

**Reviving Japan:
Tackling Ageing Population
and
Need for Incentive Based Policies**

Naoyuki Yoshino
Professor of Economics, Keio University
yoshino@econ.keio.ac.jp

Outline

1, Current Money Flow of Japan, JGB

2, Increasing Budget Deficits

Social Welfare and Fiscal Transfer

3, Stability of Government Bond Market

4, Structural Reform

4-1, Tackling Ageing Population

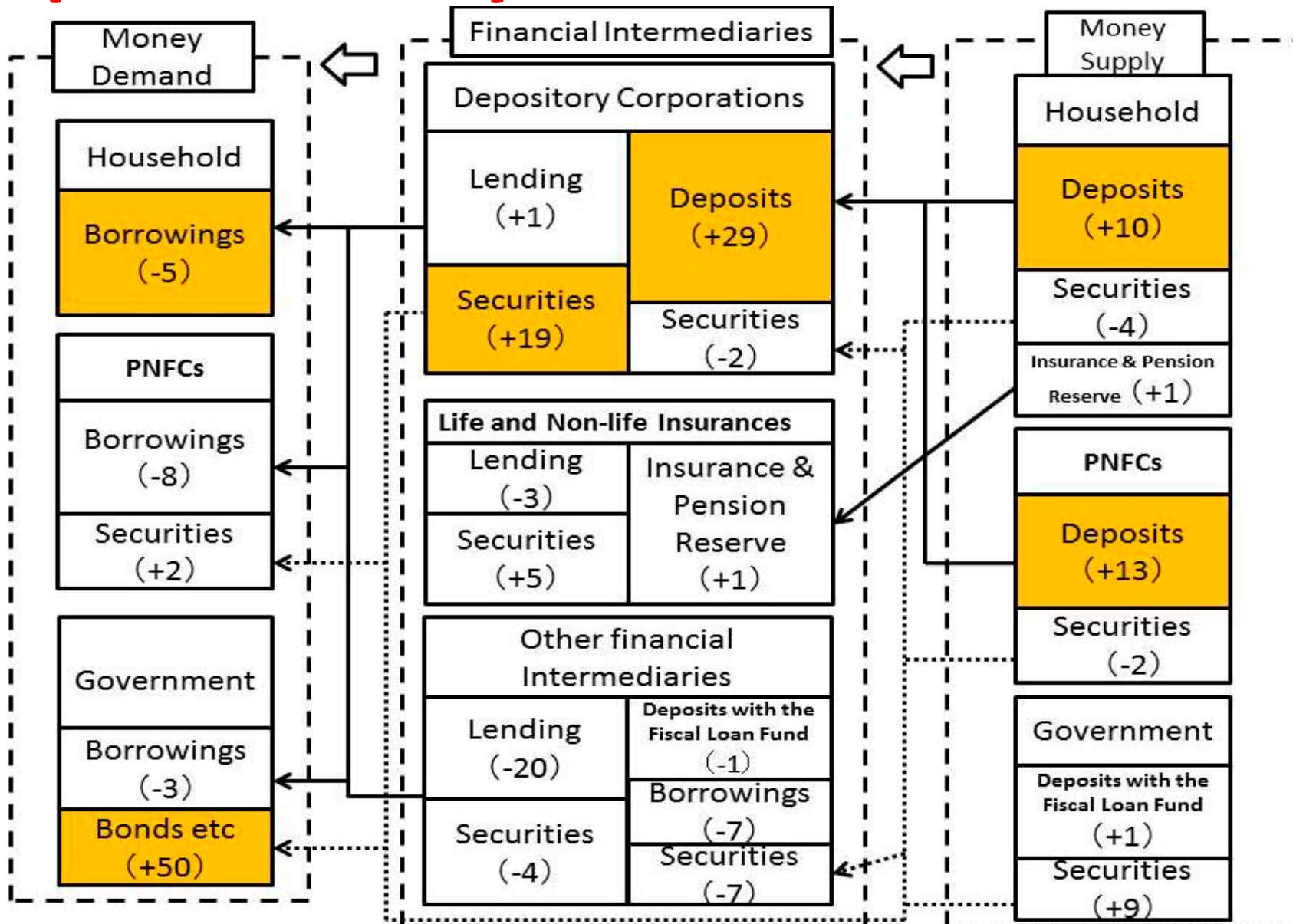
4-2, Optimal Credit Guarantee Ratio & CRD data

4-3, Hometown Investment Trust Funds (PPP)

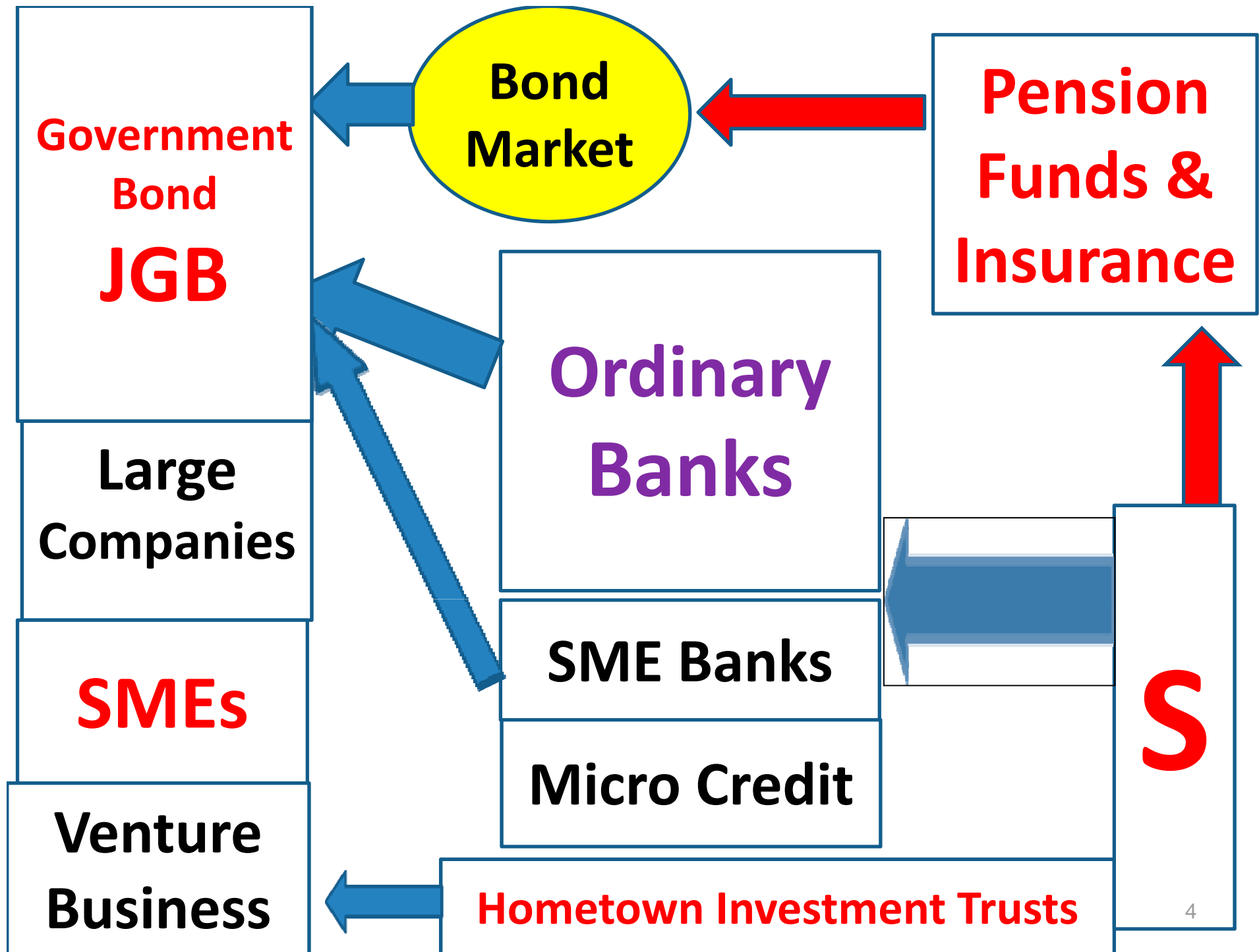
4-4, Optimal Fee Structure for Financial

Intermediaries to improve Asset Allocation

Japan's Money Flow to Government



Source : BOJ



Stop to Issue Government Bonds

Text book says

$$S \rightarrow I \rightarrow K_t = I_t + K_{t-1} \rightarrow Y = F(K, L)$$

Current Money Flow of Japan

$S \rightarrow G \rightarrow$ Elderly people (**Social Welfare**)

\rightarrow Fiscal Transfer to Local gov.

\rightarrow Interest Payments for JGB

Fiscal Discipline (5)

General Account Tax Revenues and Government Bond Issues

(Trillion yen)

120

100

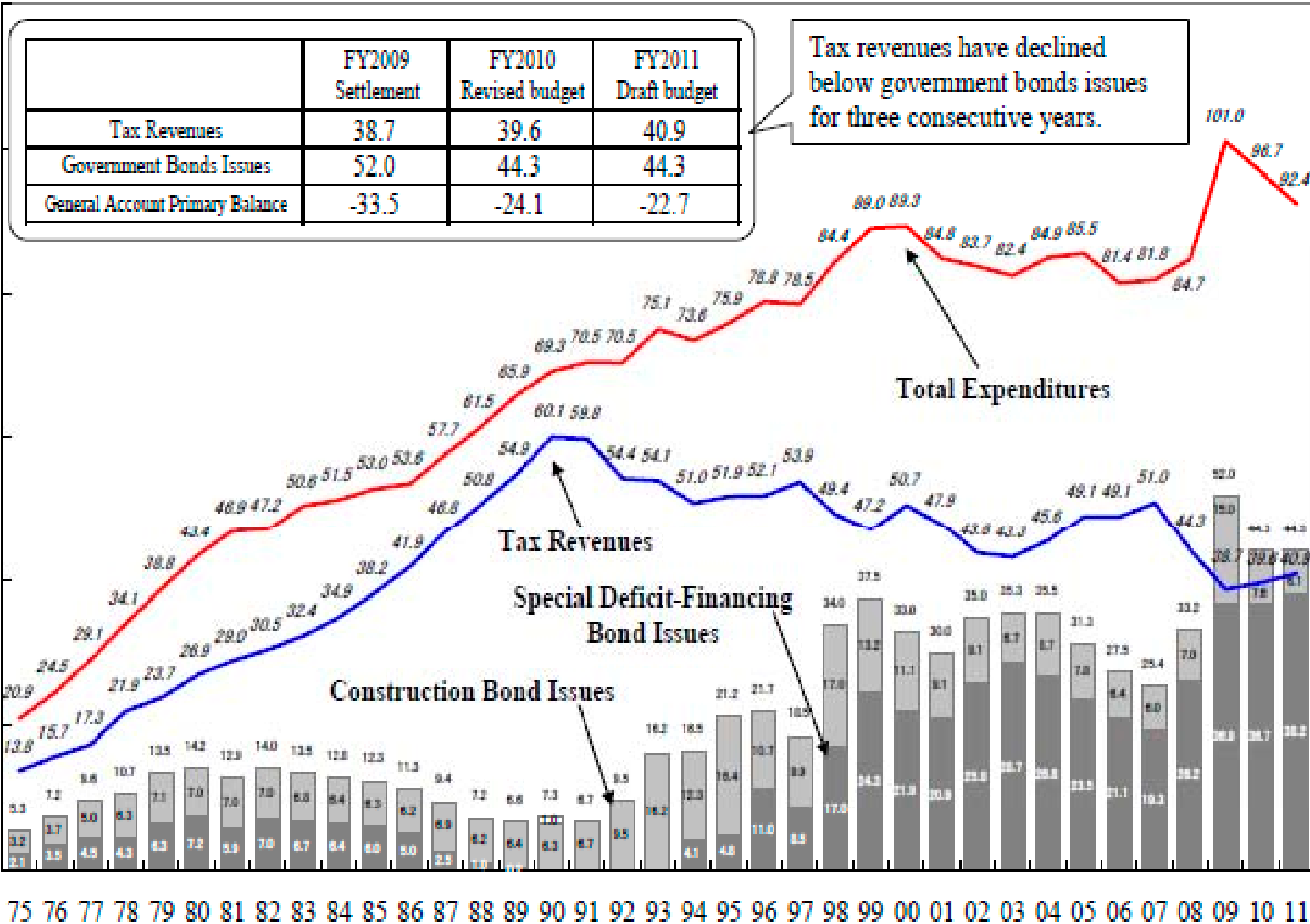
80

60

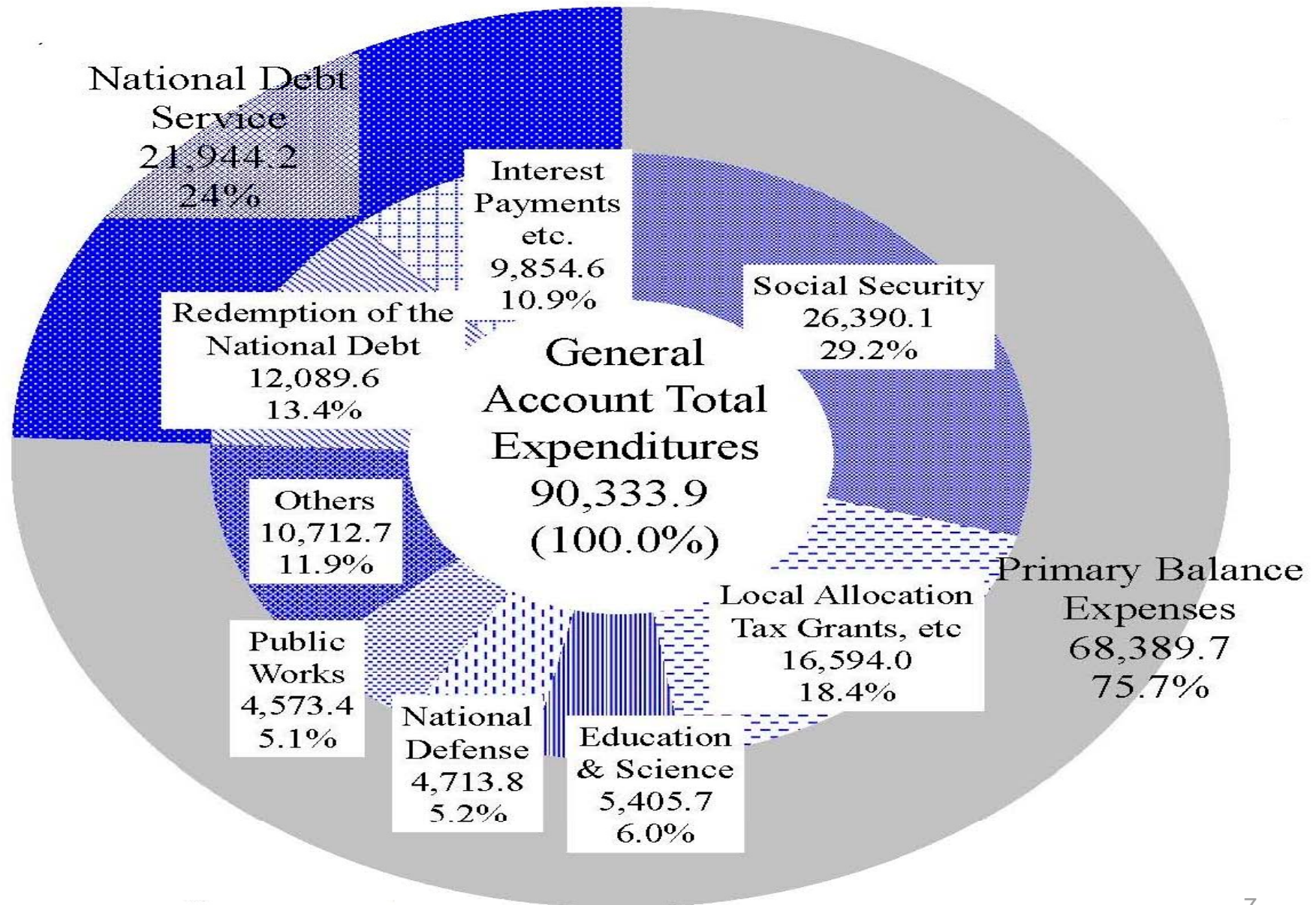
40

20

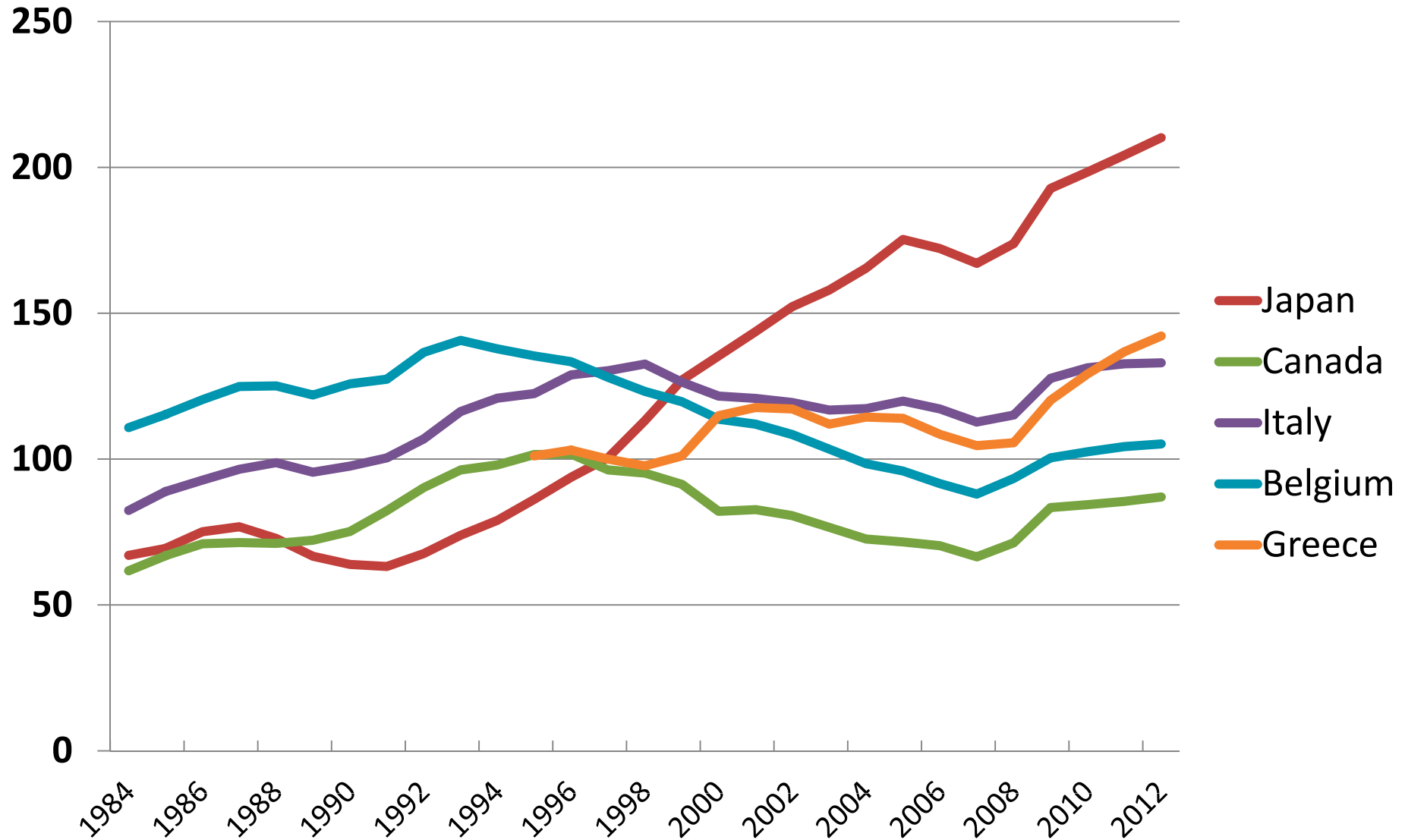
0



Government Spending of Japan

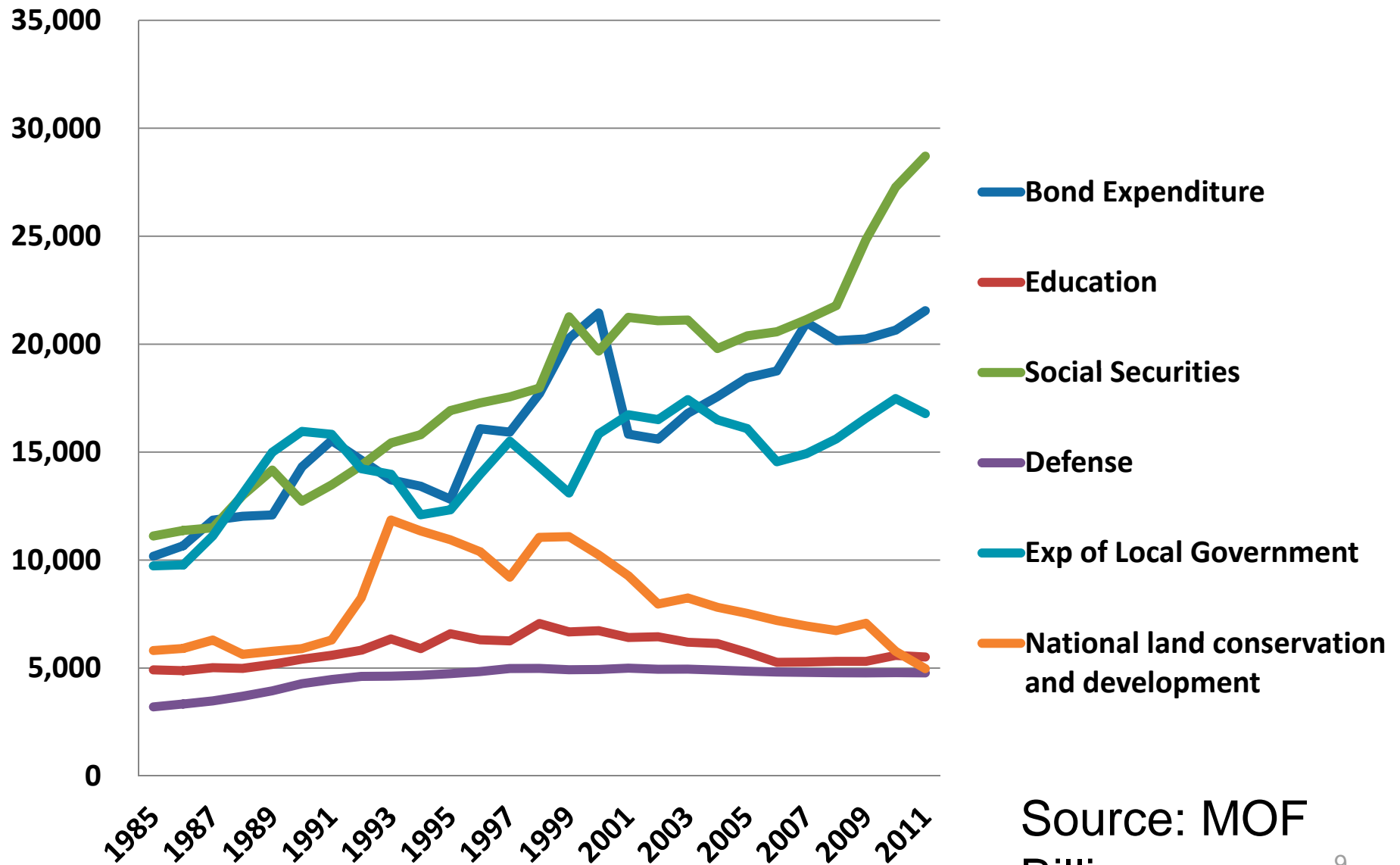


Government Debt/GDP Ratio



Source: OECD Economic Outlook

Government Expenditures, 1985-2011



Source: MOF
Billion

Greece 80% held by foreign investors

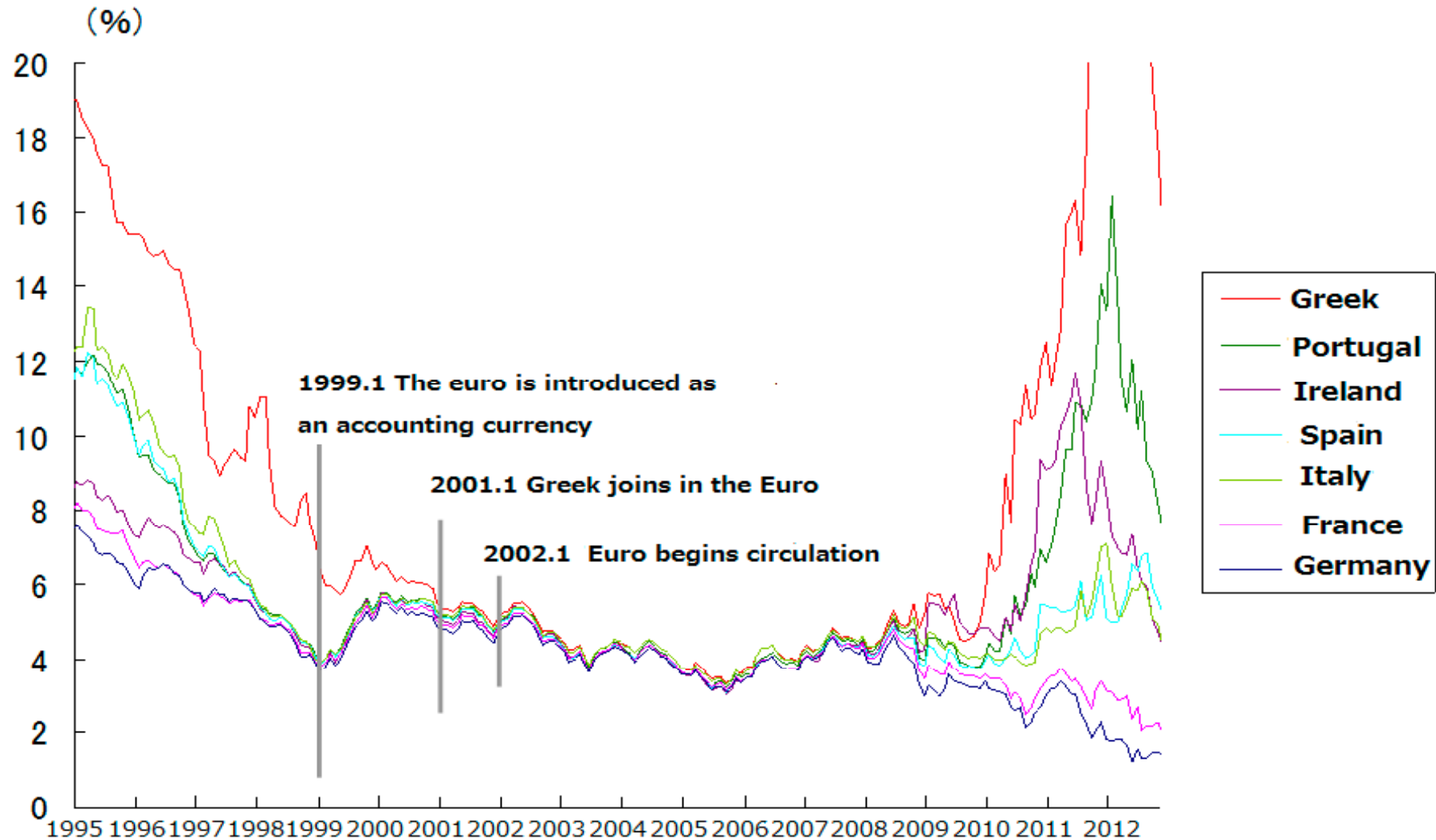
HOLDERS	%
Eurozone	15%
ECB	15%
IMF	6%
Greek banks & non-banks	23%
Other European Banks	10%
Non European Banks	8%
Non-Greek non-Banks	23%

Source: Financial Times

Japan 92% are held by Domestic Investors

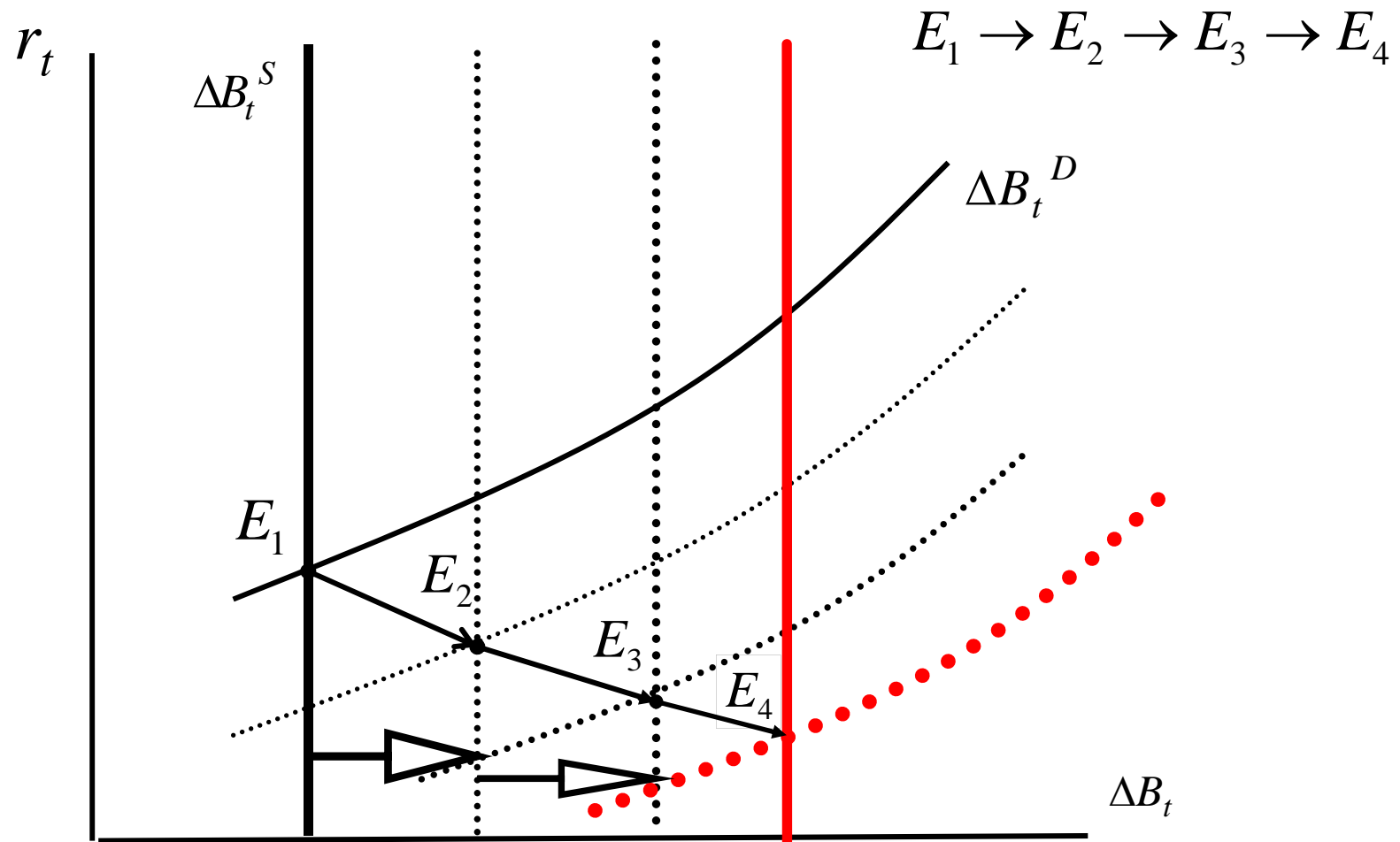
HOLDERS	%
Banks and Postal Savings	45%
Life and Non-life Insurances	20%
Public Pension funds	10%
Private Pension Funds	4%
Central Bank of Japan	8%
Overseas' Investors	8%
Households	5%
Others	3%

Interest Rate Fluctuations in Eurozone



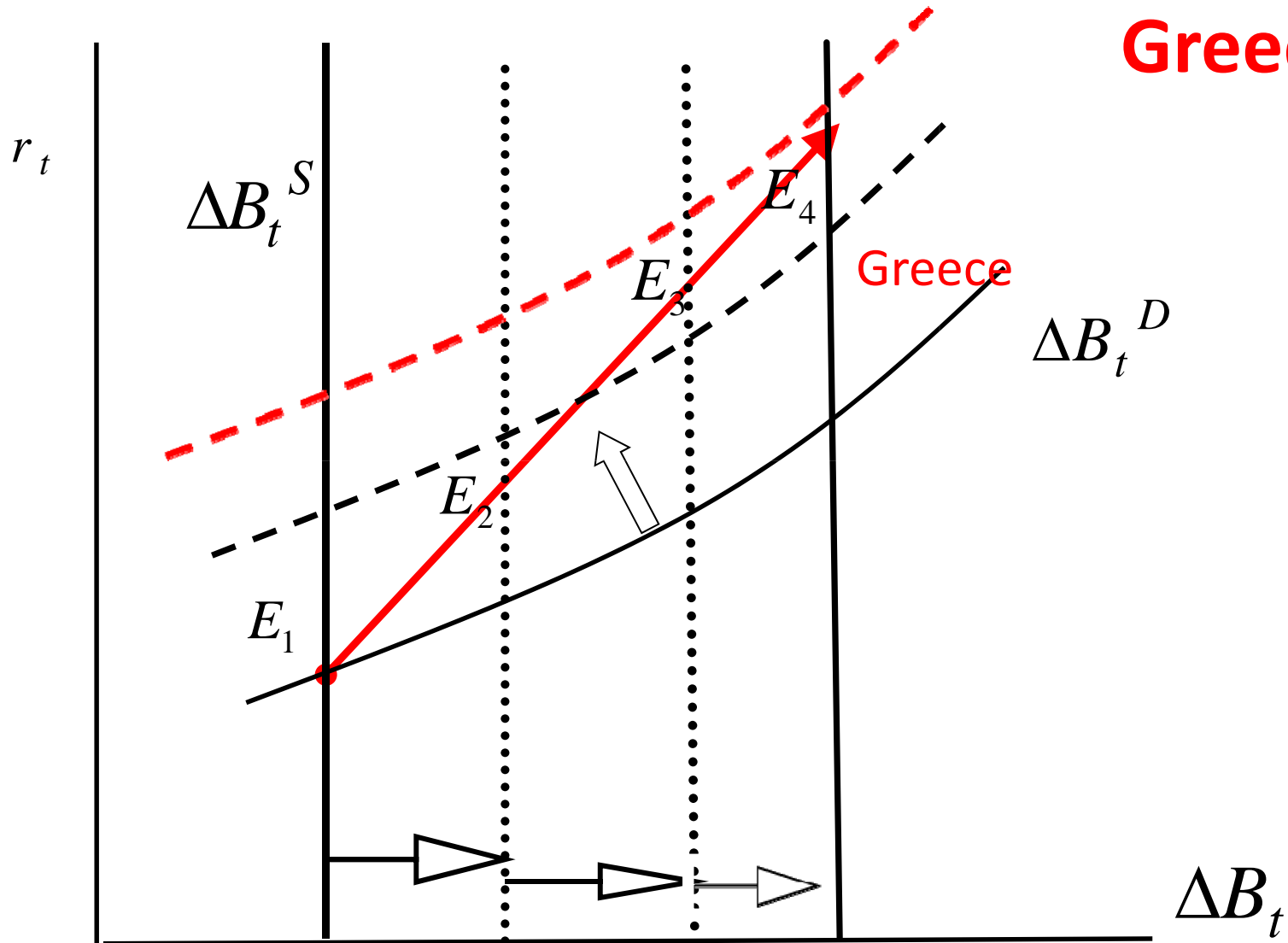
Supply and Demand for JGB, Japan

How long will it last ?



Supply and Demand for Government Bonds

Greece



$E_1 \rightarrow E_2 \rightarrow E_3 \rightarrow E_4$

Need for Fiscal Policy Rule

Our Proposed Government Spending Rule is

$$G_t = a_0 + a_1 T_t + a_2 (B_t - B_t^*) + a_3 (Y_t - Y_t^f) \\ + a_4 G_{t-1} + a_5 W_{t-1}$$

(i) the amount of tax collected T_t

(ii) Current Debt – Desired Debt

(iii) GDP-gap

(iv) the level of government spending in previous year (G_{t-1})

(v) Affordability of Financial Wealth which can be allocated to hold Government Bonds

References

- Yoshino, N. and T. Mizoguchi (2010): “The Role of Public Works in the Political Business Cycle and the Instability of the Budget Deficits in Japan,” *Asian Economic Papers*, 9:1, 94-112. MIT Press.
- Yoshino, N., (2011) “Growing Budget Deficits and Sustainability: Why is Japan still sustainable ?” *APEC, SME Economic Crisis Monitor*, July-2011 Issue, 5-6.
- McNelis Paul and N. Yoshino (2012), “Macroeconomic Volatility Under High Accumulation of Government Debt: Lessons from Japan” *Advances in Complex Systems* 2012
→ **Cut in Government Spending and Tax Increase**
- Yoshino, N. and T. Mizoguchi (2013) “Changes in flow of funds of Japan and fiscal policy rule”, *Public Policy Review*, January 2013.

4-1, To reduce Government Spendings

1, Tackling Ageing Population

asking people to keep on working

wage rate should be based on productivity

2, Complements of young and old people

give incentives to each company

3, Incentives to keep on working

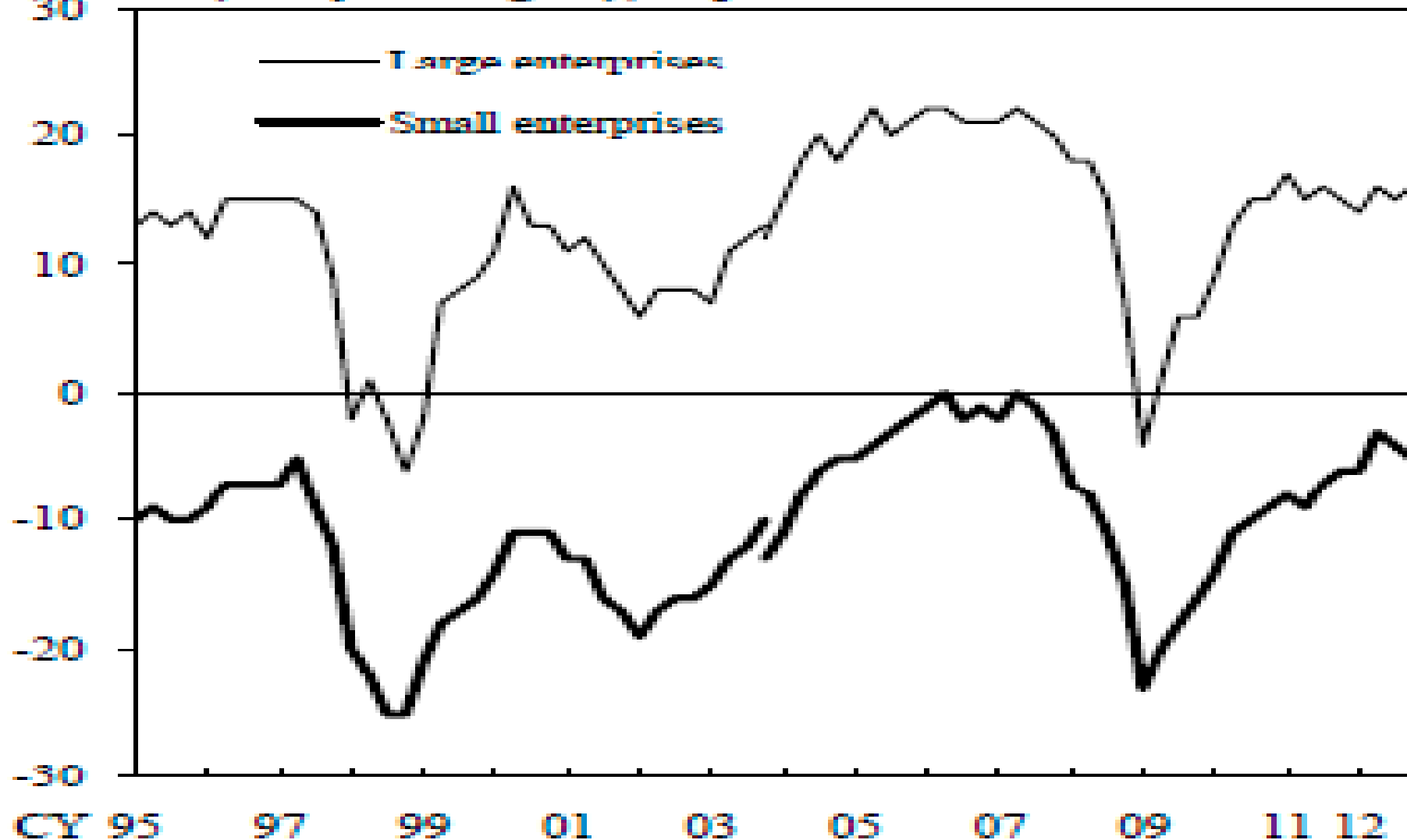
pension payments are reduced if people works

4, Huge costs of terminal care for aged people

(1) Financial Position

<Tankan¹>

DI("Easy" - "Tight"), % points



Collateral based bank lending reduces lending rate of interest

Banks' Profit Maximization

$$\text{Max. } \Pi = r_L(L) \times L - \rho(L, Z, P_L) \times L - r_D \times D - C(L, D)$$

$$\text{subject to } (1 - \rho) \times L + \rho \times L = D + A$$

$$\frac{\delta \Pi}{\delta L} = 0 \quad \text{where } P_L = \text{Land Price} = \text{Collateral Value}$$

interest rate on loans depends on collateral value

$$r_L = (1/d_1 + \rho'_L) \times L - \rho(L, Z, P_L) + r_D \times D + C'_L$$

If collateral value of land goes up, the loan interest rate becomes lower.

ρ = Expected default loss ratio, L = bank loans

Basel Capital Requirements

Basel III → Credit Guarantee

- 1, Adequate Capital for Banks**
- 2, Systematically important FIs**
- 3, SME loans will decline**
- 4, Liquidity should be maintained**
- 5, Supervision and Monitoring**
- 6, Crisis management (Bank failure)**

Figure 1. Bank's balance sheet

Assets	Liabilities
Bank Loans Good Assets	Deposits
Non-Performing Loans (NPL) Bad Assets	Capital $A(q_2)$

Capital Requirements for banks

- 1, Each country should have different capital requirement ratio for banks**
- 2, Capital requirement ratio should vary whether in boom or in recession**
- 3, Since economic structure is different from country to county**
- 4, Financial education for SMEs**

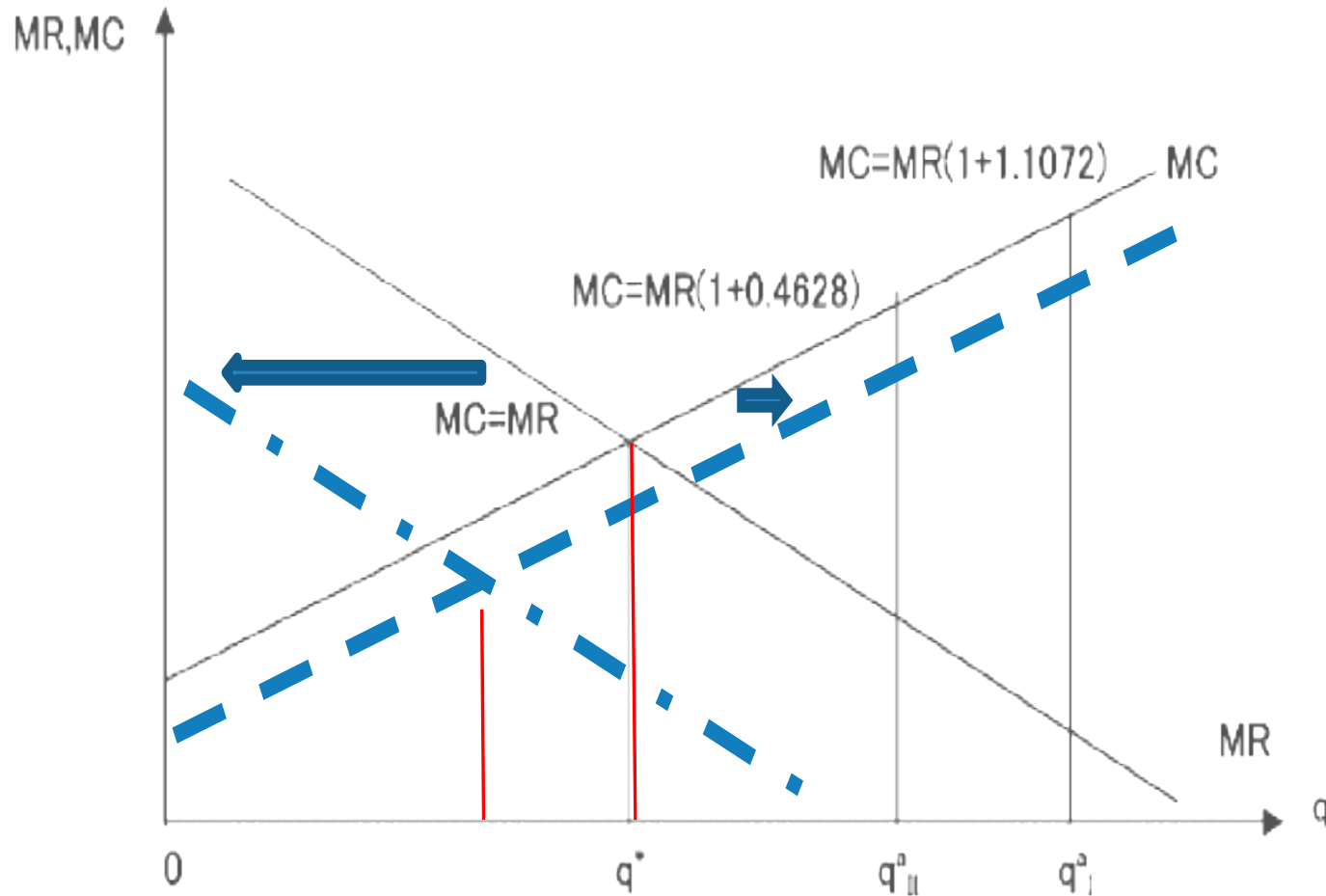
Japan's bank behavior (Loan supply)

Dependent Variable q_{it} (bankloan)	Period I (1982–1989)	Period II (1990–1995)
DEP_{it} (Bank deposit)		
		0.658 (19.69)
MS_j (Market Share)		
		0.426 (1.48)
$r_t - CR_t$ (Loan Rate –Call Rate)	16.298 (2.611)	21.351 (3.028)
CR_t (Call Rate)	8.564 (2.568)	6.755 (2.904)
BIS_{it} (BIS-ratio)		
		8.658 (2.353)
$Q_{it}^* = Q_{i(t-1)}$ (Rival Bank's Previous Period Loan)	0.066 (3.675)	0.038 (2.333)
LP_t (Land Price)	0.123 (2.546)	-1.760 (-1.449)
Constant		-36.302 (-0.874)
Adjusted-R ² 0.892, Hausman Statistic, CHI-SQUARE=0.923, P-Value=0.820		

* Figures in parentheses are t-values.

Credit Crunch of Japan

Decline in Loan demand (80%)



出所、 Revankar and Yoshino (2008)

Table 1. Estimates of Optimal Minimum Capital Requirement Ratios for Japan, United States and Canada

(1) Japan

$\theta^* = -2.20\%$ 1998 Q1 - 2008 Q4

(2) USA

$\theta^* = +4.42\%$ 2002 Q4 - 2007 Q4

$\theta^* = -1.116\%$ 2001 Q1 - 2002 Q4

(3) Canada

$\theta^* = +0.37\%$ 2003 Q1 - 2004 Q4

$\theta^* = +0.96\%$ 2006 Q1 - 2007 Q4

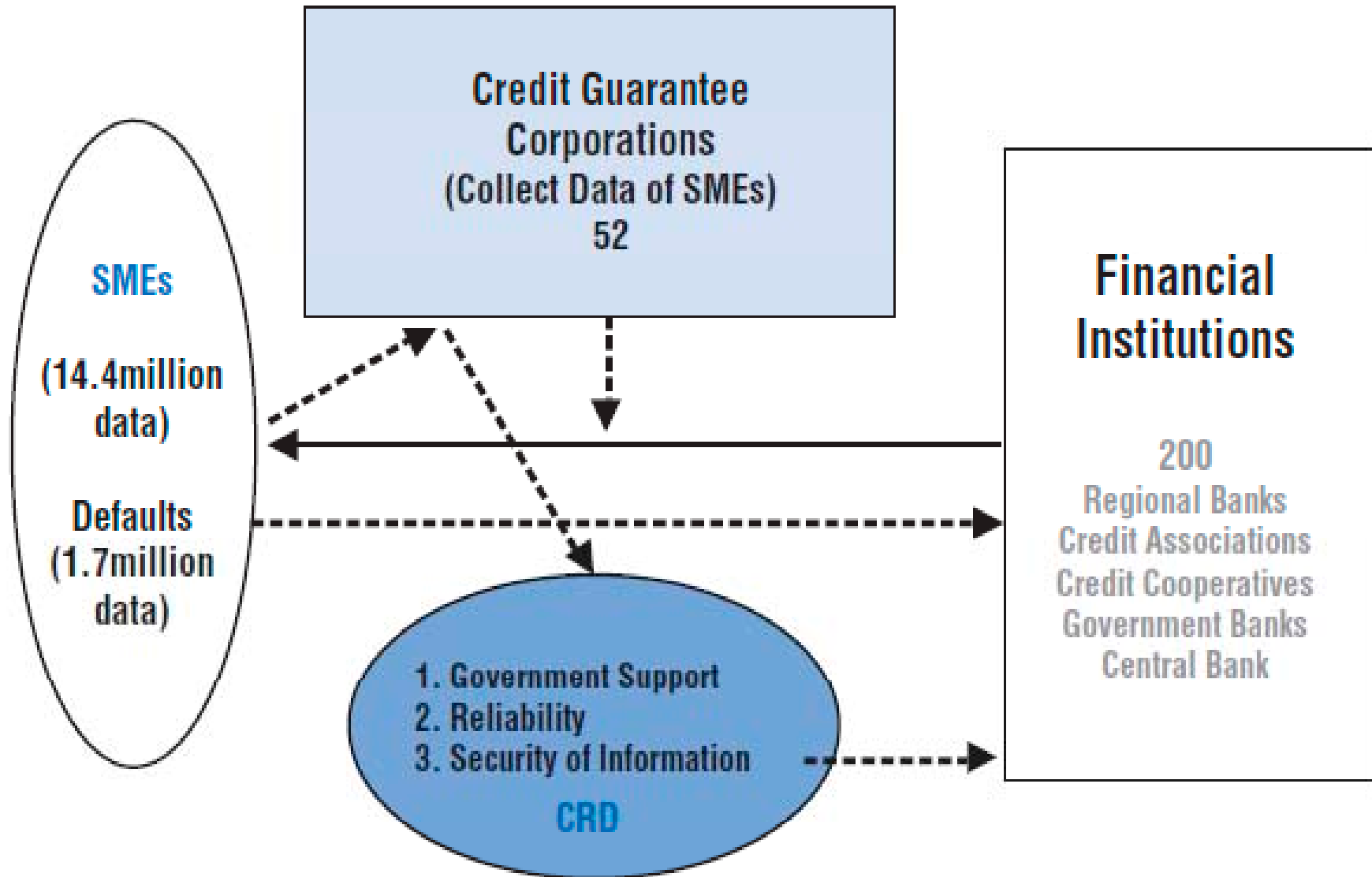
References

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)).

Yoshino, Naoyuki and Tomohiro Hirano (2013) “Counter-cyclical Buffer of the Basel Capital requirement and its empirical Analysis”, IMF, Current Development in Monetary and Financial Law, 6, Restoring Financial Stability,

Figure 15. SME Database (CRD Database)



CRD database for SMEs

- 1, Huge number of SME database**
- 2, Nationwide balanced data**
- 3, Default risk ratio can be computed**
- 4, Continuous improvement of default estimates**
- 5, CRD is a private company**
- 6, Venture capital market is not easy to develop in Asian countries**

Optimal Credit Guarantee for SMEs

Policy Objective Function

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

$$\text{where } L^*=(1+a)L_{t-1} \quad \rho^* = \alpha \times \rho_{t-1}$$

Banks' Profit Maximization

$$\text{Max. } \Pi = r_L(L) \times L - \rho(L, Z, P_L) \times L - r_D \times D - C(L, D)$$

$$\text{subject to } (1-\rho) \times L + \rho \times L = D + A \quad \text{Banks' B/S}$$

where Z= credit guarantee, PL=land price

Optimal Credit guarantee ratio is obtained as

$$Z^* = f\{(L-L^*), (\rho-\rho^*), w_1, w_2, \rho'_L, \rho'_Z, d_1\}$$

--> Optimal credit guarantee ratio is not 100%.

Hometown Investment Trust Funds

Community Type Infrastructure

Wind power Generator Funds

Japanese Wine Fund

SME Hometown Trust Fund

Large Projects and Professional Investors

Pension Funds

Insurance companies

Mutual Funds

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

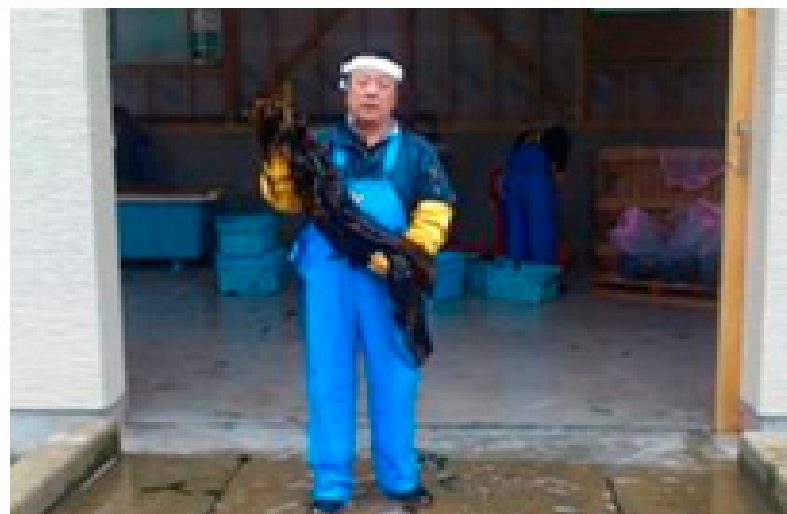
4, Music trust fund

5, Wind Power Generator

6, Green Finance



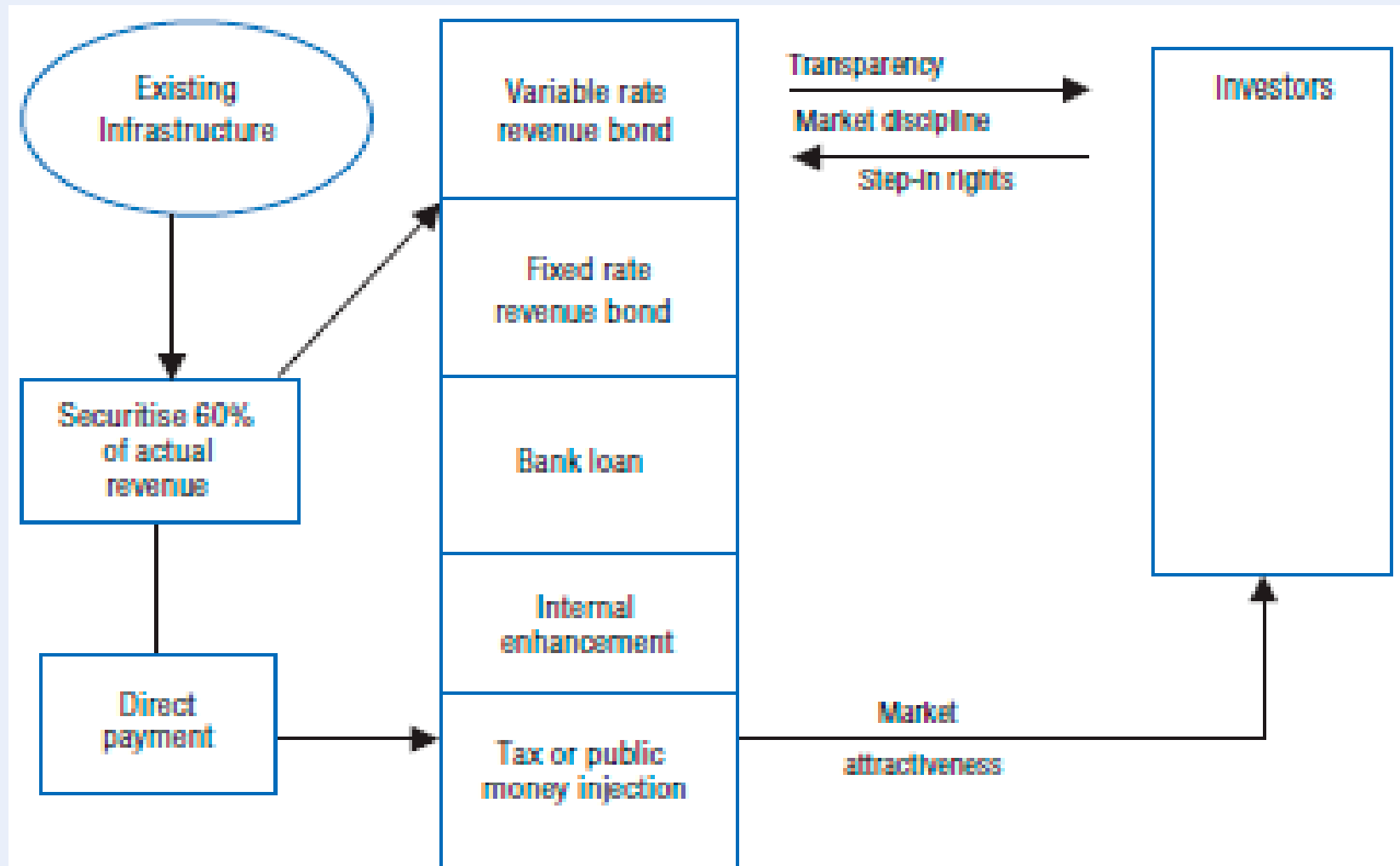
Donation and Investment to community





Box 2. Proposal for the development of a revenue bond scheme

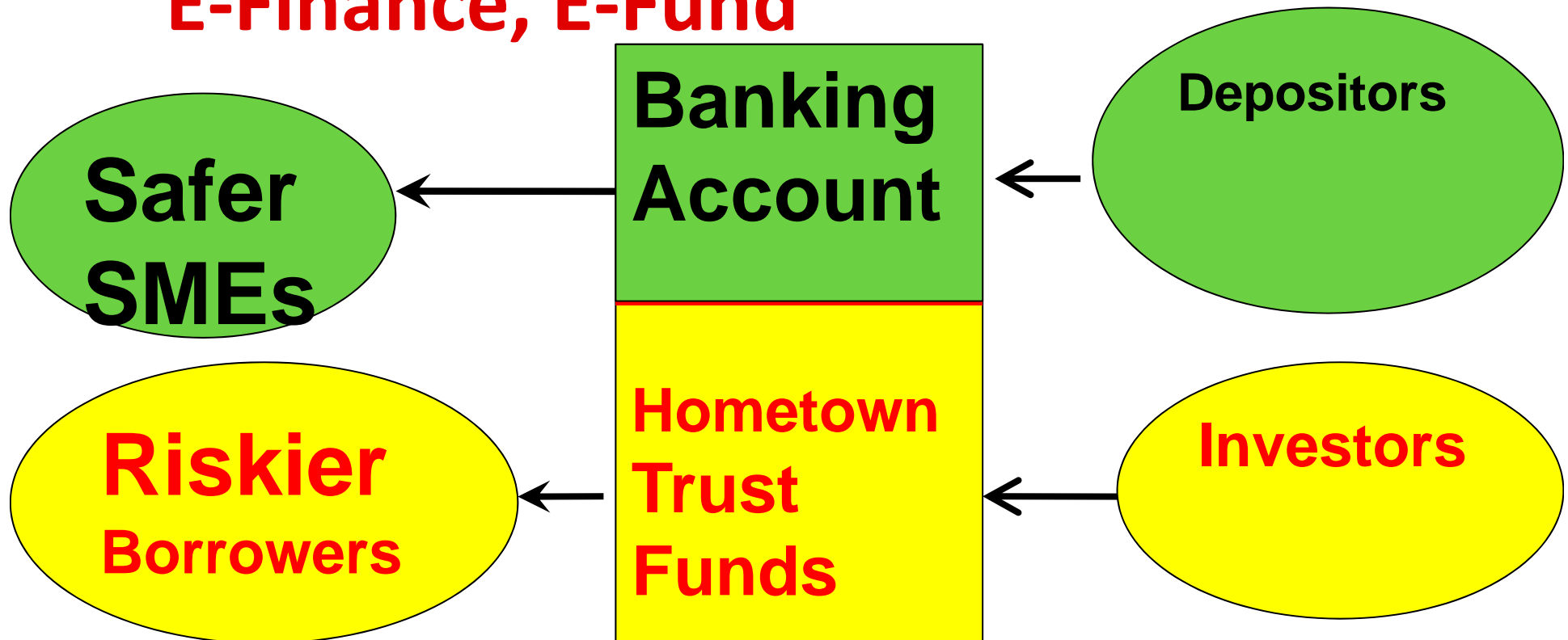
Revenue Bond Scheme in Asia



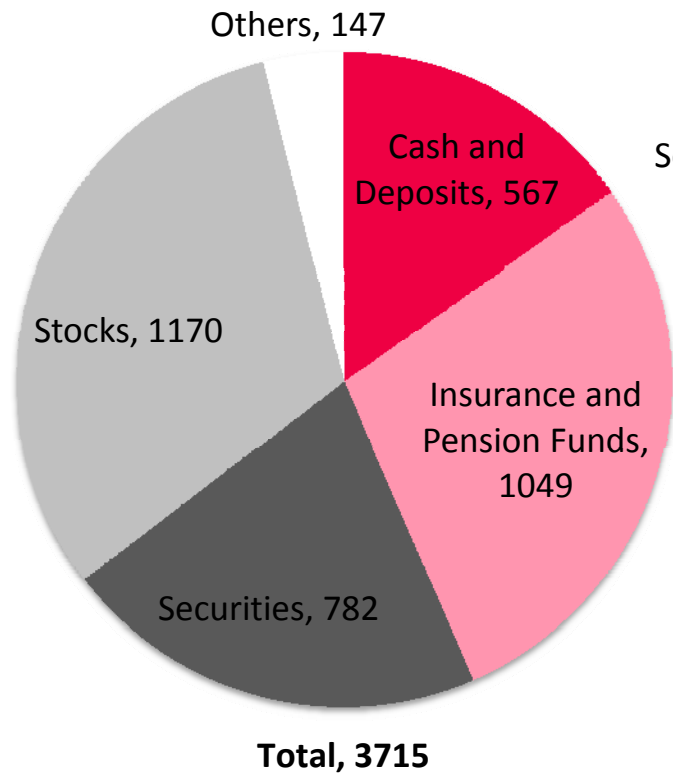
Bank based SME financing and Regional financing to Riskier Borrowers

- 1, Bank Loans to relatively safer borrower
- 2, Hometown Investment Trust Funds/

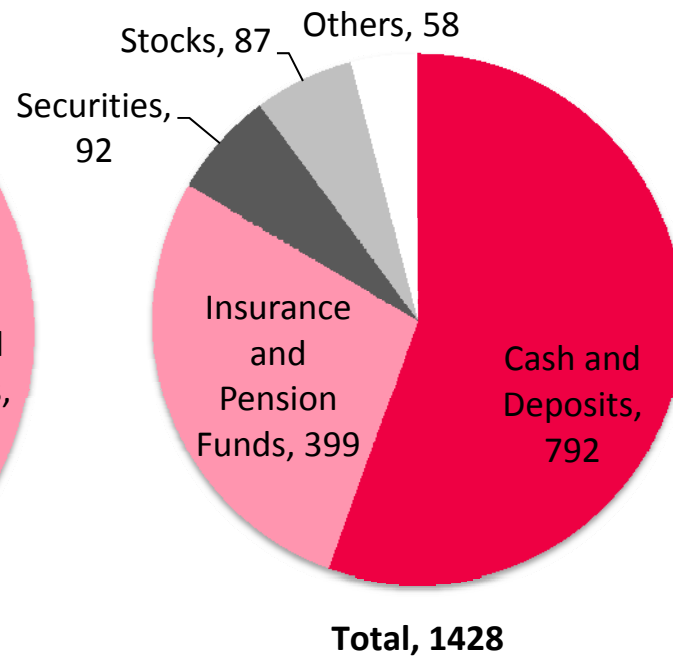
E-Finance, E-Fund



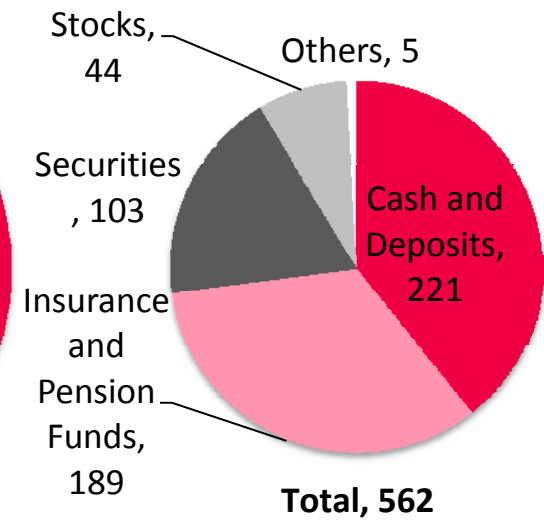
America



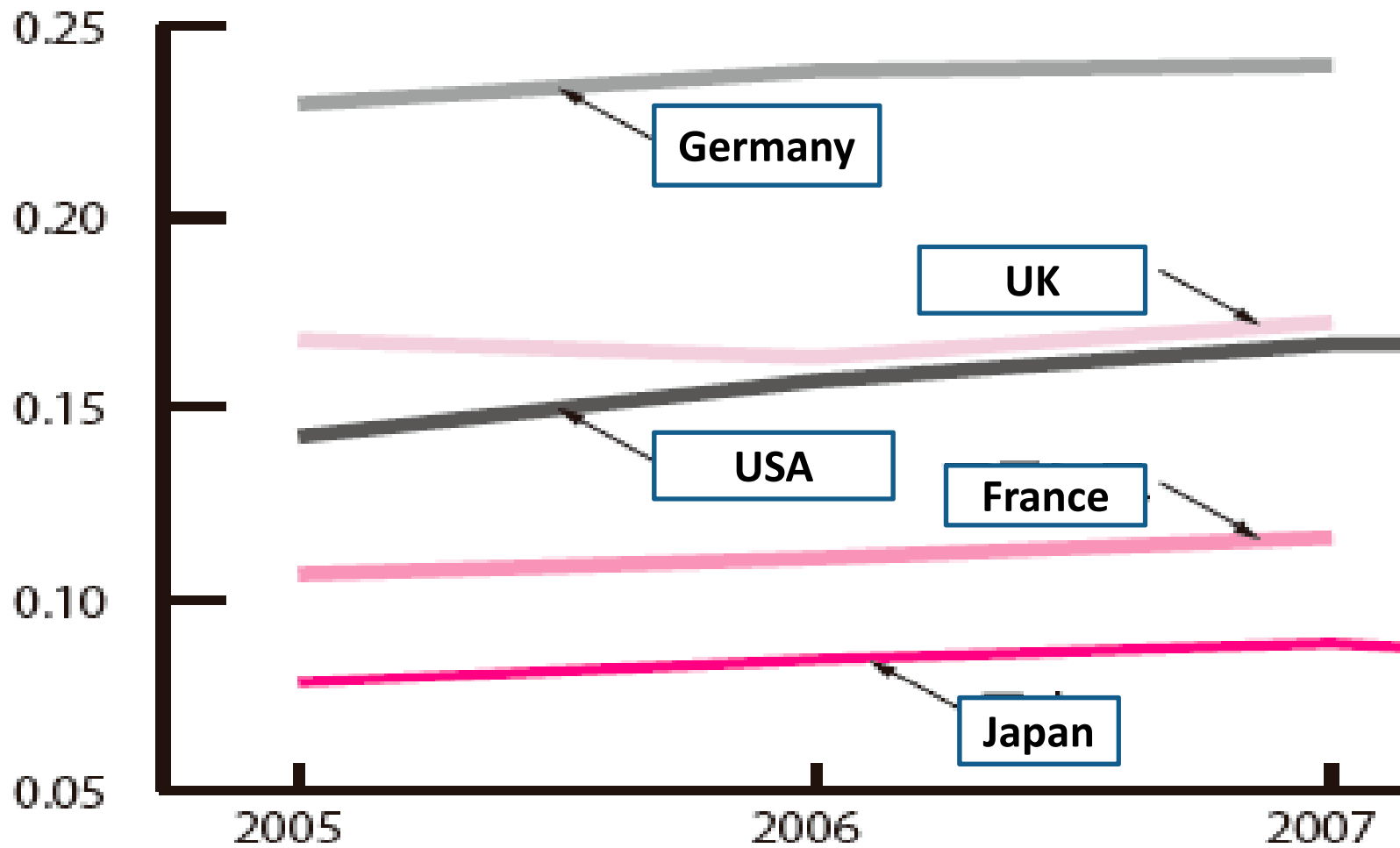
Japan



Germany



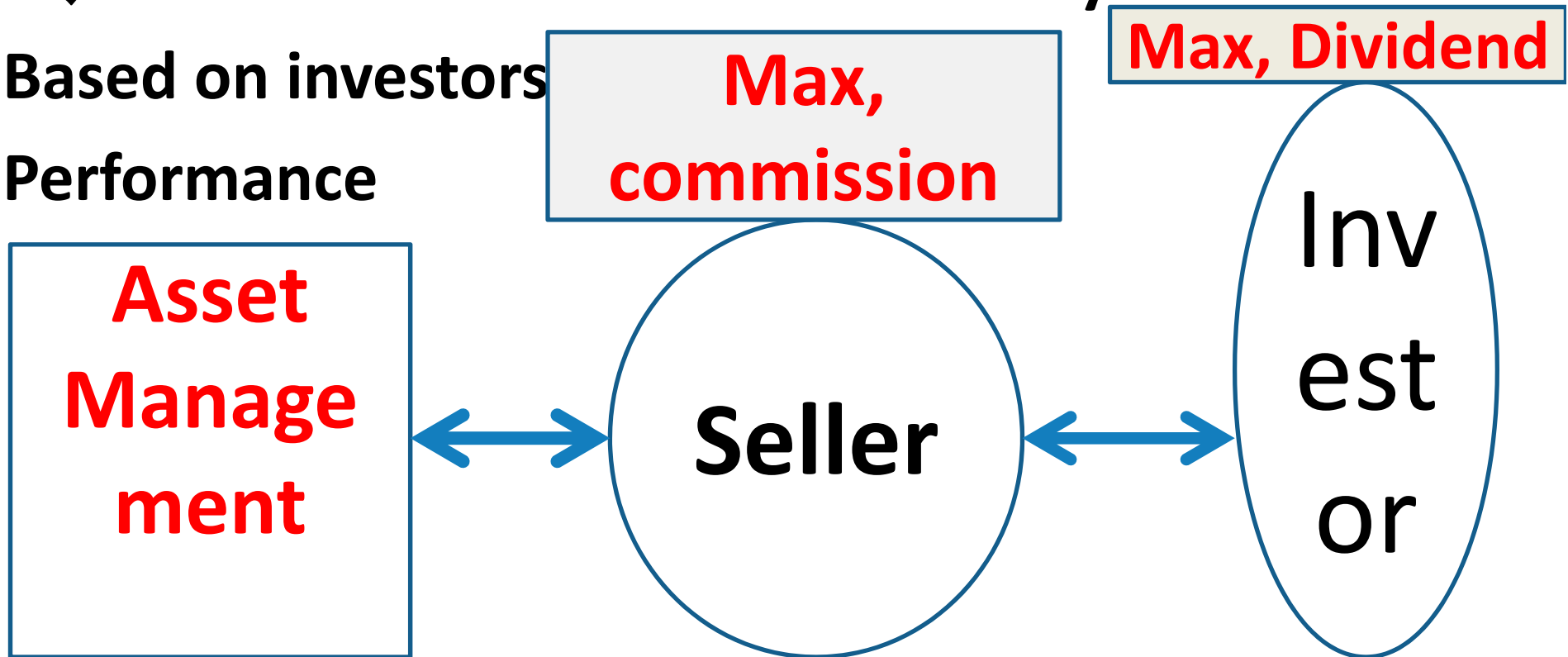
Interest and Dividends Ratio to Income



Incentive mechanism to sell better financial products in Japan

- 1、 Maximization of Commissions by sellers
- 2、 Investors -> Max. return from assets
- 3、 Fees and Commissions should vary

Based on investors
Performance

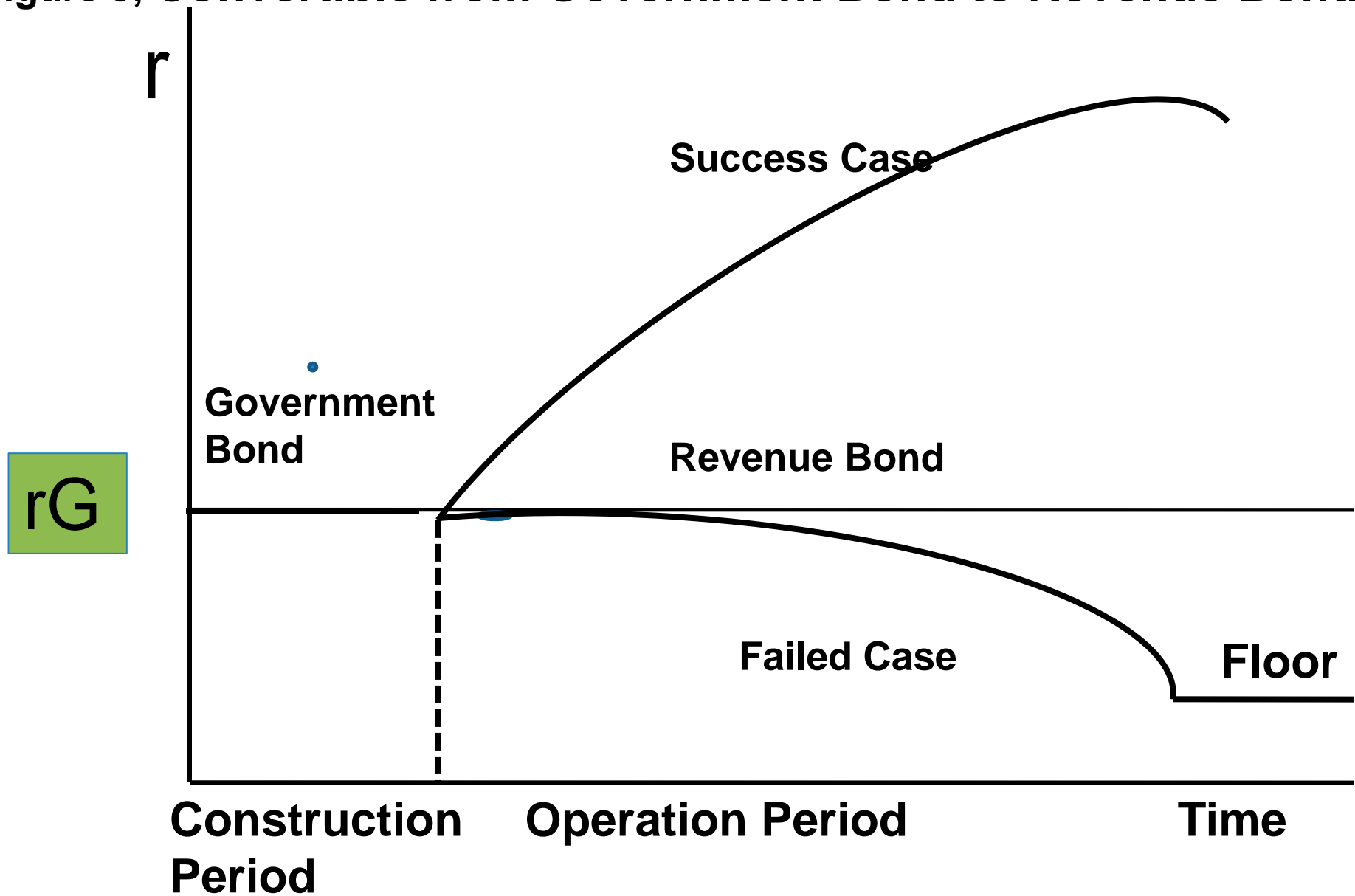


Source of Financing Infrastructure Investment

Reduce Fiscal Transfer to Local region in Japan

- (1) by tax payers' money;**
- (2) use of national savings such as national savings banks (or postal savings);**
- (3) issue government bond to construct infrastructures;**
- (4) utilizes both public money and private sector money (i.e. Public-Private-Partnership)**

Figure 9, Convertible from Government Bond to Revenue Bond



Private Sector Green Trust Fund

(1) Brown Field

Construction by the government

introduce private sector funds afterwards

(2) New Projects (Green filed)

Riskier

good to be based on market basis

References

- Yoshino, Suzuki, Maehara and Abe (2009) Development of Corporate Credit Information Database and Credit Guarantee System, ASEAN Secretariat, Feb. 2009.
- Yoshino, N. (2010) “Financing Transport Infrastructure Development in Southeast Asia” OECD, Southeast Asian Economic Outlook, 2010, Nov., Chapter 6, OECD, Paris.
- Yoshino N. (2012) “The Global Imbalance and the Development of Capital Flows among Asian Countries”, OECD Journal: Financial Market Trends, Volume 1, 2012
- Yoshino N. Kaji, S. and Asonuma T. (2012) “Choices of Optimal Monetary Policy Instruments Under the Floating and the Basket-Peg Regimes”, Singapore Economic Review, December 2012.
- Yoshino N. Kaji, S. (2013) Hometown Investment Trust Funds, Springer, March 2013

Japanese References

- 吉野直行、[日本経済の真実を語ろう]
東京書籍、2012
- 吉野直行「金融経済」、慶応義塾大学出版会
2013