Lessons learnt from a Japanese life insurer's challenge with low interest rates and demographic changes

For OLIS-LIAM-MII Life Insurance Seminar 2014

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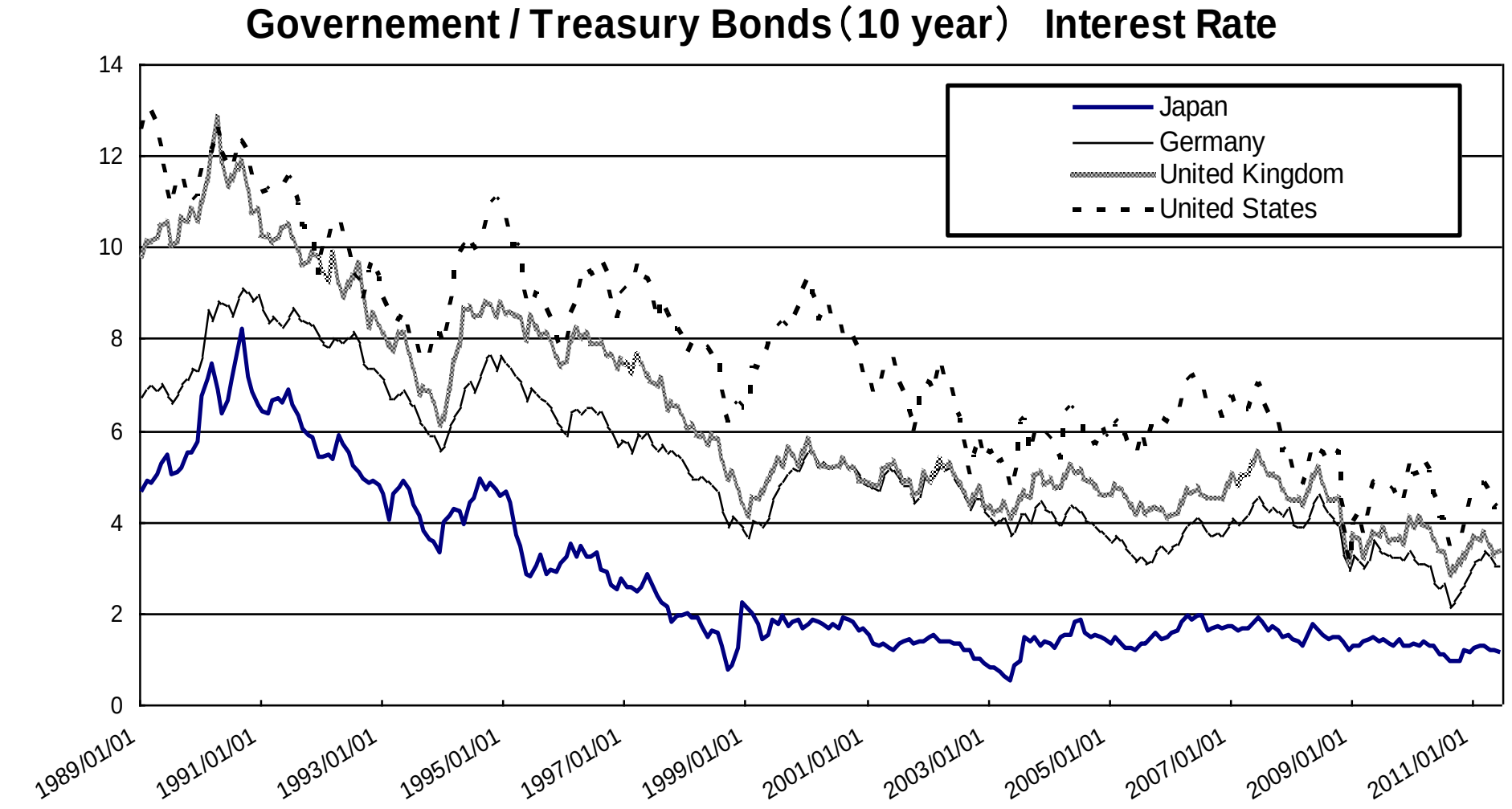
Contents

Japan experienced a low interest rate environment

- Interest rates remain low for a long time



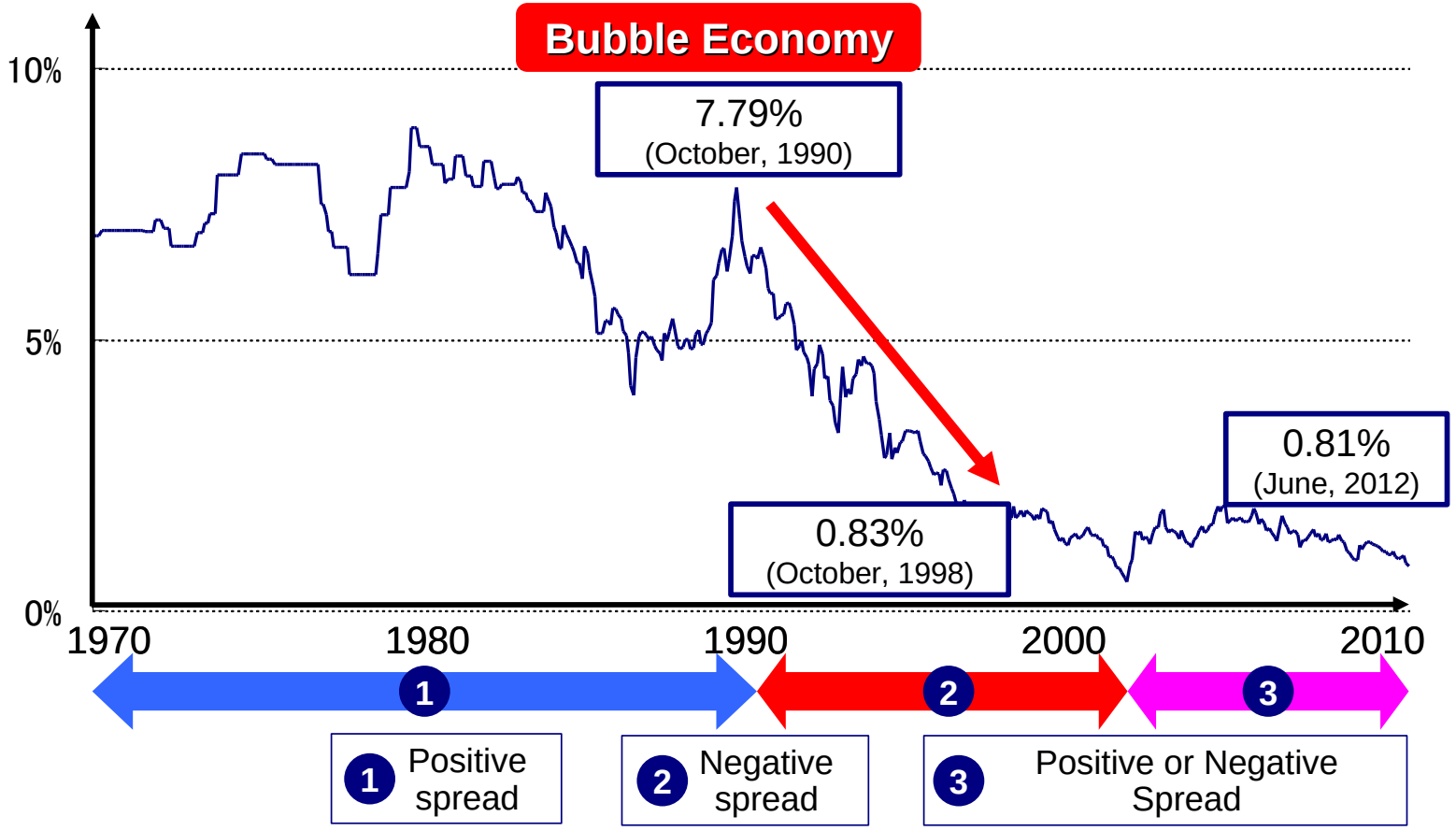
Stock market has been also disappointing

- Low interest rate coincided with poorly-performing stock prices

Negative spread problems in 1990s

- After the collapse of the bubble economy, Japan experienced a long-lasting, severe investment environment with low interest rates and poor performing stock prices. This, combined with a market dominated by long-term insurance products with high guaranteed returns, led to negative spread problems in the mid 1990s, although most Japanese life insurers endured the severe business environment.

10-year Interest Rate in Japan



Measures to reduce negative spreads

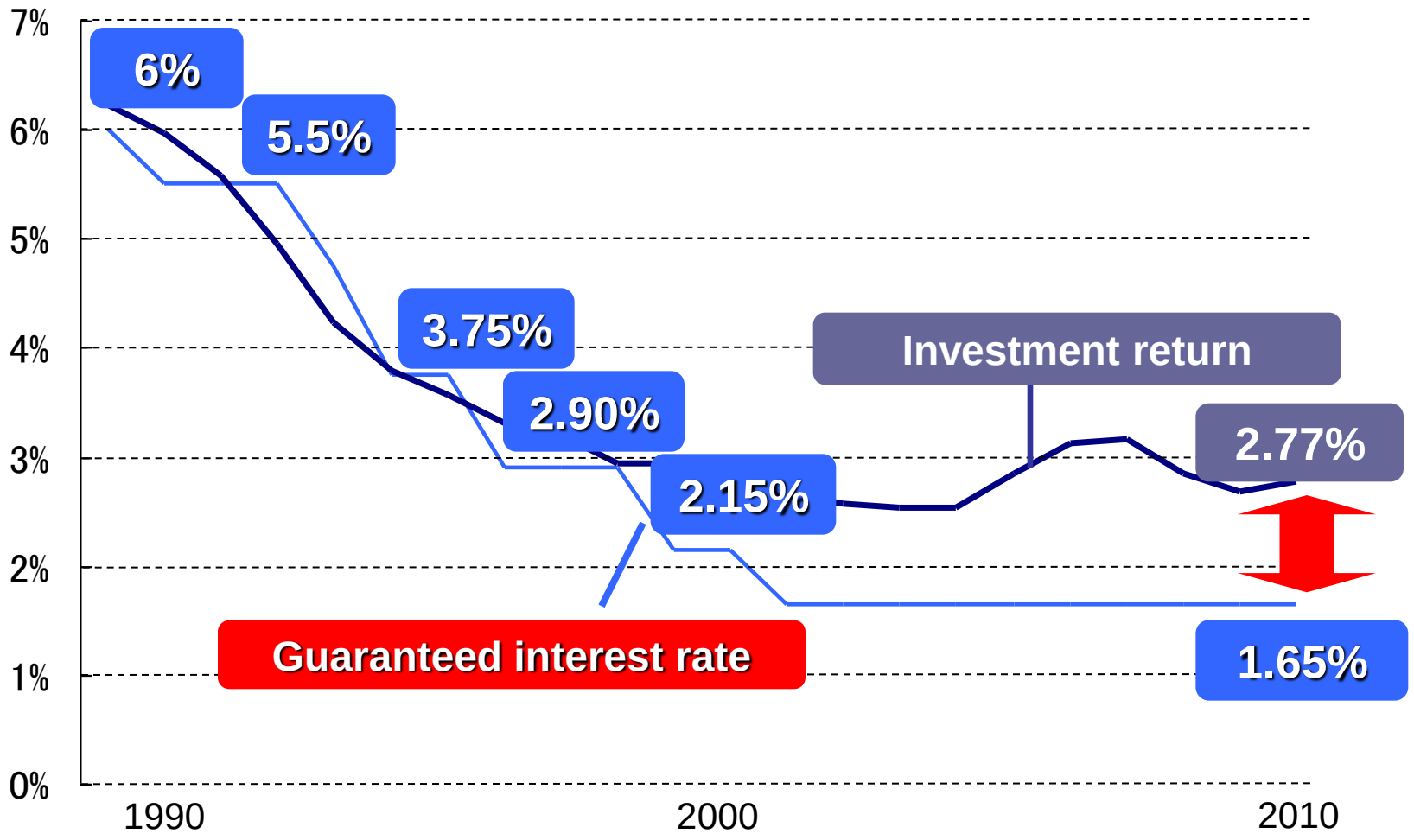
- The following are some examples of the measures taken by our company to reduce negative spreads during the difficult time.

- **Reduce guaranteed interest rate**
- **Secure mortality profit by enhancing protection-oriented products**
- **Reduce operating expenses and personnel expenses**
- **Change investment strategies to match the characteristics of insurance liabilities, and sophisticate risk management**
- **Accumulate additional policy reserves and enhance capital**

Measure I: Lowering guaranteed interest rate

- Reduced the guaranteed interest rate gradually for new policies

Lowered guaranteed interest rate

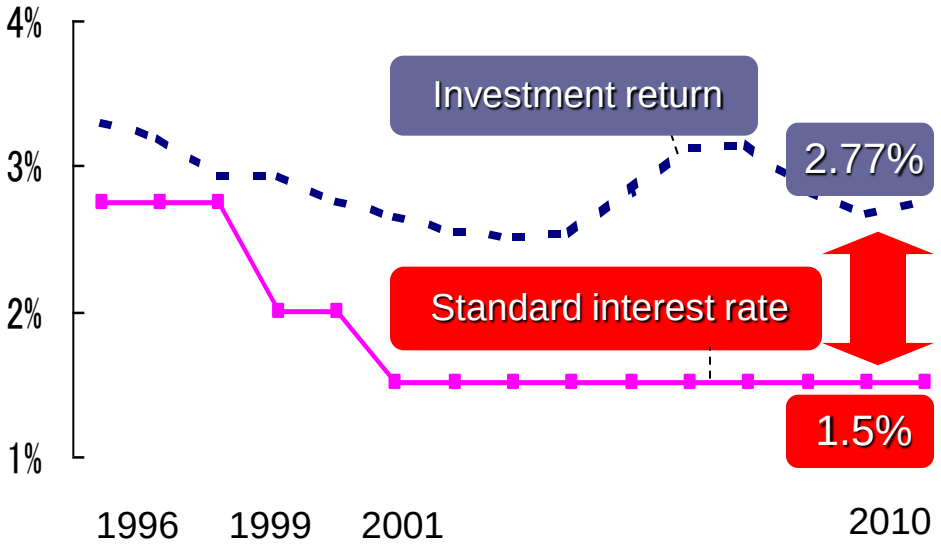


Regulatory incentives to reduce assumed interest rate

Standard Reserve Valuation System（Since 1996）

- This system requires to calculate the minimum policy reserve by using an interest rate prescribed by the supervisory authority. (based on 10 year Japanese government bonds)
- Where pricing is detached from the statutory interest rate, they may be significant additional reserving costs

Trends in the Standard Interest Rate



Continuity test – a mechanism to reflect the effect of rate change

- This amended Insurance Business Law also requires life insurance companies to conduct future cash flow tests to ascertain whether there would be any difficulty with the firm continuing its operations
- Japan's Actuarial Standards of Practice allows covering negative spread by surplus from future new business when conducting the "continuity test".

Measure II: Securing mortality profit

- Secured stable mortality profit
- Continued to develop protection-oriented products

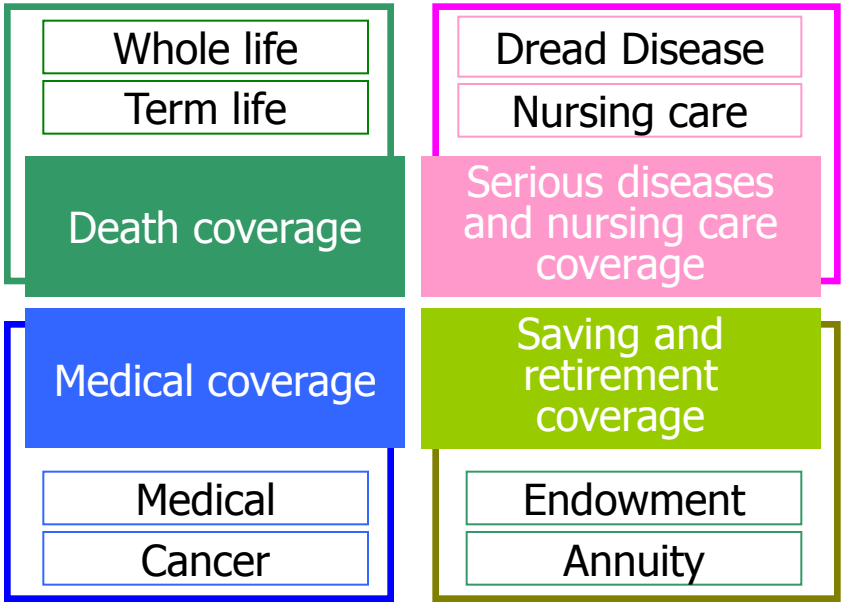
Stable mortality profit

(Billions of Yen)

	2005	2010
Mortality profit	540	437.4
Undistributed earnings	236.8	231.2

Protection-oriented products

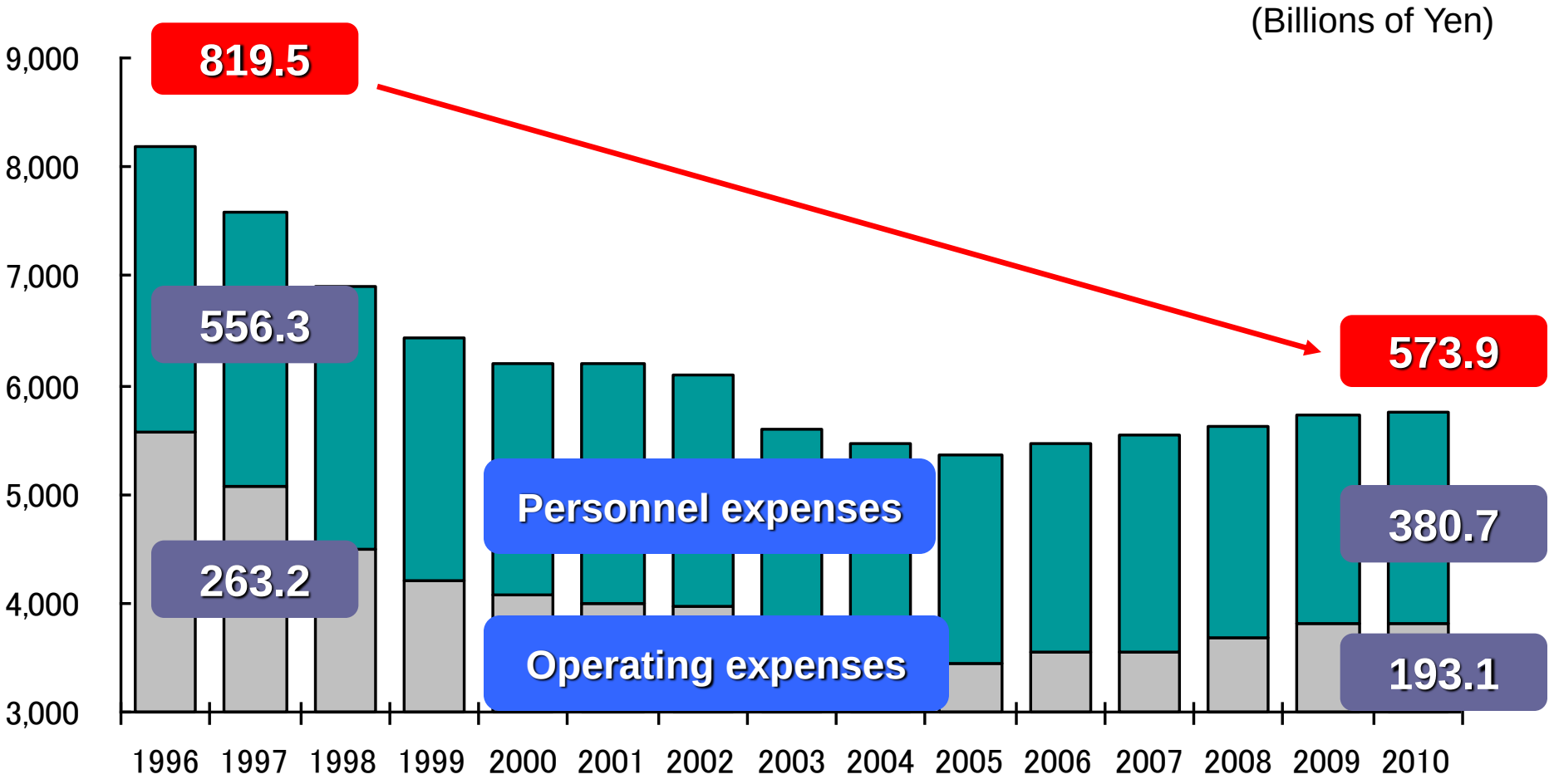
Customers can select insurance products from a well-balanced product portfolio



Measure III: Reducing expenses

- Reduced operating expenses and personnel expenses

Trends of expenses



Measure IV: Changing investment strategies

■ Changed investment strategies with more focus on ALM
- increase in yen-denominated fixed income asset
- extend asset duration

Breakdown of asset portfolio

	2000	2005	2010
Public and corporate domestic bonds	**27%**	**36%**	**46%**
Loans receivable	29%	20%	18%
Domestic stocks	17%	22%	13%
Foreign securities	11%	10%	12%

※hedged foreign bonds is included in the bond category.

(Market Conditions)

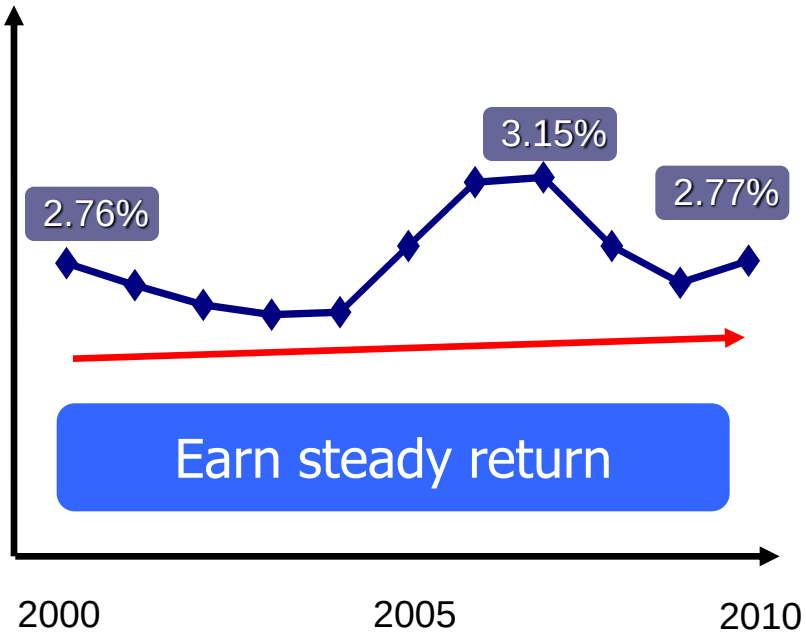
Long-term interest rates	1.28%	1.77%	1.25%
Nikkei Stock Average	¥13,000	¥17,060	¥9,755

Shift to long-term assets

	2000	2005	2010
Average asset duration	6.1years	8.0years	10.9years

※for public and corporate domestic bonds

Investment return



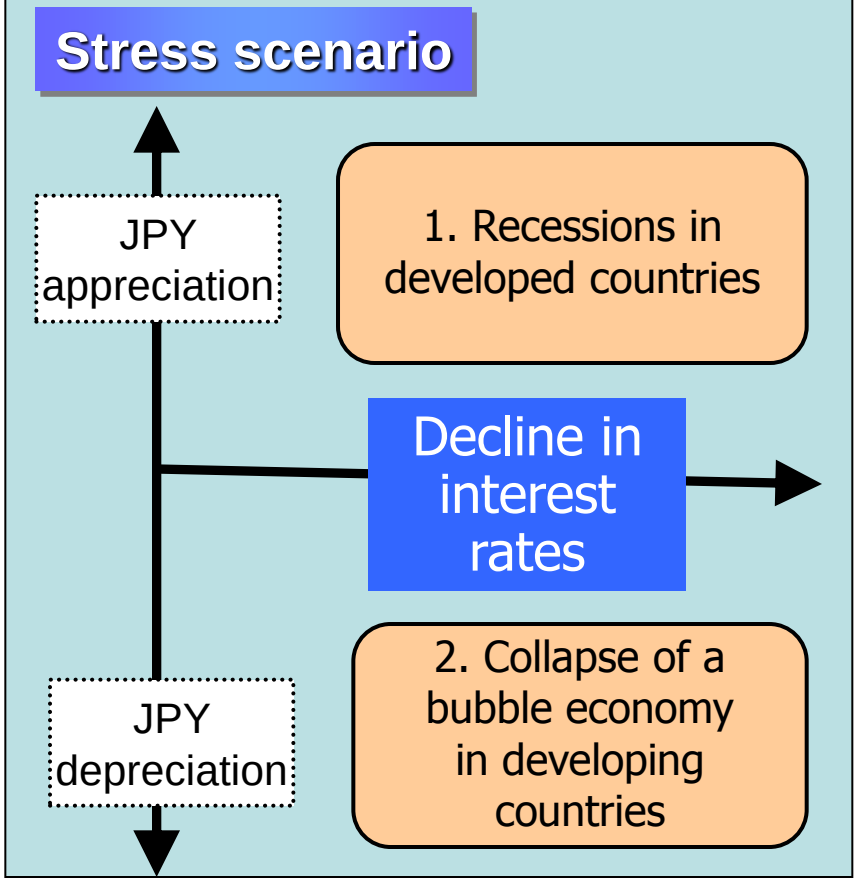
Measure V: Enhancing risk management

- For the purpose of internal management, developed and used both an RBC model (**early warnings**) and an economic model (**long-term vision**)

Regulatory Requirements and Internal Management

	Aims
Regulatory Requirements RBC model	➢ Ordering early remedial actions ➢ Confirming whether business activities can be continued for one year
Internal Management Early warnings RBC model	➢ Assessing the amount of risk stricter than regulation requires
Internal Management Long-term vision Economic model	➢ Ensuring appropriateness of ALM policies from medium- and long-term perspectives

- **Stress Tests:** Verify the adequacy of the ability to respond to a variety of events that could have a significant effect on profits



Measure VI: Accumulating policy reserves

■ Accumulated additional policy reserves, corresponding to the estimated future effect of "negative spreads"

Accumulation of additional policy reserves

Policy Reserves

Approx. ¥40trillion

➢ Reserves set aside by "lock-in method" in accordance with the laws and regulations

- For example, policies issued in 1990 are still evaluated at 6 percent, their guaranteed interest rate.

Additional policy reserves

Approx. ¥1.2trillion

➢ Accumulated additional policy reserves approx. ¥1.2 trillion since 2006

Reduction of the Negative Spread

Negative Spread Improvement Effect

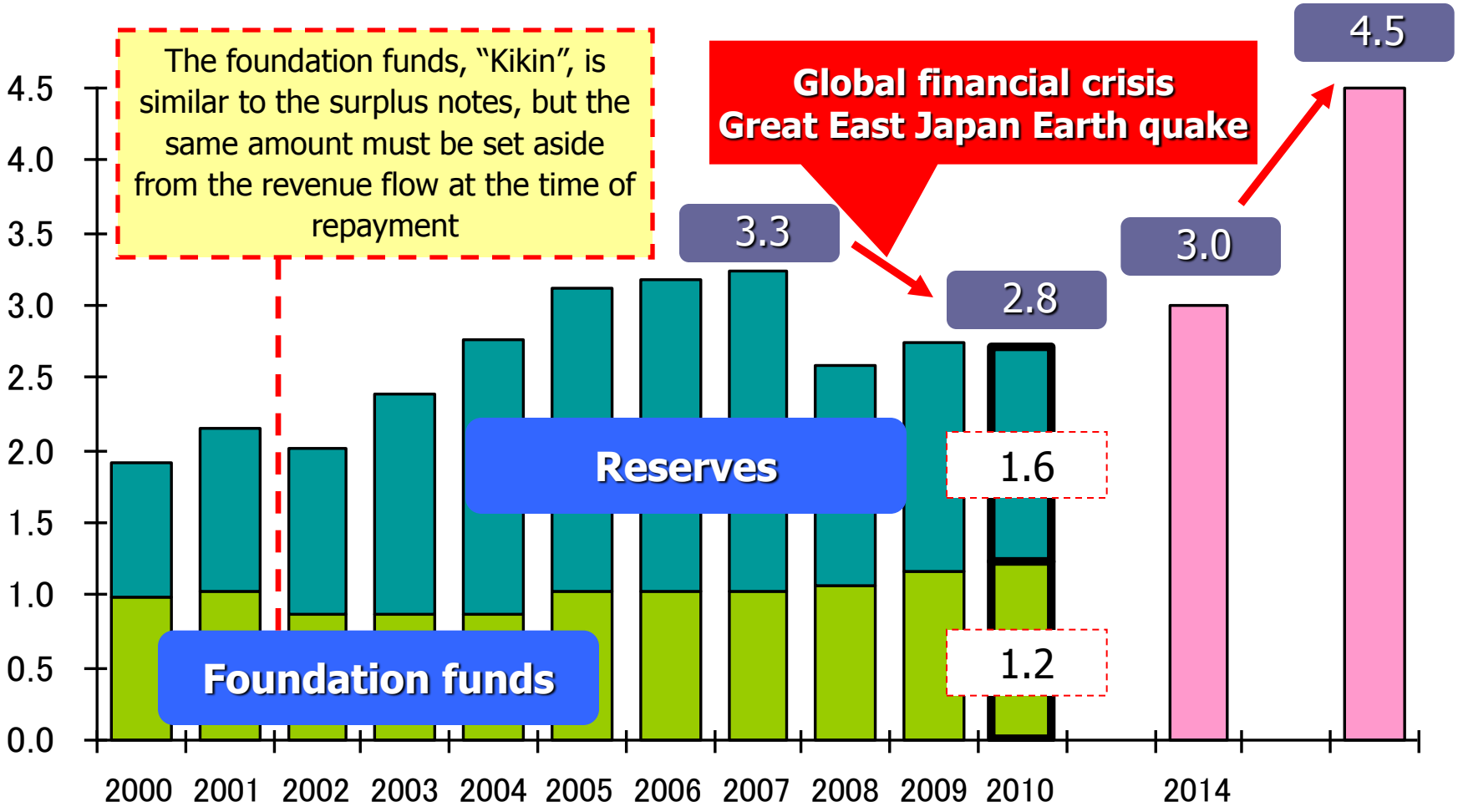
In terms of	2010
Amount	¥60 billion
Average guaranteed interest rate	24BP

Measure VII: Enhancing capital

- Enhanced capital by accumulating internal reserves and pursuing external foundation funds

Enhancement of capital

(Trillions of Yen)



Recovery from negative spread problems

- After more than a decade struggle, negative spread problems have been almost overcome: **Investment return > Average guaranteed interest rate**

Measures to reduce Negative Spread	Reduce guaranteed interest rate	Secure mortality profit, and reduce expenses	Change investment strategies, and sophisticate risk management	Accumulate additional policy reserves and enhance capital

Trends of investment gains

(Billions of Yen)

	2000	2005	2006	2007	2008	2009	2010
Difference between investment return and average guaranteed interest rate	(1.01%)	(0.44%)	(0.09%)	+0.08%	(0.10%)	(0.14%)	+0.07%
Impact of Negative Spread	(340)	(150)	(30)	+30	(40)	(60)	+30
Undistributed earnings	249	237	293	281	185	255	231

Contents

Life insurance insolvency in Japan

- There were several life insurance companies which went insolvent around year 2000 in Japan, mainly due to the significant downturns described earlier.
- Nevertheless, Japanese life insurers did not require any government funding as opposed to banks. Moreover, some companies did not require any financial support from the industry through the Policyholders Protection Corporation of Japan (PCCJ).

(Unit: Billion JPY)

	Nissan Mutual	Toho Mutual	Daihyaku Mutual	Taisho Life	Chiyoda Mutual	Kyoei Life	Tokyo Life	Yamato Life
Going insolvent	25-Apr-1997	4-Jun-1999	31-May-2000	28-Aug-2000	9-Oct-2000	20-Oct-2000	23-Mar-2001	10-Oct-2008
Procedure	Administrative	Administrative	Administrative	Administrative	Judicial	Judicial	Judicial	Judicial
Assets	1,823	2,190	1,300	155	2,233	3,725	690	195
Liabilities	2,126	2,840	1,618	191	2,828	4,415	763	259
Negative net worth	303	650	318	37	595	690	73	64
Reduction of technical provisions	None	10%	10%	10%	10%	8%	None	10%
Financial support from the industry (PPCJ)	200 (※)	381	145	27	None	None	None	28
Financial support from the government	None	None	None	None	None	None	None	None
Financial support	200	381	145	27	None	None	None	28

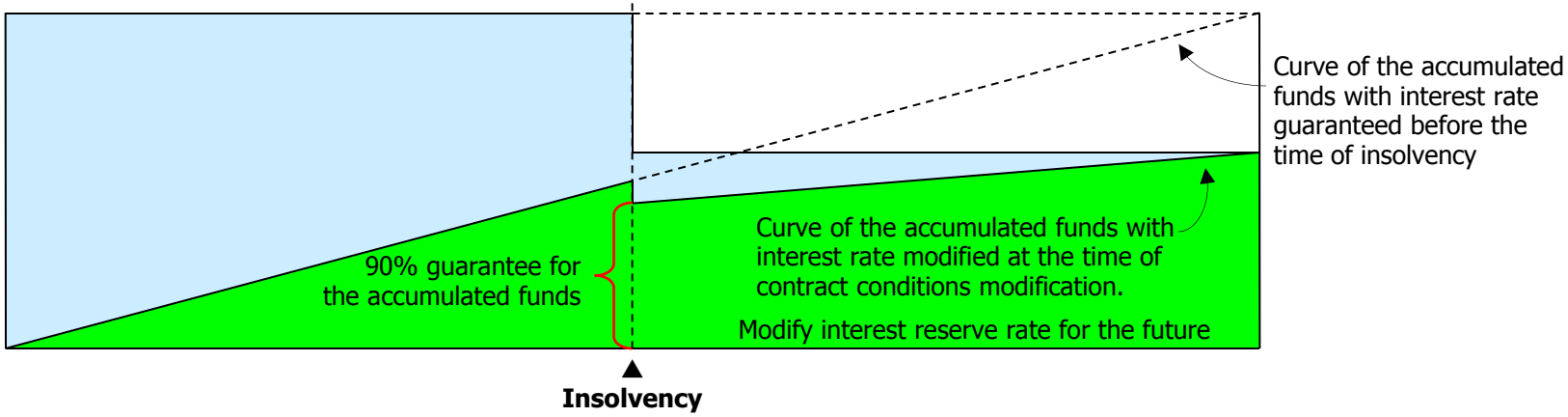
※The financial support was provided by the predecessor of PPCJ.

Modification of contract conditions at insolvency

- Japan established a resolution system that guarantees most of the accumulated interest in the past, while allowing to prospectively modify the future premium rates of existing contracts at the time of insolvency.
- As a result, the financial burdens associated with resolution have been limited (limited support from the Policyholders Protection Funds and no support from the government.) The resolution process was carried out in an orderly way.

Life insurance resolution system in Japan

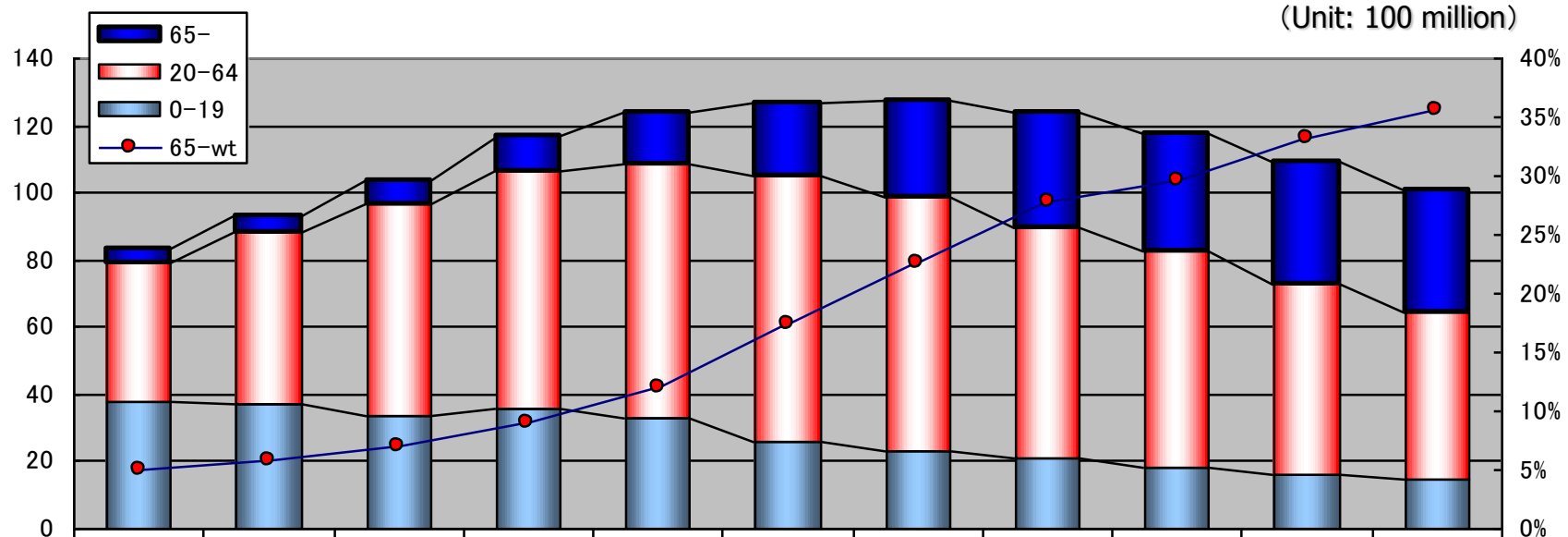
Interest accumulated in the past	Interest to be accumulated in the future
In general, 90% of the existing policyholder's interest at the time of insolvency would be guaranteed.	Premium rate/insured amount (assumed interest rate, etc.) of existing contracts is prospectively adjusted so that they are no more favorable than newly issued contracts.
While reflecting the impairment of the asset value, the accumulated interest of the existing policyholders is protected.	Future negative spreads are avoided.



Contents

Japanese population demographics

- Japanese population: 127 million 760 thousand as of 1 October, 2005, a drop of 0.02% from the previous year and decreasing since then
- Aged 65 and older reached 25.6 million, which exceeded for the first time 20% of total population and increasing since then

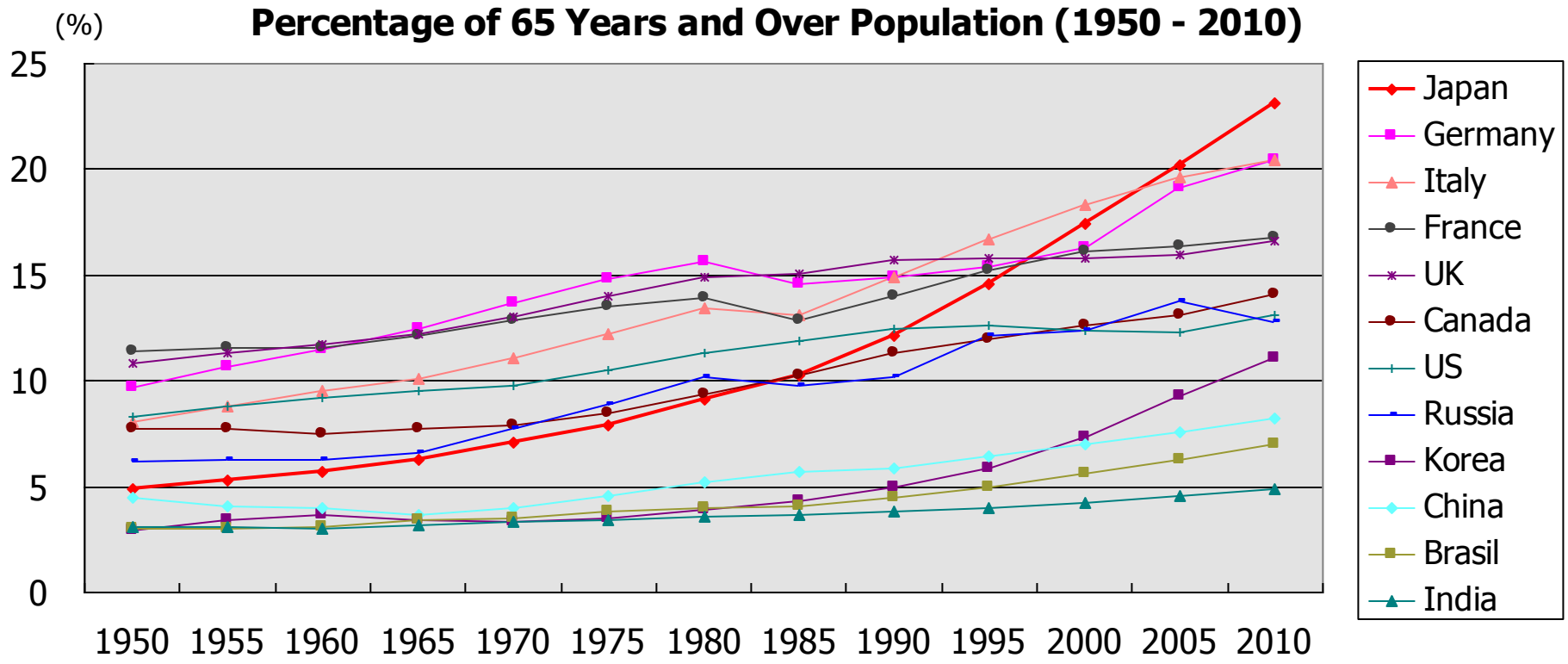


	1950	1960	1970	1980	1990	2000	2010	2020	2030	2040	2050
65-	4.1	5.4	7.3	10.7	14.9	22.0	28.7	34.6	34.8	36.3	35.9
20-64	41.1	50.7	62.5	70.6	76.1	78.9	75.6	68.6	64.5	56.6	49.8
0-19	38.0	37.4	33.9	35.8	32.6	26.0	23.1	20.9	18.3	16.4	14.9
65-wt	4.9%	5.7%	7.1%	9.1%	12.1%	17.4%	22.5%	27.8%	29.6%	33.2%	35.7%

(Source: National Institute of Population and Social Security Research "Japan's projected population")

Rapid aging

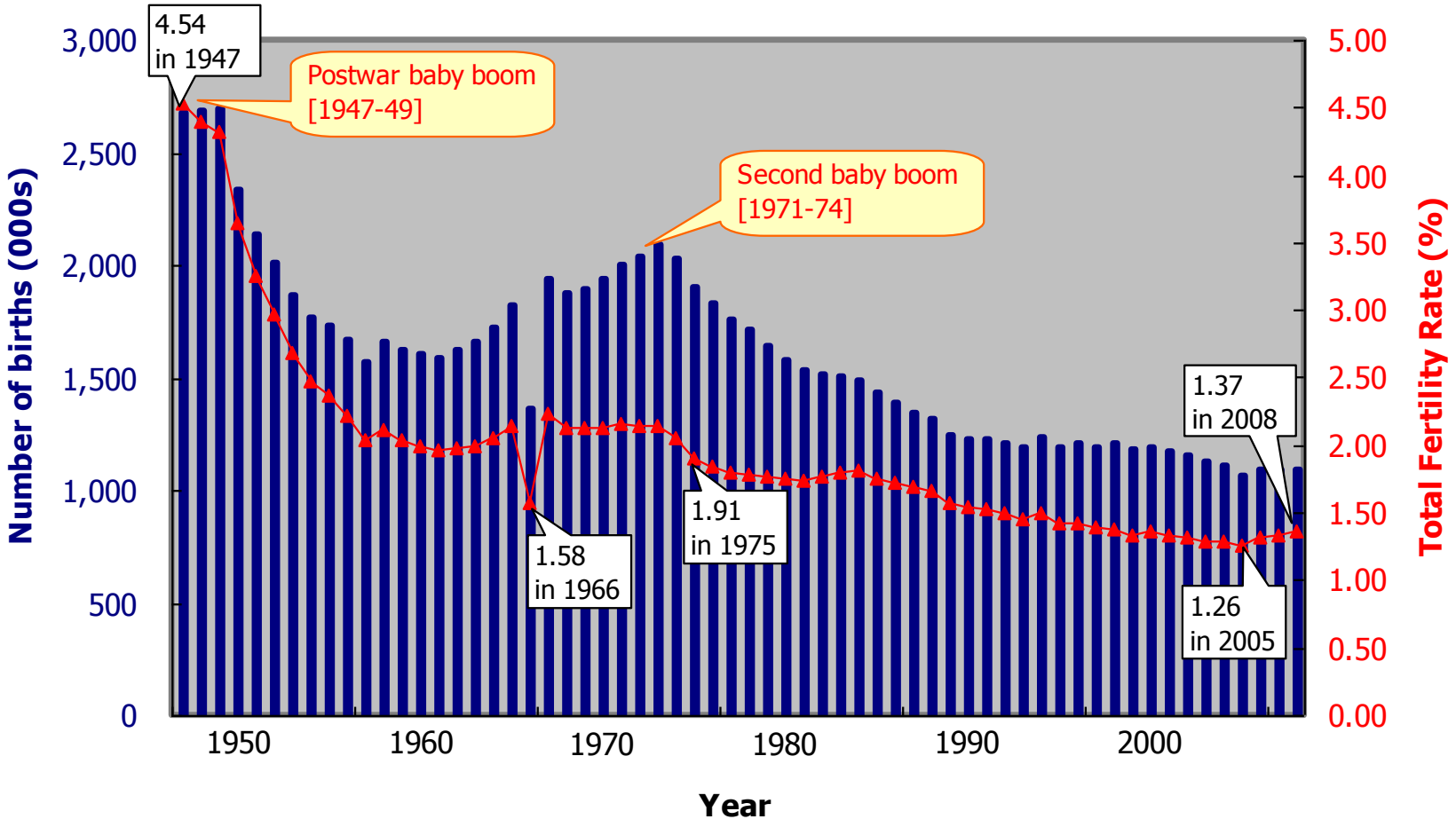
- Japan was in the lower-rankings until the 1980s, in the middle in the 1990s, and is already the highest in the early 21st century



(Source: Statistic Bureau, Data is based on United Nations, "World Population Prospects," The 2010 Revision
Note: Data for Japan is based on "Population Census of Japan")

Lower fertility rate - Trends in number of births

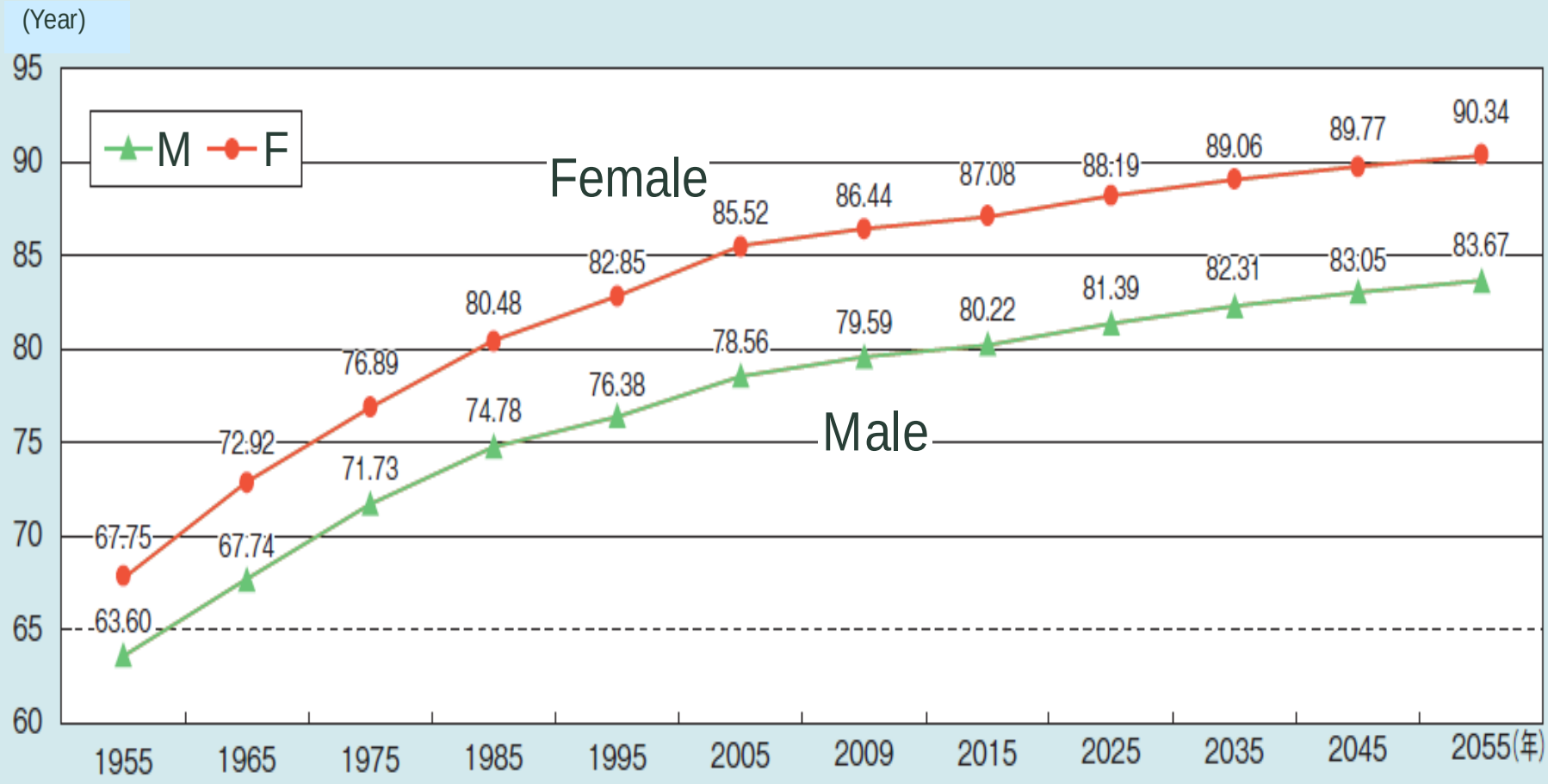
- Total fertility rate has dropped from 4.54 in 1947, to 1.91 in 1975, and to 1.26 in 2005
- Baby Boomers reaching retirement age!



(Source: Ministry of Health, Labor and Welfare, Vital Statistics)

Longer lifespan

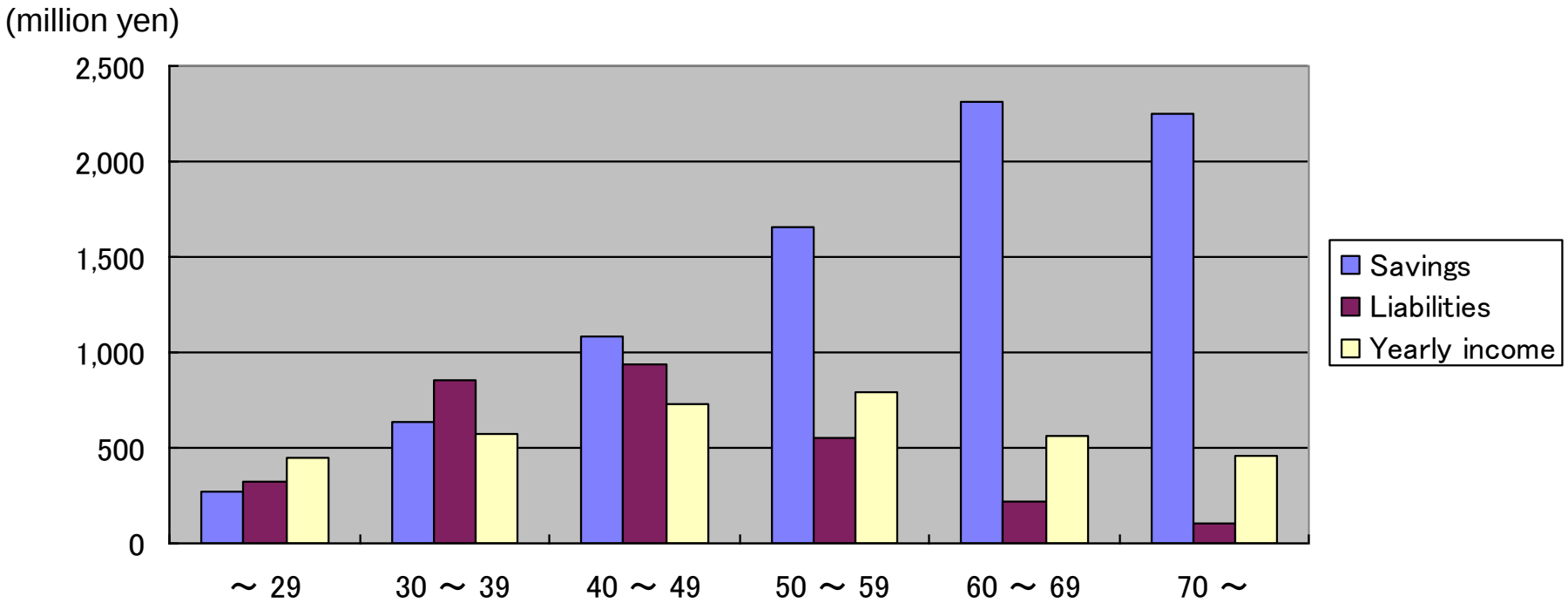
- Japanese life expectancy is among the highest in the world.
- Many Japanese women live alone for around 10 years after their husbands pass away.



Source: Ministry of Health, Labour and Welfare and National Institute of Population and Social Security Research ; courtesy of Swiss Re Japan.

Savings higher as age increases

- Savings per household by age in 2010
  - Savings are 2.7 million yen for a householder under age 30
  - 8.5 times larger at 23.14 million yen for a householder age 60 or older
  - Liabilities to be higher as age increases up to the ages 40 to 49, at which age they peak and begin to decrease



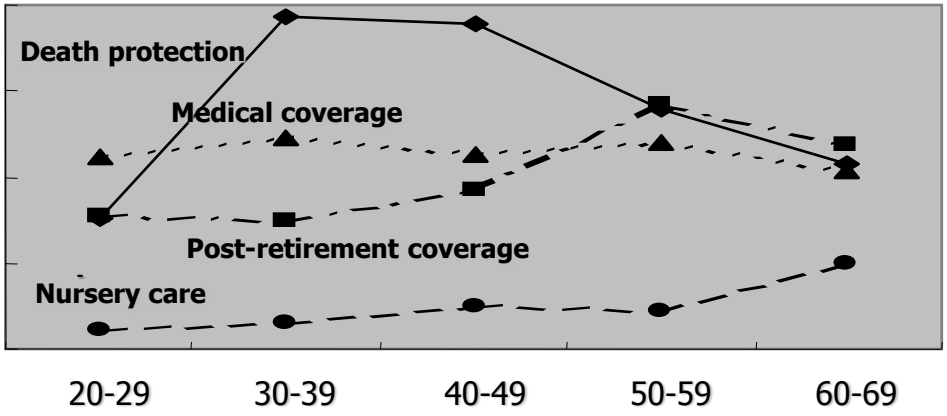
(Source: Annual report on the family income and expenditure survey. Income and expenditure, Statistics Bureau, Ministry of Internal Affairs and communications 2010)

Contents

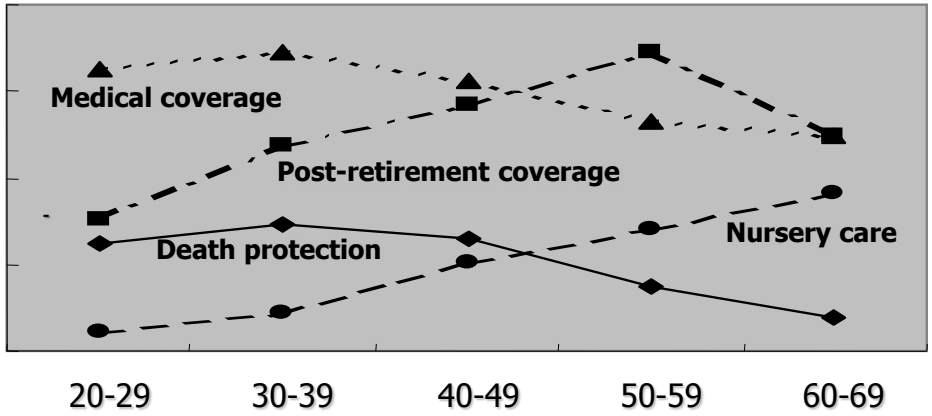
Changing life insurance needs

- In recent years, the baby boomers became aged over 50 with independent children, and needs are shifting from death protection to medical and post-retirement coverage

〔Men〕



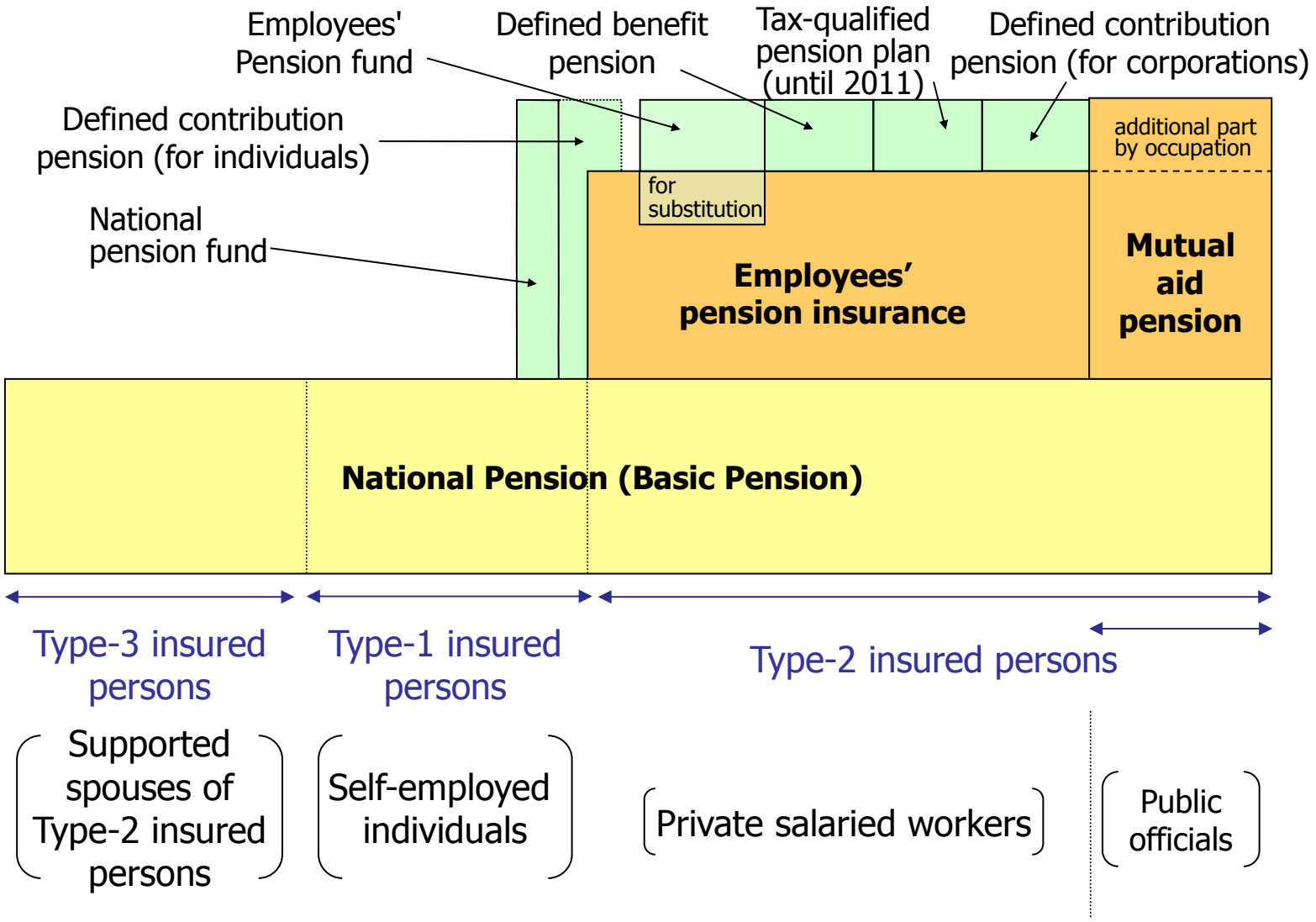
〔Women〕



(Source: Japan Institute of Life Insurance “Survey on coverage”)

Structure of the pension system in Japan

- Roles of life insurers in the pension system are evolving



(Source: Ministry of Health, Labor and Welfare)

The pension system in Japan and longevity risk

- The public pension provides a whole life annuity and the corporate pension provides a supplement in the form of a lump sum retirement payment or fixed-term annuity

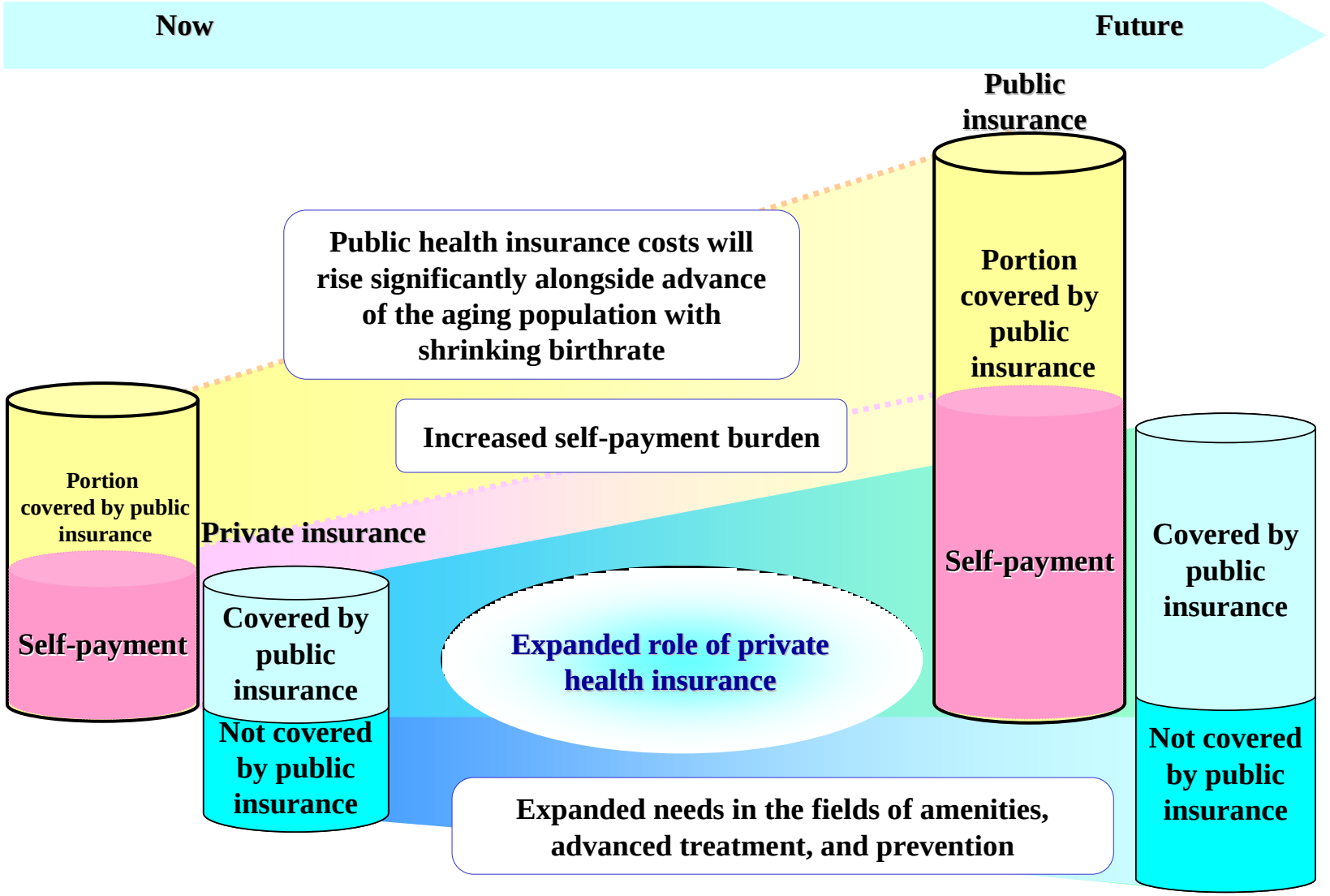
Pension system	Typical form of payment	Other features
① National Pension	**whole life annuity**	-
② Employees' Pension Insurance	**whole life annuity**	**survivor's pension**
③ Corporate Pension	lump-sum retirement allowance or fixed-term annuity	some companies provide **whole life annuities** with a guaranteed term
④ Self-Private Pension	fixed-term annuity	options for **whole life annuity** with guaranteed term and lump-sum are available

- Longevity risk is mainly borne by government, employers, and individuals.
- Life insurers are subject to longevity risk, in case where the option for whole life annuity is chosen by policyholders for self-private pension.

(Source: Ministry of Health, Labor and Welfare)

Evolving roles of public and private health insurance

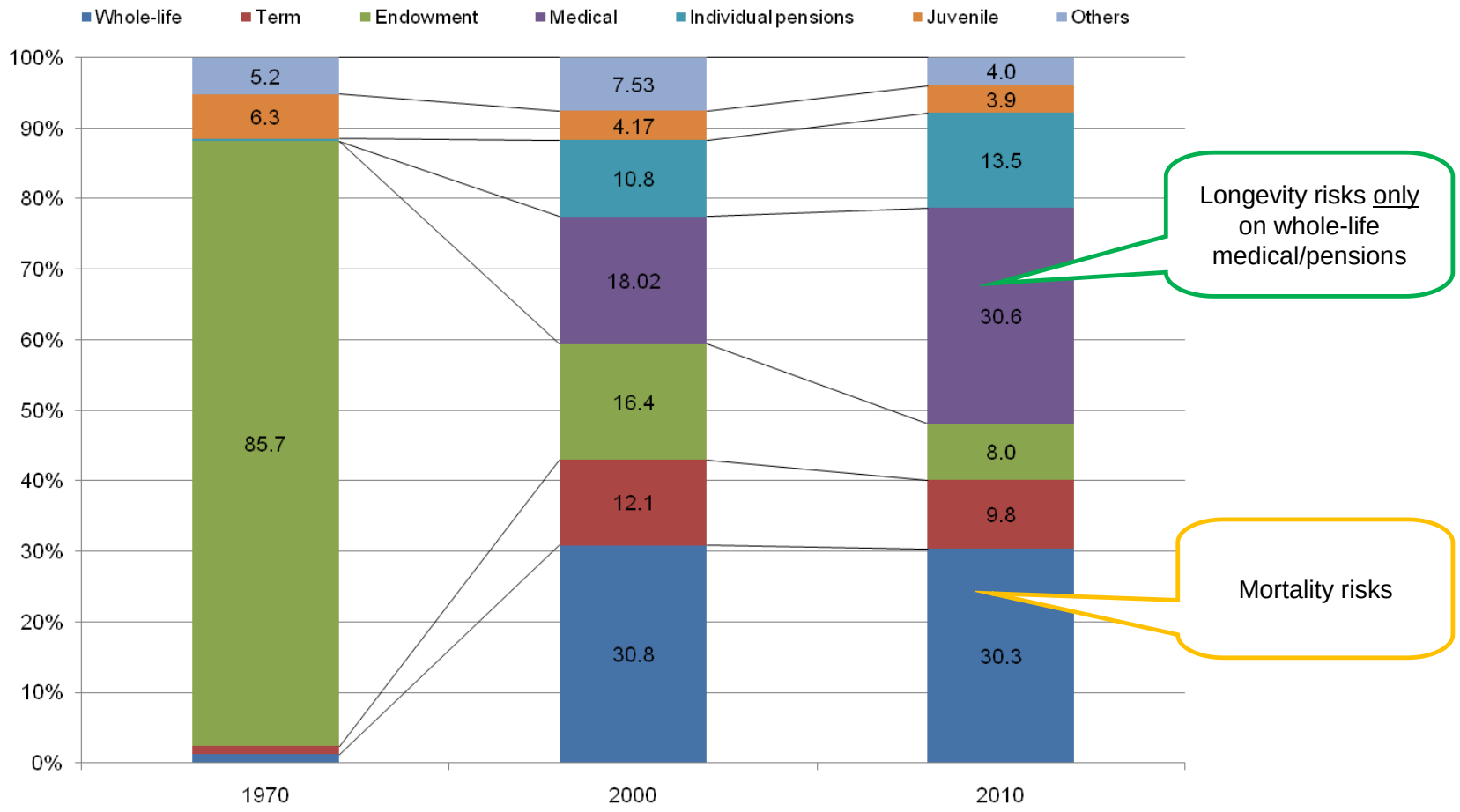
- Separate roles of public and private health insurance are evolving to respond to the aging population



Changes in product portfolio and longevity risk

- Offsetting between longevity risk and mortality risk
- Japanese life insurers' exposure to longevity risk is limited but gradually increasing

Changes in Product Portfolio (Number of Policies in Force)

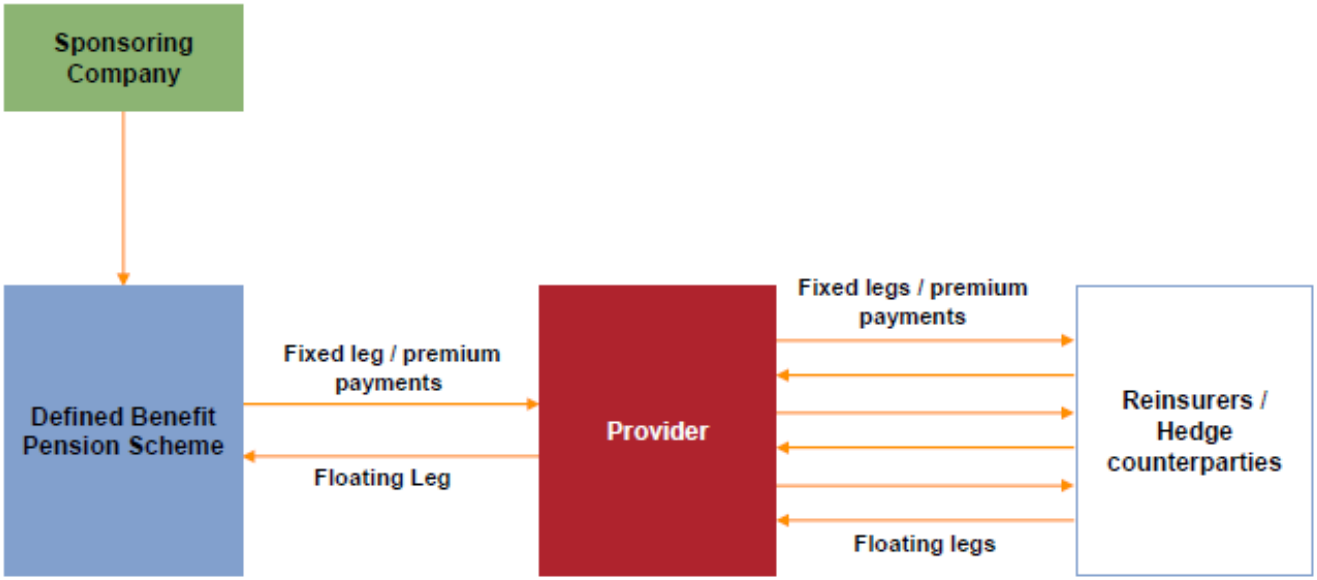


(Source: Life Insurance Association of Japan)

Other measures to mitigate longevity risk

- Longevity Risk Transfer
  - Buy-out & Buy-in
  - Longevity Swaps
- Joint Forum paper "Longevity risk transfer markets: market structure, growth drivers and impediments, and potential risks

Longevity Hedge Transaction Structure



(Source: Deutsche Bank AG)

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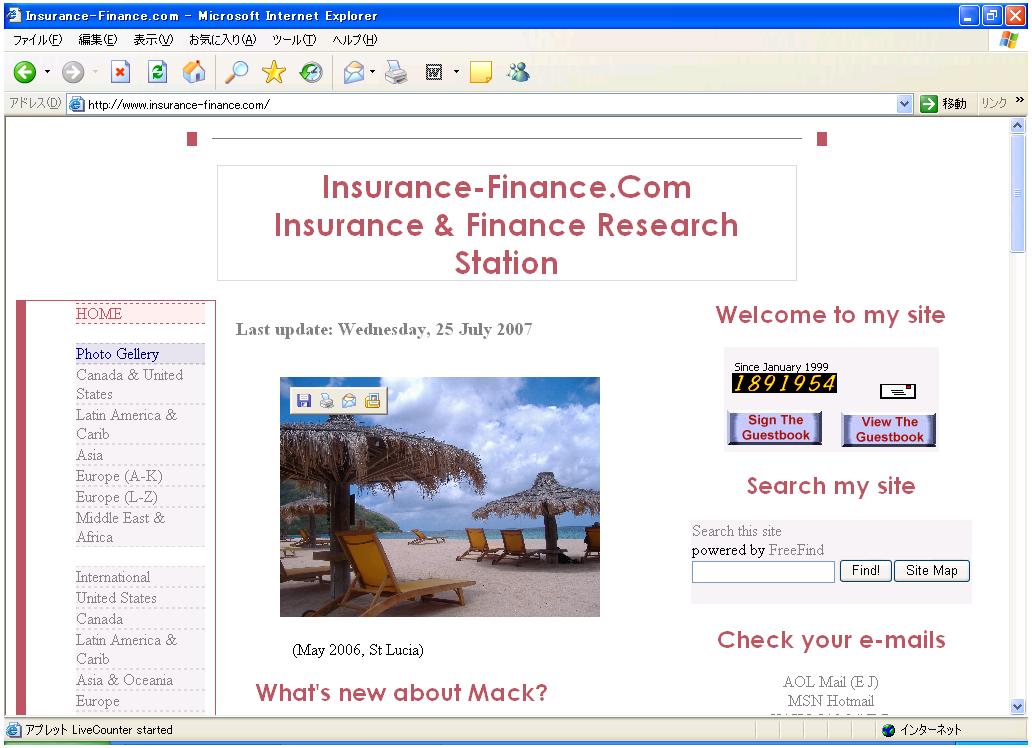
Makoto Okubo, General Manager, International Affairs,
Nippon Life Insurance Company



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