Promoting SME trade finance in the CAREC Region
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Role of Credit Guarantee Scheme and Community Based Trust Funds in SME Financing

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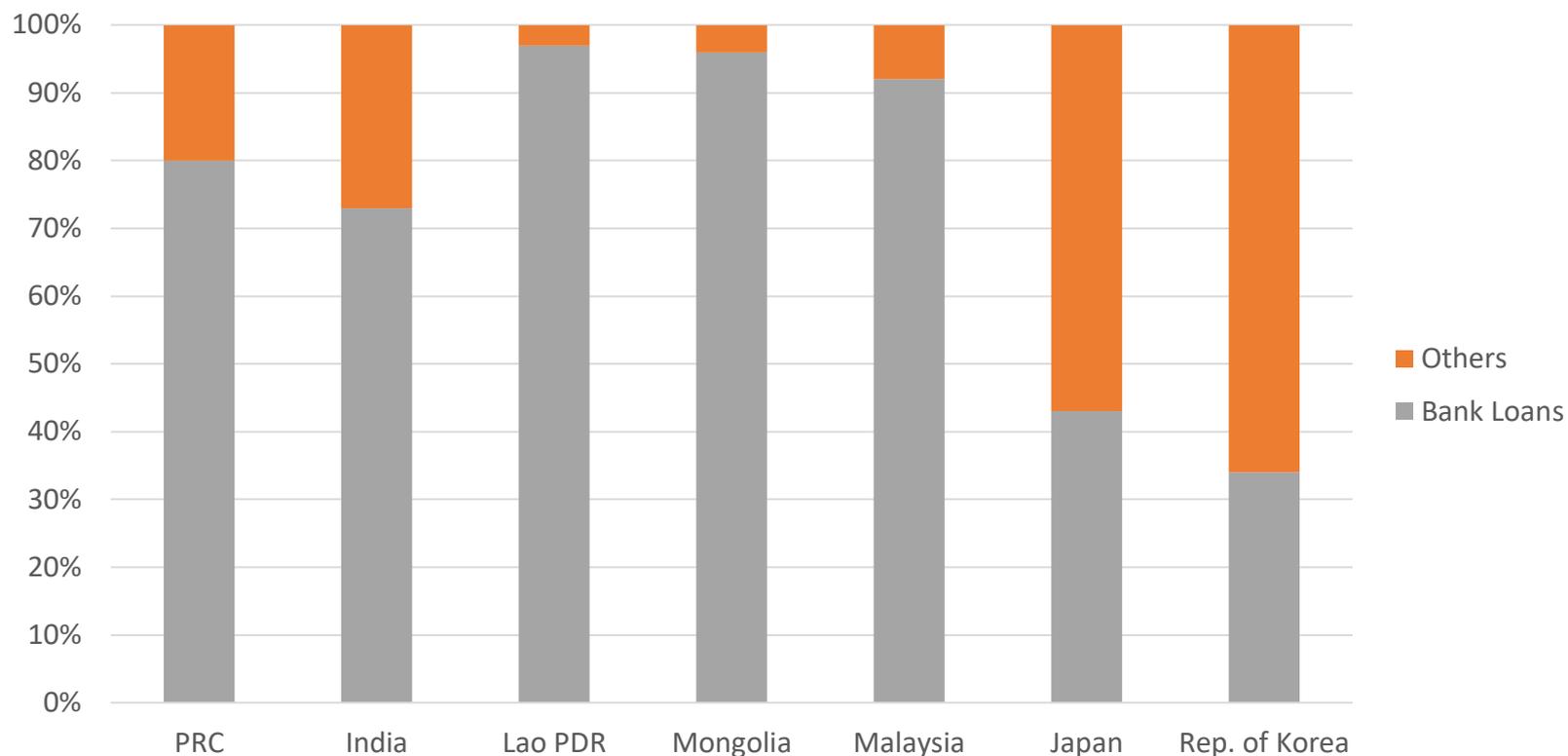*Visiting Professor, Keio University, Tokyo, Japan*

Outline

I.   **Introduction**

II.   **Credit Guarantee Schemes and SME Finance**

III. **Optimal Credit Guarantee Ratio**

IV. **Role of Community-based Trust Funds**

V.   **Conclusion and the Policy Recommendations**

I. Introduction

Bank oriented financial markets in Asia

Financial market structure in selected Asian Economies

Legend:
- ■ Others
- ■ Bank Loans

Economies (left to right): PRC, India, Lao PDR, Mongolia, Malaysia, Japan, Rep. of Korea

Financial Asset of households

USA

Others, 147

Cash ans Deposits, 567

Stocks, 1170

Insurance and Pension Funds, 1049

Securities, 782

Total, 3715

Japan

Stocks, 87

Others, 58

Securities, 92

Cash ans Deposits, 792

Insurance and Pension Funds, 399

Total, 1428

Germany

Stocks, 44

Others, 5

Securities, 103

Cash ans Deposits, 221

Insurance and Pension Funds,…

Total. 562
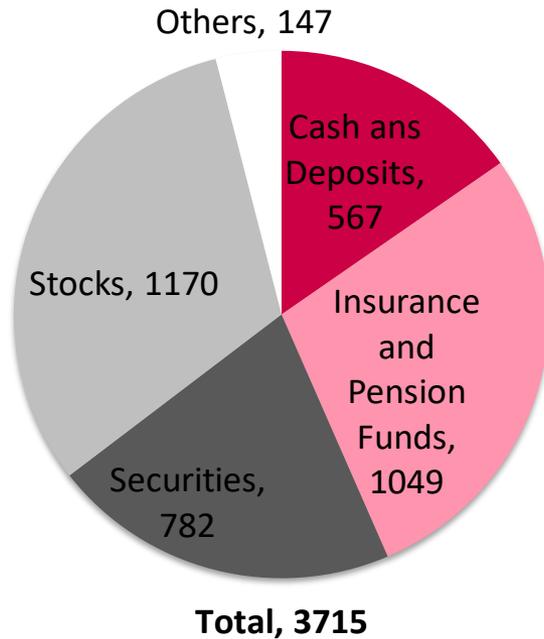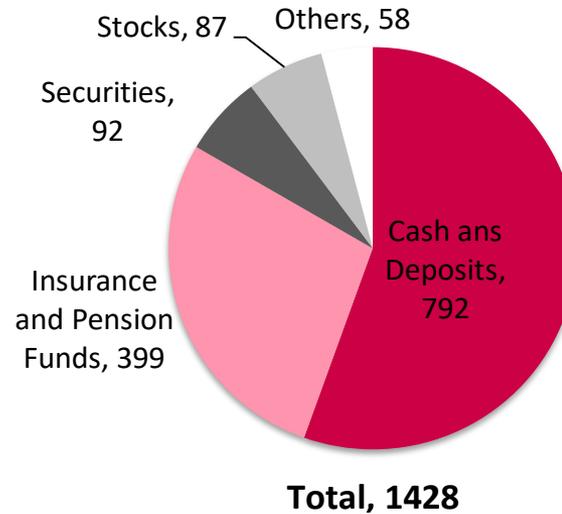
II. Credit Guarantee Scheme and SME Finance

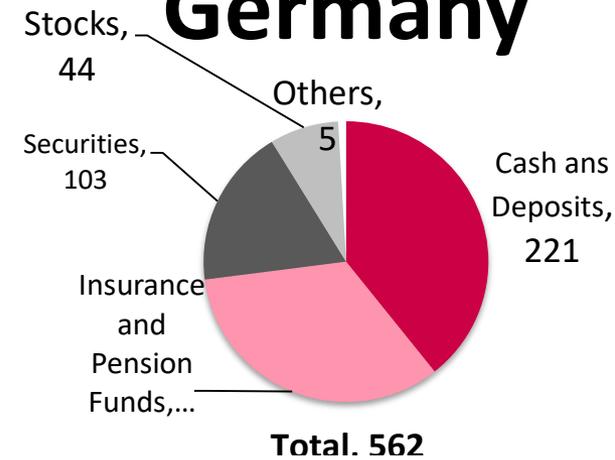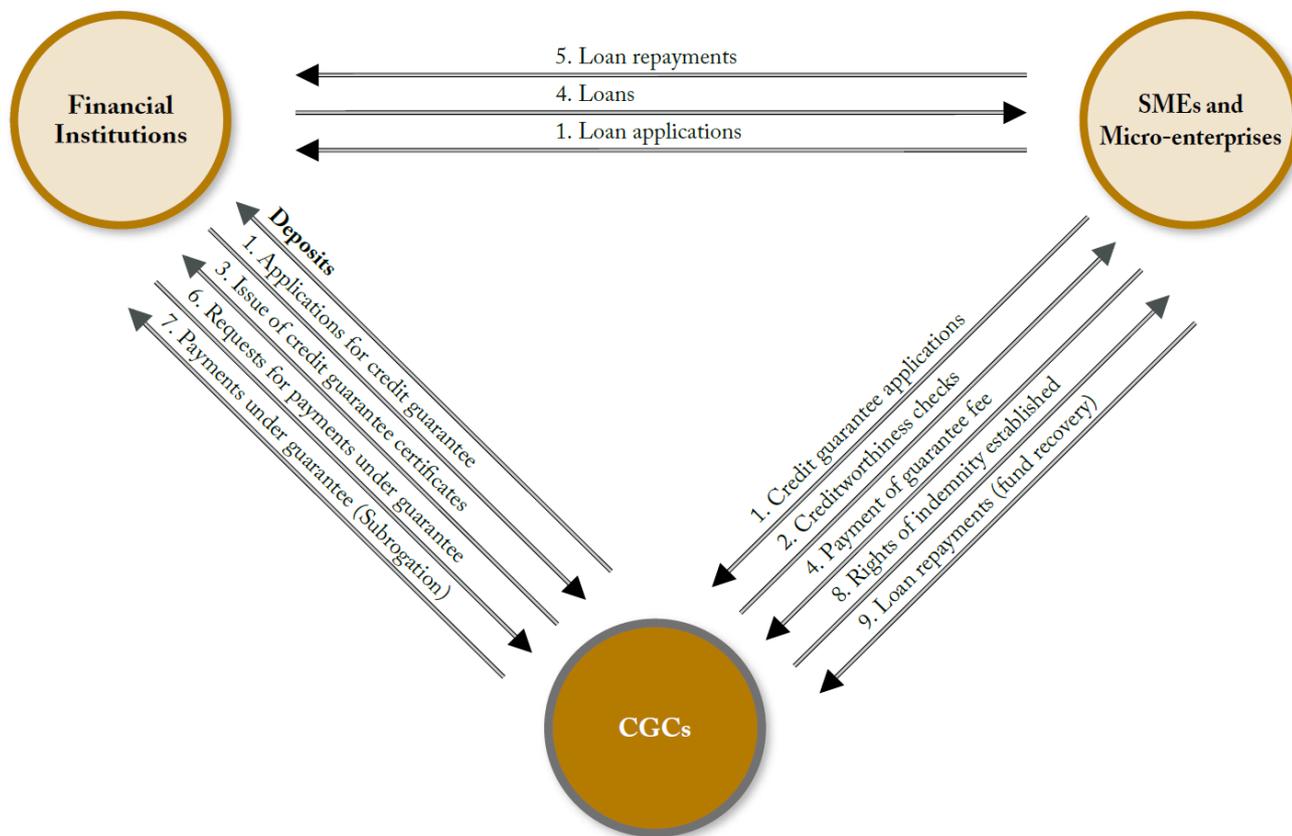# Objectives of Credit Guarantee Corporation (CGC)

CGCs are public institutions that support MSMEs by serving as guarantors to make it easier for them to borrow the funds necessary for their business operations from financial institutions.

CGCs improve the credit worthiness of MSMEs, which lack physical collateral and have weak credit standings. It helps direct funds to them from private financial institutions and provides them with smoother access to financing.

Credit Guarantee System flow of operation

Financial Institutions

SMEs and Micro-enterprises

5. Loan repayments
4. Loans
1. Loan applications

Deposits
1. Applications for credit guarantee
3. Issue of credit guarantee certificates
6. Requests for payments under guarantee
7. Payments under guarantee (Subrogation)

1. Credit guarantee applications
2. Creditworthiness checks
4. Payment of guarantee fee
8. Rights of indemnity established
9. Loan repayments (fund recovery)

CGCs

CGC Basis Principle

1. **Benefit SMEs striving to maintain, establish, and develop operations**

2. **Help them to establish creditworthiness by evaluating their managerial capabilities, and facilitate funding by providing credit guarantee backed by a public institution**

3. **Assist in reinforcing their bases of operations by responding flexibly to a diverse range of needs including consultation, analysis, and the provision of information**

4. **By these actions, contribute to the prosperity of such enterprises and promote strong regional economic development**

SMEs Access to Credit Guarantees
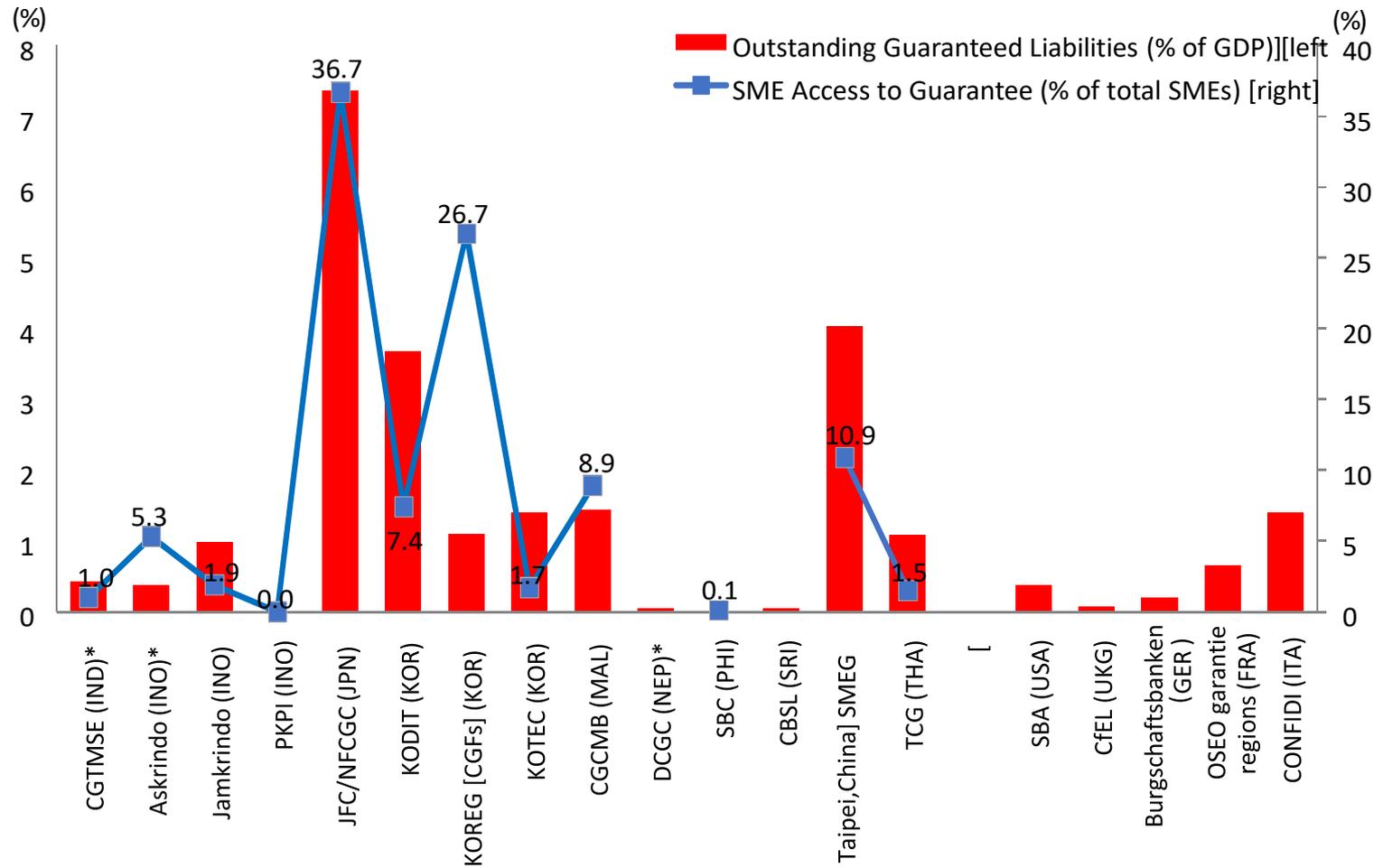
Source: ACSIC (2012), *The 25th Anniversary Publication of ACSIC – The 25-year History of ACSIC*
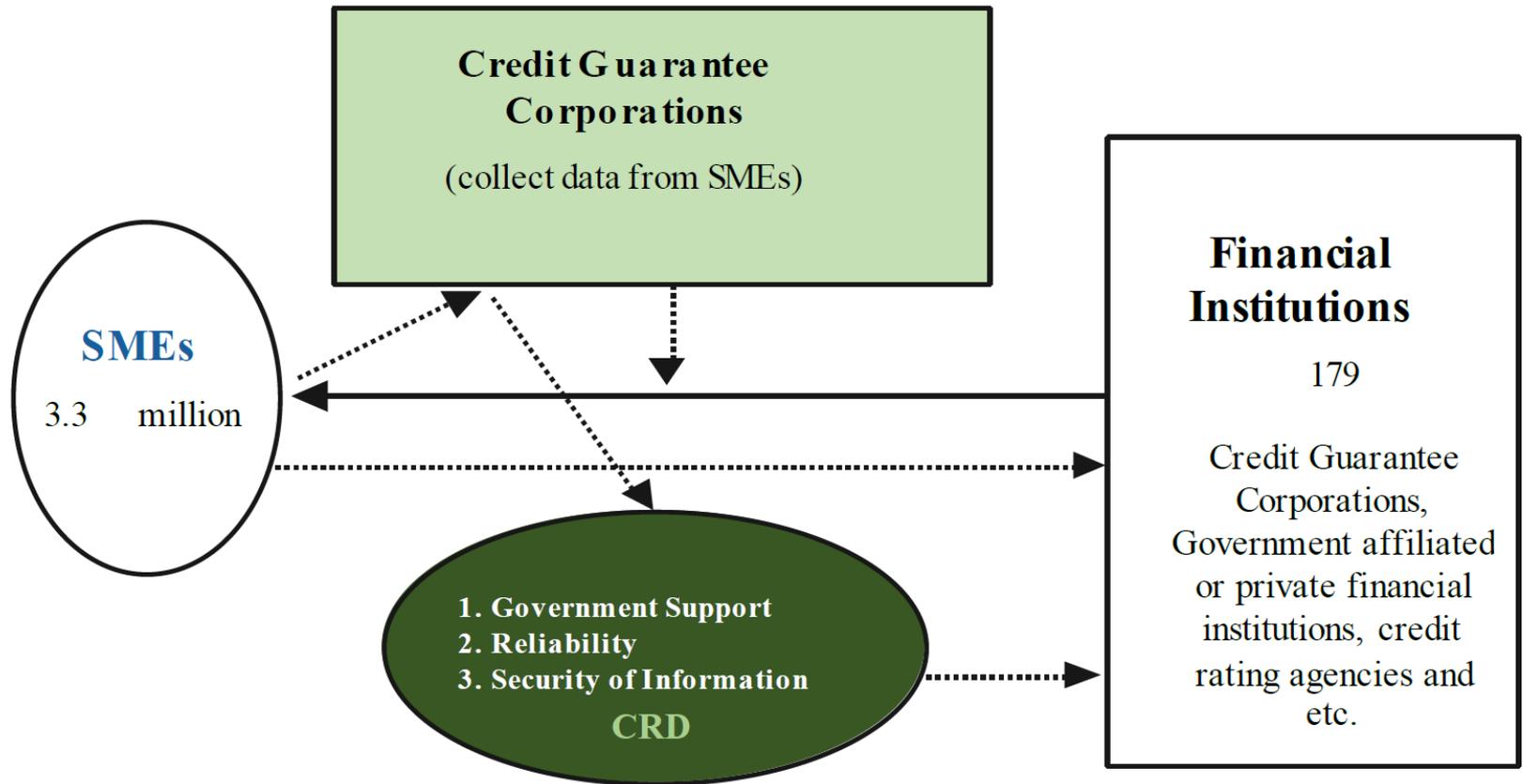
9

Japan

1. Following the introduction of credit guarantee scheme (CGS) in Japan in 1937, their use spread first throughout Europe and the Americas in the 1950s, and then to Africa, Asia and Oceania in the 1960s and 1970s.

2. At present, there are 51 CGCs, one for each prefecture and one in each of the cities of Nagoya, Yokohama, Kawasaki, and Gifu.

3. At the end of 2013, their total liabilities stood at approximately 30 trillion yen.

	2009	2010	2011	2012	2013
Number of SMEs	4,197,719	4,197,719	4,190,719	4,201,264	3,852,934
Number of companies using guarantees	1,591,726	1,573,067	1,543,847	1,502,972	1,458,434
Guarantee use rate	37.9%	37.5%	36.8%	35.8%	37.9%

* Number of SMEs taken from the "White Paper on Small and Medium Enterprises in Japan" compiled by the Small and Medium Enterprise Agency.

Source: Japan Federation of Credit Guarantee Corporations (JFG)

SMEs, CRD, CGCs and Banks

Credit Guarantee Corporations

(collect data from SMEs)

SMEs

3.3   million

1. Government Support
2. Reliability
3. Security of Information

CRD

Financial Institutions

179

Credit Guarantee Corporations, Government affiliated or private financial institutions, credit rating agencies and etc.

Source: Yoshino and Taghizadeh-Hesary (2015)

Example: Credit Guarantee Scheme of Japan
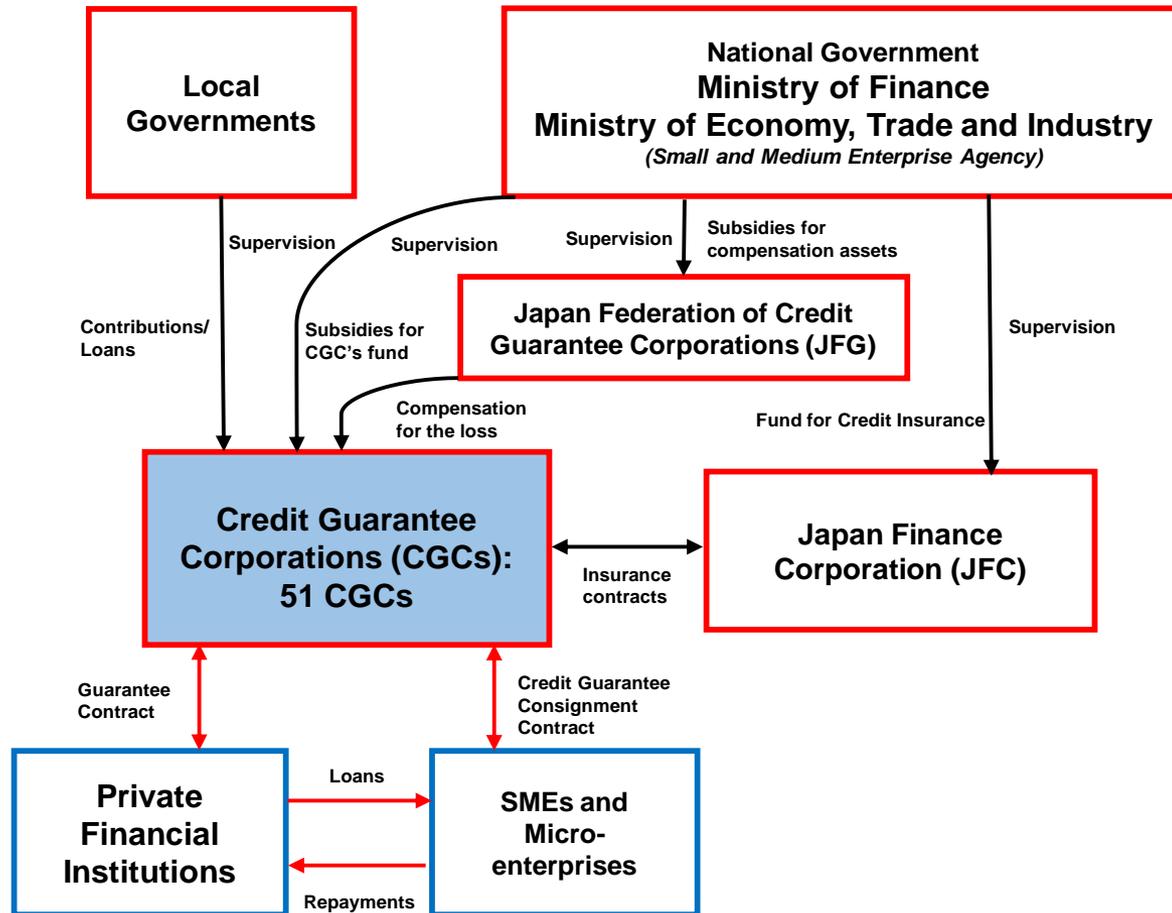
Source: Japan Federation of Credit Guarantee Corporations (JFG 2014)
Note: above figure is reproduced by the authors

Eligible SMEs for the Credit Guarantee in Japan

CGCs define the scope of MSMEs eligible to receive credit guarantees as follows. MSMEs which either meet the requirements in terms of number of regular employees or paid-up capital as given in the table below are eligible for credit guarantees (excluding some special industries).

INDUSTRY	CAPITALIZATION	NUMBER OF EMPLOYEES
Manufacturing, etc.	Up to ¥300 million	300 or less
Wholesale	Up to ¥100 million	100 or less
Retail	Up to ¥ 50 million	50 or less
Services	Up to ¥ 50 million	100 or less
Health care, etc.	—	300 or less

Source: Japan Federation of Credit Guarantee Corporations (JFG)

Industries covered by the credit guarantee system are based on the industries designated by the enforcement regulation under the Small and Medium-sized Enterprise Credit Insurance Act. Agriculture, forestry, fisheries, financial industry are excluded.

Ceiling on Guarantee in Japan

	INDIVIDUALS / CORPORATIONS	COOPERATIVES, ETC.
General Guarantees	¥200 million	¥400 million
Guarantees without Collateral	¥ 80 million	¥ 80 million
Bond Guarantees	¥450 million	—

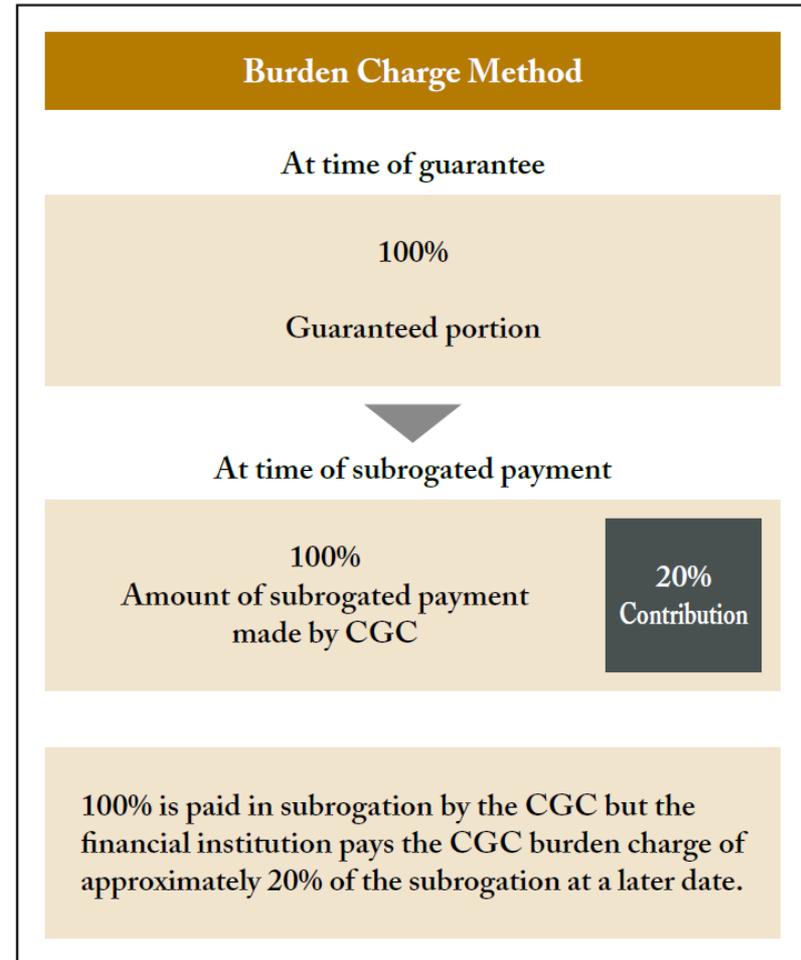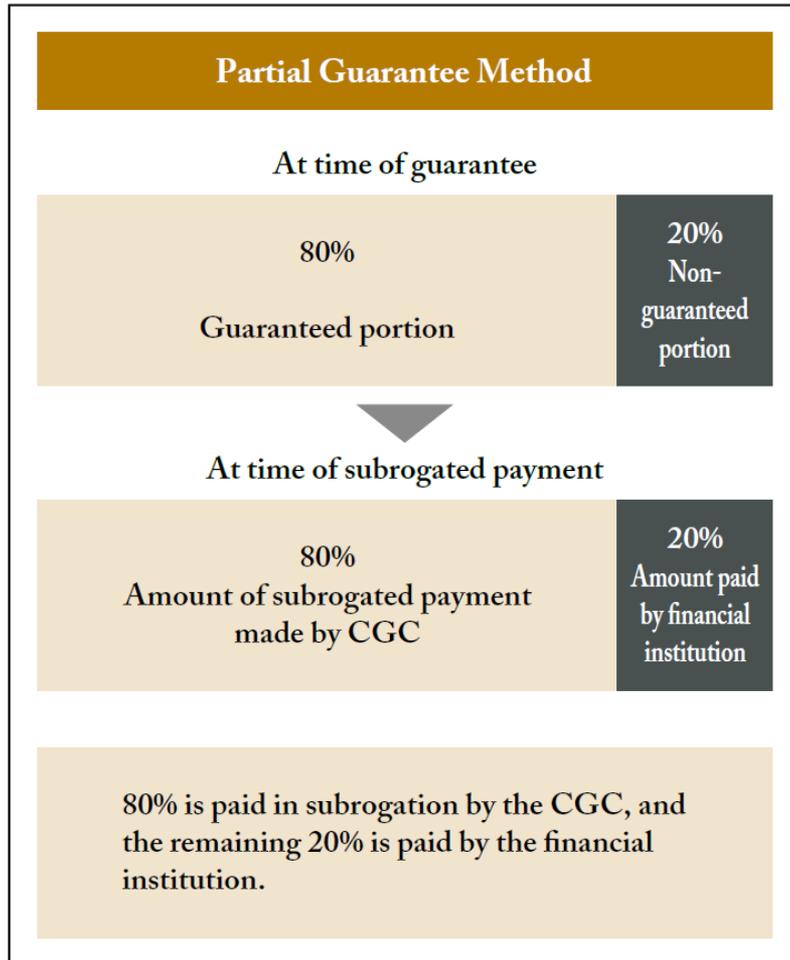*Source: Japan Federation of Credit Guarantee Corporations (JFG)*

Credit Guarantee fee rate classification

Classification	1	2	3	4	5	6	7	8	9
Credit guarantee fee rate under Responsibility-sharing System	1.90	1.75	1.55	1.35	1.15	1.00	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)
Credit Guarantee fee rate except Responsibility-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)

*1 "Special guarantees" mean revolving guarantee on discounting bill and other instruments, overdraft revolving guarantee and card loans of business operators.

*2 Credit guarantee fee rates applied to credit guarantee systems employing special insurance, or those to which the same credit guarantee fee rates are applied nationwide, etc. are determined separately.

Partial Guarantee

Partial Guarantee Method

At time of guarantee

| 80% Guaranteed portion | 20% Non-guaranteed portion |

↓

At time of subrogated payment

| 80% Amount of subrogated payment made by CGC | 20% Amount paid by financial institution |

80% is paid in subrogation by the CGC, and the remaining 20% is paid by the financial institution.

Burden Charge Method

At time of guarantee

| 100% Guaranteed portion |

↓

At time of subrogated payment

| 100% Amount of subrogated payment made by CGC | 20% Contribution |

100% is paid in subrogation by the CGC but the financial institution pays the CGC burden charge of approximately 20% of the subrogation at a later date.

Source: Japan Federation of Credit Guarantee Corporations (JFG)

III. Optimal credit guarantee ratio

CREDIT GUARANTEE CORPORATION (CGC)

B) Optimal credit Guarantee Fee
1- What is the optimal credit guarantee fee that each group of SMEs should pay to CGC?
2- Should this rate be same in economic boom or recessions or whether vary?

A) Optimal Credit Guarantee Ratio
1- What is the optimal credit guarantee ratio for the CGC? (80%,85% or???)

2- Should CGC provide same guarantee ratio for all lending institutions?
- Or should it be different based on the healthiness of the lending institutions?

Credit Guarantee fee payment

Credit guarantee coverage

Optimal Credit Guarantee Scheme

(BORROWERs)

SME1

SME2

A **BANK**

B **BANK**

(Lenders)

lending

Research Questions

In the literature on loan guarantees has left three important questions unanswered:

(i) What is the optimal credit guarantee ratio to fulfill government's goal for minimizing banks' nonperforming loans to SMEs while at the same time fulfilling the government policies for supporting SMEs?

(ii) Should this rate be constant regardless of the macroeconomic status?

(iii) Should this rate be same for all banks, or should it vary based on a bank's soundness?

Full length article

Optimal credit guarantee ratio for small and medium-sized enterprises' financing: Evidence from Asia

Naoyuki Yoshino [a, b], Farhad Taghizadeh-Hesary [c] 👤 ✉

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Abstract

Difficulty in accessing finance is one of the critical factors constraining the development of small and medium-sized

Models for the Optimal Credit Guarantee Ratio

Policy Objective Function

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

Loan Demand Function

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

Banks Profit Maximization

$$\text{Max.} \quad \Pi = r_L(L)L - \rho(g, Y, P_L, P_S, M, Z)L - r_D D - C(L,D)$$

Subject to: Banks's Balance sheet $\quad (1 - \rho)L + \rho L = D + A$

Amount of loan in equilibrium

$$L = \frac{l_1}{2}\left[\frac{l_0}{l_1} + \frac{l_2}{l_1}Y^e - \rho(g, Y, P_L, P_S, M, Z) - r_D - \rho'_L\right]$$

Optimal Credit Guarantee ratio: g

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

Depends on:

- Actual SME loans
- The desired SME loans
- The desired default risk ratio of loans
- Fixed demand for loan
- Deposit interest rate
- Expected GDP
- The weight for stabilizing the SME loans
- The weight for reducing the non-performing loan ratio
- Marginal increase of non-performing loans by increase of additional loans
- Price of Land, Price of stock, GDP, money supply,
- Financial profile of banks

Empirical Survey

Variables Examined for Bank's Soundness

No.	Symbol	Definition
1	L–D	Total loans/total deposits
2	PR–L	Properties/total loans
3	(SD+LD)–D	(Saving deposits + long-term deposits)/total deposits
4	A–L	Total assets/total loans
5	SC–L	Securities/total loans
6	CA–D	Cash/total deposits
7	CBR–D	Accounts receivable from central bank/total deposits
8	OBR–D	Accounts receivable from other banks/total deposits

Note: Properties are land, buildings, and other hard assets owned by banks. Securities include shares of corporate stock or mutual funds, bonds issued by corporations or governmental agencies, limited partnership units, and various other formal investment instruments that are negotiable and fungible. Accounts receivable from the central banks includes reserve requirement (or cash reserve ratio) and other sums that are normally in the form of cash stored physically in a bank vault (vault cash) or deposits made with a central bank. Accounts receivable from other banks are sums loaned to other banks.
Source: Yoshino, Taghizadeh-Hesary, Nili (2015)

Statistical Analysis of banks' balance sheet data

**Factor Loadings of Financial Variables
after Direct Oblimin Rotation**

Variables (Financial Ratios of Banks)	Component		
	Z1	Z2	Z3
L–D	(0.238)	(0.912)	(0.143)
PR–L	0.042	0.190	0.780
(SD+LD)–D	(0.287)	0.819	(0.123)
A–L	0.987	0.083	0.130
SC–L	(0.096)	(0.140)	0.875
CA–D	0.379	(0.536)	0.039
CBR–D	0.954	(0.104)	(0.102)
OBR–D	0.981	(0.011)	(0.117)

( ) = negative.
Note: The extraction method is principal component analysis. The rotation method is direct oblimin with Kaiser normalization.

Distribution of factors
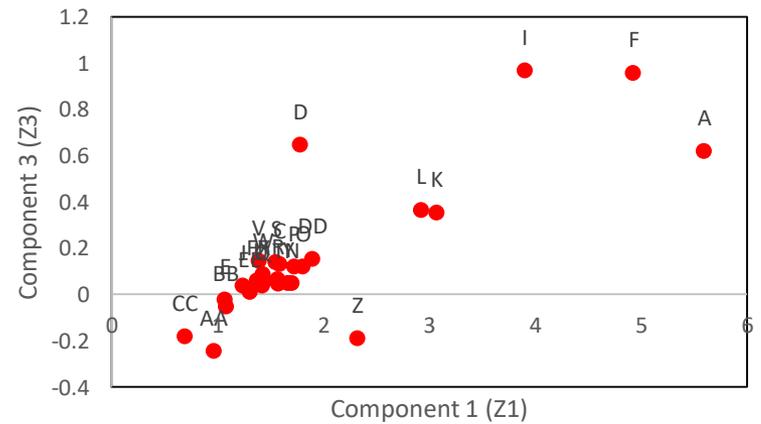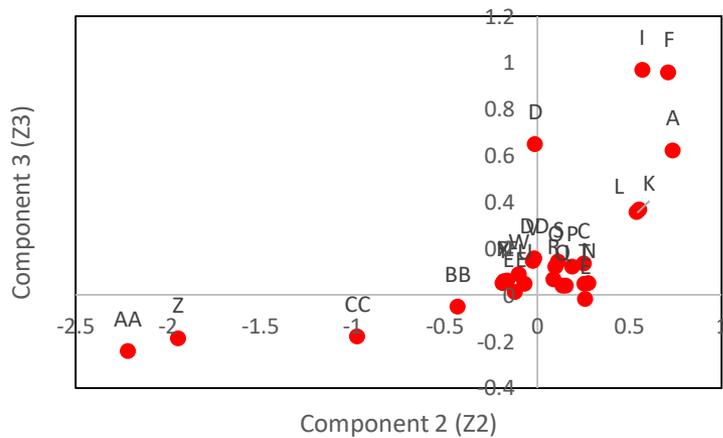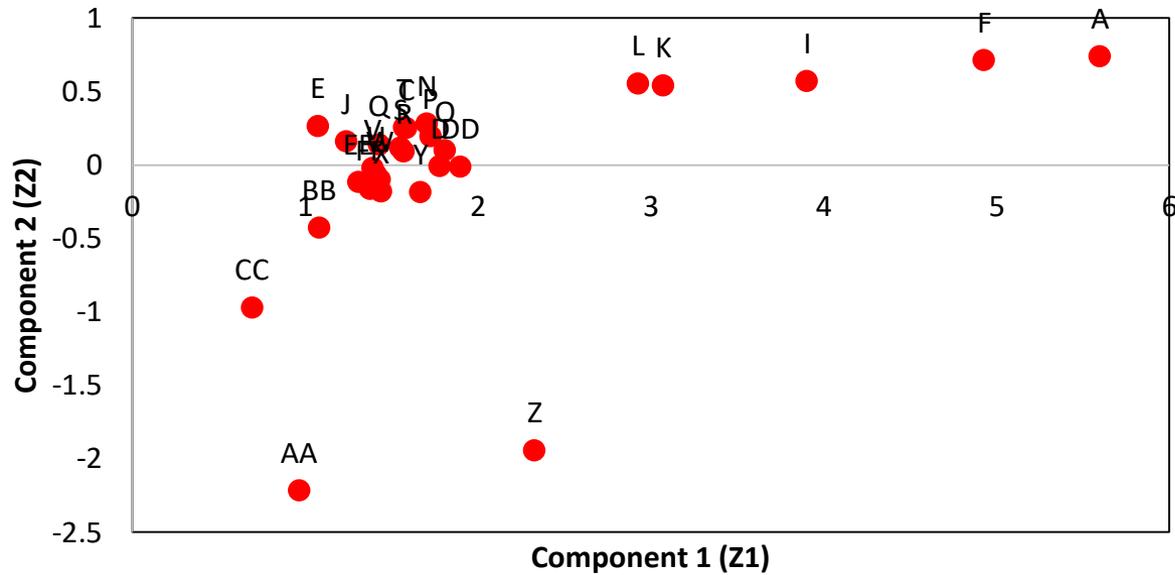
Clustering

Dendrogram
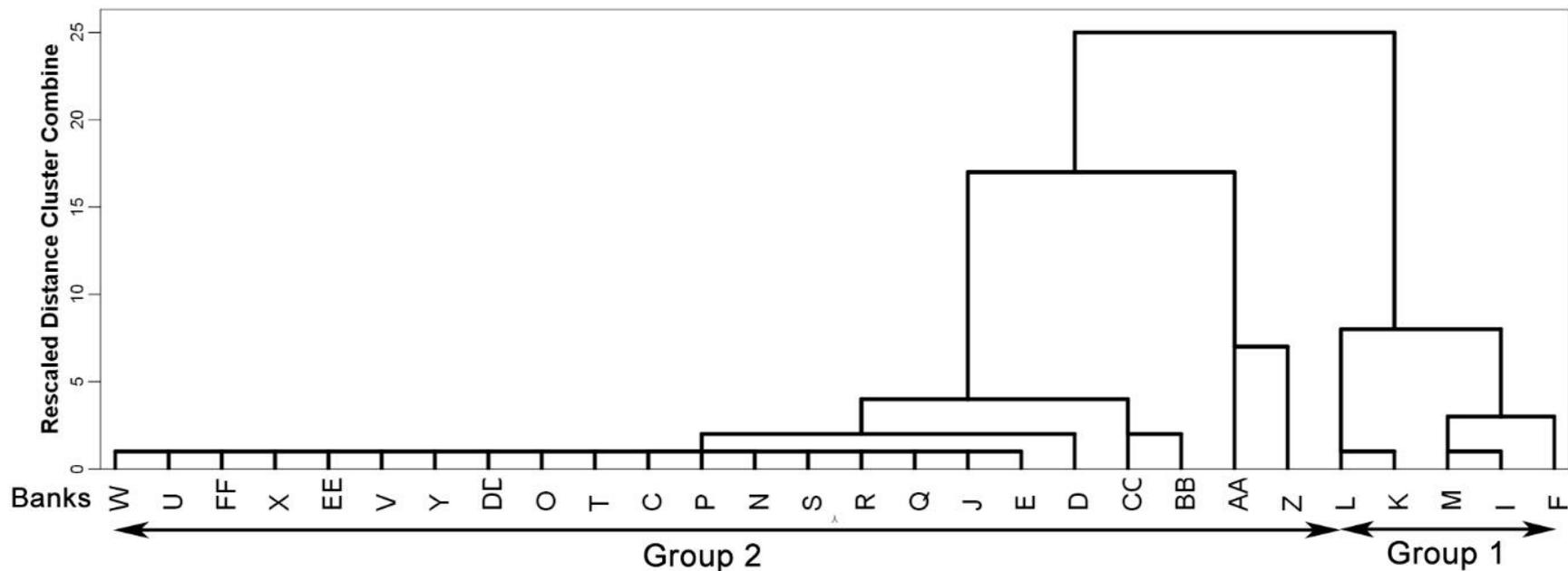
Robustness Check for Three Sample Banks

Bank	Credit rank	Rank of L–D	Rank of PR–L	Rank of (SD+LD) –D	Rank of A–L	Rank of SC–L	Rank of CA–D	Rank of CBR–D	Rank of OBR–D
I	2	24	1	16	3	5	8	21	2
R	14	14	17	12	15	9	11	9	7
W	28	11	20	22	20	6	10	3	18

Calculated Optimal Credit Guarantee ratios

the optimal credit guarantee ratio in our model depends on three groups of factors:

1. **macroeconomic variables**

2. **government policies,**

3. **banking profile.**

Group 1 of banks: 0.775
Group 2 of banks: 0.683

These three groups consist of various variables including:

price of land, price of stock, gross domestic product (GDP), money supply, actual SME loans, fixed demand for loans, deposit interest rate, expected GDP, marginal increase of nonperforming loans by increase of additional loans, desired SME loans, desired default risk ratio of loan, weight for stabilizing the SME loans, weight for reducing the nonperforming loan ratio, and financial profile of banks.

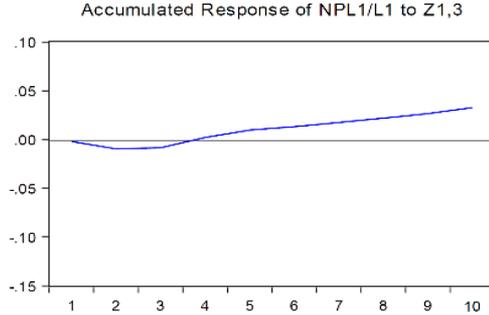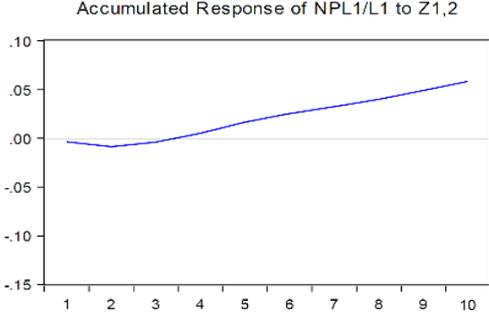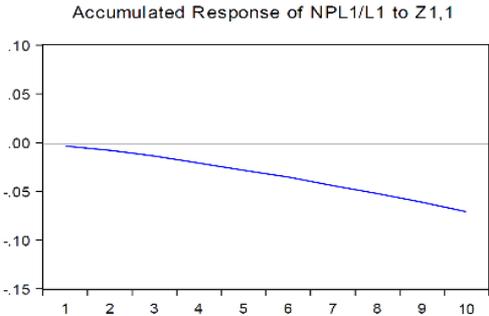# Robustness Check of the Optimal Credit Guarantee Model

- **Stationarity test**
- **Co-integration analysis**
- **VECM**

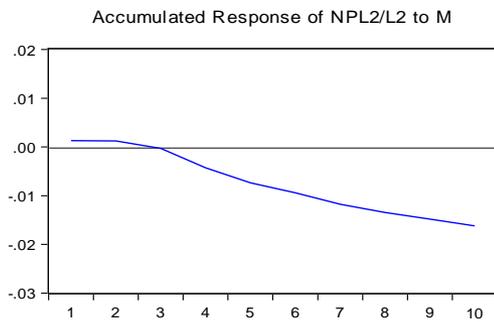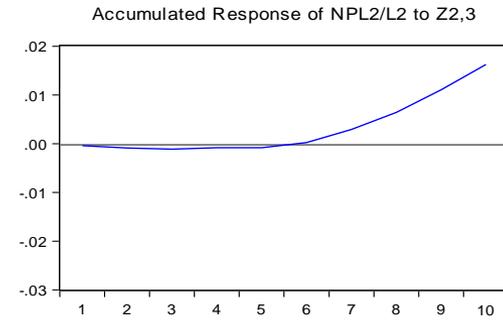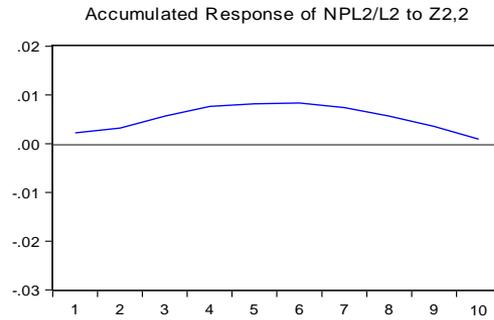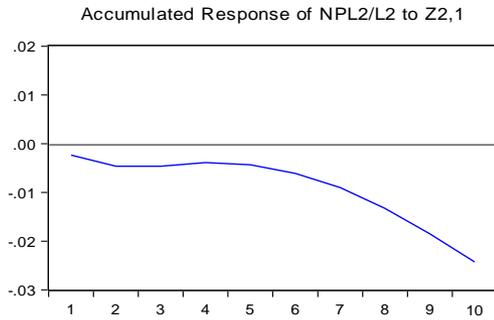$$V = \left(\rho, gdp, cpi, m1, Z_1, Z_2, Z_3 \right)$$

$d(\rho_1) = \quad \Phi_1[Z_{1,1}(-1) - 47.45\ \rho\ (-1) - 33.89\ P(-1) + 1.82\ Y(-1) + 0.34\ trend - 12.36]$

$\quad + \Phi_2[Z_{1,2}(-1) - 8.83\ \rho_1\ (-1) - 5.43\ P(-1) + 0.75\ Y(-1) + 0.05\ trend - 1.55]$

$\quad + \Phi_3[Z_{1,3}(-1) - 23.10\ \rho_1\ (-1) - 17.63\ P(-1) + 6.89\ Y(-1) + 0.24\ trend - 9.12]$

$\quad + \Phi_4[\ M(-1) - 0.92\ \rho_1\ (-1) - 2.17\ P(-1) + 2.35\ Y(-1) + 0.03\ \ trend - 1.59]$

$\quad + \Phi_5\ d[Z_{1,1}(-1)] + \Phi_6\ d[Z_{1,2}(-1)] + \Phi_7 d[Z_{1,3}(-1)] + \Phi_8 d[M(-1)] + \Phi_9 d[\ \rho_1\ (-1)]$

$\quad + \Phi_{10} d[P(-1)] + \Phi_{11} d[Y(-1)] + \Phi_{12}$

$d(\rho_2) = \Phi_{13}[Z_{2,1}(-1) + 0.67\ Z_{2,2}(-1) - 3.90\ Z_{2,3}(-1) + 0.03\ M(-1)$

$\quad - 2.04\ \rho_2\ (-1) - 1.11\ P(-1) - 0.04\ Y(-1) + 0.008\ trend - 0.97]$

$\quad + \Phi_{14}\ d[Z_{2,1}(-1)] + \Phi_{15}\ d[Z_{2,2}(-1)] + \Phi_{16} d[Z_{2,3}(-1)] + \Phi_{17} d[M(-1)]$

$\quad + [\Phi_{18} d[\ \rho_2\ (-1)] + \Phi_{19} d[P(-1)] + \Phi_{20} d[Y(-1)] + \Phi_{21}$

Impulse Response Analysis: Group 1 of banks
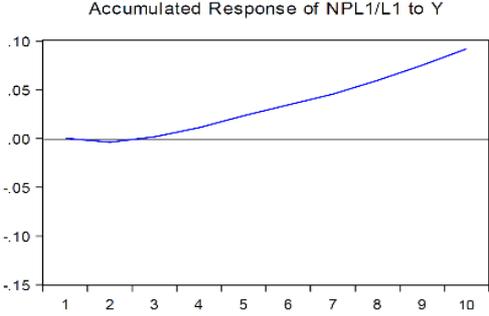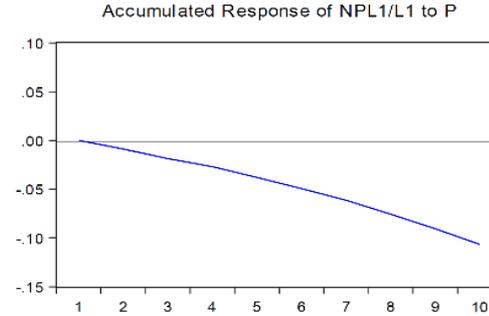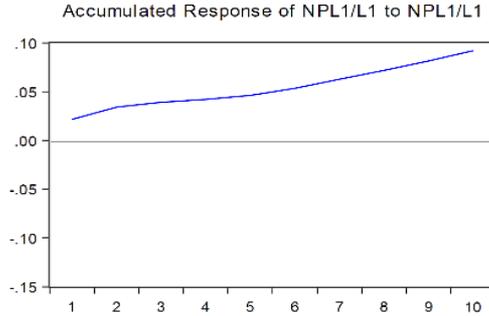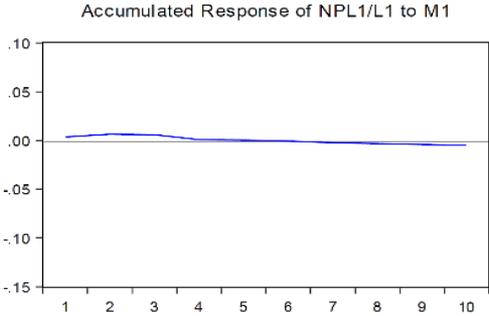
Impulse Response Analysis: Group 2 of banks

Accumulated Response of NPL2/L2 to Z2,1

Accumulated Response of NPL2/L2 to Z2,2

Accumulated Response of NPL2/L2 to Z2,3

Accumulated Response of NPL2/L2 to M

Accumulated Response of NPL2/L2 to NPL2/L2
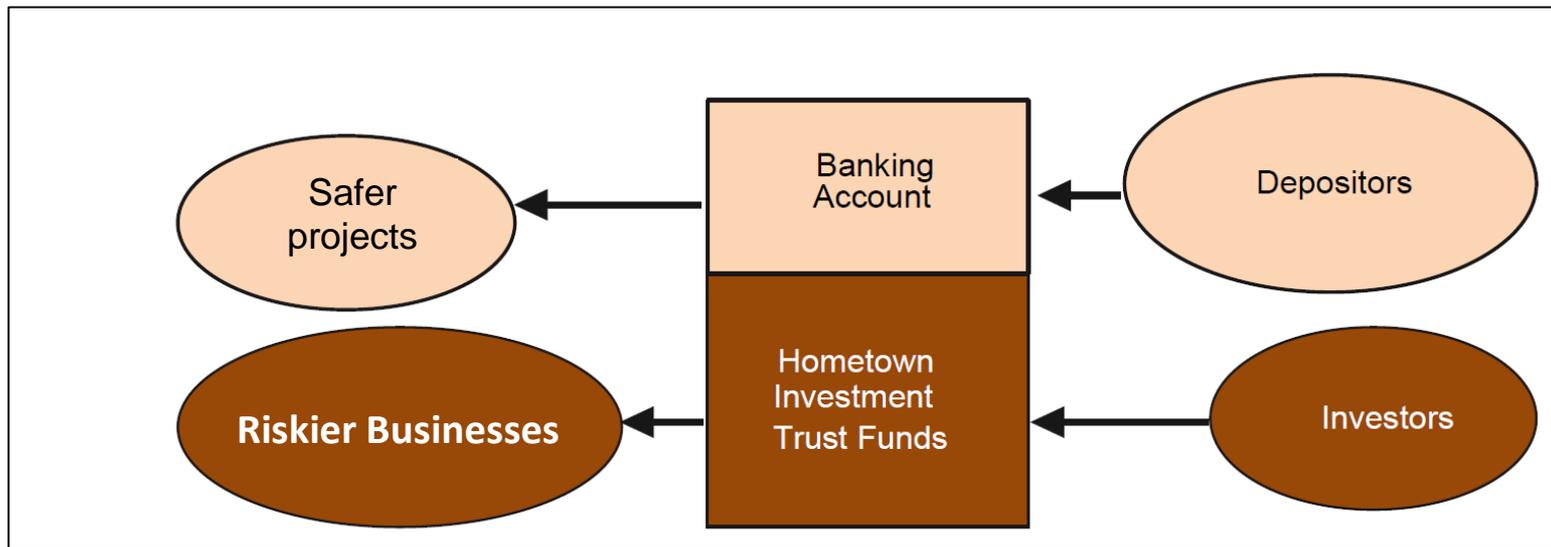
Accumulated Response of NPL2/L2 to P

Accumulated Response of NPL2/L2 to Y
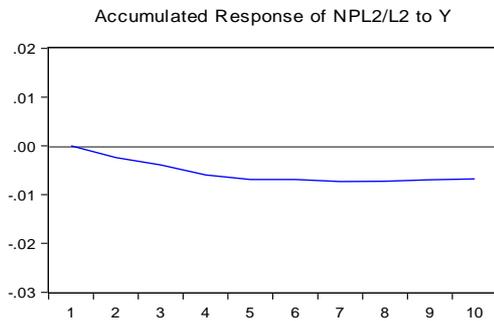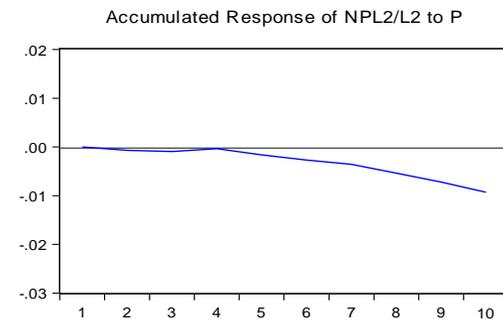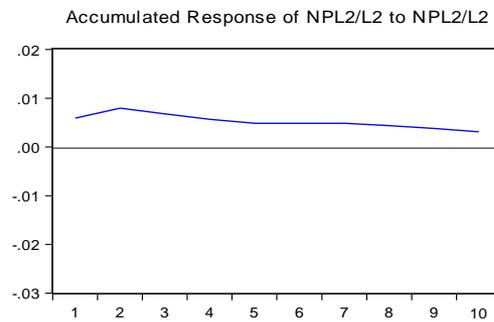
IV. Role of Community-based Trust Funds

Hometown investment trust funds (HITs) a new way to finance for *risky businesses*

Source: Yoshino and Taghizadeh-Hesary (2017)

Modelling the social funding and spill-over tax for addressing the green energy financing gap

Naoyuki Yoshino[a], Farhad Taghizadeh–Hesary[b, *], Masaki Nakahigashi[c]

[a] Dean and CEO, Asian Development Bank Institute (ADBI), Professor Emeritus, Keio University, Tokyo, Japan
[b] Assistant Professor, Faculty of Political Science and Economics, Waseda University, Tokyo, Japan
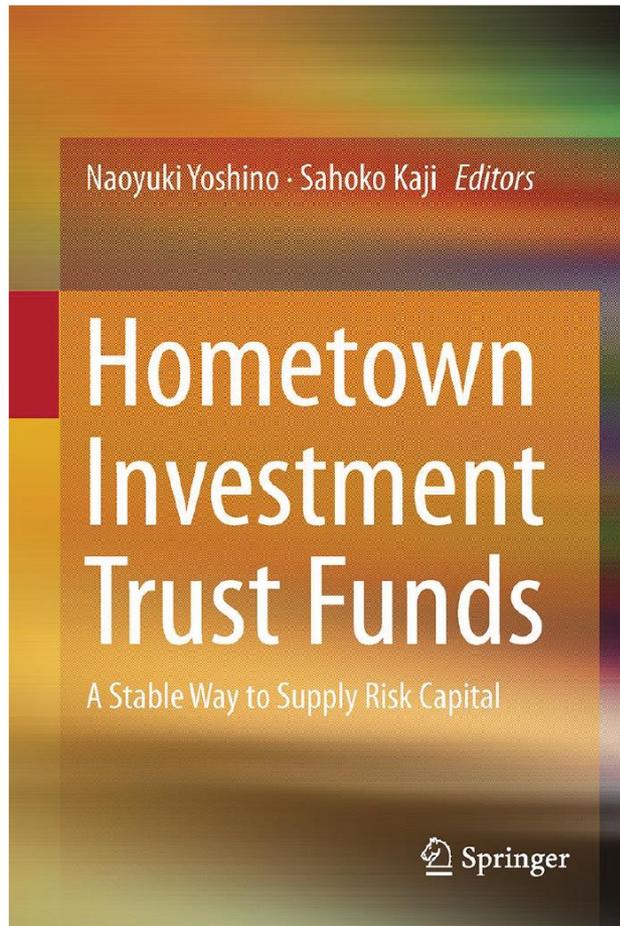[c] Associate Professor, Niigata University, Niigata, Japan

ARTICLE INFO

ABSTRACT

The major challenge for filling the financing gaps of green energy is lower rate of return of green projects comparing to fossil fuels. Electricity tariffs are often regulated by governments; It has to be kept in low price to serve for every households as a necessary goods. Sources of revenue from green energy comes only from user charges. Hence it is not so much attractive for private investors. The paper is proposing a model for utilization of the tax revenue spillover of green energy supply by returning the portion of it to green energy projects in order to increase their rate of return. In addition, the paper is proposing a social community based funding scheme for smaller scale green projects (e.g. solar and wind). The paper theoretically and empirically shows that utilizing spillover effect in form of tax return for funding green energy projects will increase the rate of return and make them feasible and interesting for the private investors.

Springer

Possible Solutions
  by use of community funds
For Risky businesses

Naoyuki Yoshino · Sahoko Kaji *Editors*

Hometown Investment Trust Funds

A Stable Way to Supply Risk Capital

Springer

ADBInstitute

ADBI Working Paper Series

**Hometown Investment Trust Funds:
An Analysis of Credit Risk**

Naoyuki Yoshino and
Farhad Taghizadeh-Hesary

No. 505
November 2014

Asian Development Bank Institute

  Hometown Investment Trust Funds

**A Stable Way to Supply Risk Capital
Yoshino, Naoyuki; Kaji Sahoko (Eds.), 2013,**
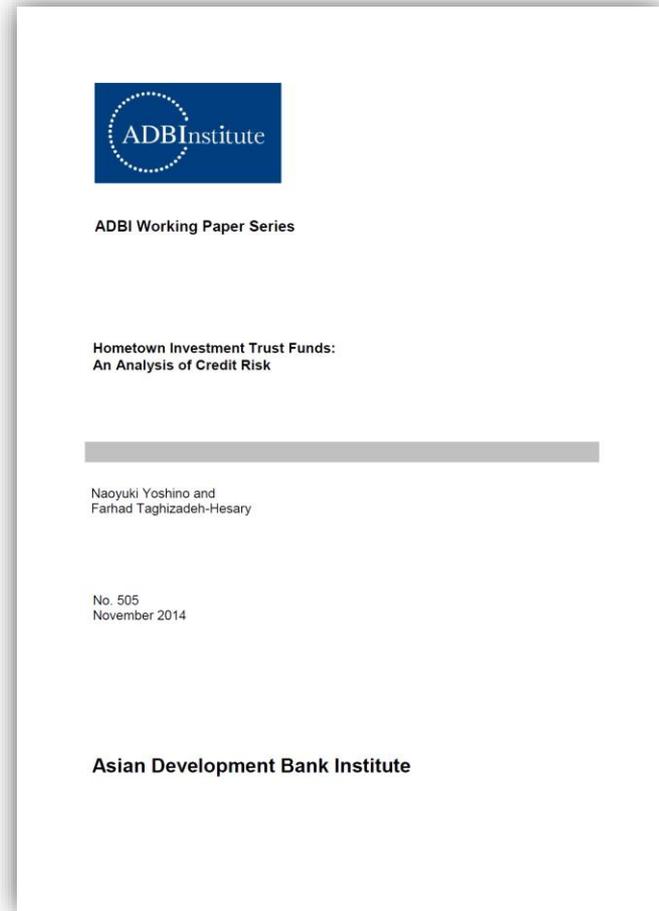
ADBI Working Paper Series

Naoyuki Yoshino and
Farhad Taghizadeh-Hesary

A **"warm feeling"** is behind the **Hometown investment trust funds (HITs)**, because investors are sympathizing with the company/project owners and their efforts and not solely seeking the profit.

Through about 40 funds, Music Securities Co. raised **1.08 billion yen for earthquake** reconstruction efforts and replacing renewable energy.

Note: Music Securities micro-investment platform, that allows users to invest in local regions or industries through HITs Japan
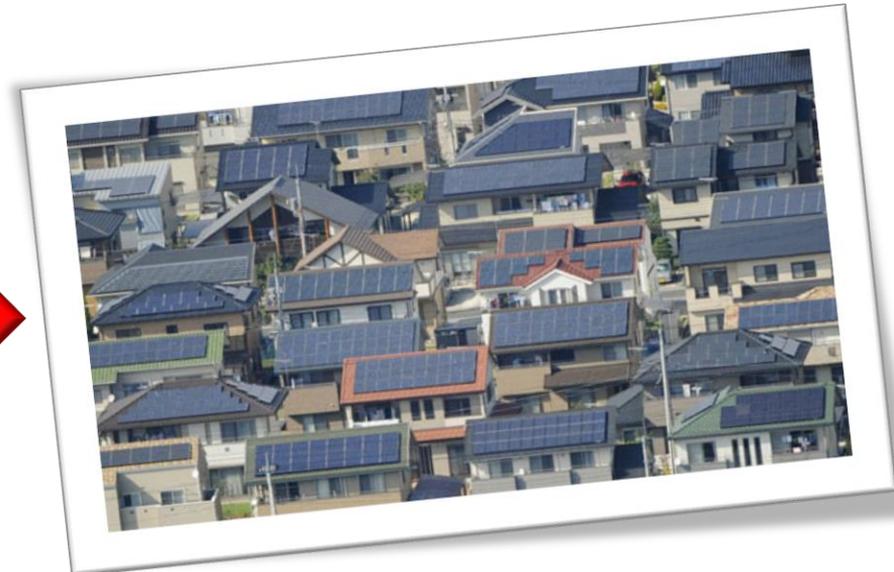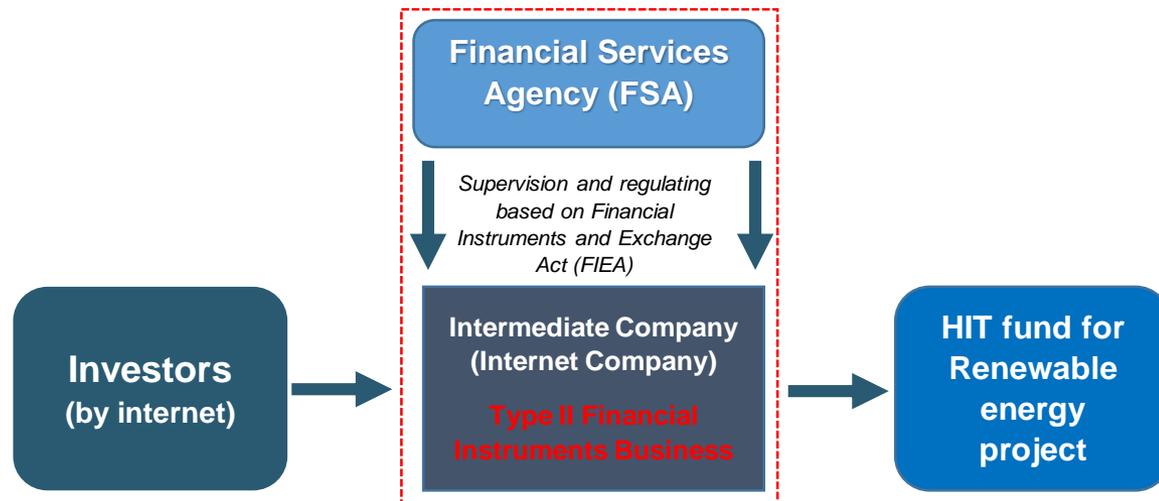
- Business owner: Easley Co., Ltd.
- Region: Nagano prefecture
-Installation location : Roof of private building around Chino city
- Installation period:
  From December 17, 2015 to March 31, 2016
- Operation period: 10 years
-Number of applicants: 74 people

Hometown Investment Trust Funds (HITs) became a national strategy in Japan under the prime minister Abe's direction

❖ Financial Service Agency of Japan(J-FSA) is regulating and supervising the micro-finance/investment companies that develop HITs. (such as Music Securities co. and etc.)

❖ Deposit Insurance corporation does not guarantee the investments in HITs.

❖ The principle and the margin is not guaranteed.

❖ The return in HITS are products (electricity, agricultural products,…) or whether liquid return (money).

Supervision of HITs' intermediate companies
(Case of Japan)

Financial Services Agency (FSA)

Supervision and regulating based on Financial Instruments and Exchange Act (FIEA)

Intermediate Company (Internet Company)

Type II Financial Instruments Business

Investors (by internet)

HIT fund for Renewable energy project

HITs = hometown investment trust fund
Source: Yoshino and Taghizadeh-Hesary (2017)

HITS are applicable to difference sectors (agriculture, fishery, renewable energy projects and export oriented SMEs)

Bid amount: ¥ 21,600
Application status: Accepting
Region: Inami-cho Hyogo Prefecture
The number of participants: 71 people
Field: Agriculture · Livestock · Forestry
Total offering: 8,400,000 yen
Recruitment period: January 27, 2017 ~ July 31, 2017
series: Hometown Investment trust Funds

IV. Conclusion and Policy Recommendations

Conclusion and Policy recommendations (1)

1. The public credit guarantee scheme is a tool to reduce the supply–demand gap in SME finance.

2. In order to avoid moral hazard and for increasing the effectiveness and sustainability of the CGS, adoption of the *optimal credit guarantee ratio* is needed

3. Optimal credit guarantee ratio is determined by three groups of variables: (i) government policies for NPL reduction and SME support, (ii) macroeconomic variables, and (iii) bank-level variables or banking behavior

Conclusion and Policy recommendations (2)

4. The optimal credit guarantee ratio should vary for each bank, or for each group of banks, based on their financial soundness.

5. Moreover, this rate should vary based on economic conditions. Governments should lower the guarantee ratio in good economic conditions where the default risk of SME loans is reduced, and raise it in bad economic conditions to protect the SME financing and economic growth.

6. Community based trust funds (e.g. HIT funds) are a suitable solution for financing risky sectors.

Reference:

1. Yoshino, N. and F. Taghizadeh-Hesary (2014). An Analysis of Challenges Faced by Japan's Economy and Abenomics. *The **Japanese Political Economy** 40: 1–26. DOI: 10.1080/2329194X.2014.998591

2. Yoshino, N. and F. Taghizadeh-Hesary (2014). *Analytical Framework on Credit Risks for Financing SMEs in Asia. **Asia-Pacific Development Journal**. United Nations Economic and Social Commission for Asia and the Pacific (UN-ESCAP). 21(2): 1-21.

3. Yoshino, N. and F. Taghizadeh-Hesary. (2015). Analysis of Credit Risk for Small and Medium-Sized Enterprises: Evidence from Asia. **Asian Development Review (ADR).** Vol. 32 No. 2.: 18-37, MIT Press.

4. Yoshino N., and Taghizadeh-Hesary, F. (2018). Optimal credit guarantee ratio for small and medium-sized enterprises' financing: Evidence from Asia. **Economic Analysis and Policy,** https://doi.org/10.1016/j.eap.2018.09.011

5. Yoshino, N., Taghizadeh-Hesary, F., Nakahigashi, M. (2018). Modelling the social funding and spill-over tax for Addressing the green energy financing gap. **Economic Modelling**. DOI: 10.1016/j.econmod.2018.11.018

6. Yoshino, N., Taghizadeh-Hesary, F., and Nili, F. (forthcoming). Fair Premium rate of the Deposit Insurance system based on banks creditworthiness. **Studies in Economics and Finance**.

7. OECD (2018). Enhancing Access to Finance for SMEs: The case of central Asia. *Unlocking Access to Finance for SMEs in Asia*. Eds. N. Yoshino and F. Taghizadeh-Hesary. London: Routledge

Thank you for your attention!
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