

Depopulation/Aging and Development

How should we capture it, cope with it?

(For Discussion Meeting with Delegates from NESDB, Thailand)

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Part I

Trends, Issues

World Population Dynamics (from UN Population Projections)

- World Population: 2.5 bil. (1950); 6 bil. (2000); **9.1 bil. (2050)**
Developed: 0.81 bil. (1950); 1.19 (2000); **1.25 (2025); 1.24 (2050)**
Developing: **6.66 (2025); 7.84 (2050)**
- Growth Rate of Population: 1.8% p.a. (1950-2000);
0.8% p.a. (2000-2050)
- (Gross) Birth Rate: 37.5/1000 (1950-55); 22.5/1000 (1995-2000);
13.8/1000 (2045-50)
- Total Fertility Rate: 5.02 (1950-55); 2.79 (1995-2000); **2.05 (2045)**
- Life Expectancy: 46.6 (1950-55); 64.6 (1995-2000); **75.1 (2045-50)**
- Rate of Population Aging (% of 65 and over in Population)
Developed: 7.9% (1950); 14.3% (2000); **25.9% (2050)**
Developing: 4.1% (1950); 5.9% (2000); **14.6% (2050)**
- Population of 65 and over in Developing Countries:
66.8 mil. (1950); 250.3 mil. (2000); **1.14 bil. (2050)**
59.4% ; **78.1%** of World Aged

In Need of Changing Mentality

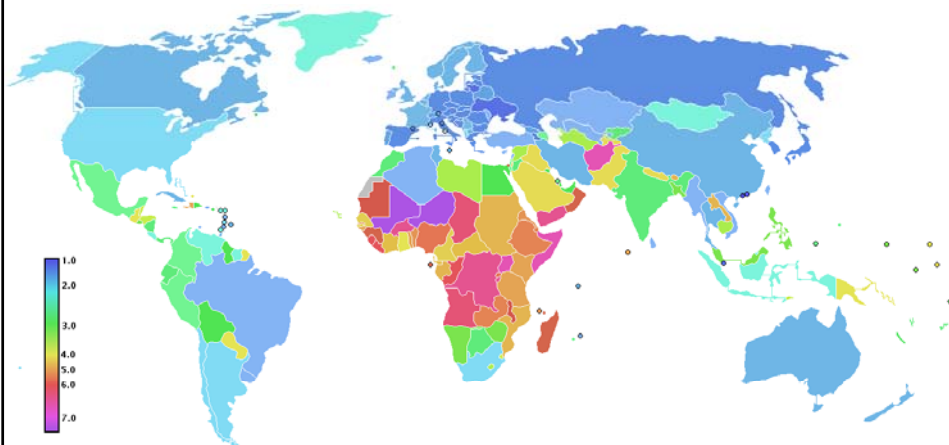
- 20th Century

- Population Explosion
Low Income
Equilibrium Trap
- Population Bonus
Demographic
Dividend

- 21st Century

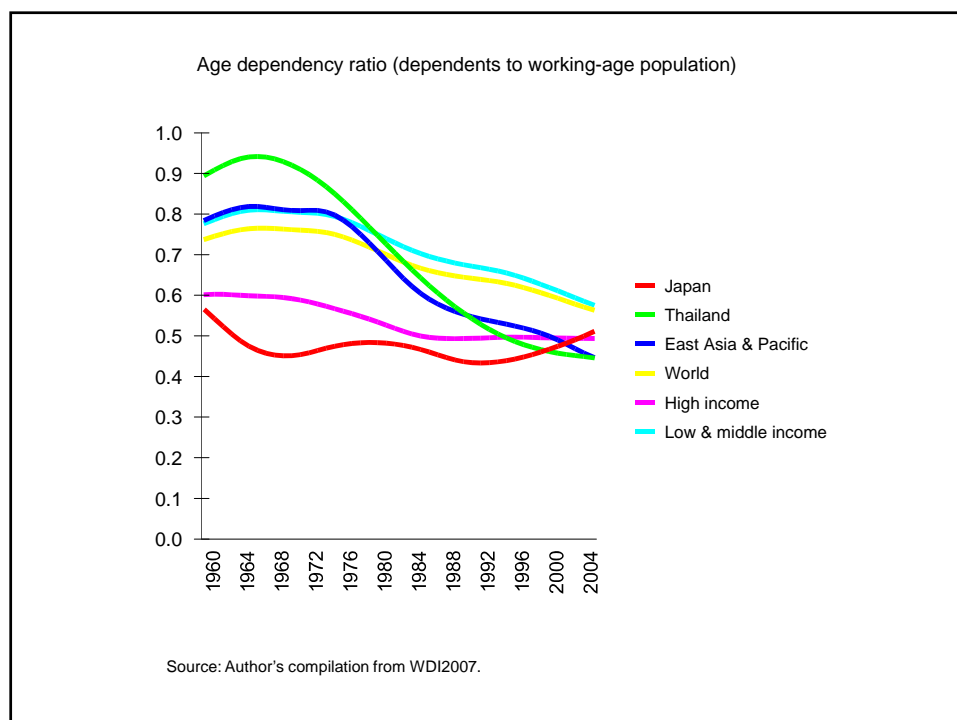
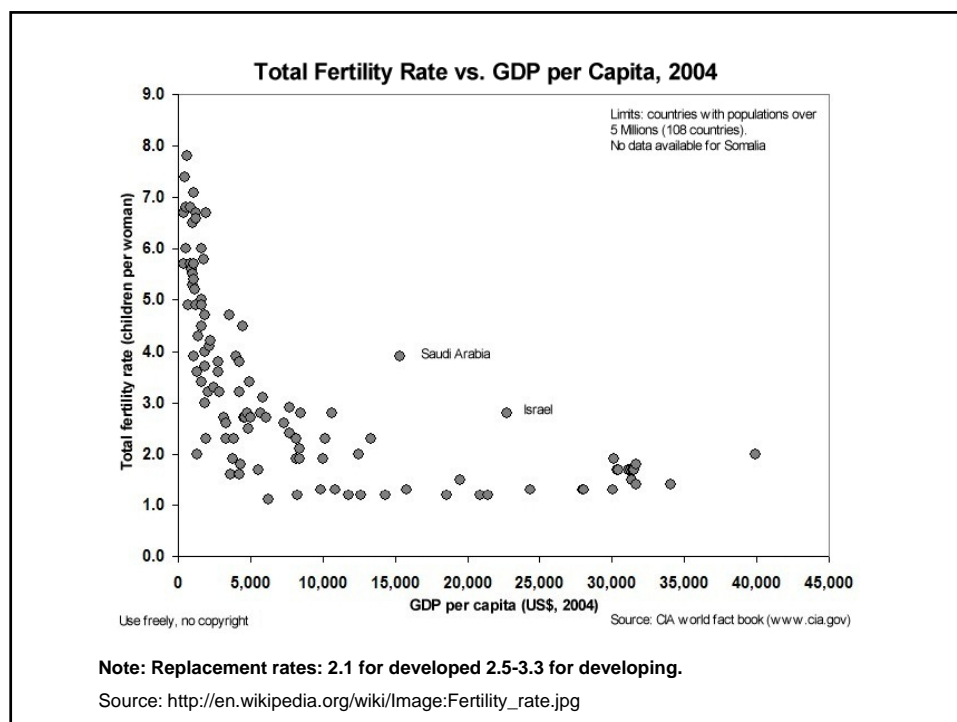
- Depopulation/Aging
Aging w/o Development
Sustainability of High Income
- Burden of Aging
Demographic
Penalty

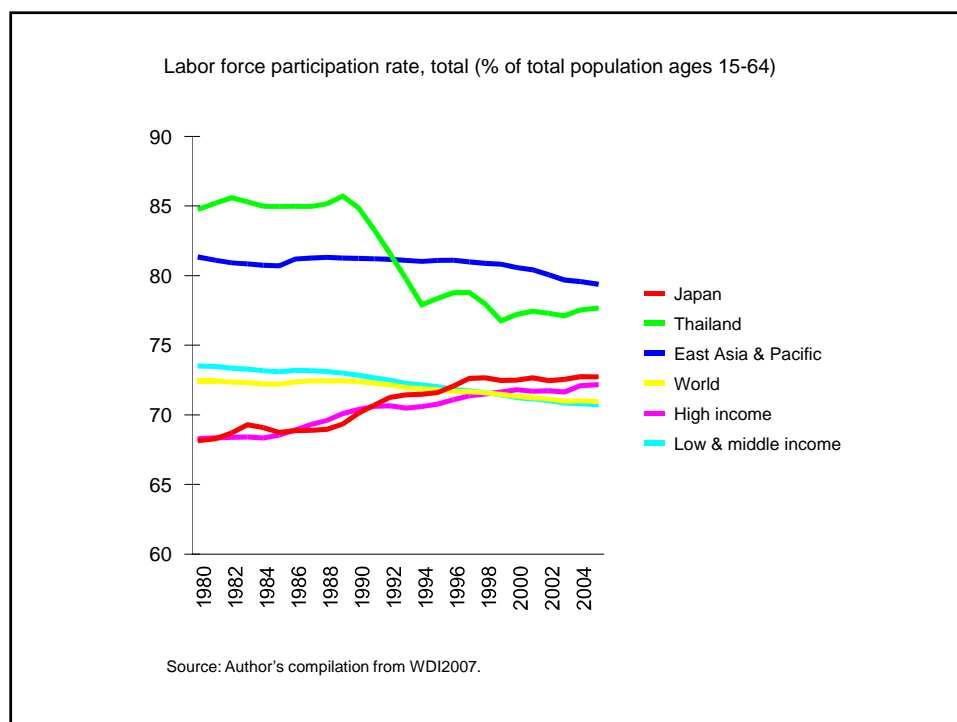
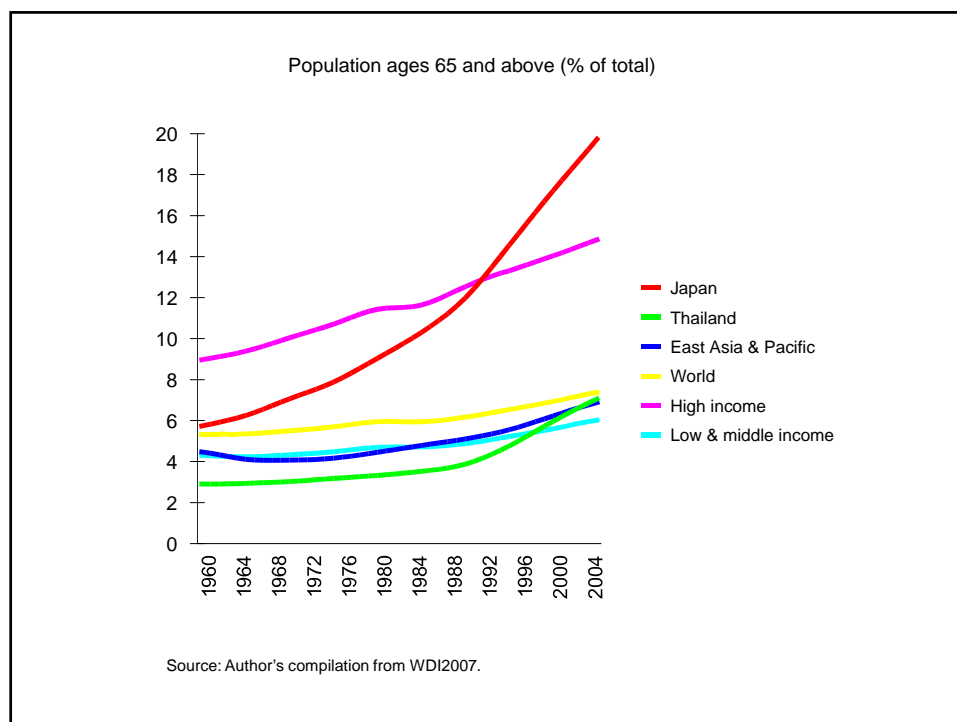
World Total Fertility Rate Map (2006)



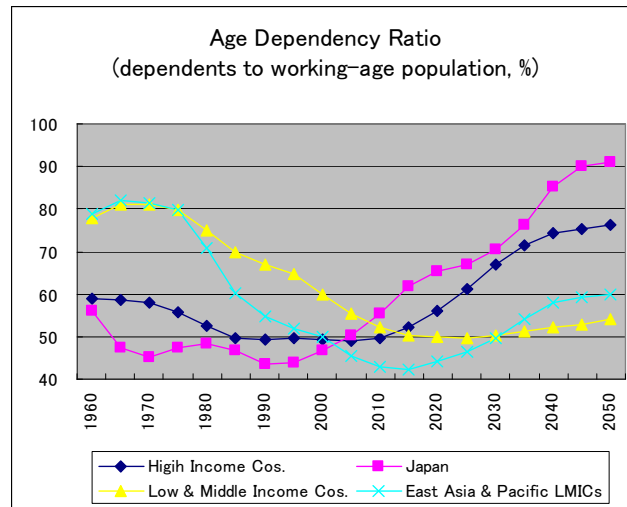
Note: Replacement rates are 2.07-2.08 for developed countries;
2.5-3.3 for developing countries.

Source: http://en.wikipedia.org/wiki/Image:Fertility_rate_world_map_2.png



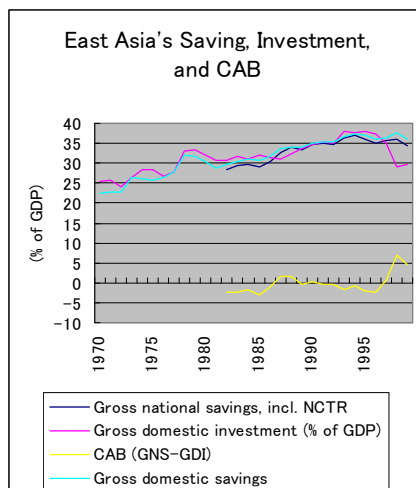


Is Doomsday Imminent ?



Determinants of the private saving ratio:

Income (level), rates of return, uncertainty, domestic/foreign borrowing constraints, financial depth, fiscal policy, pension system, income/wealth distribution, and **demographics** ...



East Asia's saving ratio (GDS) increased from 22% to 32% in the 1970s, and reached 37% before the AFC, facilitating a healthy increase in the investment ratio...

The CA deficit also expanded in the 1990s until the AFC came about. And then ?

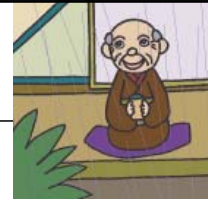
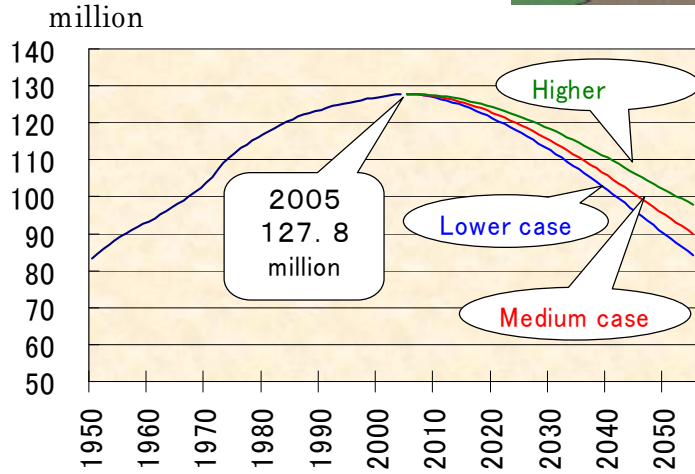
Aging Japan

Unavoidable depopulation and aging



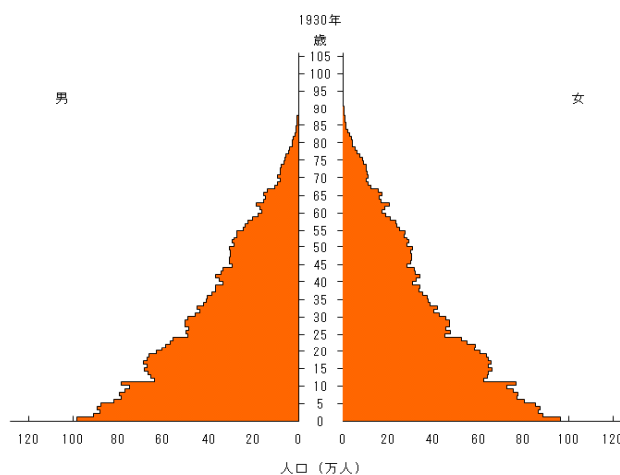
Fertility Rate	
Until early 1970s	
Around 2.2	
2000	1.36
2005	1.26
Medium case	
Same level as now	
2030	1.24
2055	1.26
Lower case	
Drop until 2020s	
2030	1.04
2055	1.06

Population in Japan



(Source) National Institute of Population and Social Security Research estimate (Dec.2006)

Population Pyramid in Japan



Source: <http://www.ipss.go.jp/>

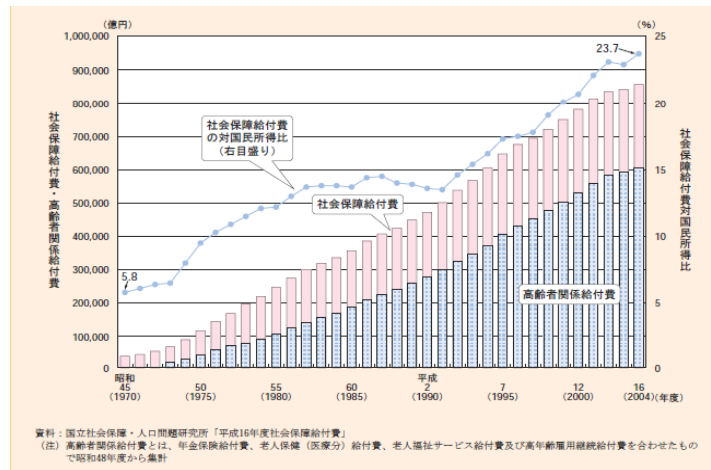
2008/04/07

low fertility & aged society and
social security

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Government expenditure for social security

(from Prof. Fujikawa's PP)



Source: <http://www8.cao.go.jp/kourei/whitepaper/w-2007/zenbun/pdf/j1120000.pdf>

2008/04/07

low fertility & aged society and social security

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History of Internal Migration in Japan

Toward the Era of Regional Autonomy?

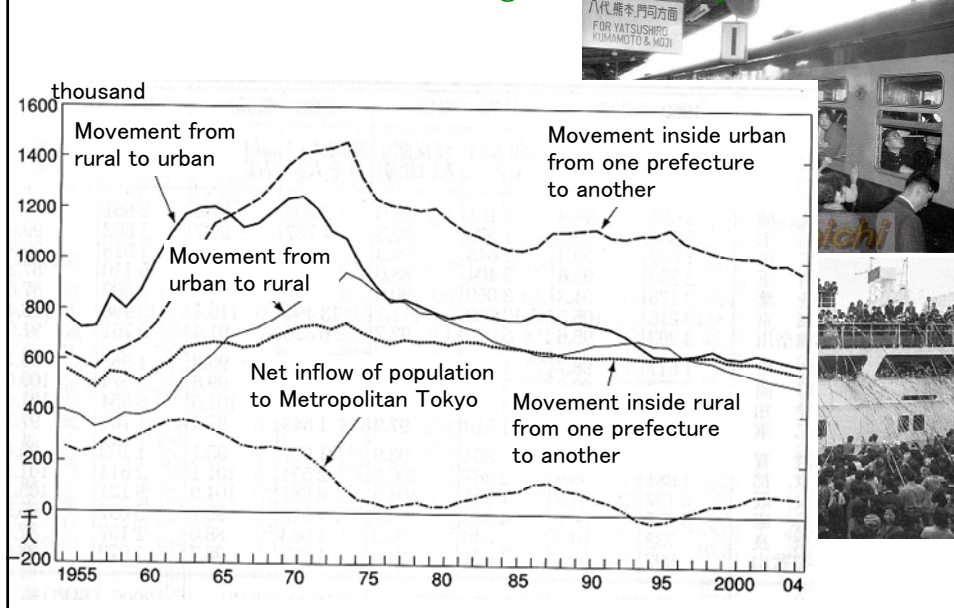
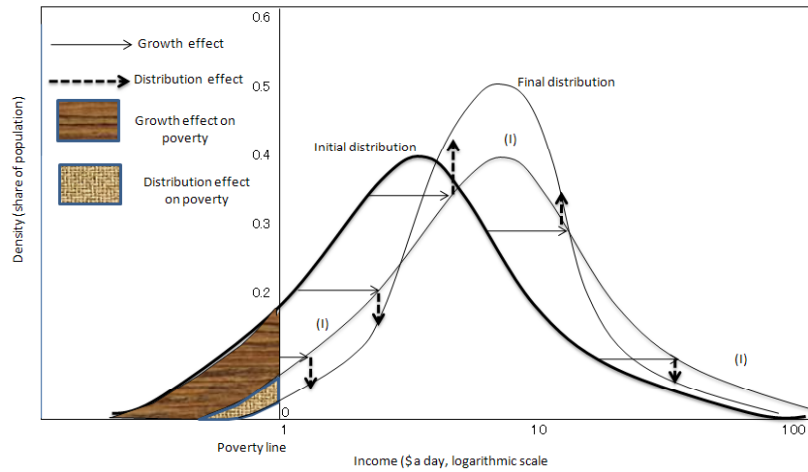


Figure 2: Decomposition of change in distribution and poverty into growth and distribution effects



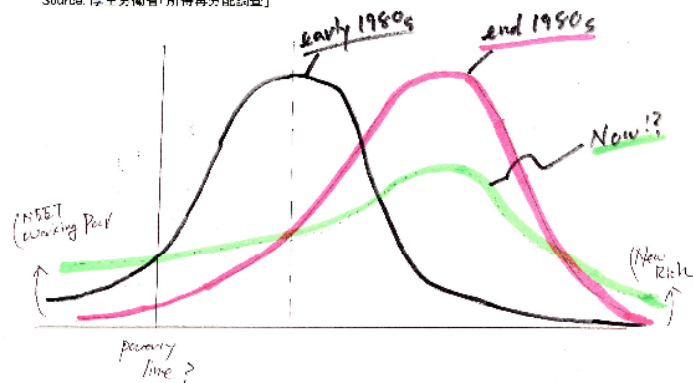
Source: Bourguignon (2003), Figure 1.2; Bourguignon (2004), Figure 1

Change in Poverty = F(growth, distribution, change in distribution) (assuming log-normal distribution)

Recent Movements in Japan's Gini Indices

	1981	2005	Changes
Gini Index before Redistribution (当初所得)	0.3491	0.5263	1.51
Gini Index after Redistribution (再分配所得)	0.3143	0.3873	1.23

Source: 厚生労働省「所得再分配調査」



Source : Author's unscientific imagination !?

Speed of Aging in East Asia

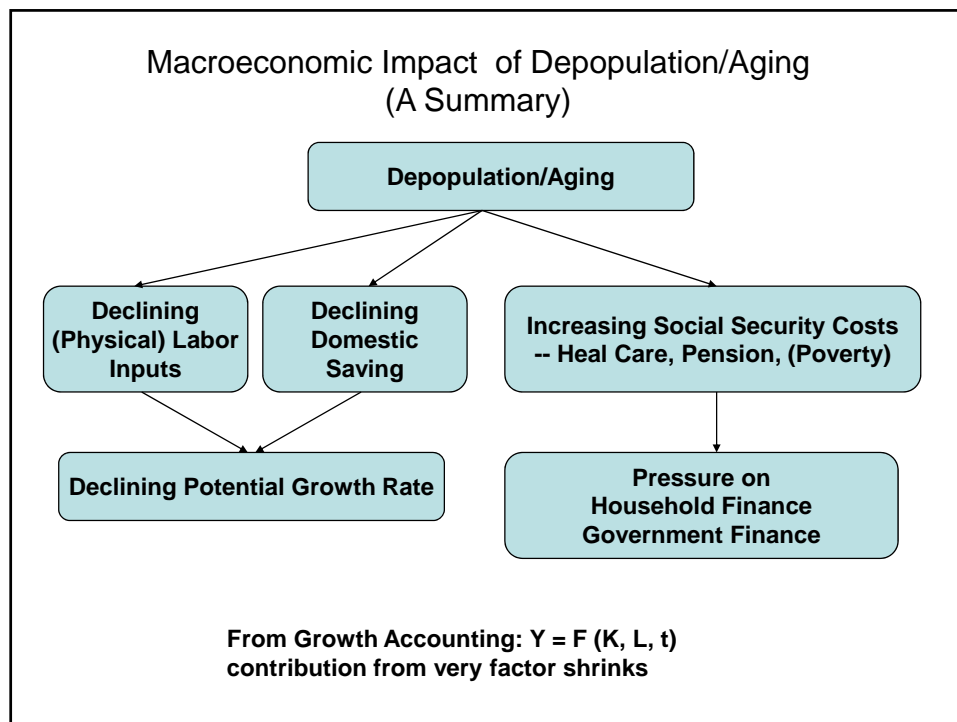
	(1) Share of Aged 7% Aging Society	(2) Share of Aged 14% Aged Society	Period between (1) and (2)
Japan	1970	1994	24
South Korea	1999	2017	18
Hong Kong	1983	2014	31
Singapore	2000	2016	16
Thailand	2005	2027	22
Malaysia	2019	2044	25
Indonesia	2019	2041	22
Philippines	2026	2049	23
China	2001	2026	25

Note: Based on the Medium scenario from the UN population projections.
Based on the assumption of TFR converging to 1.85.
Explanations are added.

Source: Oizumi, Kajiwara, and Niitame (2006). *Aging in Developing Countries: Viewpoints to New Assistance*. Tokyo: JICA. (In Japanese) Table 3-7 (p.57).

Part II

Theoretical/Conceptual Framework



**Population Bonus – Demographic Dividend
(Demographic Economics)**

- **Population Conversion Phases**
 - (1) High Birth – High Death
 - (2) High Birth – Low Death
Population Explosion – 'Low-Level Equilibrium Trap'
 - (3) Declining Birth/Death Rates **Population Bonus I**
with declining natural rate of population growth
 - (4) Low Birth – Low Death Rates **Population Bonus II**
rate of population growth decline further **Thailand in 1990s**
entering the phase of population aging
 - (5) Birth Rate Lower than Death Rate
depopulation with rapid aging **Japan after 2005**
Thailand in early 2040s

Population Bonus – Declining DR (or DR<50%)

- **Making the Most of Population Bonus**

(1) Growth Accounting: $Y = F(K, L, t)$

(2) Population Bonus only as “Potential Gains”

Employment generation to take advantage of rising (younger) L
Development of financial market to take advantage of rising S
Conducive environment/institutions/infrastructure for HRD, R&D

(3) Developed cos. entered **Population Bonus** with higher starting income (\$5,000+); came out with high accomplishments.

Japan: PBI (1955-1970), PBII (1970-1990) \$27,000
1965- if DR<50 is used

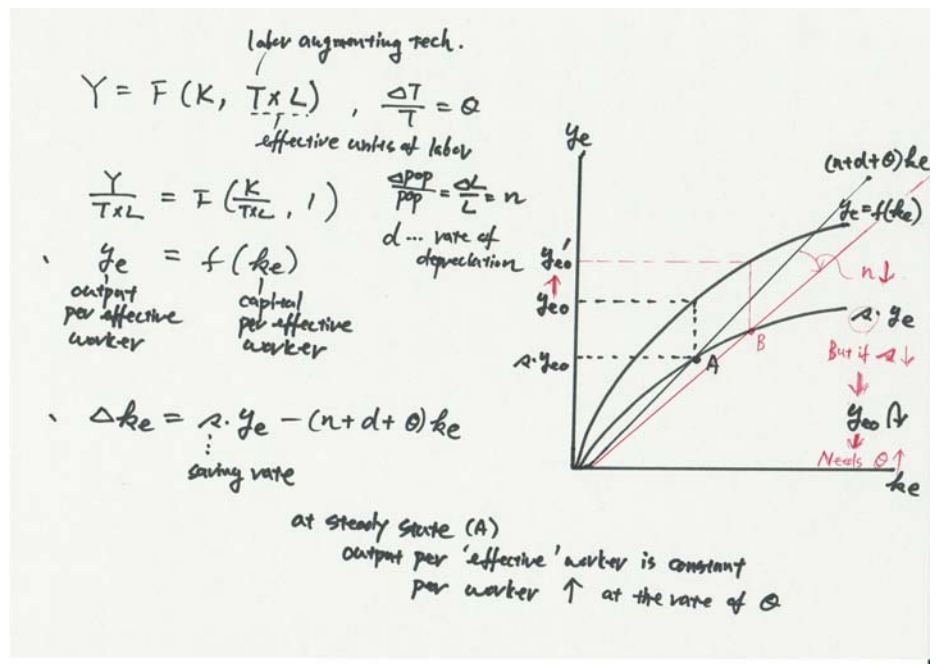
Thailand: \$2,900+- now, ??? at around 2015

(4) Nominal income of \$10,000+ would be necessary to cope with Aging with sufficient savings and fiscal capacity.

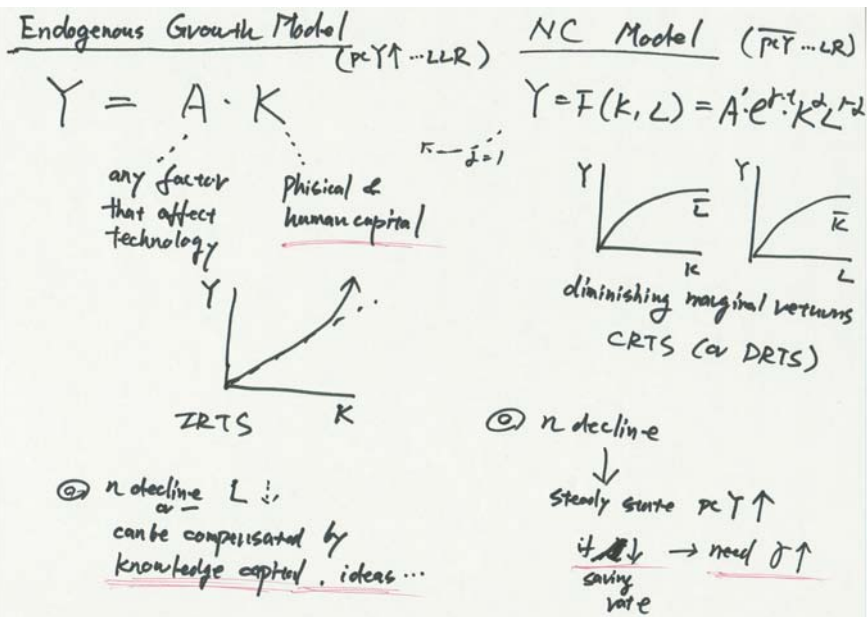
Traditional Two-Sector Model (with Unlimited Supply of Labor)

- Redundant labor force in Traditional/Agricultural sector is absorbed in Modern/Industrial sector in the process of ‘industrialization’.
- As redundant labor disappears, modern sector wages start to increase and domestic terms of trade turns against industry.
- To preserve the process of industrialization, 1) food importation and/or 2) green revolution would be necessary. 1) would damage farmers welfare. 2) should benefit both farmers and city workers/entrepreneurs (allocation can be changed by price controls).
- Declining labor force by depopulation/aging will accelerate/strengthen the process of profit squeeze in the modern sector, and this in turn, calls for additional policies/innovation.

Neo-Classical Growth Model



New Growth Theories (Simple AK Model w/ IRTS)



What Could/Should be the Source(s) of pcY Growth under Depopulation/Aging ?

- Knowledge Capital
- Creation of Positive Externalities
- Technology Progress, Productivity Increase
- Efficient Institutions/Systems
meaning...
- Education, Investment in Human Capital, ICT Development, Public-Public Partnership
- Building Better Institutions, Social Capital

Development Stages Theory of BOP (cf. Crowther, 1957)

		Indonesia Thailand	Malaysia	Korea	Singapore	Japan	
		Immature Debtor Country	Matured Debtor Country	Debt Repaymen t Country	Immature Creditor Country	Matured Creditor Country	F. Asset Take-down Country
Current Account Balance	Surplus			+	++	+	
	Deficit	-	-				-
Trade Balance in Goods & Services	Surplus		+	++	+		
	Deficit	-				-	-
Income Balance (returns on Investments)	Surplus				+	++	+
	Deficit	-	-	-			
Net Foreign Assets	Surplus				+	++	+
	Deficit	-	-	-			
Capital Account Balance	Surplus	+	+				+
	Deficit			-	--	-	

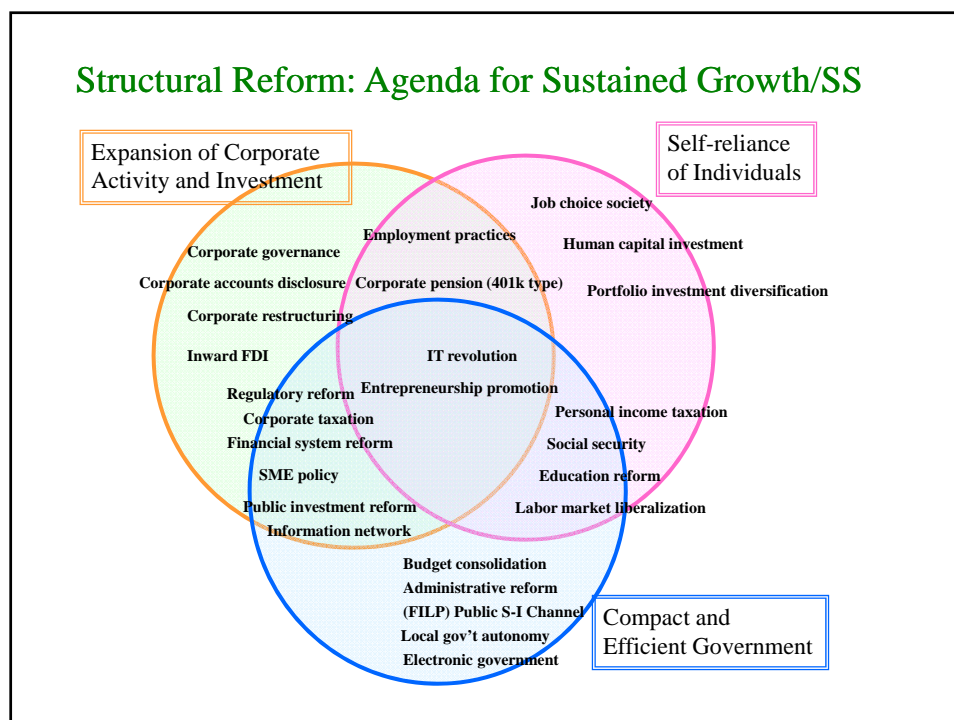
Part III
What can/should be done ?
Japan & Asia should develop their own
model(s)!!

Cases of economic development under depopulation				
Nation	Western Europe	Japan	Ireland	Hungary
Time	Late 14 th c.	1730~1800	Late 19 th c.	1980~
Decline	70~80 mil. → 40~50 mil	32 mil. → 30 mil.	2 mil. In 10 years	0.3% decline annually
Reason	Black death	Famine Late marriage Less birth	Famine Emigration	Lower birth rate
GDP	-0.3%	0.2%	0.7%	0.6%
GDP Per capita	0.4%	0.3%	1.6%	0.9%
Impact	Labor scarcity	Agricultural technology	Change to livestock farming	Marketization Investment

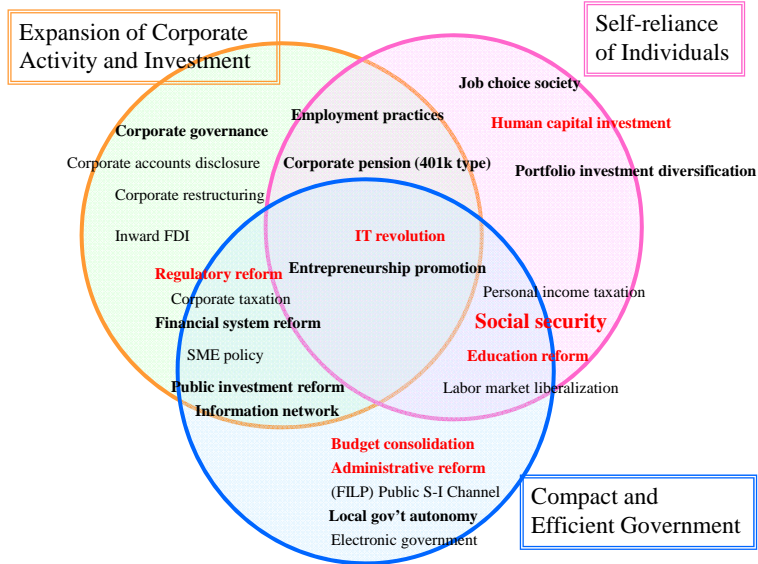
Source: Economic planning Agency (2000)

<u>Nominal per capita (2006)</u>		<u>PPP per capita (2007)</u>	
1.	Luxembourg 80,288	Luxembourg	80,800
2.	Norway 79,154	Qatar	75,900
3.	Qatar 70,754	Norway	55,600
4.	Iceland 62,976	Kuwait	55,300
5.	Ireland 58,883	United Arab Emirates	55,200
6.	Denmark 57,035	United States	46,000
7.	Switzerland 56,711	Ireland	45,600
8.	Sweden 47,069	Iceland	39,400
9.	United States 45,594	Canada	38,200
10.	Netherlands 45,429	Denmark	37,400

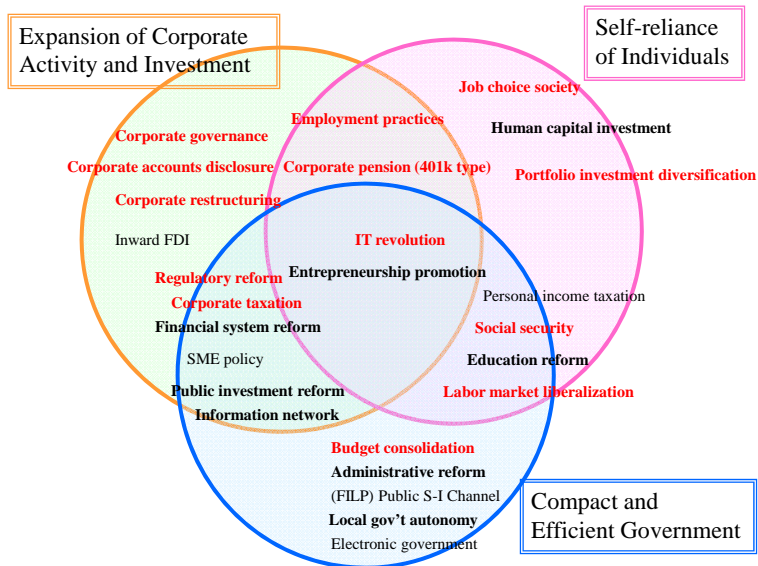
Source: http://en.wikipedia.org/wiki/Per_capita_income
 •CIA World Factbook
 •International Monetary Fund, World Economic Outlook Database, September 2006



Structural Reform: Scandinavian (N.European) Model



Structural Reform: American Market-Based Model

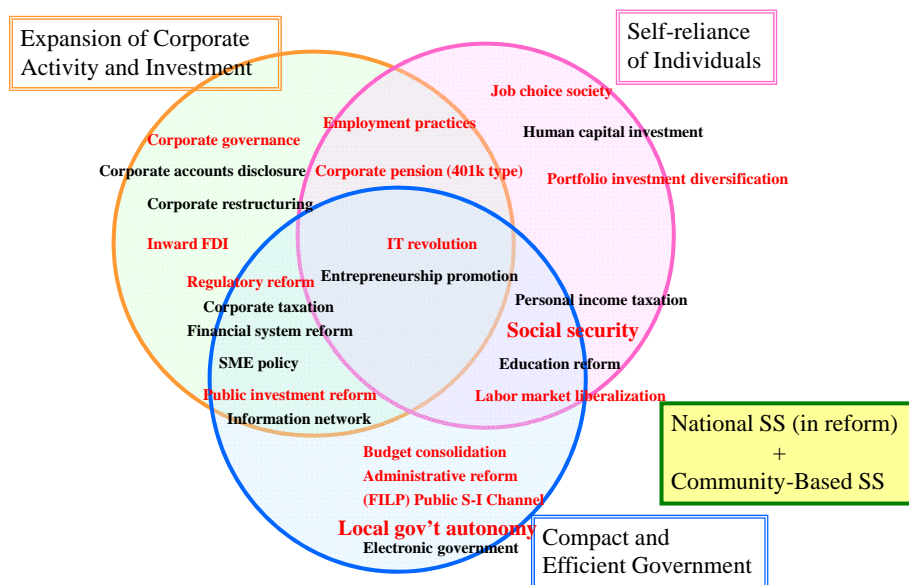


What would/should Asia Choose?

(Asian SS System to deal with Depopulation/Aging)

- **Scandinavian Model of Welfare State**
 - High costs call for high income/tax levels.
 - Developing cos. cannot afford high welfare.
- **Social Insurance Model of Germany/France**
 - For employed. Based on insurance premium/contributions. (J, T)
- **American/Western Model of Market-Based SS**
 - Leaving-it-to-the-market (private investment,private insurance) will create winners and losers.
 - Gini will increase with social capital meltdown.
 - Unrealistic with large poor population.
- **Asian Model of Community Networking**
 - Mixing national social security with region/community social capital.
 - Traditional family/relative network alone cannot accommodate large aging population.

Structural Reform: Japan's Agenda (mixture)



Multipillar Approach Proposed by the WB (Holzman and Hinz, 2005)

Table 1. Multipillar Pension Taxonomy

Pillar	Target group			Main criteria		
	Lifetime poor	Informal sector	Formal sector	Characteristics	Participation	Funding or collateral
0	X	X	x	"Basic" or "social pension," at least social assistance (universal or means tested)	Universal or residual	Budget or general revenues
1			X	Public pension plan, publicly managed (defined benefit or notional defined contribution)	Mandated	Contributions, perhaps with some financial reserves
2			X	Occupational or personal pension plans (fully funded defined benefit or fully funded defined contribution)	Mandated	Financial assets
3	x	X	X	Occupational or personal pension plans (partially or fully funded defined benefit or funded defined contribution)	Voluntary	Financial assets
4	X	X	X	Access to informal support (family), other formal social programs (health care), and other individual financial and nonfinancial assets (homeownership)	Voluntary	Financial and nonfinancial assets

Note: The size and appearance of x reflect the importance of each pillar for each target group in the following increasing order of importance: x, X, X.

Source: Holzmman and Hinz (2005). Old Age Income Support in the 21st Century: An International Perspective on Pension Systems and Reform. Washington D.C.:The Wrold Bank. Table 1 (p.10)

Japan as a Relevant Case Study for other Asian Nations

- While the WB's pillar 4 is a mere suggestion. Japan has already had experience with 「地域福祉」 or '**Commnuity-based (Social) Welfare**'.
- In marginal towns/villages, the aged cannot survive without community-based medical care or community-based welfare.
- In 1973, Working Group on Social Welfare (中央社会福祉審議会) issued 'Community Formation and Social Welfare'; acknowledged the importance of 'Community-based Welfare'.
- In 1990 revisions on welfare-related 8 laws, notions of 'Community-based Welfare' were clearly introduced.
- From 1993, local governments had been required (by social work law; social welfare law from 2000) to draw up plans for health & welfare for the aged.
- Participatory institutions/operators of community-based welfare has been diversified. There activities are coordinated by local public offices and Social Welfare Councils (社会福祉協議会) that exist in every city/ town/village consisting of residents' association, PTA, clubs for the aged, NGO, agri-coop, life-coop, welfare facilities, business, public offices, etc.

*... Development under
Depopulation/Aging ...*

May you enjoy the program!!

Thank You !

