropriate and flexible rating systems that are aimed at eliminating information asymmetry. An advanced rating system will not only minimize information asymmetry, but will also reduce bank losses resulting from risky loans, while enabling SMEs with growth potential to access financing with low borrowing costs. Information asymmetry for SMEs means that loans are made to SMEs only through the conventional lending method, being based on collateral, including real estate, personal assets and sureties of the executives to negate risks that cannot be reliably measured. This situation leads to the provision of loans for guarantees rather than loans for business. The banking system in Japan was based on collaterals mostly in the form of real estate collaterals prior to the 2000s, and the financial sector came to face difficulties in the management of risks due to sharp falls in real estate prices.

Efforts were made to overcome the loan management problems prior to 2000 in Japan through a restructuring of the system, with banks developing internal assessment systems to this end, overseen by the Japanese finance authority. The rating models established by banks relied on both qualitative and quantitative data related to businesses. In other words, data related to finance, assets, liabilities and receivables, as well as the performance of the managers and shareholders of the company, were used in the model. A rating scoring attempts to calculate the probability of defaults. Accordingly, it also assumes that the lender's potential losses can be managed. Rating models allow for a more reliable rating of businesses, their access to finance and their use of such financing at more convenient costs. Many studies were undertaken in Japan throughout the 2000s, and the most concrete step was taken with the foundation of the CRD. The CRD provides all members with a rating modelling, and periodically shares with them statistical data based on that model. This makes it possible for each member to make a rating assessment through the use of a more reliable database.

It is argued in many studies carried out in Japan that rating assessments fail to provide a reliable rating, being based on data pertaining to previous years, and that this method is insufficient as it does not take into account the short-term situation. A more reliable rating of the current situation of businesses is essential for risk management. Related studies in Japan strongly suggest that the movements of the accounts of businesses in the banking system should be monitored in order to overcome this problem, suggesting in particular that the financial model should be

combined with the bank account model. It is believed that the smaller the business, the greater the need for these models

We can list the key results of this study specific to Japan as follows:

- SMEs are crucial to economic development and growth.
- SMEs' access to finance is so important to determine economic indicators.
- Credit guarantee systems are the most significant and appropriate method for ensuring the elimination of problems preventing SMEs from accessing finance.
- Factors supporting credit guarantee systems include a reliable rating method and dynamic systems that can be revised depending on the time and need.

Japan is a country that is worth analyzing as a pioneering country in terms of per capita income, its share of global production and exports. The Japanese banking and lending system should also be studied. This study analyzes the Japanese Credit Guarantee System as a part of a deep-seated economic system, which has turned Japan into the third largest economy in the world and shares all components of the model with the reader. We have seen during our visits, interviews, and our reviews of sources and studies that the Japanese Credit Guarantee system, which has been functioning since 1937 and has been subjected to constant improvement, plays a crucial role in the current economic level of the country. It is one of the countries that makes use of the system in the best fashion, considering the system's ratio to GDP (8%), its share in loans borrowed (7%) and the total number of SMEs taking advantage of the system (33%).

The final premise of this study is that, credit guarantee funds are one of the key mechanisms behind the growth and development of developed and developing economies. South Korea and Japan are two models that differ from the West in terms of economic development. The fulcrum of the both models is having a long standing credit guarantee systems functioning with a sustainable and broad manner for economic development.

The presence of the Credit Guarantee Fund, which was launched as a more active model in Turkey two years ago, and its transformative effect on the economy, will yield strategic results at a global scale in our country's near future with a sustainable model like the one in Japan.

6 REFERENCES

1. Prof. Ph.D. Naoyuki Yoshino (ADBI Dean), Presentation Notes, November 2018

2. Ph.D. Farhad Taghizadeh-Hesary (ADBI), Presentation Notes, November 2018

3. Prof. Ph.D. Naoko Nemoto (ADBI), Presentation Notes, November 2018

4. Prof. Ph.D. Naoyuki Yoshino & Dr. Farhad Taghizadeh-Hesary, "Analytical framework on credit risks for financing small and medium-sized enterprises in Asia" Asia-Pacific Development Review, December 20145. Prof. Ph.D. Naoyuki Yoshino, Dr. Farhad Taghizadeh-Hesary, Phadet Charoensivakorn & Baburam Niraula, "SME Credit Risk Analysis Using Bank Lending Data: An Analysis of Thai SMEs" Asia-Pacific Development Review, July 2015

6. Prof. Ph.D. Naoyuki Yoshino & Dr. Farhad Taghizadeh-Hesary, "Analysis of Credit Ratings for Small and Medium-Sized Enterprises: Evidence from Asia" Asia-Pacific Development Review, March 2015

7. Prof. Ph.D. Naoyuki Yoshino & Farhad Taghizadeh-Hesary, Ph.D. "Optimal Credit Guarantee Ratio for Asia" Asia-Pacific Development Review, July 2016

8. Prof. Ph.D. Naoko Nemoto, Prof. Ph.D. Naoyuki Yoshino, Yutaka Okubo, Daimei Inaba & Kentaro Yanagisawa, "Credit Risk Reduction Effect on Small and Medium-Sized Enterprise Finance through the Use of Bank Account Information" Asia-Pacific Development Review, August 2018

9. Law on Credit Guarantee Corporations in Japan, August 1953

10. Small & Medium-size Enterprise Basic Act of Japan, 1963

11. Satoshi Kuwahara, Credit Risk Database (CRD) Presentation, November 2018

12. Soichi Ito, Tokyo Credit Guarantee Corporation (CGC) Presentation and Operating Report, November 2018

13. Toshiro Iwasa, Japan Federation of Credit Guarantee Corporations (JFG) Presentation, November 2018

14. Katsuhiko Nagano, Japan Federation of Credit Guarantee Corporations (JFG), November 2018

15. Tokyo Kiraboshi Bank Presentation and Operating Report, November 2018

16. Resona Bank Presentation and Operating Report, November 2018

17. Japan Finance Corporation (JFC) 2018 Operating Report

18. Japan Finance Corporation (JFC) 2018 SME Guide

19. Credit Guarantee System in Japan 2017 Booklet, CGC

20. Credit Guarantee System in Japan 2018 Booklet, CGC

21. Mahmut Şahin, Turkey Credit Guarantee Fund Meeting Notes, November 2018

22. Associate Professor Ph.D. Hakan Güray Şenel, Meeting Notes, November 2018