Demographic Change and the Asian Economies

- Global Economy and Population Forecasts (2006~2050) -

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Major Contents

1. **Why did we focus on a Population Problem ?**
2. **Prospects for Demographic Change in Asia**
3. **Viewing the Asian Economy Demographically**
4. **Demographic Changes and Economic Society in Japan**

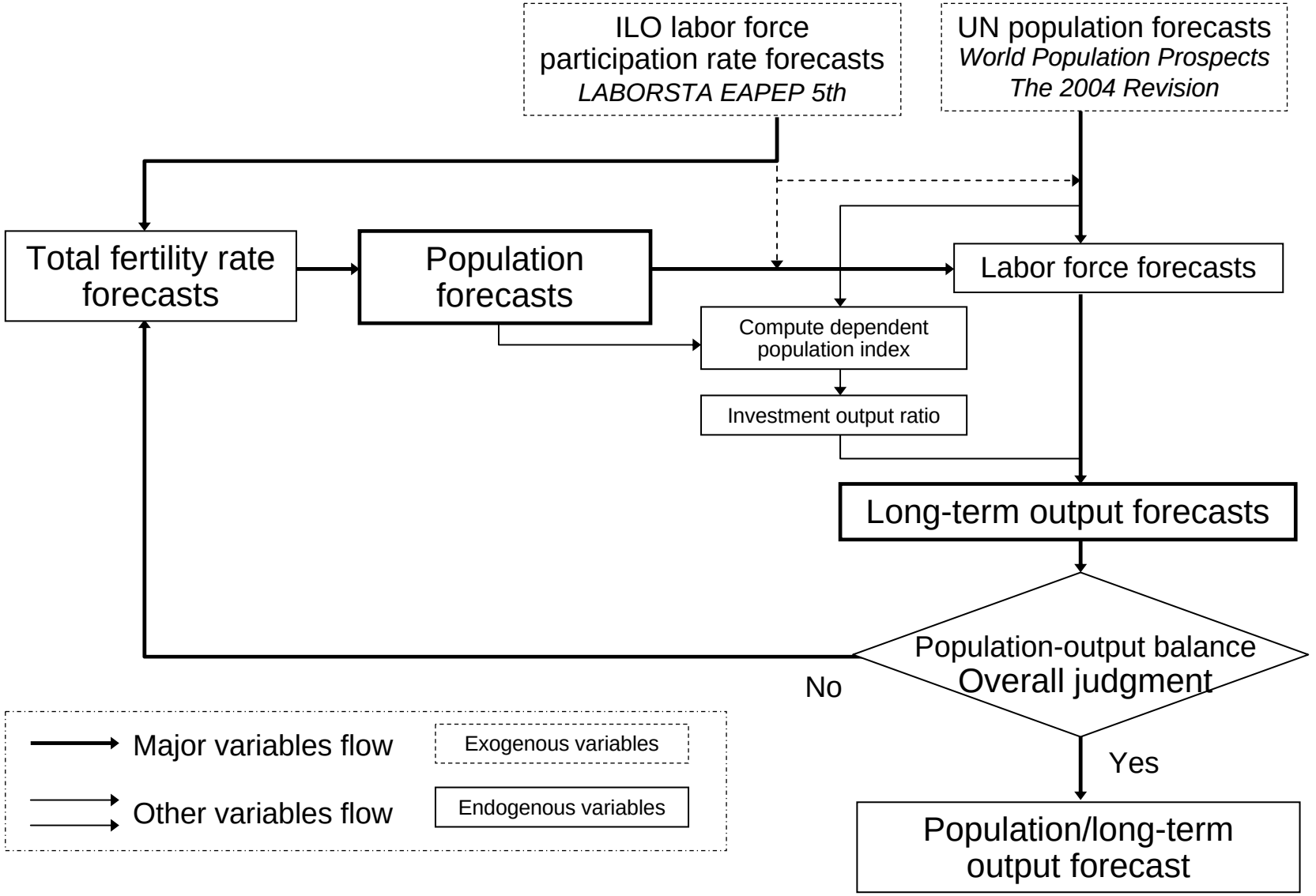
Why is the Population Problem Important for Asia Today?

1. The uncertainty of population forecasts is relatively low.

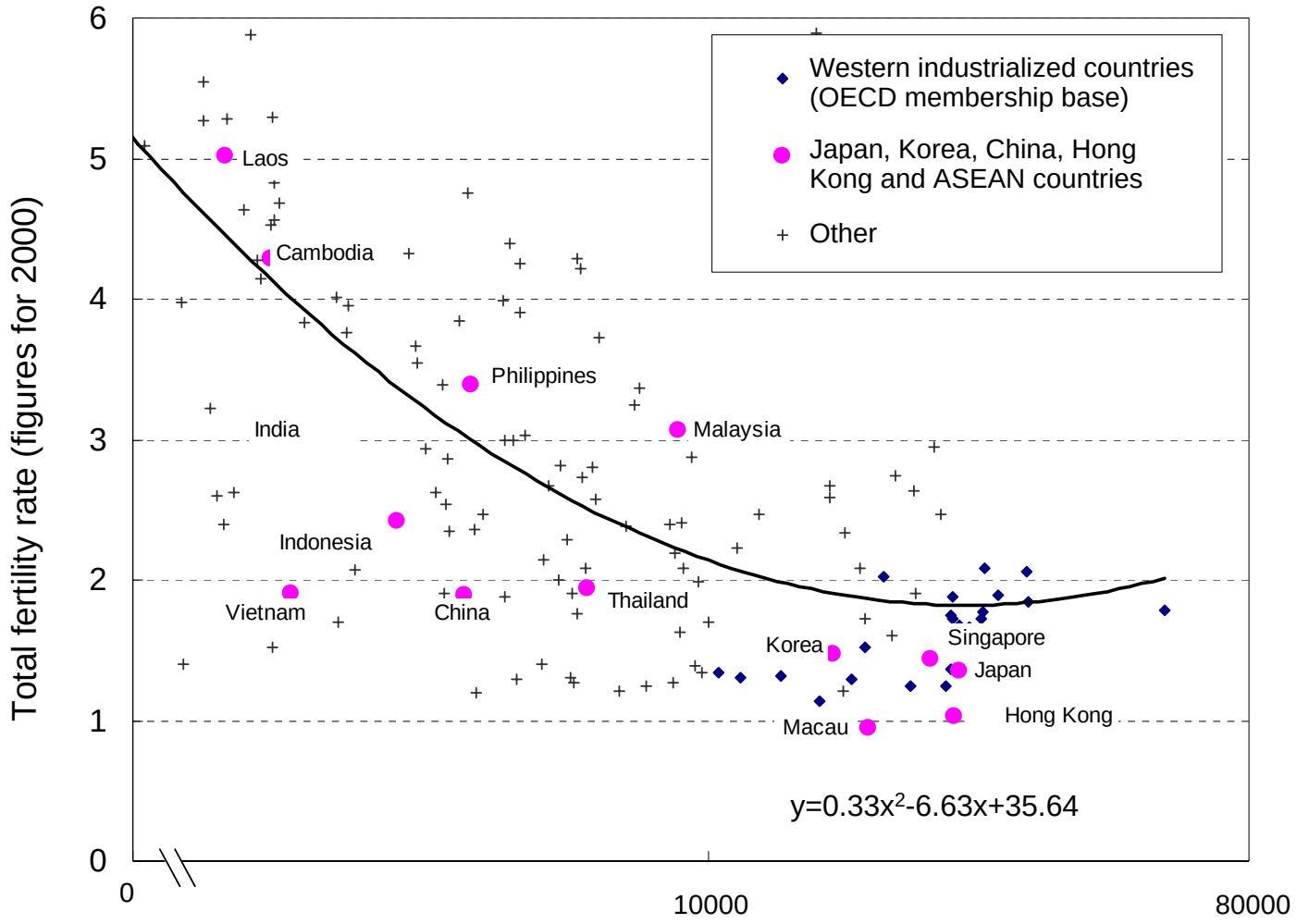
2. Asia's demographic structure will undergo major change from here on.

3. Demographics are deeply tied to economic society.

Successive Approximation for Population and Economic Forecasts (Flow Chart)



Relationship Between Income and Fertility Rate

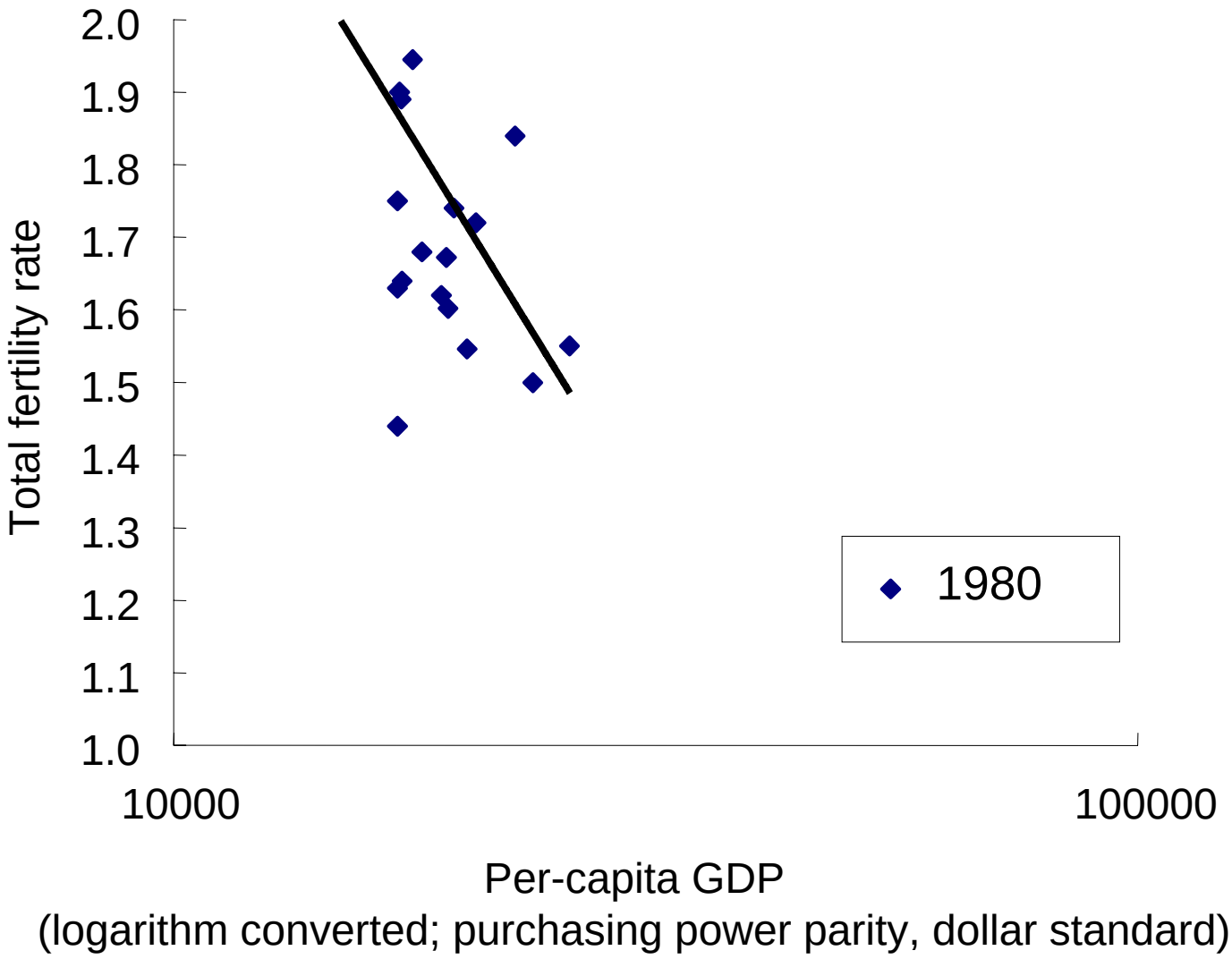


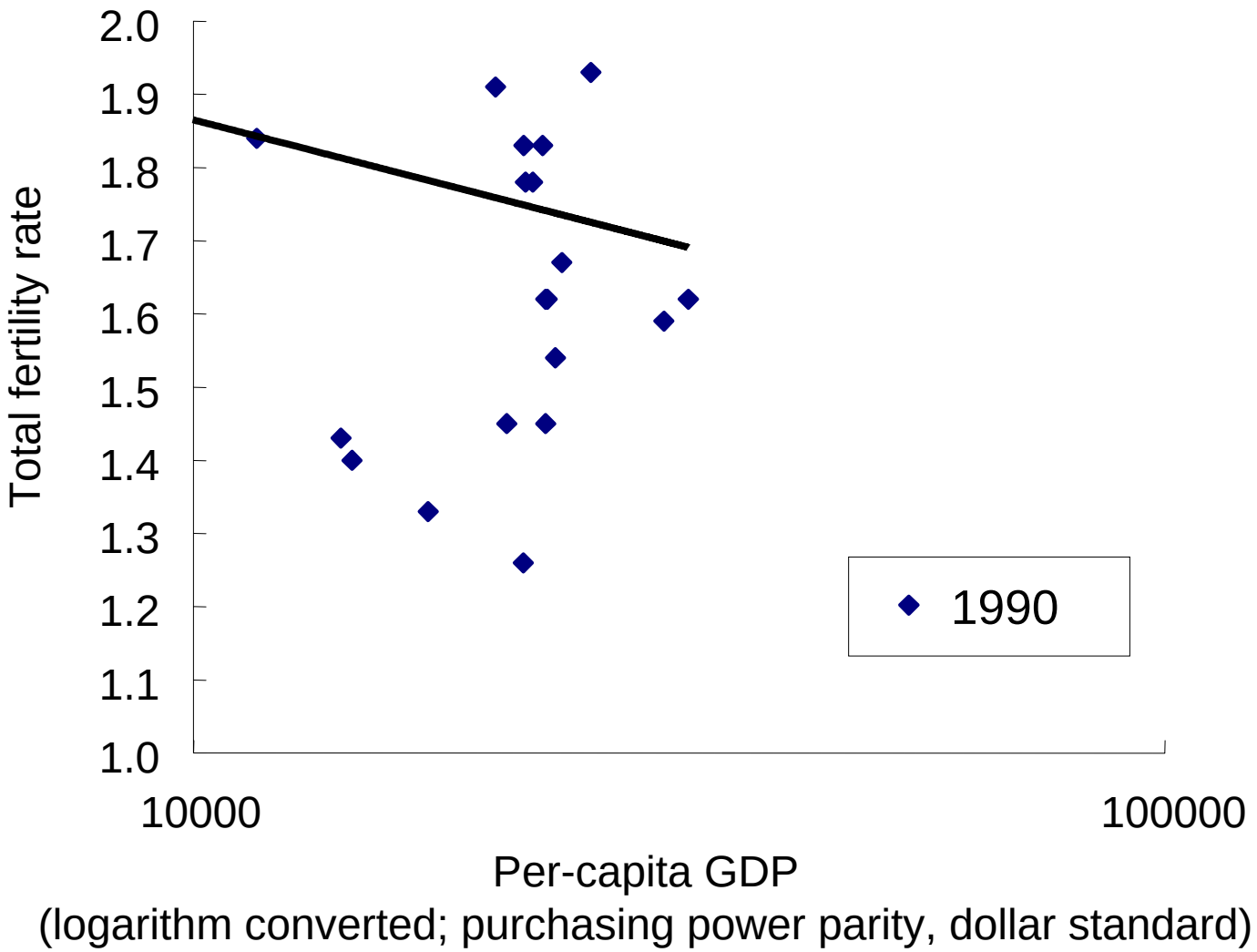
Per-capita GDP (logarithm converted; purchasing power parity, dollar standard, year 2000)

Source: World Bank, *World Development Indicators*

Income Level Growth and the Fertility Rate (Economic Explanation)

	Educational costs	Child-rearing costs	Support for family budget	Support in elderly years
Developing countries	Low	Low	High expectations	High expectations
Industrialized countries	High	High	Low expectations	Low expectations


2.0
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1.0
Total fertility rate
1980
10000
100000
Per-capita GDP
(logarithm converted; purchasing power parity, dollar standard)


2.0
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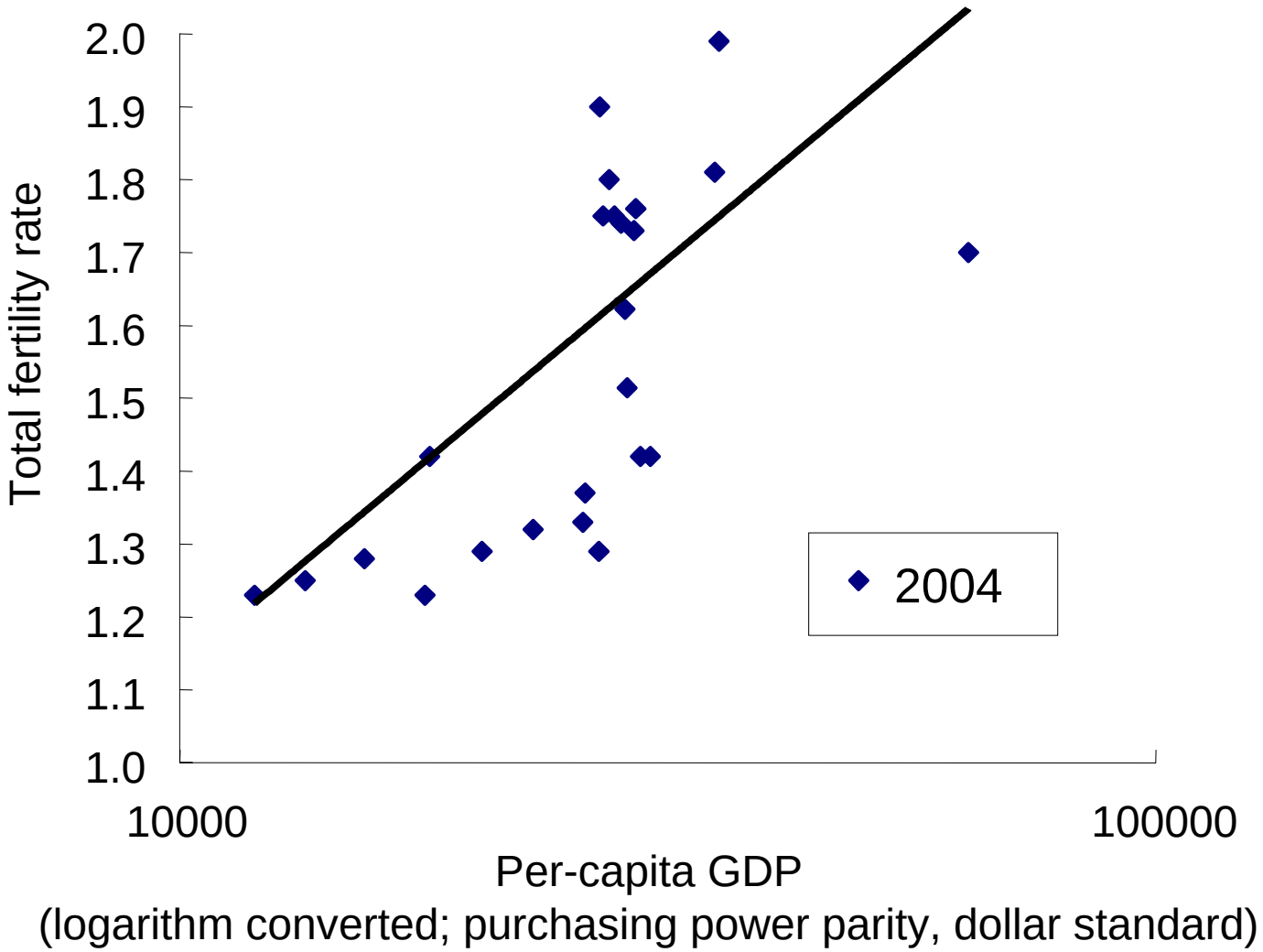
1.1
1.0
Total fertility rate
10000
100000
Per-capita GDP
(logarithm converted; purchasing power parity, dollar standard)
1990


2.0
1.9
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1.4
1.3
1.2
1.1
1.0
Total fertility rate
2004
10000
100000
Per-capita GDP
(logarithm converted; purchasing power parity, dollar standard)

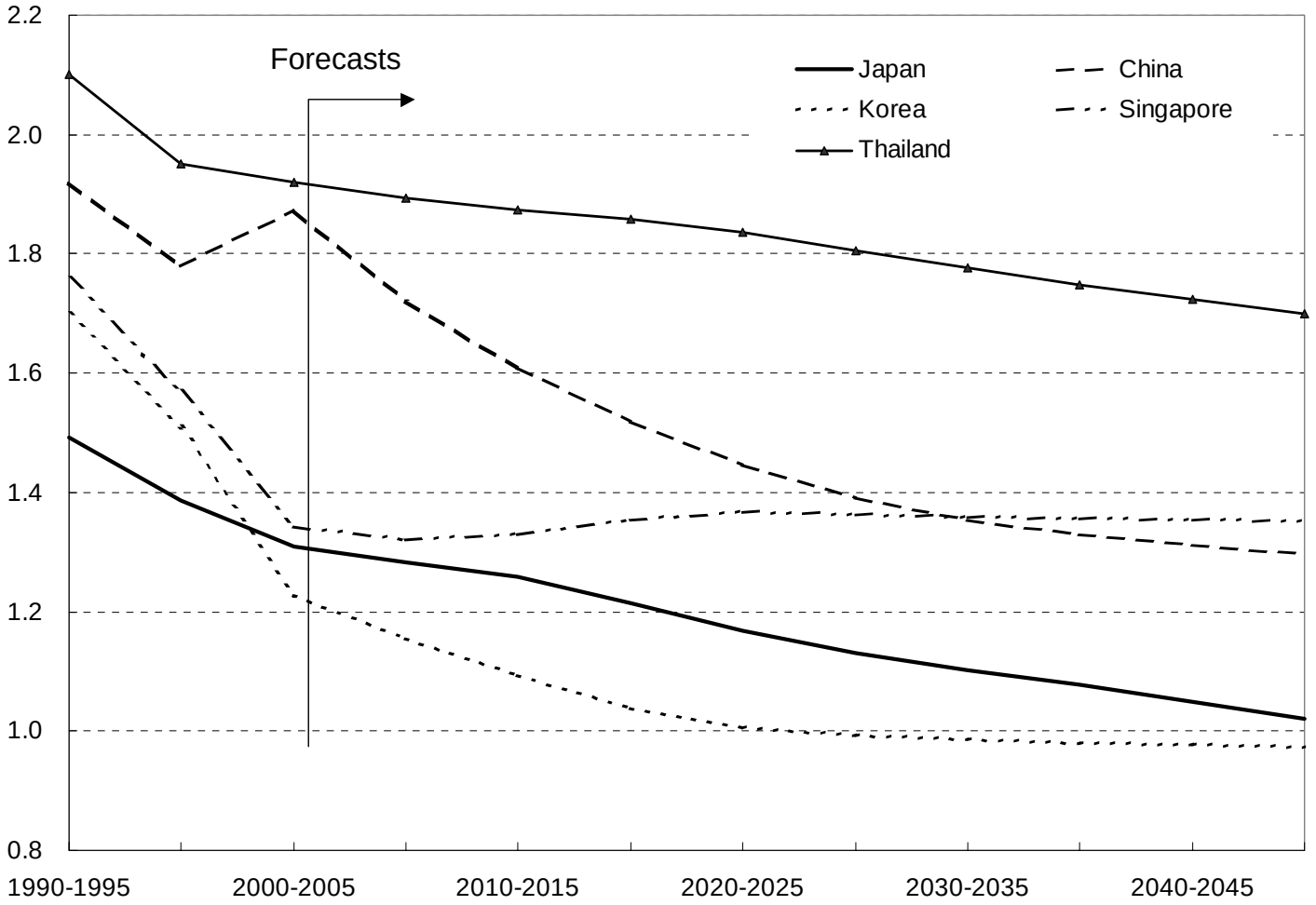
Major Changes in Asia's Demographic Structure

Transitions in Asian Nation Populations

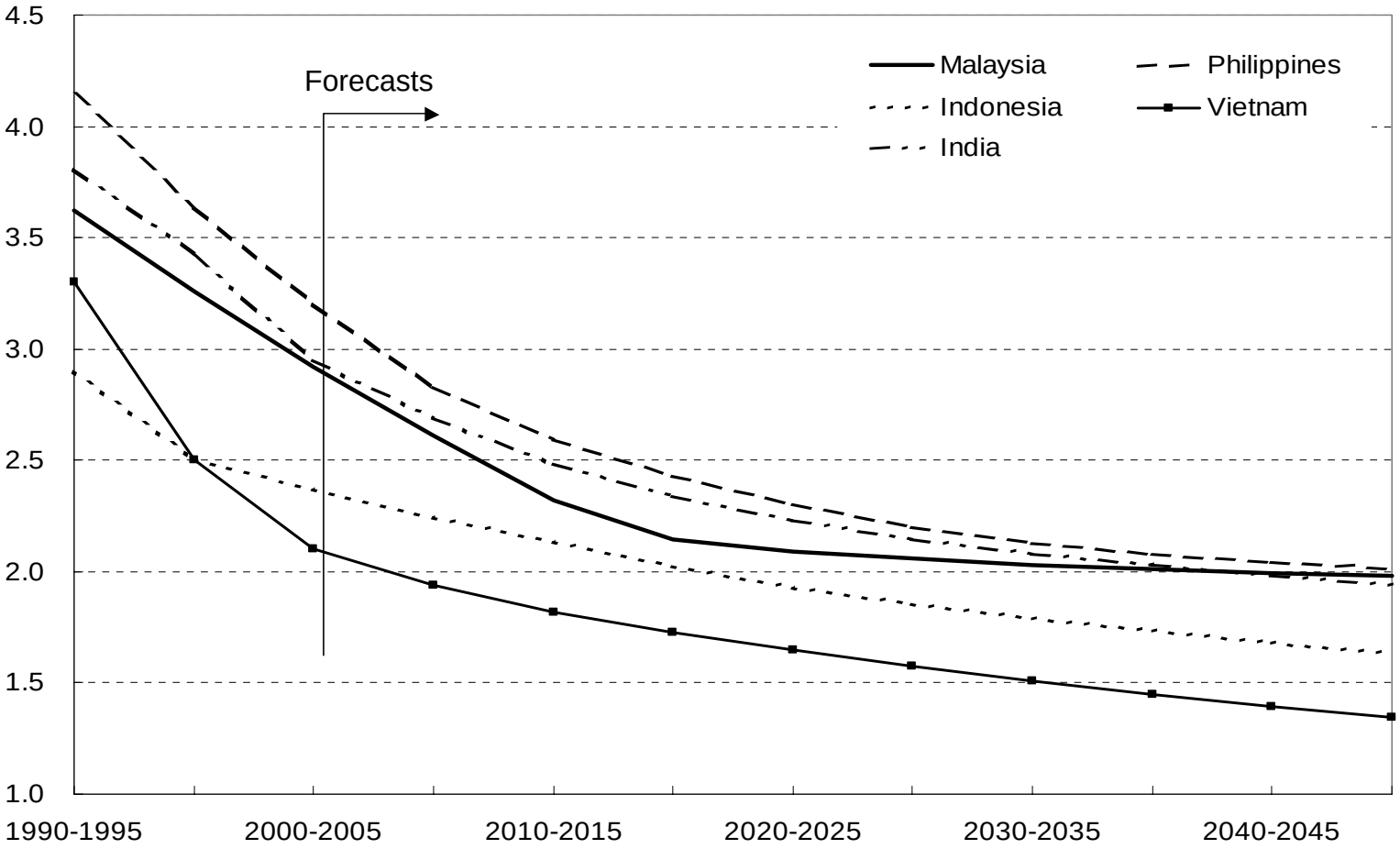
Period	Period when total fertility rate falls below 2.1	Period when elderly population ratio exceeds 14%	Period when labor force begins to decline	Period when total population begins to decline
1950-1955				
1955-1960				
1960-1965	Japan			
1965-1970				
1970-1975				
1975-1980	Singapore			
1980-1985	Hong Kong			
1985-1990	Korea			
1990-1995	China	Japan		
1995-2000	Thailand			
2000-2005			Japan	
2005-2010	Vietnam			Japan
2010-2015		Hong Kong		
2015-2020	Indonesia	Korea, Singapore	China, Hong Kong	Korea
2020-2025	Malaysia		Korea, Singapore	
2025-2030		China, Thailand		China
2030-2035	India			
2035-2040	Philippines	Vietnam	Thailand, Vietnam	Singapore
2040-2045		Malaysia, Indonesia		Thailand, Vietnam
2045-2050				

Note: Rates of change for the total fertility rate, labor force and total population were measured as five-year averages. The elderly population ratio was viewed by five-year intervals (for 1995, for example, the results are classified as being for 1990-95).

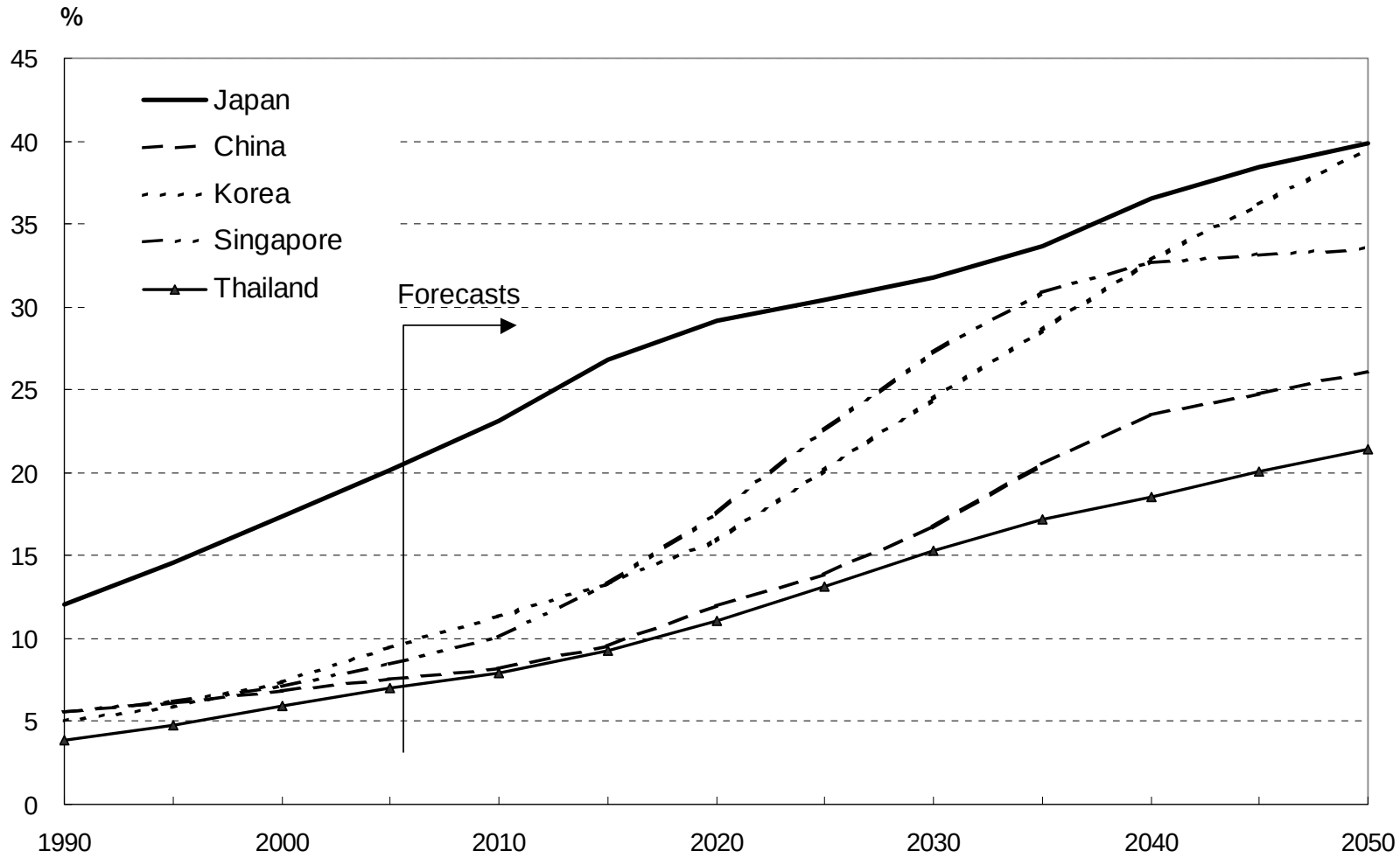
Total Fertility Rate Trends in Major Asian Countries (Japan + Group 2 Countries)



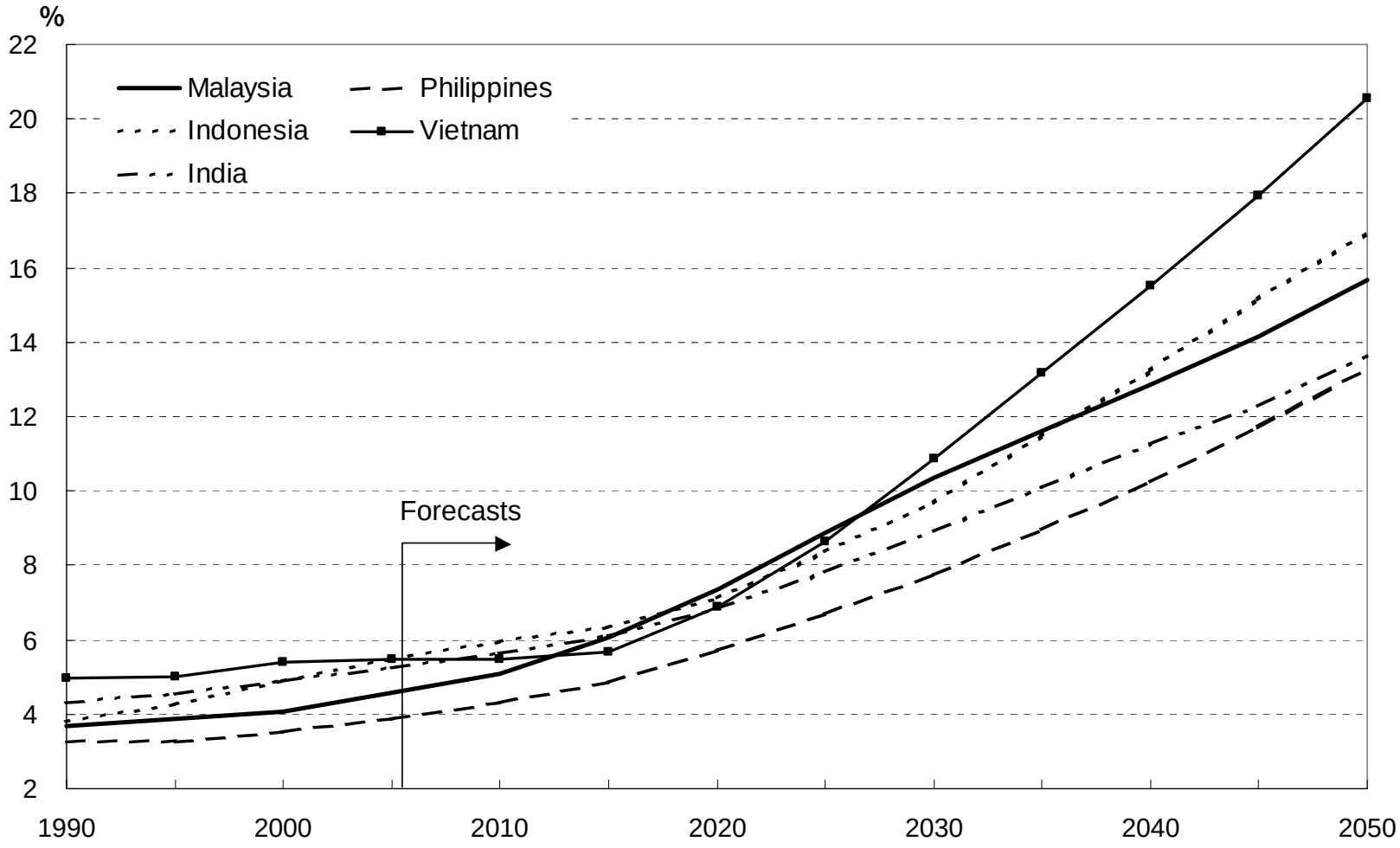
Total Fertility Rate Trends in Major Asian Countries (Group 3 Countries)



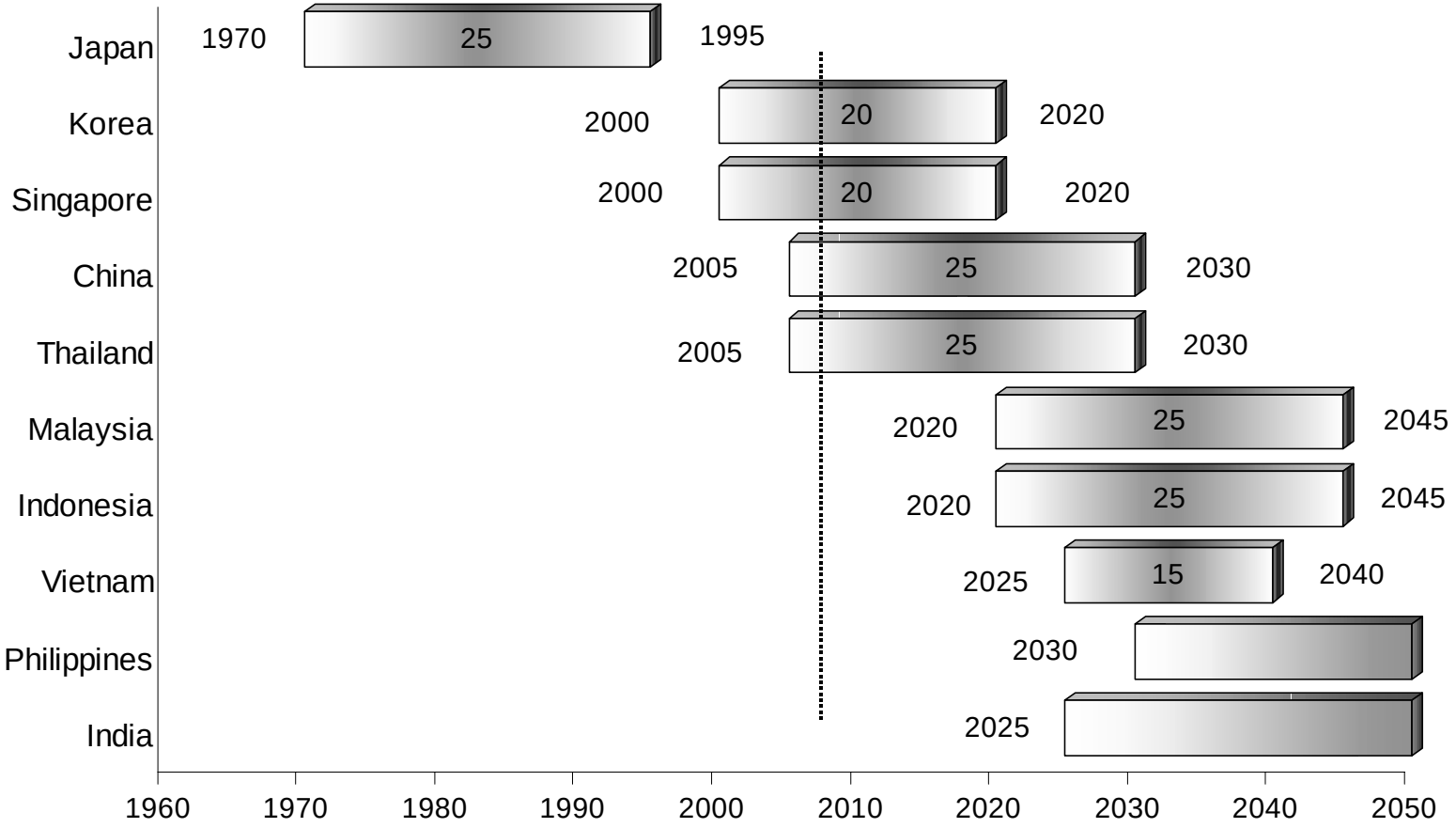
Trends in Elderly Population Ratios for Major Asian Countries (Japan + Group 2 Countries)



Trends in Elderly Population Ratios for Major Asian Countries (Group 3 Countries)



Overview of Population Aging Speed

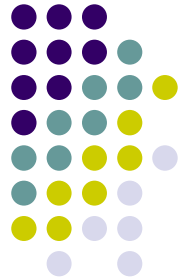


(Notes)

1. Periods when age 65+ segment reaches 7% and 14% of total population (data viewed at five-year intervals). Even by 2050, neither the Philippines nor India will have achieved the status of “aged societies.”
2. Data for 2006 and after based on Japan Center for Economic Research (JCER) forecasts.

3. Demographics will Change the Asian Economies

Demographic Change and Economic Growth



① Manpower

Labor forces decrease due to declining birthrates.

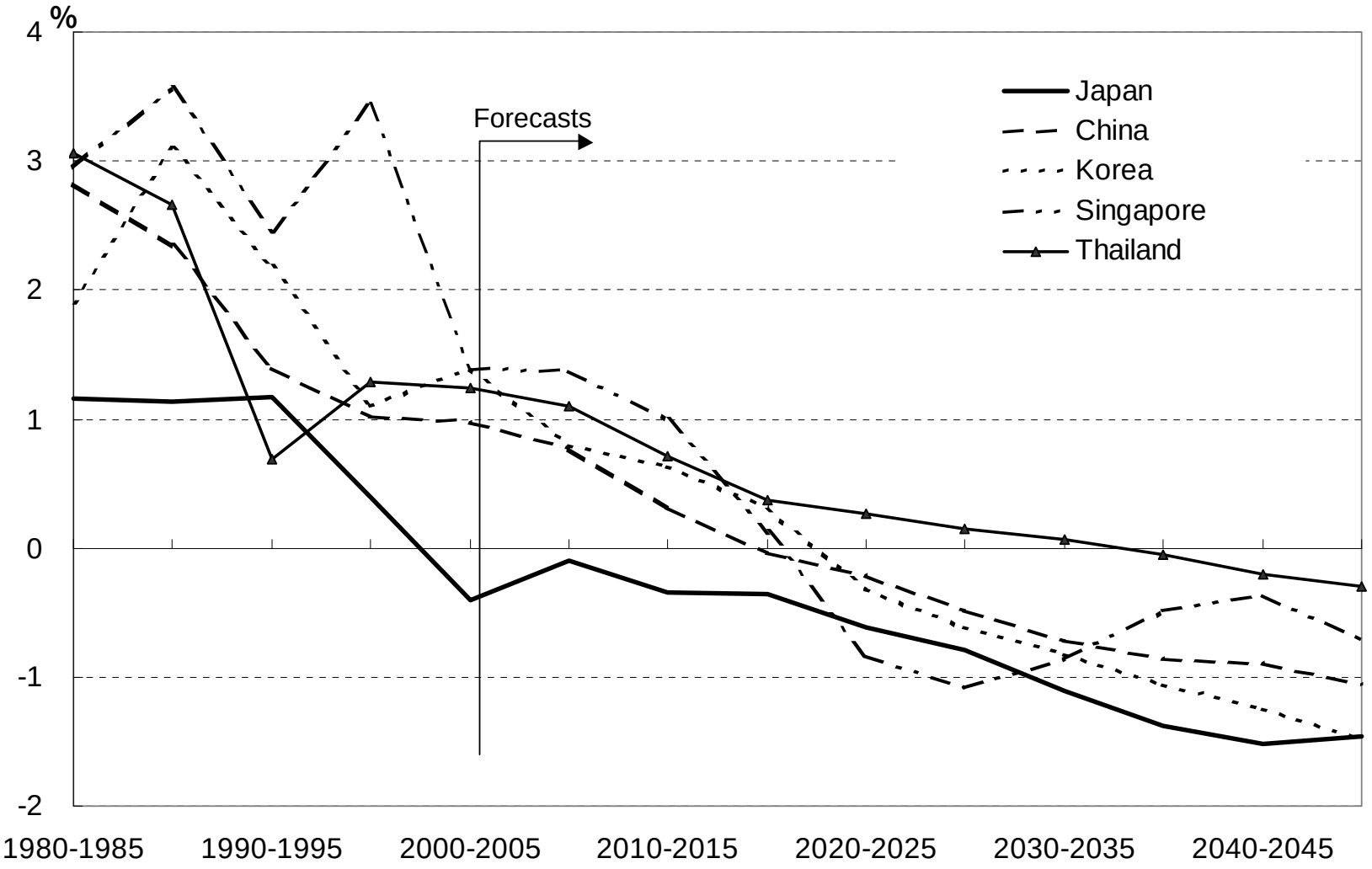
② Capital

Savings rates decline due to aging populations.

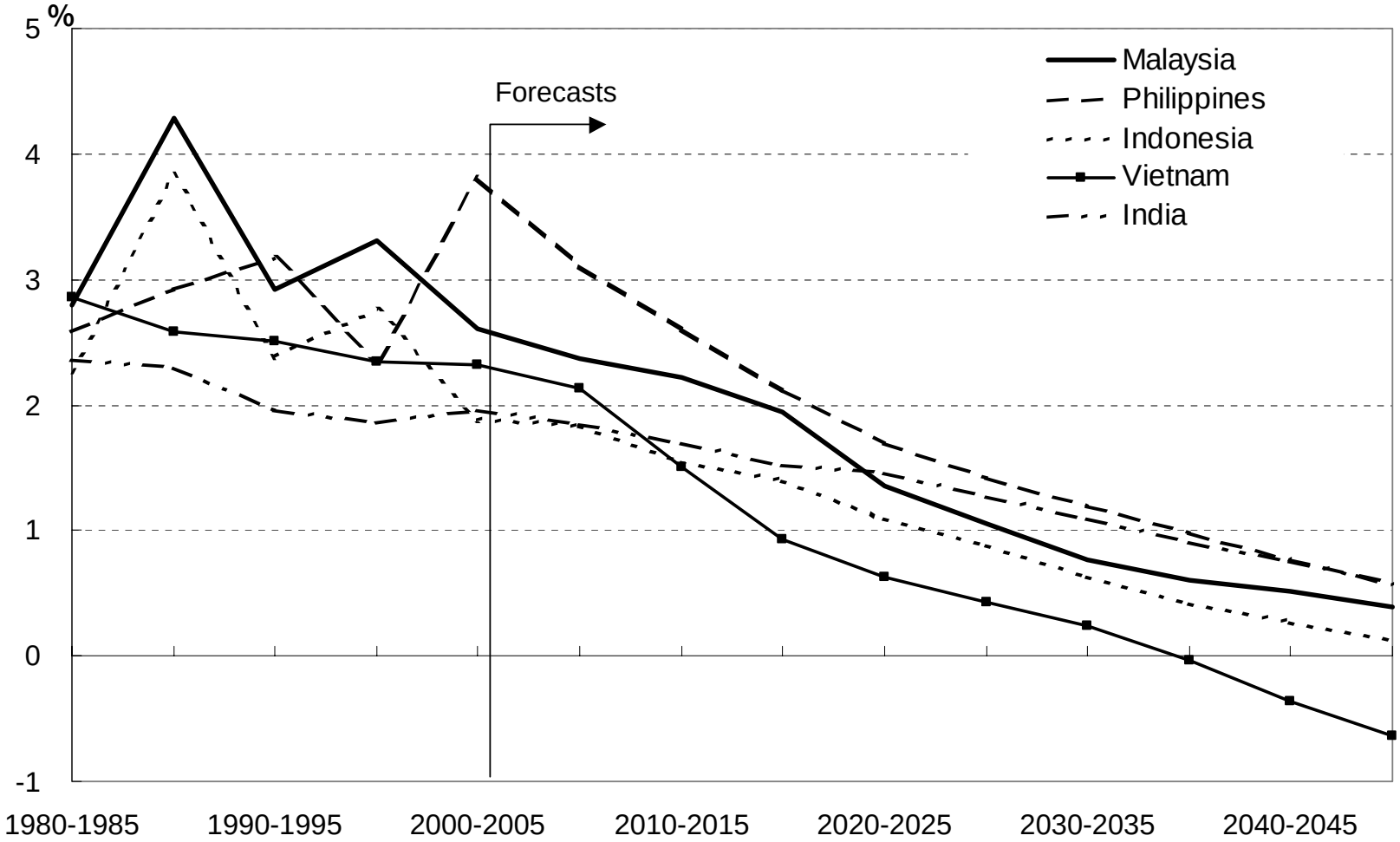
③ Economic and Social Systems

Changes in balances between working generations and non-working generations, leading to unbalances in intergenerational benefits and burdens.

Changes in Labor Forces (Japan + Group 2 Countries)

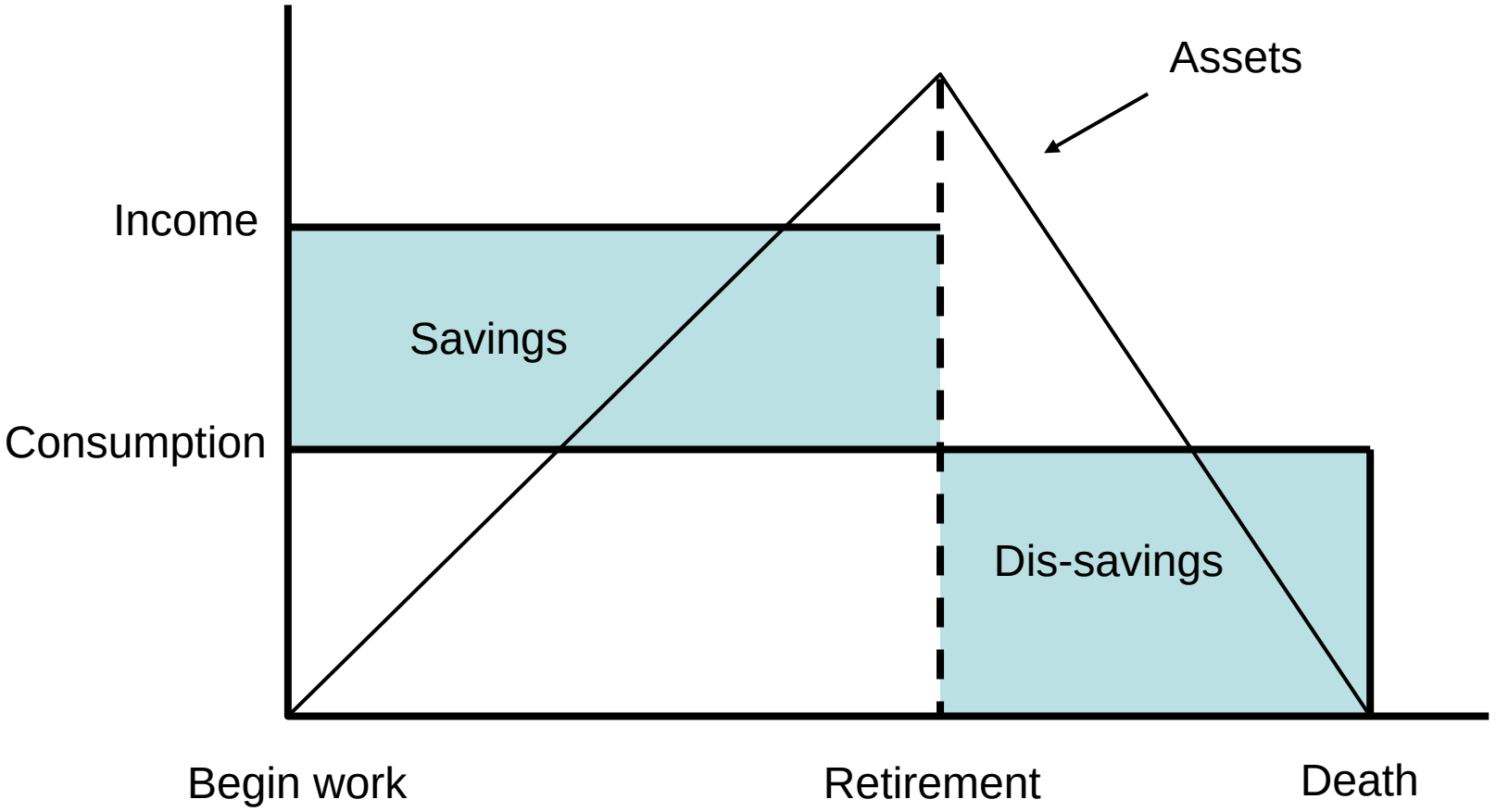


Changes in Labor Forces (Group 3 Countries)



Note: Data for 2006 and after based on Japan Center for Economic Research (JCER) forecasts.
Source: Ministry of Internal Affairs and Communications, *Labor Force Survey*; ILO, *LABORSTA*.

Lifecycle Hypothesis Concept



Outlook for East Asia Regional Growth Rates (average annual growth rates; %)

	1991-2000	2001-2005	2006-2020	2021-2030	2031-040	2041-2050
Japan	1.2	1.2	1.4	1.1	0.6	0.0
Group 2						
China	10.6	9.3	5.5	3.8	1.9	0.9
Korea	6.1	4.4	3.4	1.7	0.8	0.1
Singapore	7.9	4.2	3.8	1.8	1.2	1.0
Thailand	4.5	5.1	3.2	2.4	2.1	1.8
Group 3						
Malaysia	7.6	3.8	4.7	3.7	2.8	2.3
Indonesia	4.4	4.1	3.1	3.7	3.2	2.6
Philippines	2.6	3.6	4.6	4.6	3.5	2.7
Vietnam	7.0	7.3	5.0	3.7	3.2	2.5
India	5.4	6.6	5.0	3.8	3.4	2.9

Source: Japan Center for Economic Research (JCER), *Changing Demographics in Asia* (January 2007).

Rankings

GDP Ranking

(unit: $100 billion)

		2005
1	EU	111.6
2	U.S.	110.9
3	China	77.3
4	Japan	34.7
5	India	33.8

	2030
China	251.6
U.S.	214.1
EU	163.1
India	103.0
Japan	47.1

	2050
U.S.	339.6
China	333.9
EU	198.9
India	191.2
Japan	49.9

Per-Capita GDP Ranking (Asia)

(unit: $1,000)

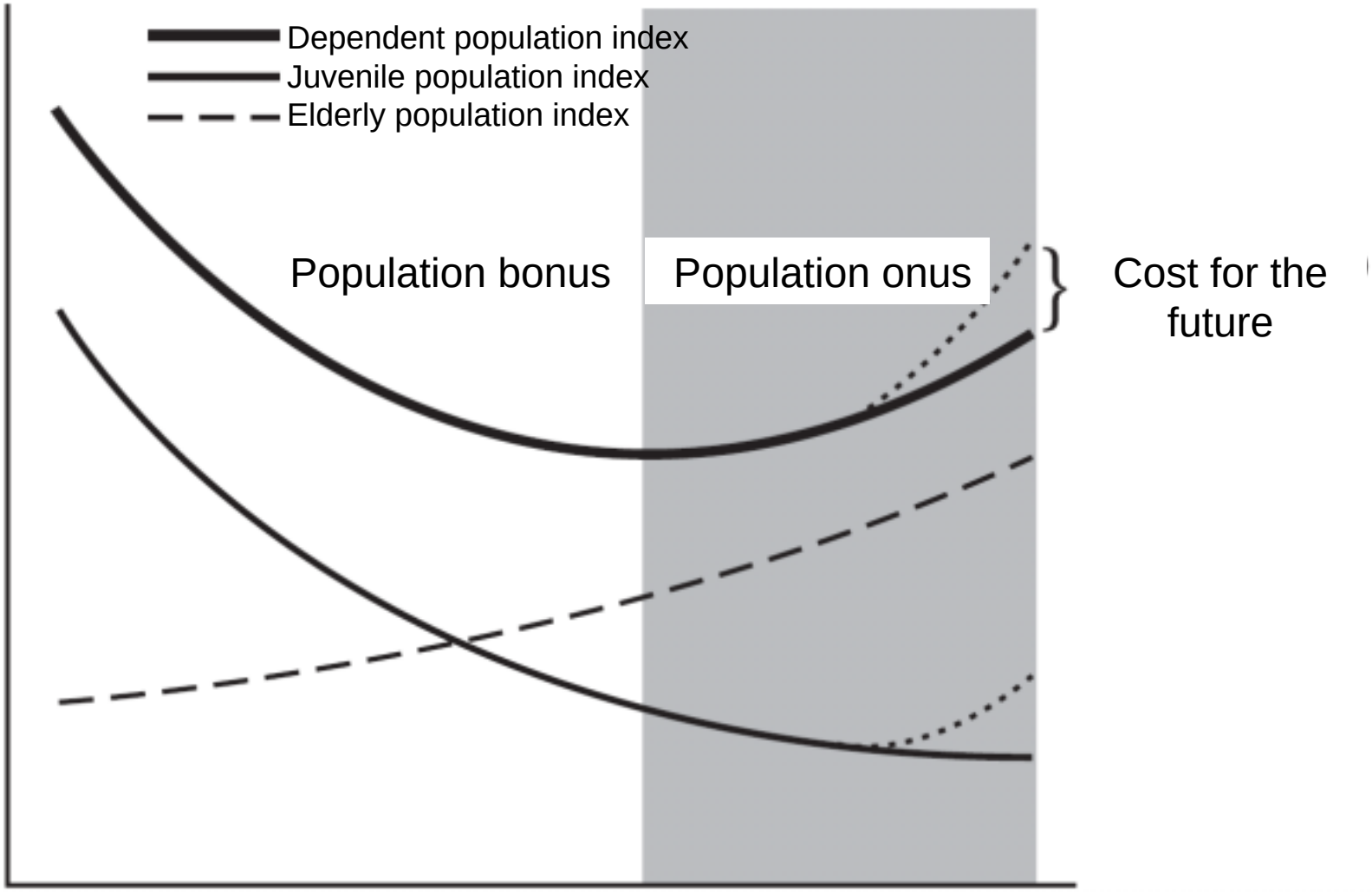
		2005
1	U.S.	37
2	Hong Kong	30
3	Japan	27
4	Singapore	27
5	EU	25

	2030
U.S.	59
Singapore	47
Japan	41
Hong Kong	40
Korea	39

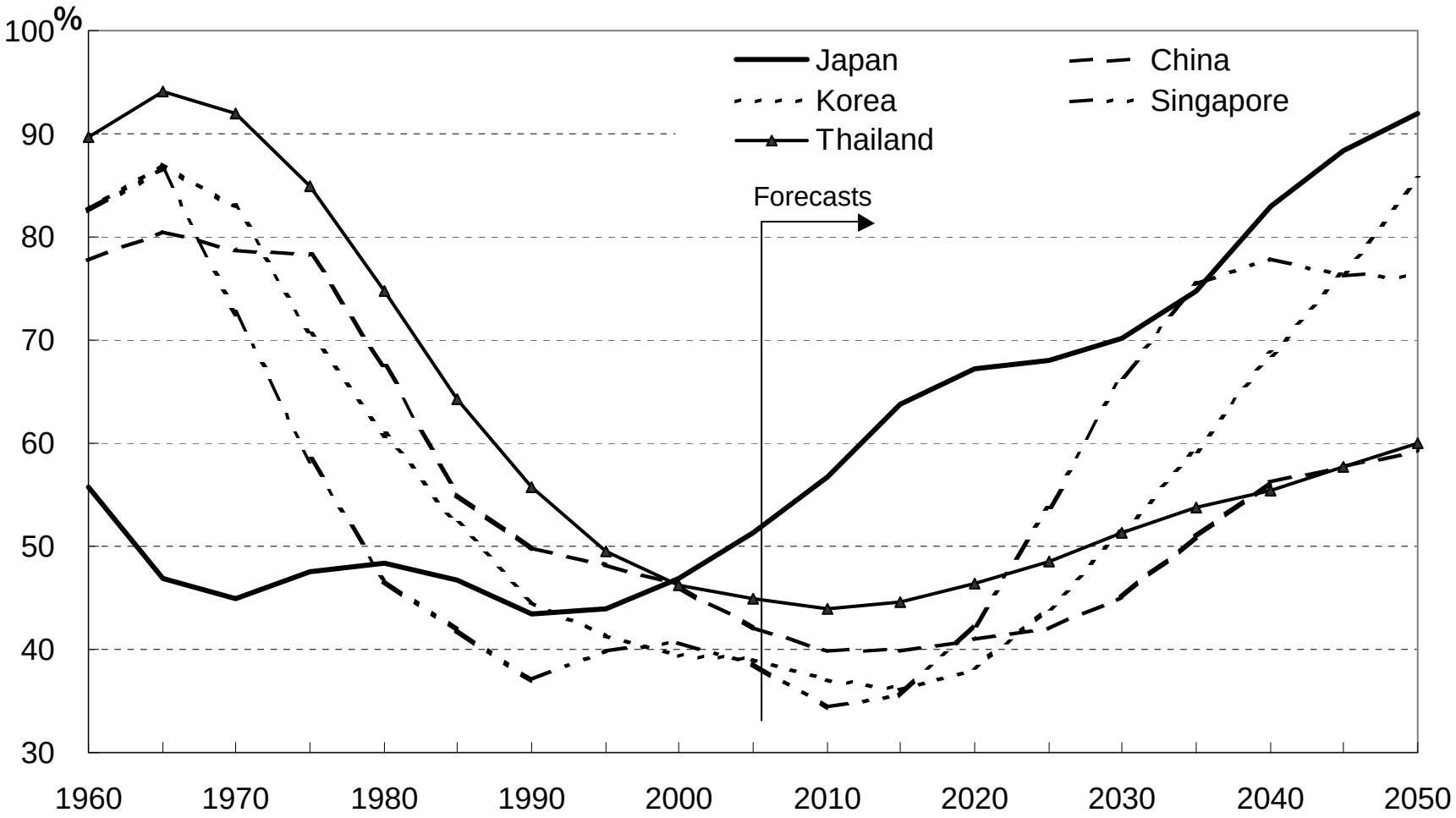
	2050
U.S.	86
Singapore	63
Japan	53
Korea	52
Hong Kong	50

Note: Year 2000 standard purchasing power parity in dollars.

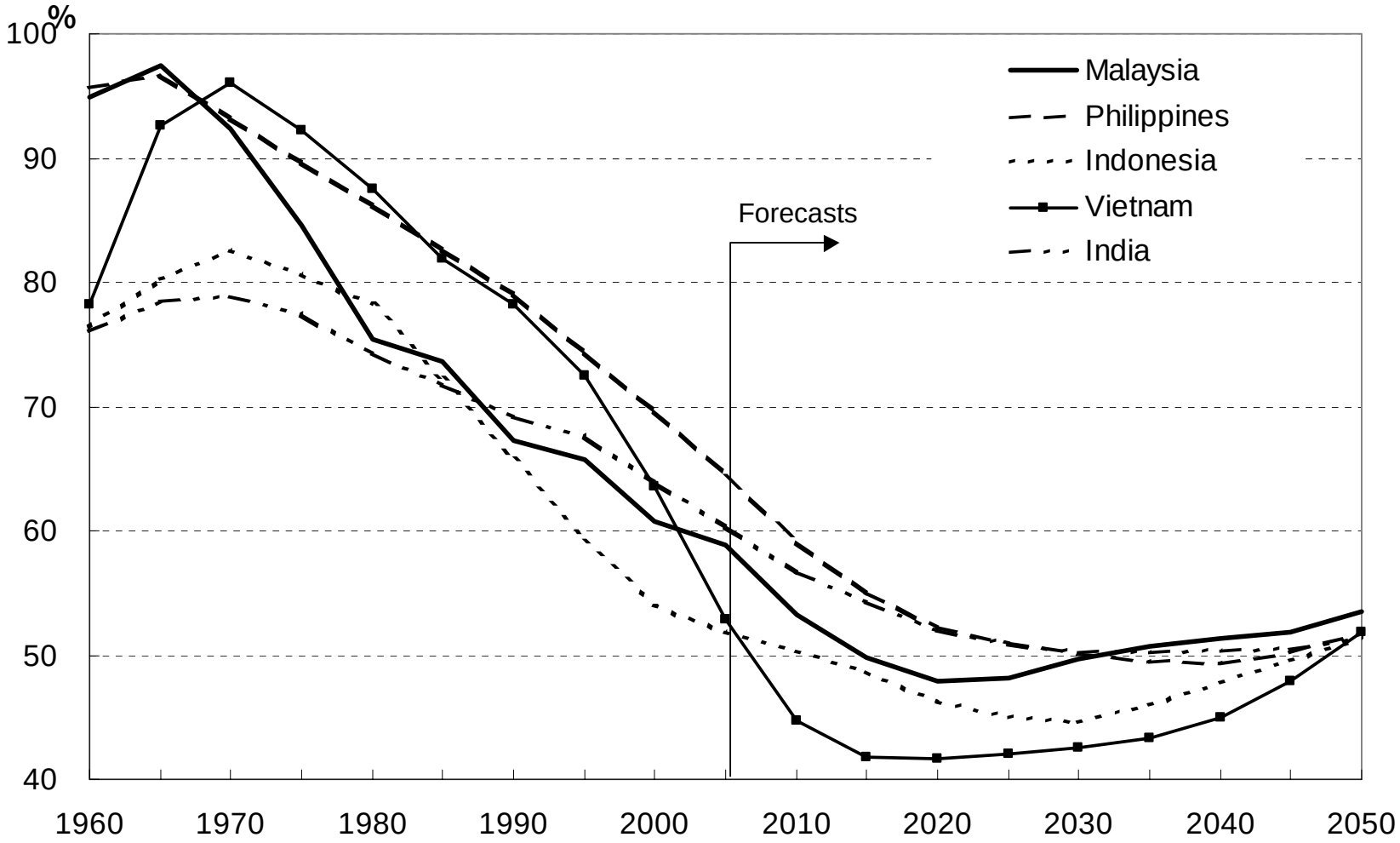
Population Bonus and Population Onus



Changes in Dependent Population Index (Japan + Group 2 Countries)

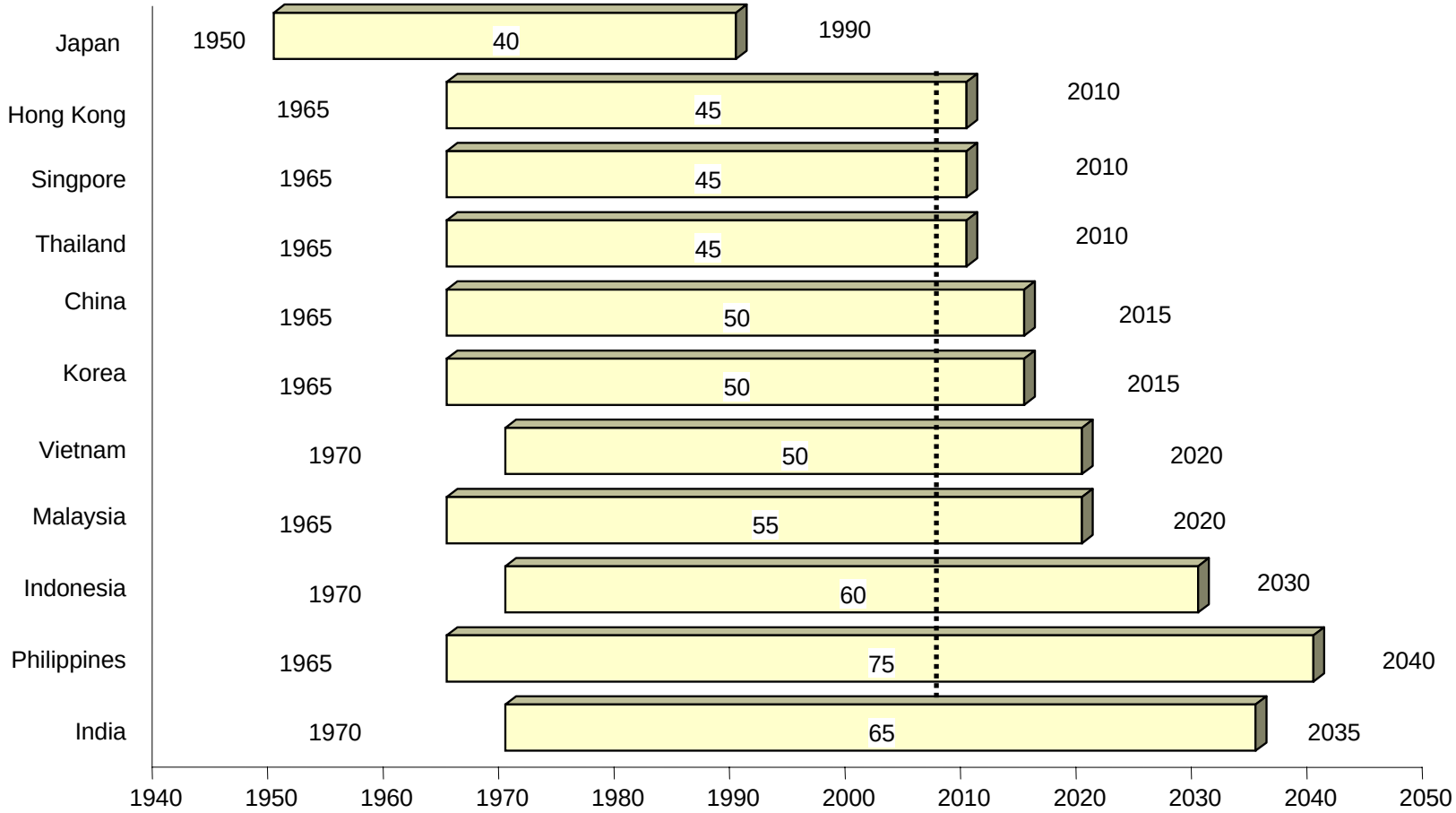


Changes in Dependent Population Index (Group 3 Countries)



Note: Data for 2006 and after based on Japan Center for Economic Research (JCER) forecasts.

Population Bonus Period Overview



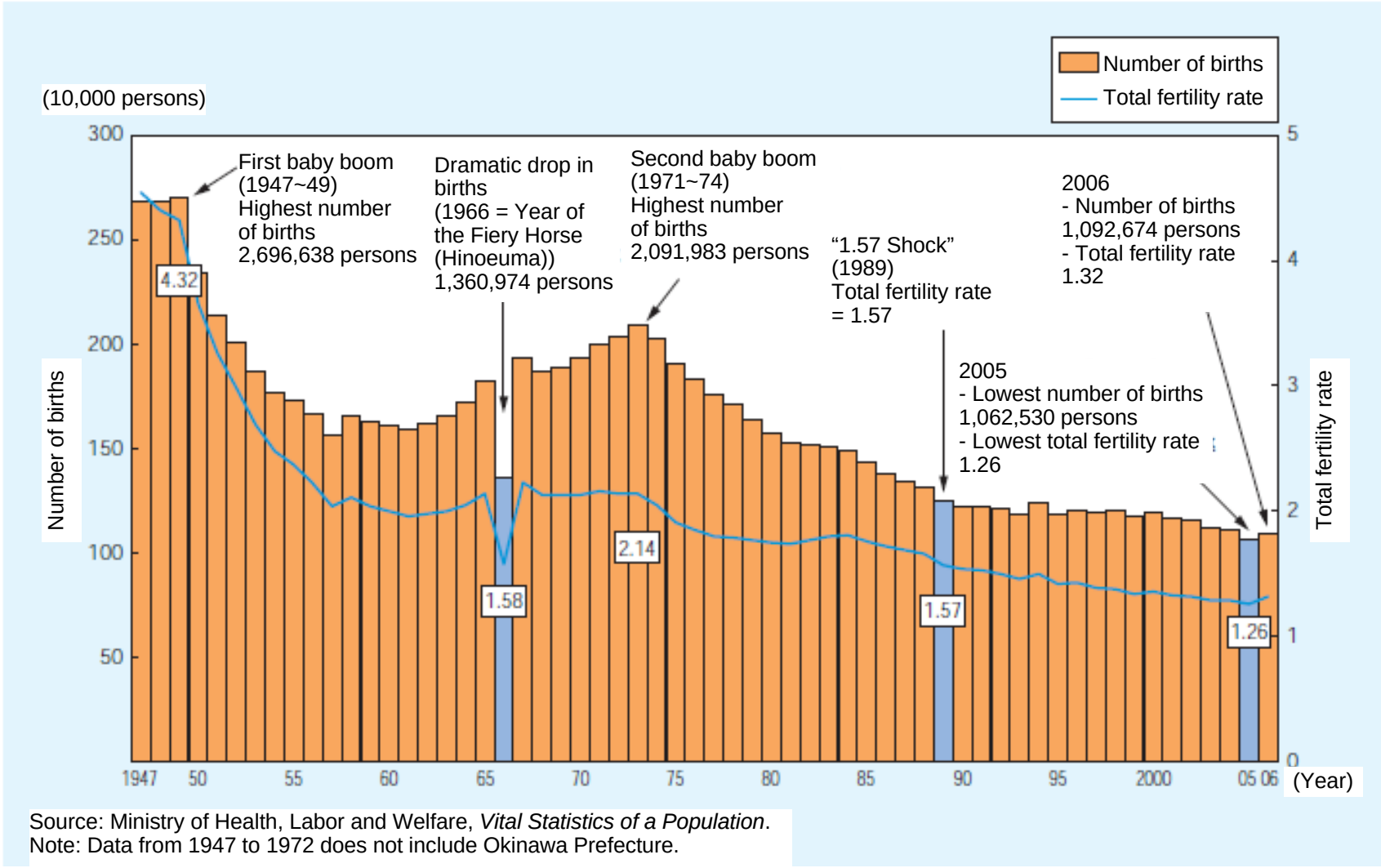
Note: Population bonus periods defined as periods during which dependent population indexes continue to decrease. Figures measured at five-year intervals.

Per-Capita GDP at the end of Population Bonus

Country	Population bonus final year	Per-capita GDP
Japan	1990	23,504
Thailand	2010	8,740
Singapore	2010	30,391
Hong Kong	2010	32,040
Korea	2015	27,724
China	2015	9,722
Malaysia	2020	15,571
Vietnam	2020	4,763
Indonesia	2030	6,207
India	2035	7,758
Philippines	2040	12,289

Demographic Changes and Japan's Economic Society

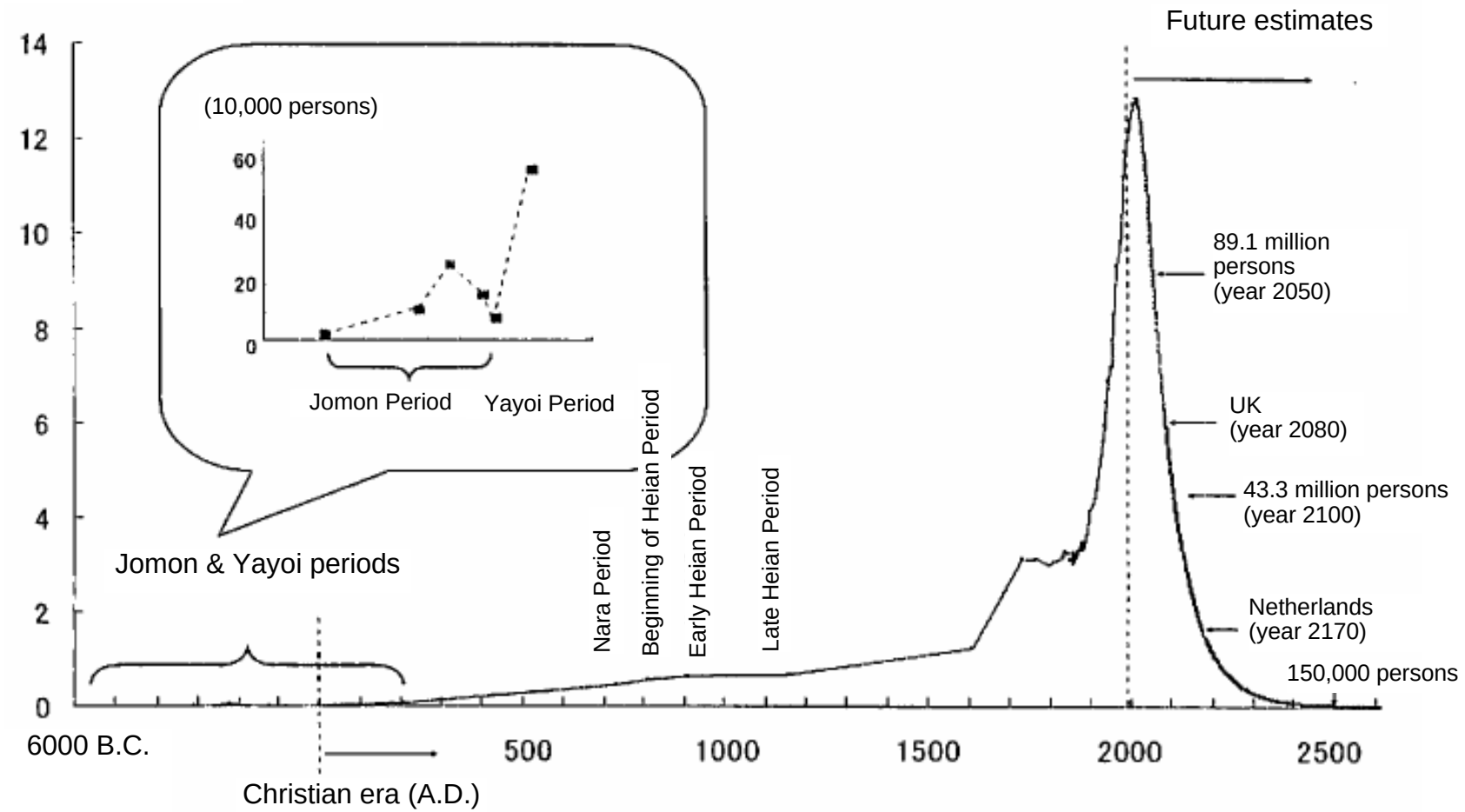
Annual Trends in Number of Births and Total Fertility Rate



Source: Ministry of Health, Labor and Welfare, *Vital Statistics of a Population*.
Note: Data from 1947 to 1972 does not include Okinawa Prefecture.

From Cabinet Office, *2007 White Paper on Birthrate-Declining Society*.

Extra-Long Estimates of Population Scale

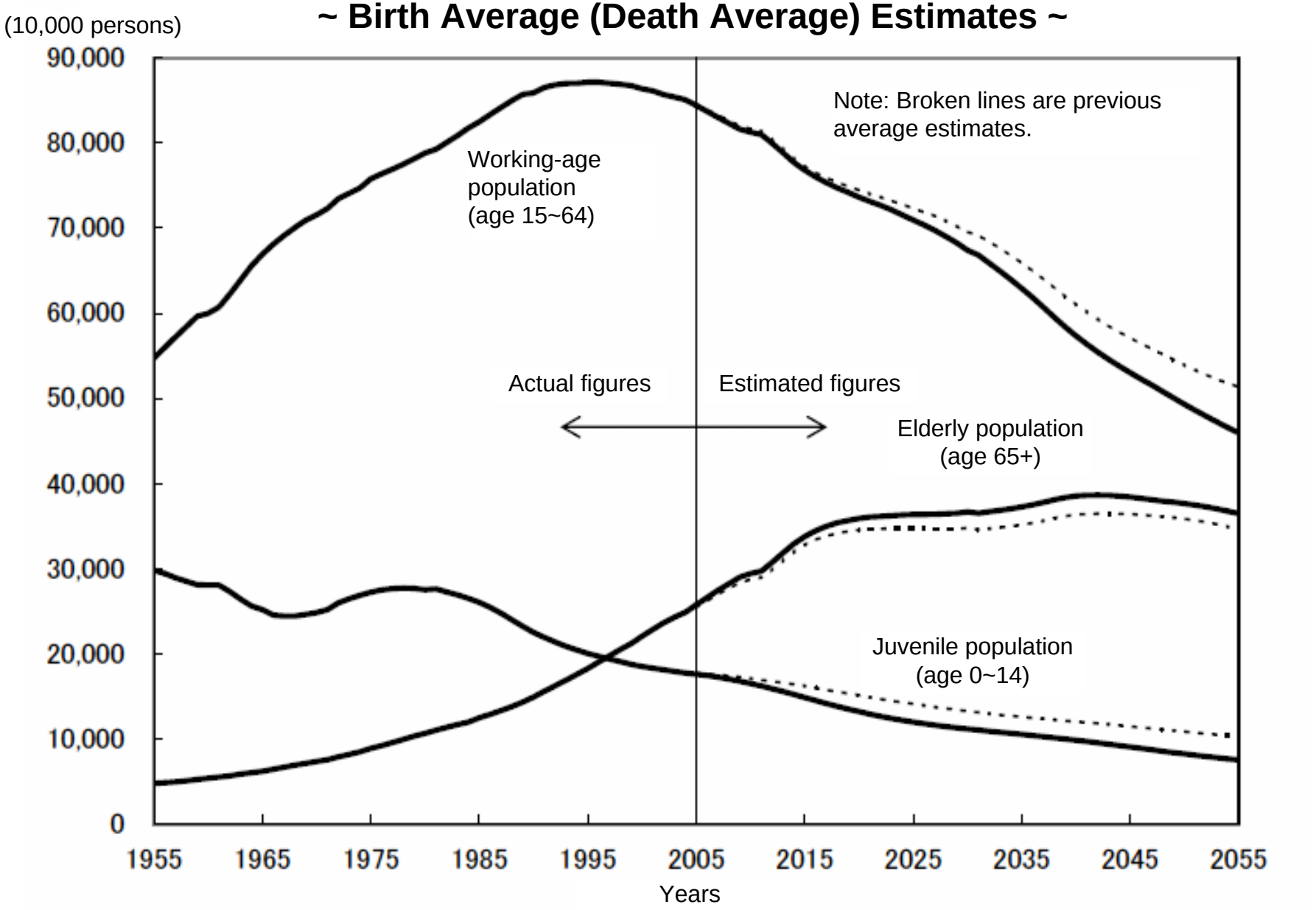


(Notes)

1. Prepared from *Interpreting Japanese History from Demographics*, Hiroshi Kito, National Institute of Population and Social Security Research, *Demographic Statistics* (2003 edition); United Nations, *World Population Prospects*, *2002 Revision*.
2. With regard to population estimates, simple extrapolation of birthrates and death rates as of 2001, made without consideration for influx and outflow of immigrants and other entities.
3. With regard to the U.K. and the Netherlands, years expressed are equivalent to the population scale in both countries in 2000.

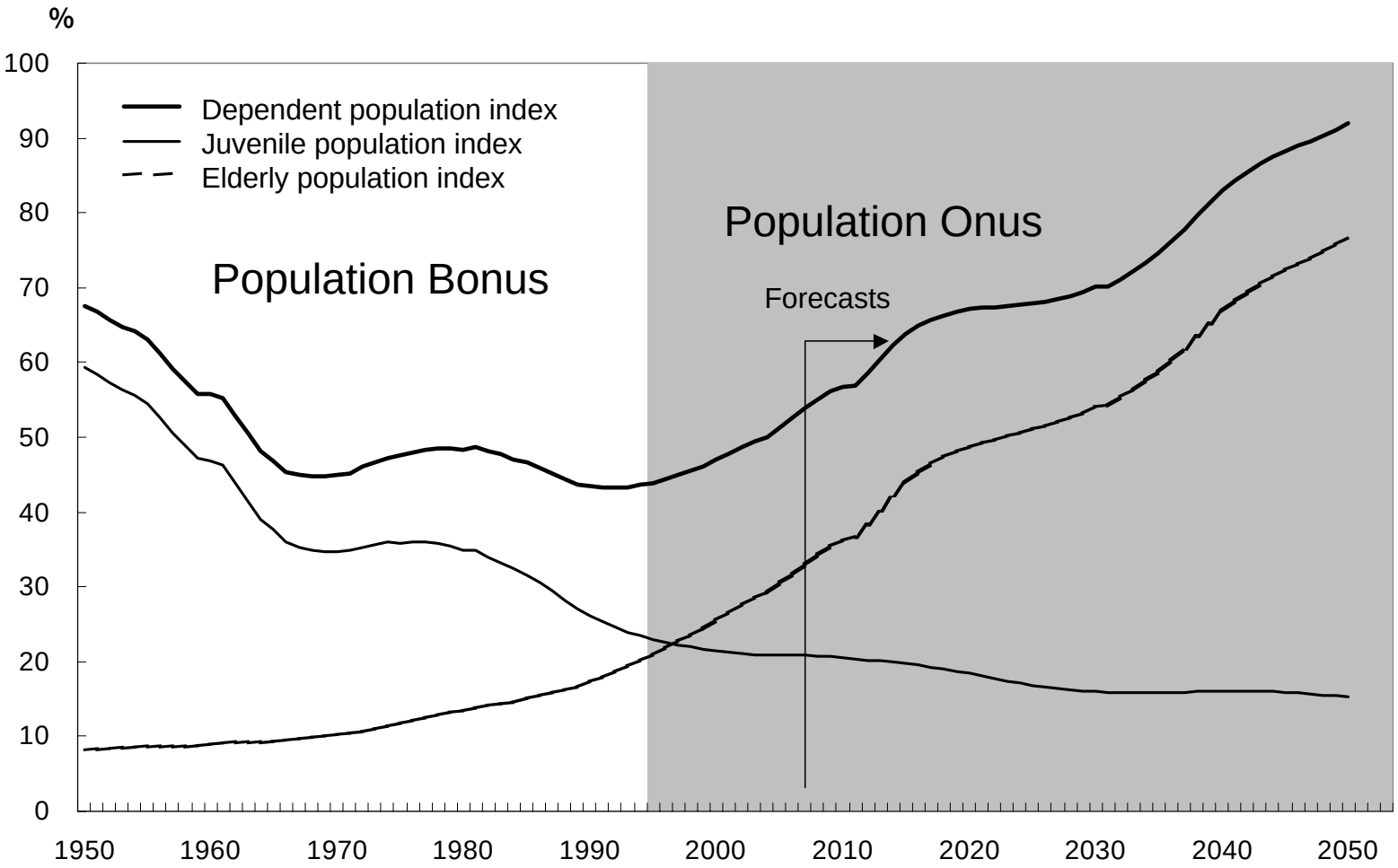
From NIRA, *Research into Population Decreases and Aggregate National Strength* (March 2004).

Demographic Trends for Three Age Categories
~ Birth Average (Death Average) Estimates ~



Medium estimates for *Population Estimates* (December 2006), National Institute of Population and Social Security Research.

Trends in Japan's Dependent Population Index ~ Japanese Population Bonus and Onus



Note: Data for 2006 and after based on Japan Center for Economic Research (JCER) forecasts.
Source: Ministry of Internal Affairs and Communications, *National Census*.

Japan Economic Society Under Population Onus

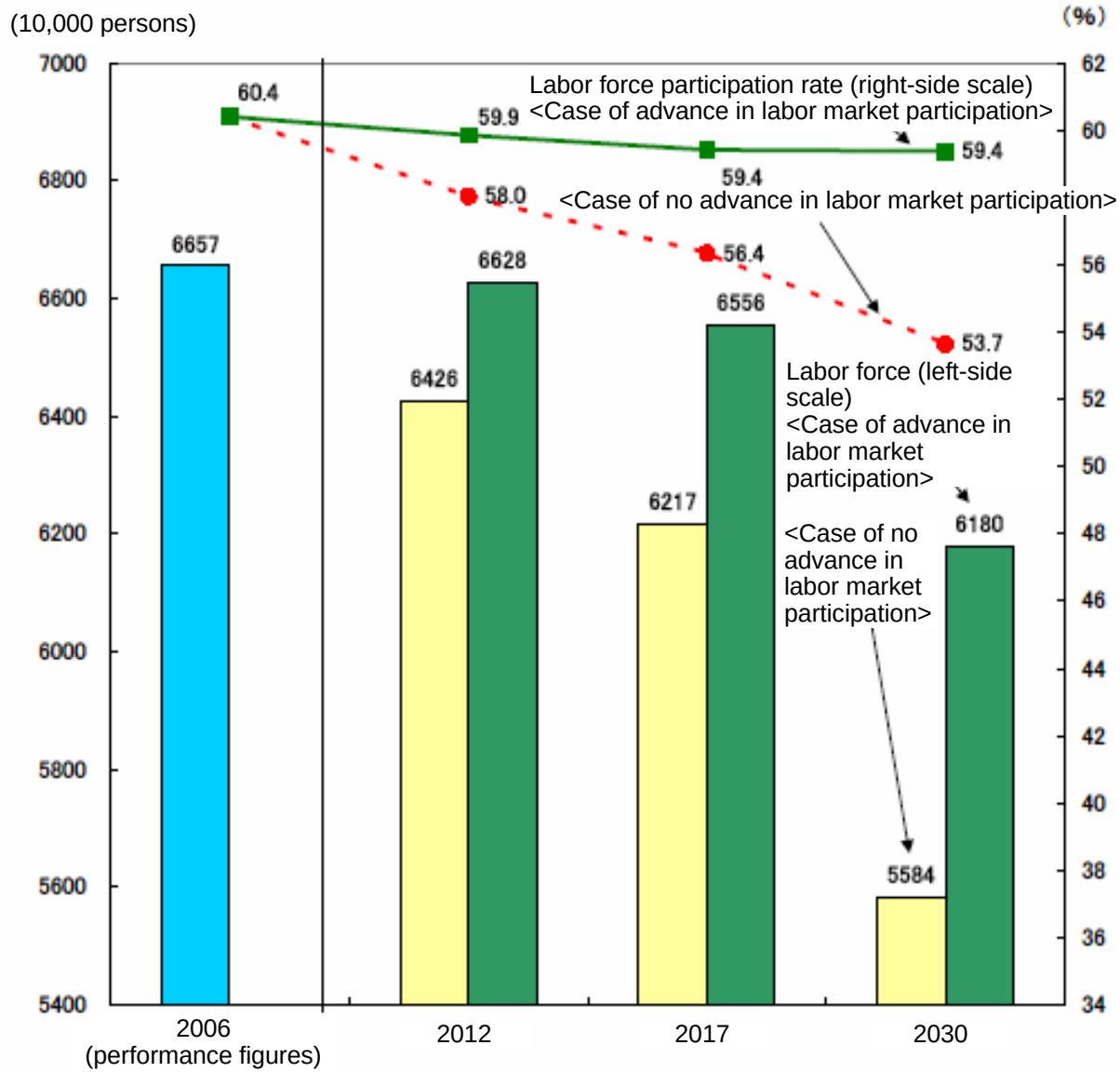
Economic impact: Decline in growth potential

1. Intensifying labor shortage
2. Declining savings rate

Social impact: Increasingly heavy pressure on social security system

1. Pension system demands reform
2. Increases forecast in medical expenses

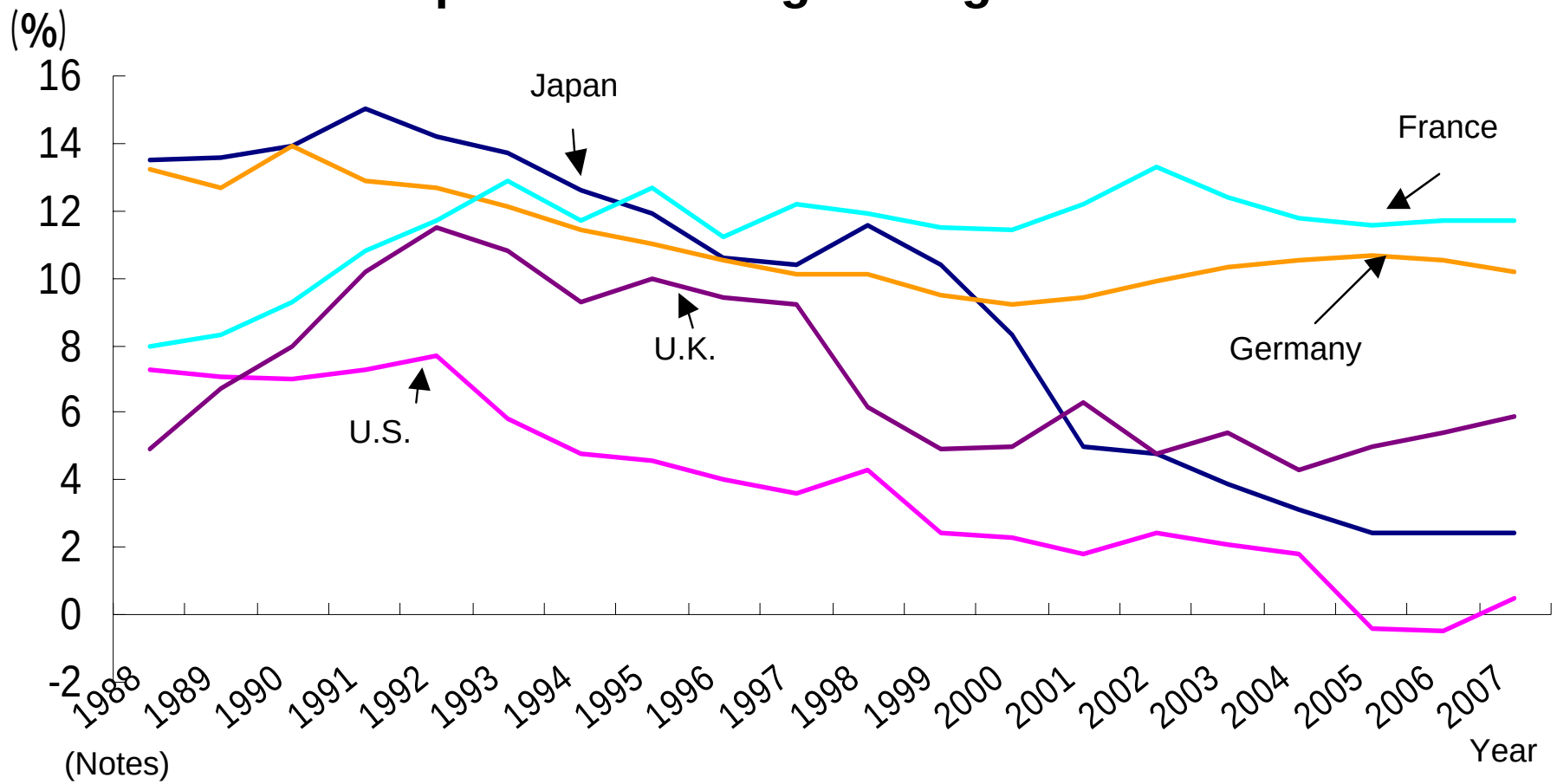
Labor Force Forecasts



Source: For 2006, *Labor Force Survey*, Ministry of Internal Affairs and Communications Statistics Bureau; 2012 and after, studies conducted by Employment Policy Research Group, based on estimates of Japan Institute for Labor Policy and Training (JILPT) Labor Supply-Demand Research Group.

From Employment Policy Research Group Report, Ministry of Health, Labor and Welfare (December 2007).

Japan's Declining Savings Rate



(Notes)
1. Prepared from OECD, *Economic Outlook No. 73*; Cabinet Office, *National Economic Accounting*.
2.Japan figures prior to 1989 based on 68SNA.
Source : Cabinet Office, *2003 Economic Policy White Paper*.

Changes in Dependent Population

	2005	2030	2050
Dependent population index	51.4 (one dependent supported by 1.9 working population)	70.9 (one dependent supported by 1.4 working population)	93.0 (one dependent supported by 1.1 working population)
Dependent elderly population index	30.5 (one dependent supported by 3.3 working population)	54.4 (one dependent supported by 1.8 working population)	76.3 (one dependent supported by 1.3 working population)
Dependent juvenile population index	20.8 (one dependent supported by 4.8 working population)	16.5 (one dependent supported by 6.1 working population)	16.7 (one dependent supported by 6.0 working population)

Medium estimates for *Population Estimates* (December 2006), National Institute of Population and Social Security Research.