Improving the Financing Needs, Credit Rating of SMEs and CRD Database

Submitted by: Keio University

**APEC Ease of Doing Business 2012
Stocktake Workshop
Moscow, Russia
12-13 February 2012**

Improving the Financing Needs, Credit Rating of SMEs and CRD Database

Presented by Naoyuki Yoshino
Professor, Keio University, Japan,
March, 2012 at Moscow
yoshino@econ.keio.ac.jp

1

Outline of Presentation

1, SME dominates Asian Economy

2, SMEs are difficult to borrow money from Banks

3, Heavy reliance on Micro-credit

4, Book Keeping, Data collection

5, Financial Education for SMEs

6, Interest rate ceiling, Amount of sales

7, SME database, Information Asymmetry

8, E-Fund (E-financing) for SMEs

2

Need for the Structural Reform in Asian Financial Market

(1) "Using Asian Savings for Asian Investments" through development of **Infrastructure bond markets** to help develop bond markets in Asia.
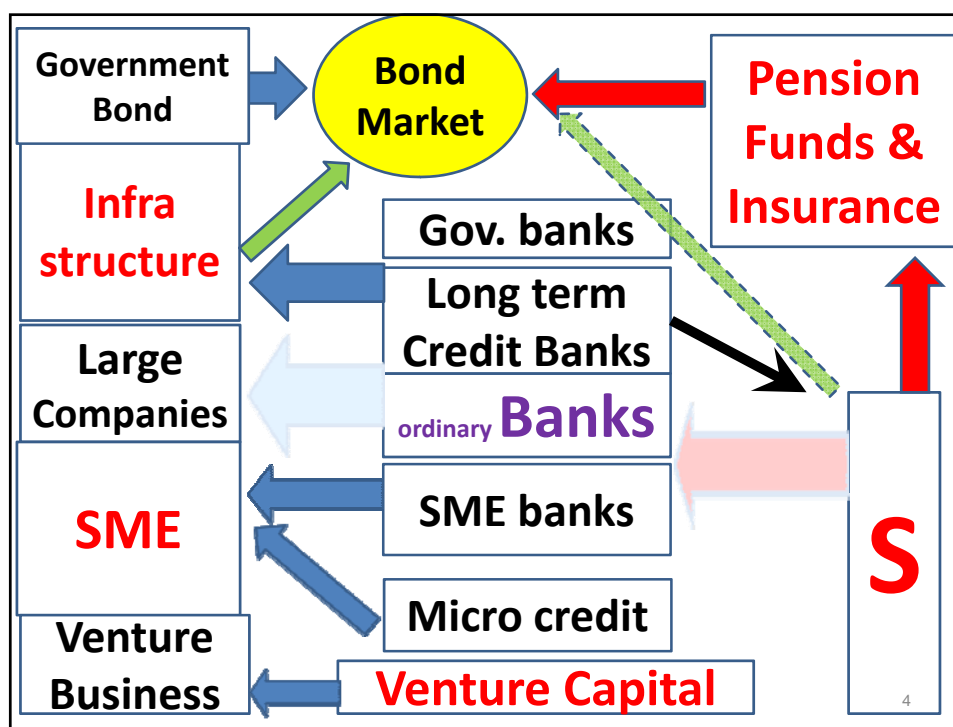
(2) To facilitate financial inclusion of SMEs, which are the most numerous type of business structure in Asia, **creating a SME database** and **developing regional trust funds**.
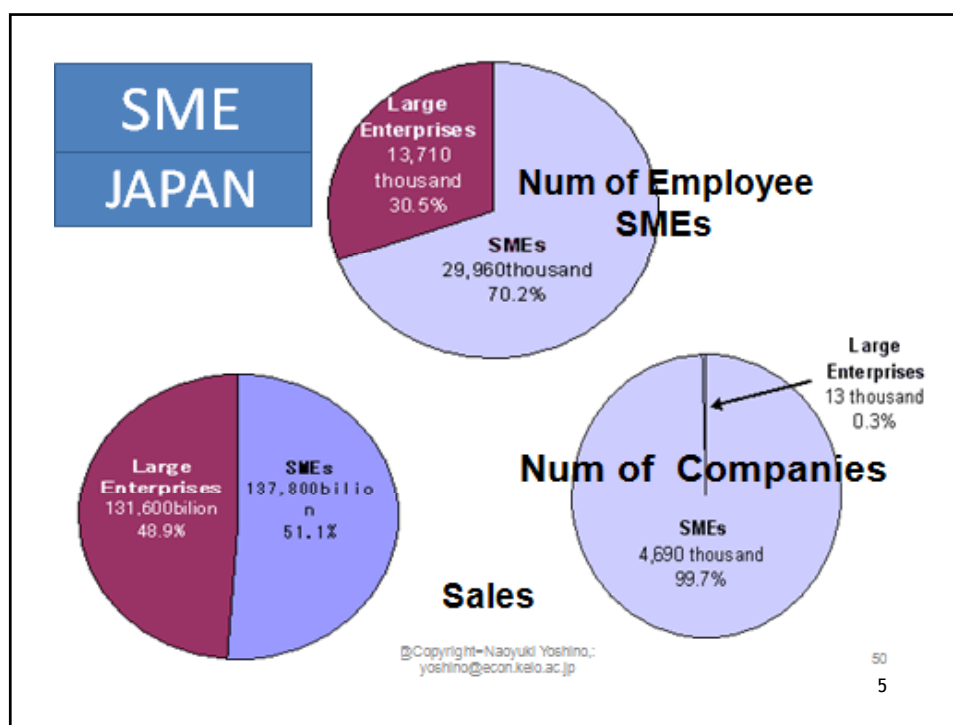
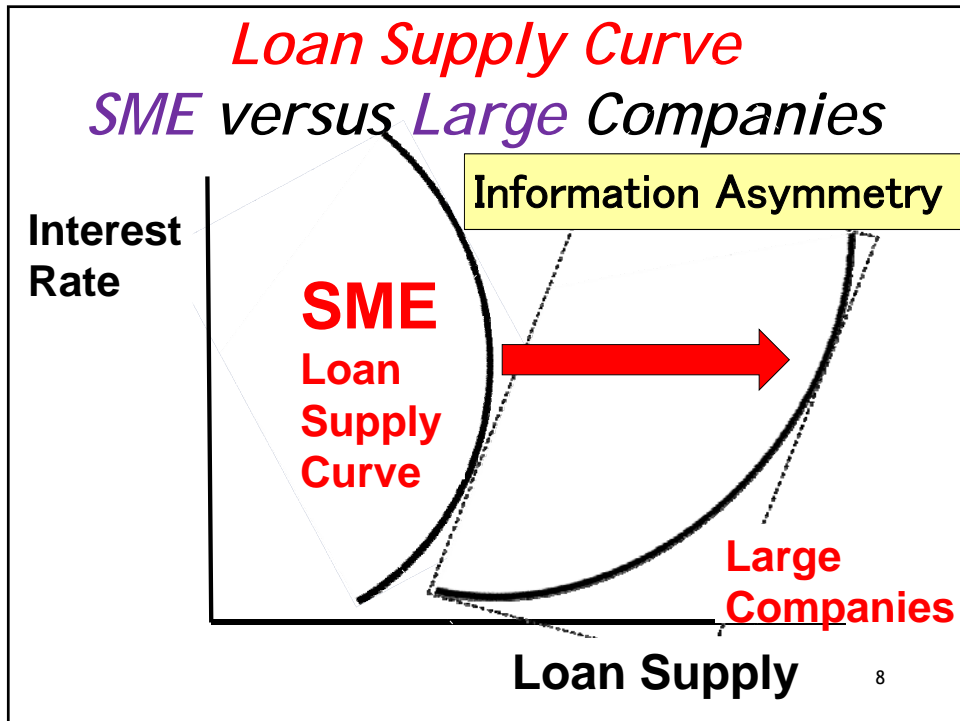**(3) Supply side of finance**: Need for long term Investors → such as **Pension funds and Insurance**

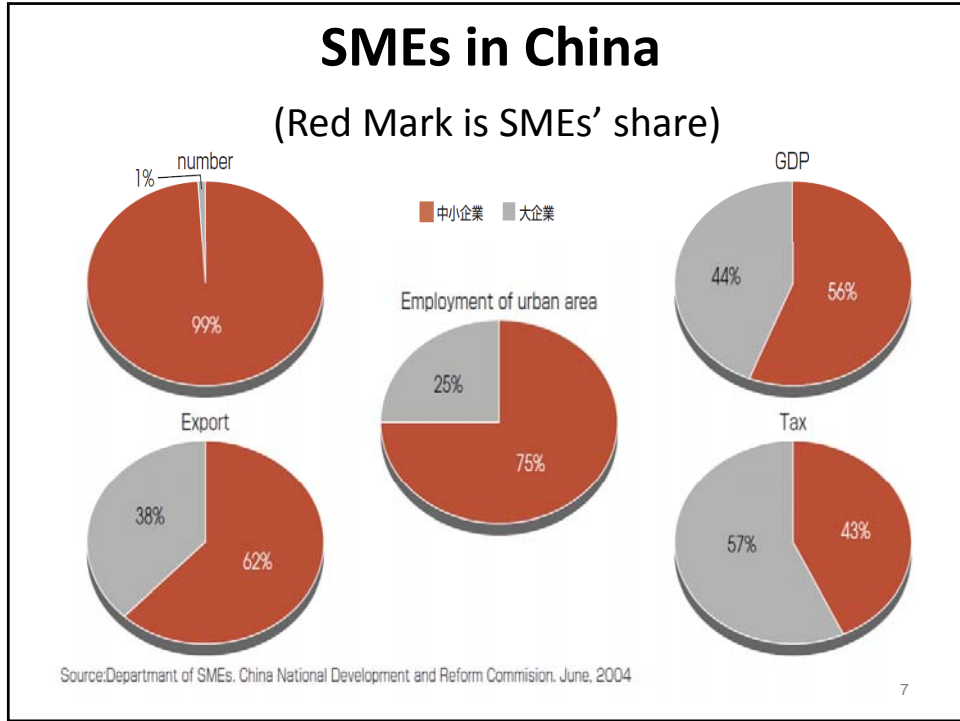## SMEs in Thailand

Type of Enterprise	No. of Enterprises (% of total)	No. of employment (% of total)	GDP Mill. Baht (% of total)
SMEs	2,366,227 (99.6%)	8,900,567 (76.0%)	3,244,974 (38.2%)
Large Enterprise and Others	9,141 (0.4%)	2,810,767 (24.0%)	5,239,226 (61.8%)
Total	2,375,368 (100%)	11,711,334 (100%)	8,484,200 (100.0%)

SMEs in China

(Red Mark is SMEs' share)

Source:Departmant of SMEs. China National Development and Reform Commision. June, 2004

7

Loan Supply Curve
SME versus Large Companies

Information Asymmetry

Interest Rate

SME
Loan Supply Curve

Large Companies

Loan Supply

8

Bank's Profit Function
$\Pi = r(L)XL - \rho(L,Z)xL - C(L)$

Subject to Balance Sheet Condition (L=D)

→**First Order Condition**

r=-r'(L)xL-ρ(L,Z))-ρ'(l)xL-C'(L)

r=d1xL-ρ(L,Z)-ρ'(L,Z)xL-C'(L)

dr/dL=d1-2xρ'(L,Z)-ρ''(L,Z)xL-C''(L)

$\quad\quad\quad\quad$ (+) $\quad$ (+) $\quad\quad$ (+) $\quad\quad$ (+)

∏=Profits, r(L)=loan rate of interest, L=amount of bank loan, D=Deposit
P=Default ratio, C(L)=Cost function of bank, Z=CRD data

9

Basel Capital Requirements
Basel III

1, Adequate Capital for Banks

2, To keep healthy

3, SME loans will decline

4, Micro credit

5, Loan sharks

6, Education to SMEs and borrowers

10

Figure 1. Bank's balance sheet

Assets	Liabilities
Bank Loans Good Assets	**Deposits**
Non-Performing Loans (NPL) Bad Assets	**Capital A(q$_2$)**

Revankar N. and Yoshino, N., (2008) "An Empirical Analysis of Japanese Banking Behavior in a Period of Financial Instability," *Keio Economic Studies*, Vol.45 No.1.
Yoshino, Naoyuki and Tomohiro Hirano (2011) "Pro-cyclicality of the Basel Capital Requirement Ratio and Its Impact on Banks " (*Asian Economic Papers, MIT Press, Vol.10,No.2*)).

11

Financial Education for SMEs
Education Program and Textbooks

1, Financial Planners Association

    Individual Borrowing

2, Central Bank of Japan

    Text books, **Educate School teachers**

    Regional Education Program

3, Various Financial Associations

    Bankers Association, Stock Exchange

12

Financial Planning for SMEs

(i) Education for SMEs

(ii) Japan's Banks provided consultation services to SMEs

(iii) Financial Education for SMEs

→Text book and Education training

→ Book Keeping

→ Data collection

13

Keeping books by SMEs

<Financial statements>

(i) Cash & deposits

(ii) Amount of Sales

(iii) Inventories

(iv) Buying price

(v) Amount of goods laid in

(vi) Various costs

Equipment and Personal costs

(vii) net profits

14

How much interest rate could SME pay ?

1, Amount of loans / Net profits

2, number of years to borrow

3, expected growth rate of sales

4, interest rate SME has to pay

5, ratio of savings out of net profits

Japan's Interest rate ceiling

  = 98% → 45% → 29% → 20% (2010)

$$rL_{t-1} + C_t = Y_t + \Delta L_t \ \dots(1)$$

$C_t = cY_t$ （c は平均消費性向）

$Y_t = (1+a)Y_{t-1}$ （a は名目所得伸び率）

$a = \dfrac{\Delta Y}{Y} = \dfrac{\Delta p}{p} + \dfrac{\Delta y}{y} =$

（インフレ率）＋（実質所得伸び率）[1]

$L_0 =$ 初期時点の借入額

$Y_0 =$ 初期時点の所得

$L_n =$ n 期時点における借入残高

_____

[1] Y=py （p；価格、y；実質所得）と表すこ

とする。L_n は（1）式に逐次代入することにより、初期の借入額 L_0 と初期の所得 Y_0、利子率 r、所得の伸び率(a)、平均消費性向（c）を用いて、以下のように書き表すことができる。

$rL_{n-1} + cY_n = Y_n + (L_n - L_{n-1})$

$\Leftrightarrow L_n = (1+r)L_0 - (1-c)Y_n$

$\Leftrightarrow L_n = (1+r)\{(1+r)L_{n-2} - (1-c)Y_{n-1}\} - (1-c)Y_n$

$\Leftrightarrow L_n = (1+r)^2 L_{n-2} - (1-c)\{(1+r)Y_{n-1} + Y_n\}$

$\Leftrightarrow L_n = (1+r)^3 L_{n-3} - (1-c)\{(1+r)^2 Y_{n-2} + (1+r)Y_{n-1} + Y_n\}$

......

$\Leftrightarrow L_n = (1+r)^n L_0 - (1-c)\{(1+r)^{n-1}Y_1 + (1+r)^{n-2}Y_2 + \cdots + (1-r)Y_{n-1} + Y_n\}$

$\Leftrightarrow L_n = (1+r)^n L_0 - (1-c)\{(1+r)^{n-1}(1+a) + (1+r)^{n-2}(1+a)^2 + \cdots + (1+a)^n\}Y_0$

$\Leftrightarrow L_n = (1+r)^n L_0 - \dfrac{(1-c)(1+a)}{(r-a)}\{(1+r)^n - (1+a)^n\}Y_0$

$L_n = (1+r)^n L_0 - \dfrac{(1-c)(1+a)}{(r-a)}\{1+r)^n - (1+a)^n\}Y_0 < 0$

$$\dfrac{L_0}{Y_0} < \dfrac{(1-c)(1+a)}{(r-a)}\left[1 - \left(\dfrac{1+a}{1+r}\right)^n\right] \dots(2)$$

$rL_{t-1} + C_t = Y_t + \Delta L_t \quad ....(1)$

$$C_t = cY_t \qquad \text{(c : marginal propensity to consume)}$$

$Y_t = (1 + a)Y_{t-1} \qquad \text{(a: Expected growth rate of net sales)}$

$a = \dfrac{\Delta Y}{Y} = \dfrac{\Delta p}{p} + \dfrac{\Delta y}{y} = \text{(Rate of Inflation)} + \text{(Growth rate of real net sales)}$ [1]

$L_0 = $ Initial amount of borrowing

$Y_0 = $ initial net sales

$L_n = $ Amount of loans at the end of n-th period.

$$\frac{L_t}{Y_t} < \frac{(1-c)(1+a)}{(r-a)}\left[1 - \left(\frac{1+a}{1+r}\right)^n\right] \cdots (2)$$

17

Credit Rating System

1, AAA, AA, BBB …………..

    Single Number

2, Various Characteristics needed to be focused on:

    (i) Growth potential

    (ii) Good Management

    (iii) Technology   etc.

3, Sudden Down-grading after Crisis

18

Credit rating for large firms

1, It is based on historical data

2, Expect future based on past data
   Future credit rating will depend on
   future exchange rate, interest rate, etc.

3, Evaluate only on current situation

4, Cannot help how to revitalize

5, Cannot advise how to change

6, Big shock cannot be dealt with (Six Sigma)

7, Only Applicable to Large corporations [19]

(i) Credit rating is **a prediction of the future state under normal economic conditions** and its effectiveness is very limited when an unexpected event occurs. The same thing can be said about credit examination and investment decisions.

(ii) If we attempted to reflect potential impacts of **unexpected events in credit ratings**, we would be unable to make such credit ratings that fit in for normal economic conditions.

(iii) Two opposite ideas about what credit rating ought to be: **ratings flexibly** responding to changing conditions and **stable ratings**. [20]

(iv) Corporate finance credit ratings are likely vary according to various factors (**changes in business results or external environments, etc.**)

(v) There is a gap between **simplicity** represented by a rating symbol and **complexity actually arising in the rating process**.

(vi) If a credit rating depends on publicly available information alone, the slow-acting effect of the rating cannot be avoided.

(viii) **Rapid and drastic downgrading of a credit rating** could make the situation even worse.

21

Quantitative and Qualitative Data

1, Credit Rating
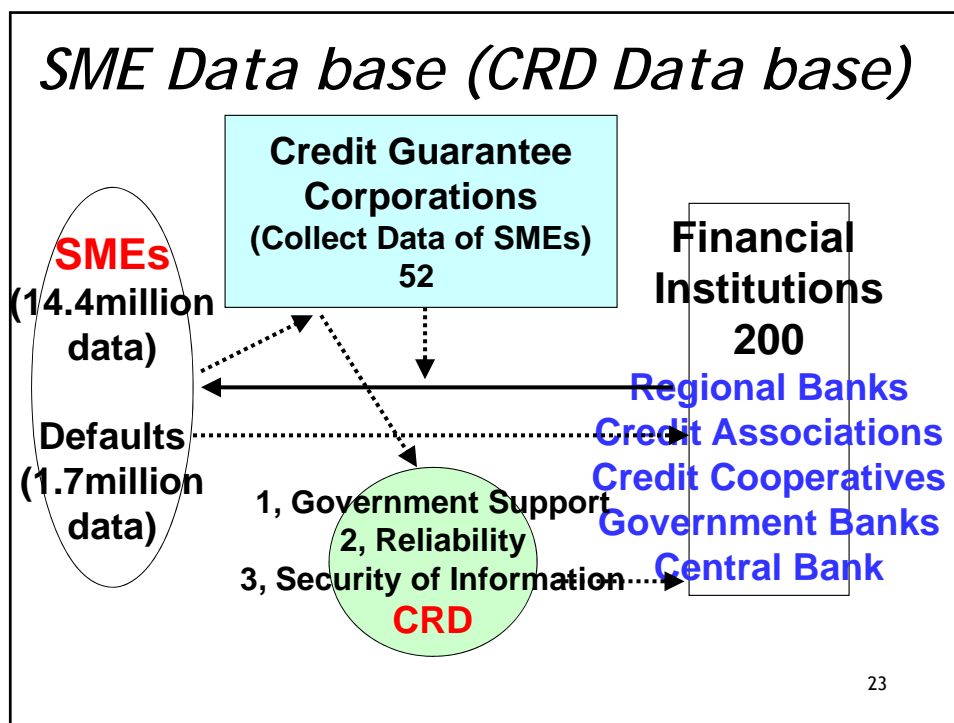
based on maily quantitative data

2, Changes in Credit Rating

→ Affects performance of company

3, → Corporate Credit Rating

→ Asset Credit Rating

22

SME Data base (CRD Data base)

Credit Guarantee Corporations
(Collect Data of SMEs)
52

SMEs
(14.4million data)

Defaults
(1.7million data)

1, Government Support
2, Reliability
3, Security of Information
CRD

Financial Institutions 200
Regional Banks
Credit Associations
Credit Cooperatives
Government Banks
Central Bank

23

Credit rating for large firms

1, It is based on historical data

2, Expect future based on past data
  Future credit rating will depend on
  future exchange rate, interest rate, etc.

3, Evaluate only on current situation

4, Cannot help how to revitalize

5, Cannot advise how to change

6, Big shock cannot be dealt with (Six Sigma)

7, Only Applicable to Large corporations 24

Credit Rating for SMEs by *Use of CRD Data*

1, Credit Rating is only applicable to large companies

2, Credit Rating for SMEs based on CRD Data

3, Five ranking of SME (Japan's case)

4, Credit Guarantee ratio is determined

5, CRD can obtain default risk ratio

6, Risk based Interest rate

25

Credit Rating of SMEs by *Use of CRD Database*

(i) Profitability capital earnings ratio

(ii) Efficiency

(iii) Productivity

(iv) Safety Liquidity ratio

(v) Growth Potential profit growth

26

CRD Database

1, Sector, Location, Year of Establishment

2, Real estates, Age of Owner

3, Successor or not

4, Financial Data

    (i) Cash & Deposits,

    (ii) Liquidity Assets and Fixed Assets

    (iii) Total Assets

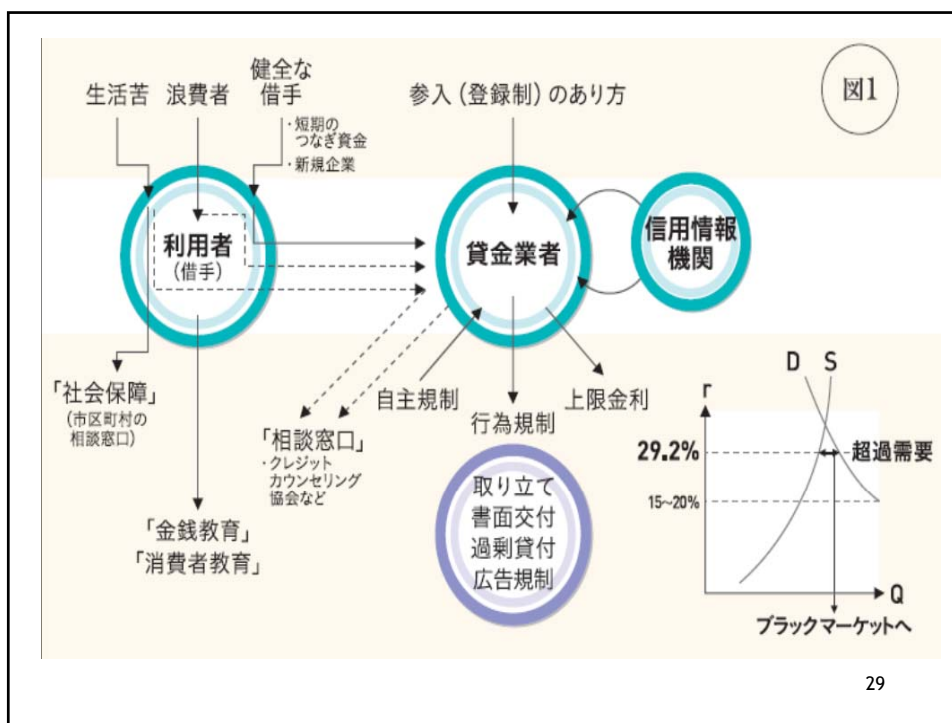   (iv) Short term and long term borrowings

    (v) Sales, Profits

27

Risk Based Interest Rate
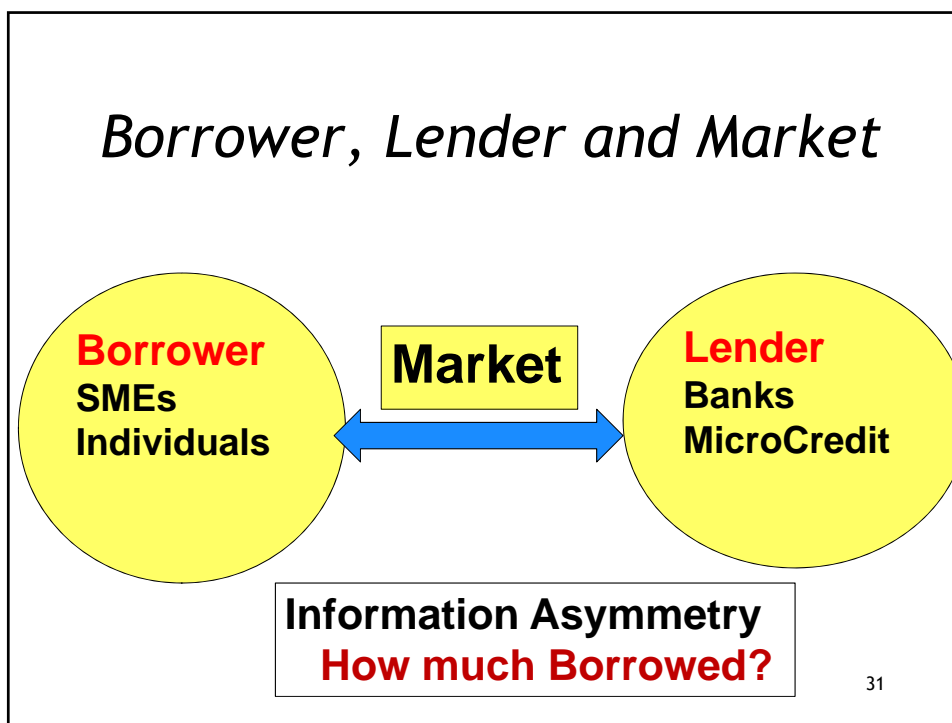
(1) General Credit Risk

(2) Credit Cost Ratio

  [Default ratio}x(1-recovery rate)

(3) Costs = Personal and Equipment

(4) Interest rate to raise money

(5) Monitoring of SMEs by banks

28

図1

Bankers and Micro credits have to provide honest service to SME borrowers

1, **Association of Micro credit companies**

was established in 2009 in Japan.

Education to money lenders

  (micro credit companies)

2, Self regulations by the Association

3, More than 50% joins the Association

30

Borrower, Lender and Market

Borrower
SMEs
Individuals

Market

Lender
Banks
MicroCredit

Information Asymmetry
How much Borrowed?

31

Asia's Characteristics

1, Large Share of SMEs (Small and Medium Enterprises)

2, Bank Dominated Market

3, Long term commitment

4, Large Share of Micro Credit

5, High Savings Rate

32

Collateral based Lending

1, Collateral --- Land and Real estate

2, Have to look at the business activities
   of borrowers

3, Tuna and other collateral

4, Bankruptcy Law

> Cannot pay back the loans
>
> Priority of lenders
>
> Sell collateral into the market

33

Bank based SME financing and Regional financing to Riskier Borrowers

1, Bank Loans to relatively safer borrowers

2, Regional mutual funds / Regional fund

E-Finance, E-Fund

Safer SMEs ← Banking Account ← Depositors

Riskier Borrowers ← Regional Funds Mutual Funds ← Investors

34
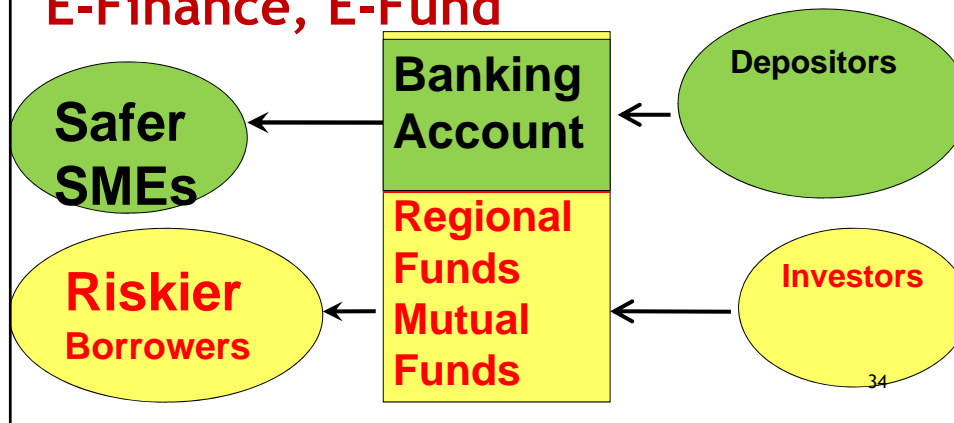
Examples of Trust Funds by Internet in Japan; E-fund

1, Solar Power Panel

2, Japanese Sake (=Japanese wine) producers' fund

3, Forest trust fund

4, Music trust fund

5, Wind Power Generator

6, Green Finance

35

Separate Accounts of SME financing

1, Traditional Bank finance

    Private banks

2, SME fund, Regional mutual funds, E-Finance

       Sell these mutual funds through

               banks' branch offices

3, Separating two accounts

   (i) Banking accounts (Guarantee by FDIC)

   (ii) SME funds, Regional mutual fund

               (non-guarantee)

36

References

Yoshino, Suzuki, Maehara and Abe (2009) *Development of Corporate Credit Information Database and Credit Guarantee System,*

ASEAN Secretariat, Feb. 2009.

Yoshino, N.(2010),OECD, Southeast Asian Economic Outlook, Fall 2010, Chapter 6

Yoshino, N., OECD-ADB, THE GLOBAL IMBALANCE AND THE DEVELOPMENT OF CAPITAL FLOWS AMONG ASIAN ECONOMIES

February 8, 2012, Tokyo, Japan 37