



Population Ageing, Macroeconomic Crisis and Policy Challenges

~ Prepared for the Panel “The General Theory and the Policy Responses to Macroeconomic Crisis” at the 75th Anniversary Conference of Keynes’ General Theory, University of Cambridge, June 19-21 ~

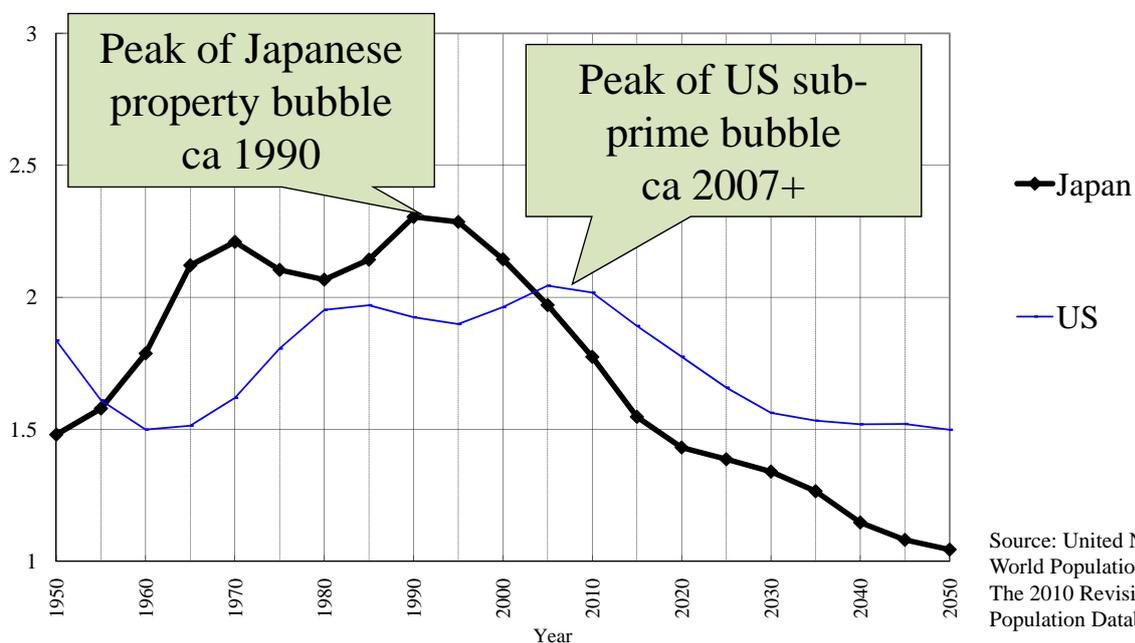
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Deputy Governor of the Bank of Japan

(Figure 1.1)

Population Change and Bubble: Japan and US

Inverse Dependency Ratio: Ratio of Working-Age Population to the Rest
= How many people of working age have to provide for one dependent person?

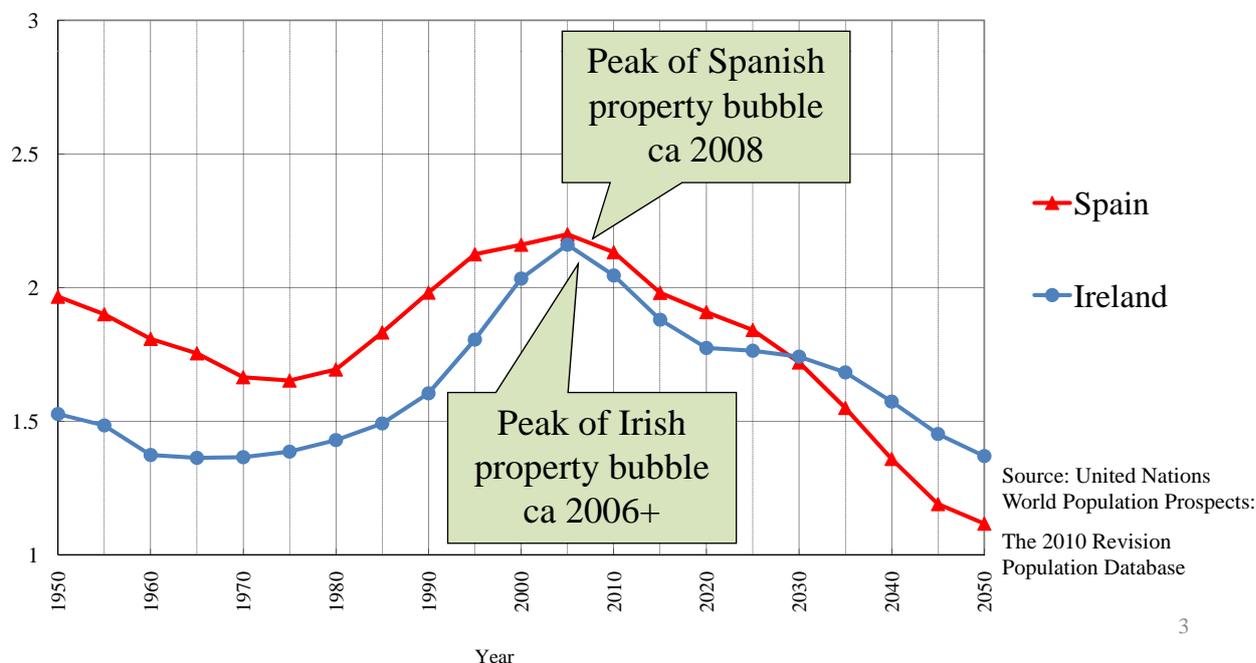


Source: United Nations
World Population Prospects:
The 2010 Revision
Population Database

(Figure 1.2)

Population Change and Bubble: Spain and Ireland

Inverse Dependency Ratio: Ratio of Working-Age Population to the Rest
= How many people of working age have to provide for one dependent person?



(Table 2.1)

Population Growth: Selected Countries

Estimated Population as of July 1 (in thousands)										
Year	Developed	Market Economy						Emerging	Non-Market => Market	
		Japan	USA	Germany	France	Italy	UK		Russia	China
1955	472,617	88,390	171,151	70,325	43,434	48,131	51,186	719,760	111,401	608,359
1980	590,434	115,916	229,826	78,289	53,879	56,220	56,304	1,121,824	138,653	983,171
2005	685,627	126,394	296,820	82,540	60,999	58,672	60,202	1,451,435	143,842	1,307,593
2030	759,998	120,217	361,679	79,469	68,468	60,852	69,313	1,529,506	136,431	1,393,075

Estimated Population Growth										
Period	Developed	Market Economy						Emerging	Non-Market => Market	
		Japan	USA	Germany	France	Italy	UK		Russia	China
1955-1980	0.89%	1.09%	1.19%	0.43%	0.87%	0.62%	0.38%	1.79%	0.88%	1.94%
1980-2005	0.60%	0.35%	1.03%	0.21%	0.50%	0.17%	0.27%	1.04%	0.15%	1.15%
2005-2030	0.41%	-0.20%	0.79%	-0.15%	0.46%	0.15%	0.57%	0.21%	-0.21%	0.25%

- Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision, <http://esa.un.org/unpd/wpp/index.htm>, May 30, 2011

(Table 2.2)

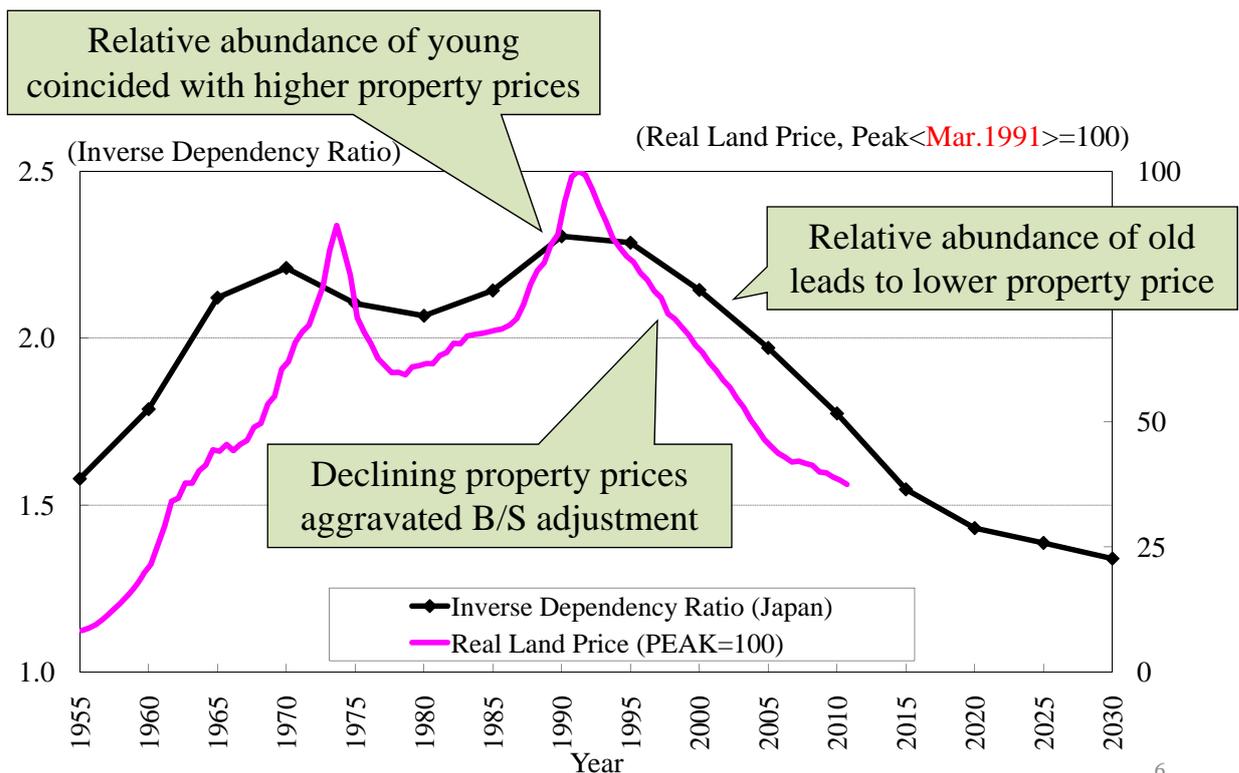
Life Expectancy: Selected Countries

Estimated Life Expectancy at birth (years)								
Year	Market Economy						Non-Market => Market	
	Japan	USA	Germany	France	Italy	UK	Russia	China
1950-1955	62	69	68	67	66	69	65	45
1975-1980	75	73	73	74	73	73	68	66
2000-2005	82	77	79	80	80	78	65	72
2025-2030	85	81	83	84	84	82	72	76

• Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision, <http://esa.un.org/unpd/wpp/index.htm>, Jun 8, 2011

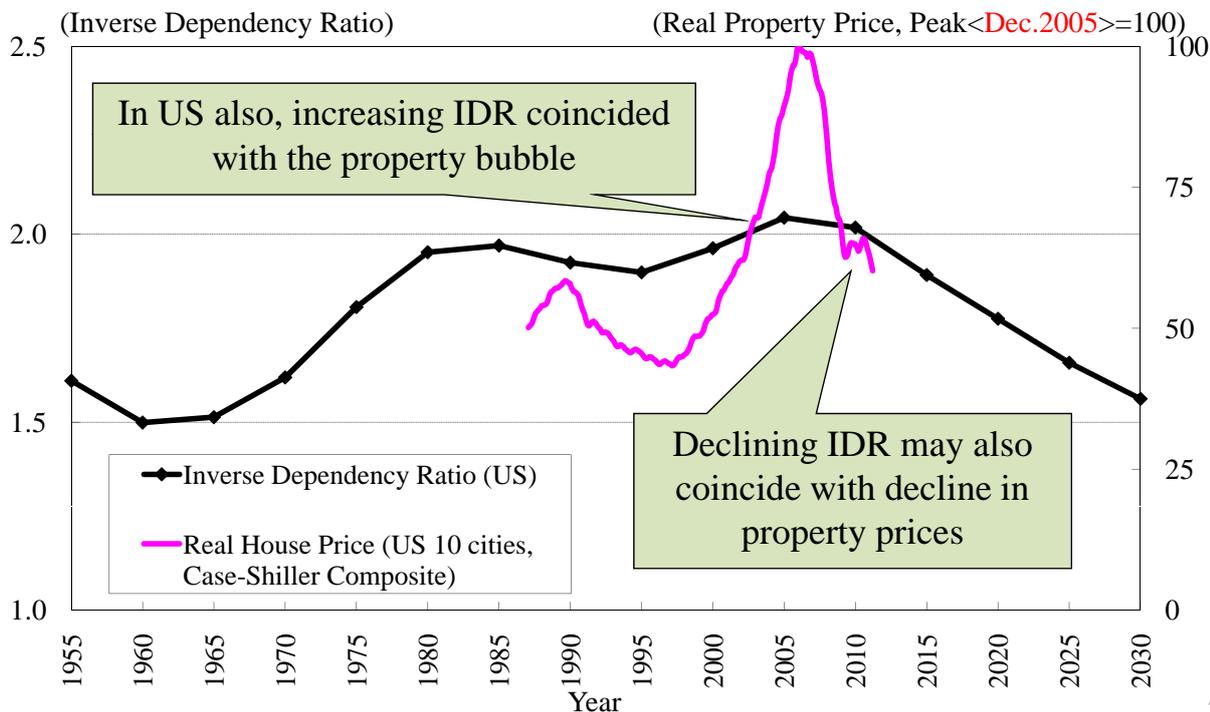
(Figure 2.1)

Ageing Population and Property Prices: Japan



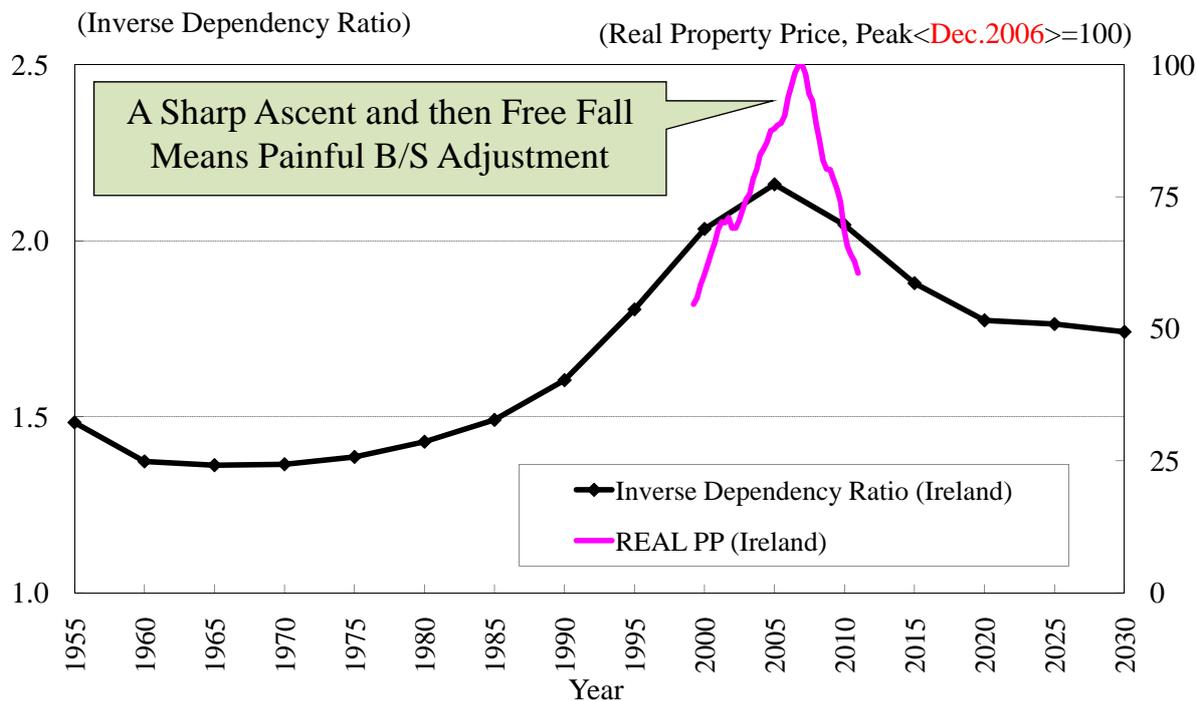
(Figure 2.2)

Ageing Population and Property Prices: US

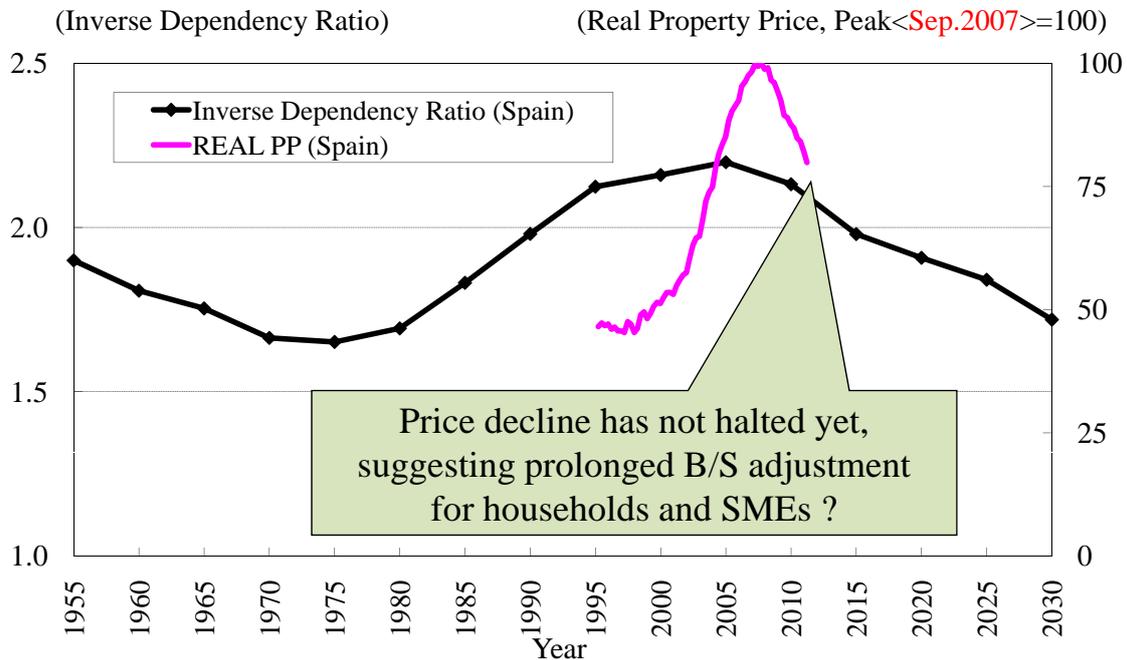


(Figure 2.3)

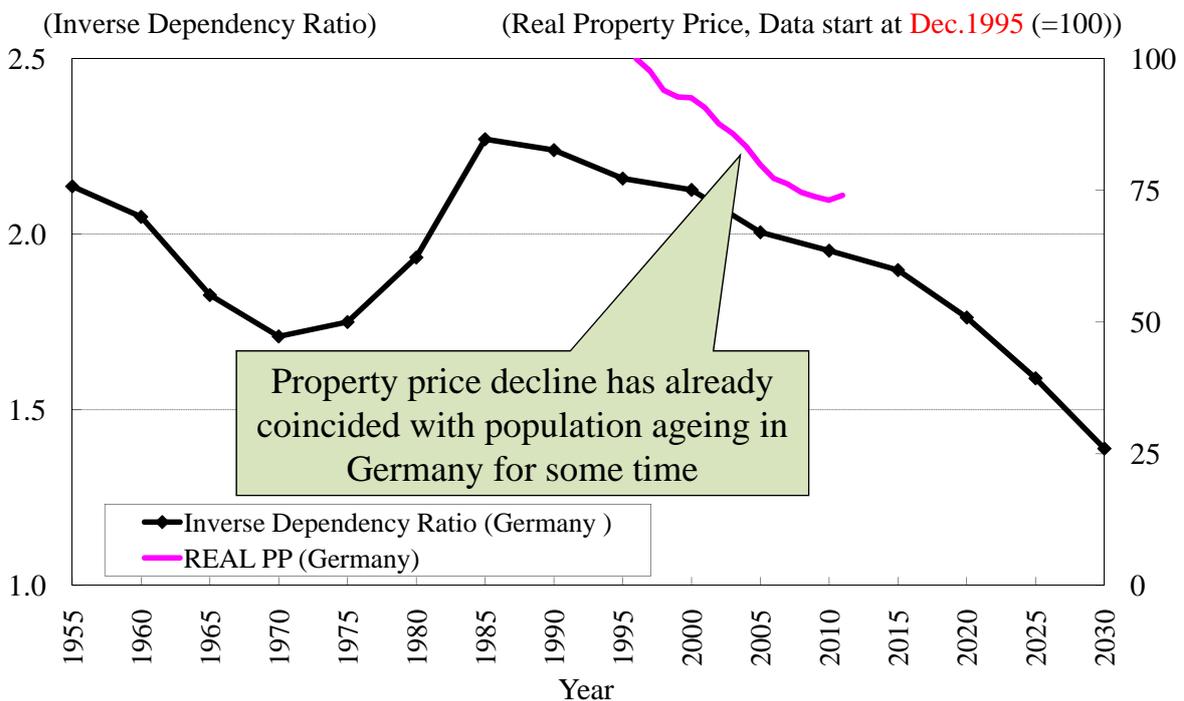
Ageing Population and Property Prices: Ireland



(Figure 2.4) Ageing Population and Property Prices: Spain



(Figure 2.5) Ageing Population and Property Prices: Germany



(Table 2.3)

Impact of Globalization

Numerical Example Based on UN Population Estimates

Period	Young Population			Asset Price Inflation Rate
	Developed	Emerging	Market World	
	unit = thousands			per annum
1: Cold War (1955)	472,617		472,617	
2: Pre-Globalization (1980)	590,434		590,434	0.89%
3: Globalization (2005)	685,627	1,451,435	2,137,062	5.28%

<Note: Fixed Exchange Rate Between Regions in Period 3>

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(Table 2.4)

Aftermath of Globalization

Period	Young Population			Asset Price Inflation Rate
	Developed	Emerging	Market World	
	unit = thousands			per annum
1: Cold War (1955)	472,617		472,617	
2: Pre-Globalization (1980)	590,434		590,434	0.89%
3: Globalization (2005)	685,627	1,451,435	2,137,062	5.28%
4: Post-Globalization (2030)	759,998	1,529,506	2,289,504	0.28%

(Figure 3.1) Declining Mobility: Japan

<Enterprise Creation and Destruction>

Year	All industries (%)	Retail	Eating and drinking places	Services	Miscellaneous
Post-World War II Era ^b					
Rate of net increase					
1981–1986	2.31	3.72	1.18	1.97	1.49
1987–1991	3.25	3.88	0.66	1.38	1.53
1992–1996	1.41	1.92	0.21	0.21	2.87
Rate of creation (estimated)					
1981–1986	3.52	5.46	0.00	0.00	6.10
1987–1991	3.76	5.98	0.00	0.00	6.39
1992–1996	2.12	4.90	0.00	0.00	3.40
Rate of destruction (bankruptcy rate)					
1981–1986	1.33	2.58	1.12	1.72	0.82
1987–1991	0.57	0.88	0.48	0.88	0.33
1992–1996	0.75	1.14	0.73	1.07	0.38

After the bubble burst, creation of enterprises is sharply reduced.

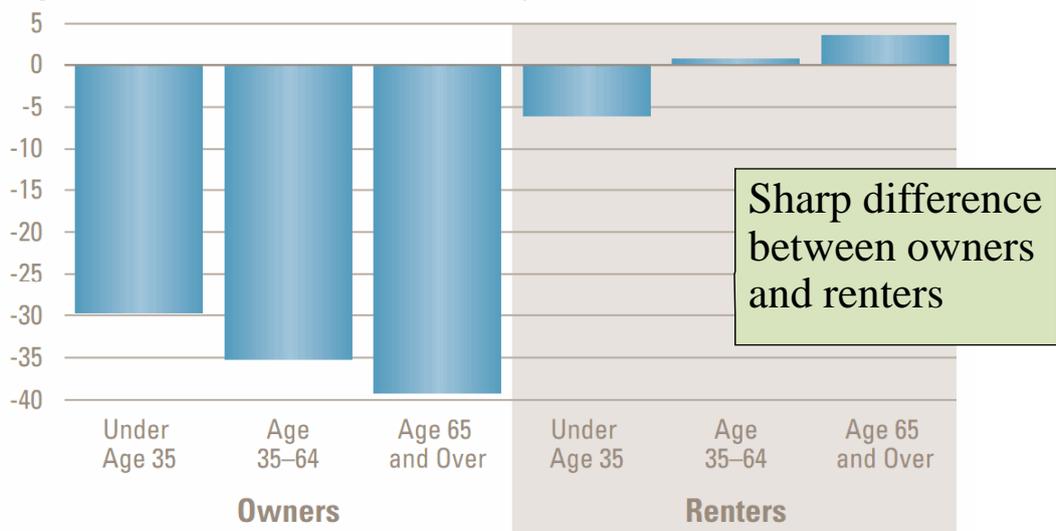
In contrast, relatively mild increase in destruction.

Source: Nishimura and Kawamoto (2003). "Why Does the Problem Persist?: "Rational Rigidity" and the Plight of Japanese Banks," *The World Economy*, 26 (2003), 301-324

--"Sticky industry structure," hanging on to the past

(Figure 3.2) Declining Mobility: US

<Changes in Householder Mobility Rate, 2005–9 (Percent)>



Sharp difference between owners and renters

Note: Mobility rate is defined as the share of householders who reported having moved in the previous 12 months.

Source: JCHS tabulations of US Census Bureau, 2005 and 2009 Current Population Surveys.

Figure 13, *The State of the Nation's Housing 2010*, Joint Center of Housing Studies of Harvard University

--The housing crash reduced mobility rates.

(Figure 3.3) Breakdown of Natural Selection Mechanism in Japanese Financial Crisis of 1997

TFP of surviving and exiting firms

	1994-95		1995-96		1996-97		1997-98	
	Survive	Exit	Survive	Exit	Survive	Exit	Survive	Exit
Food products and beverages								
Livestock products	1.71	1.00	1.67	1.05	1.68	1.94	2.18	1.28
Seafood products	1.42	0.86	1.58	1.06	1.66	0.94	1.28	1.11
Flour and grain mill products	2.35	0.69	3.83	1.05	4.00	1.21	4.27	2.33
Miscellaneous foods and related products	1.43	3.15	1.52	1.26	1.49	1.61	1.60	0.98
Soft drinks, carbonated water, alcoholic	4.12	1.49	4.59	1.63	4.56	1.60	4.53	5.26
Pharmaceuticals					2.96	3.89	3.64	1.24
Chemicals					1.84	3.69	3.36	2.22
Chemical fibers	1.73		1.74	2.38	0.95	2.06	n.a.	
Oil and fat products, soaps, synthetic detergents, surface-active agents and paints	1.72	1.91	1.97	1.78	2.18	1.98	2.50	1.69
Drugs and medicines	2.10	1.60	2.26	1.76	2.49	2.43	2.63	1.67
Miscellaneous chemical and allied products	2.55	1.59	2.15	3.94	2.73	1.87	2.97	1.18
Retail trade								
Retail trade, general merchandise (clothing, shoes, apparel and accessories)	1.15	1.07	1.25	1.14	1.36	1.18	1.28	1.10
Retail trade (food and beverage)	0.84	0.71	0.98	0.71	0.93	1.01	0.99	1.78
Retail trade (motor vehicles and bicycles)	0.84	0.74	0.92	0.92	0.96	0.89	0.88	0.83
Retail trade (furniture, household utensil and household appliance)	1.05	1.04	1.04	1.13	1.18	0.92	1.30	0.69
Household appliance stores	1.00	0.92	1.27	1.03	1.20	1.42	0.93	0.99
Drug and toiletry stores	4.16	0.78	2.33	0.84	2.54	0.87	0.82	0.73
Fuel stores	0.94	0.86	0.88	1.04	0.87	0.94	0.92	0.92
Miscellaneous retail trade	1.12	1.51	1.15	1.12	1.18	1.31	1.06	0.98

1997: many industries saw more productive firms exiting. → Breakdown of natural selection

Shaded: exiting firms are more productive than surviving firms

Nishimura, Nakajima, Kiyota (2005) "Does Natural Selection Mechanism Still Work in Severe Recessions? - Examination of the Japanese Economy in the 1990s- " *Journal of Economic Behavior and Organization*, 58:1 (2005), 53-78

Notes: (1) Shaded areas indicate weighted mean of TFP of exiting firms is greater than that of surviving firms. (2) "Survive" include "switch" firms.

End of Presentation



View of the BOJ courtyard around sunset

Appendix: Financial Crisis and Inverse Dependency Ratio: An Update

In a speech in January 2011,¹ I presented some telling figures on the correlation of financial crisis, or so-called bubbles, and the inverse dependency ratio in Japan, United States, Greece, Portugal, Spain, Ireland and China. The figures were based on the 2008 revision of the United Nations World Population Prospects. Since then, the United Nations has published its 2010 revision. This appendix updates these figures and expands on them by including more European and Asian countries.

The Japanese inverse dependency ratio peaked around 1990, and it was in the very next year, 1991, that the Japanese Bubble peaked. The peak of the US ratio was between 2005 and 2010, and the peak of the US Subprime Bubble was 2007 (Figure A.1 [same as Figure 1.1]). The economically troubled countries of the eurozone present a similar pattern to Japan and the United States. The ratios for Greece, Portugal and Spain have almost the same time profile, and all of them peaked around 2000-2005. The peak of the Spanish property boom was just after the ratio's peak, and the financial problems of Greece also started at the same time. A particularly interesting case is Ireland, which showed a sharp rise in the ratio until around 2005. The bursting of the country's property market bubble was just a few years around the corner (Figure. A.2).

How about other European countries? The so-called Core Europe, Germany, France and Italy, passed the peak 10+ years ago, and seemingly, did not have any particularly alarming property bubbles around 2010 (Figure A.3). However, new and potential members of the eurozone show similar patterns to Greece, Spain, Portugal, and Ireland (Figure A.4). Their ratios peaked around 2005-2010, and some have their own problems.

In contrast to advanced countries, emerging Asia has shown remarkable resilience against the financial crisis of 2008. In fact, their inverse dependency ratio is still rising, as exemplified by China's ratio (Figure A.5). The inverse dependency ratios of many other Asian countries have a quite similar time profile to that of China (Figure A.6). However, their ascent will be checked in a relatively short period, and the peak will be around 2010-15 in many of these countries. After that, the ratio will fall as rapidly as it is now rising.

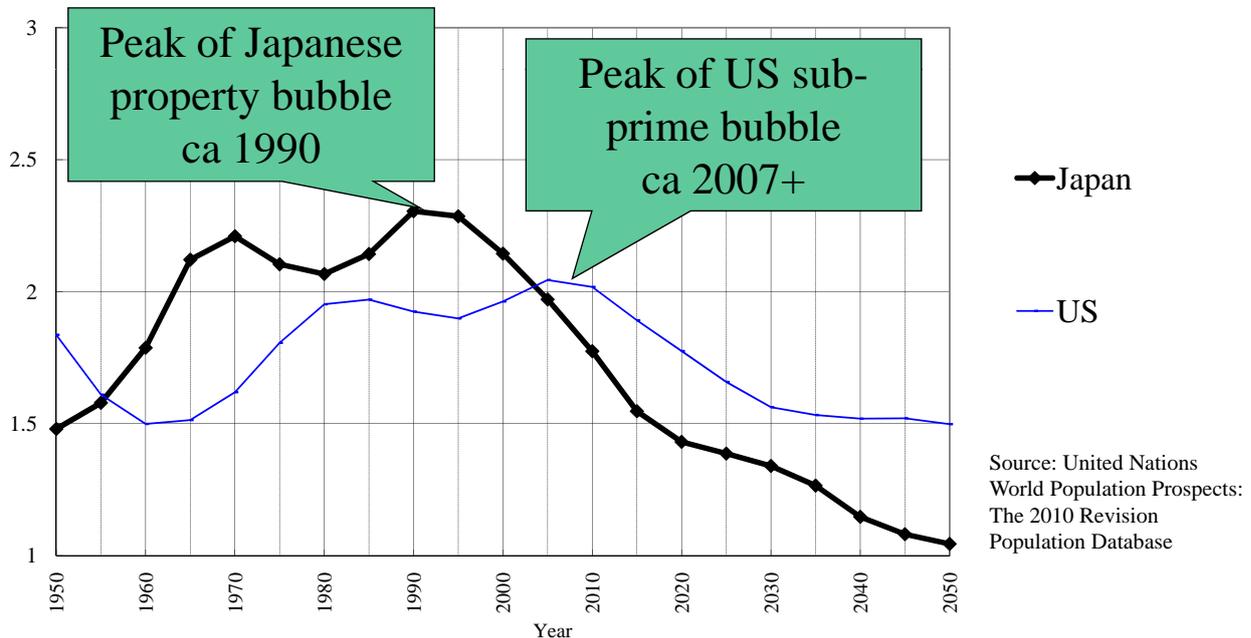
¹ See footnote 2.

(Figure A.1[same as Figure 1.1])

Population Change and Bubble: Japan and US

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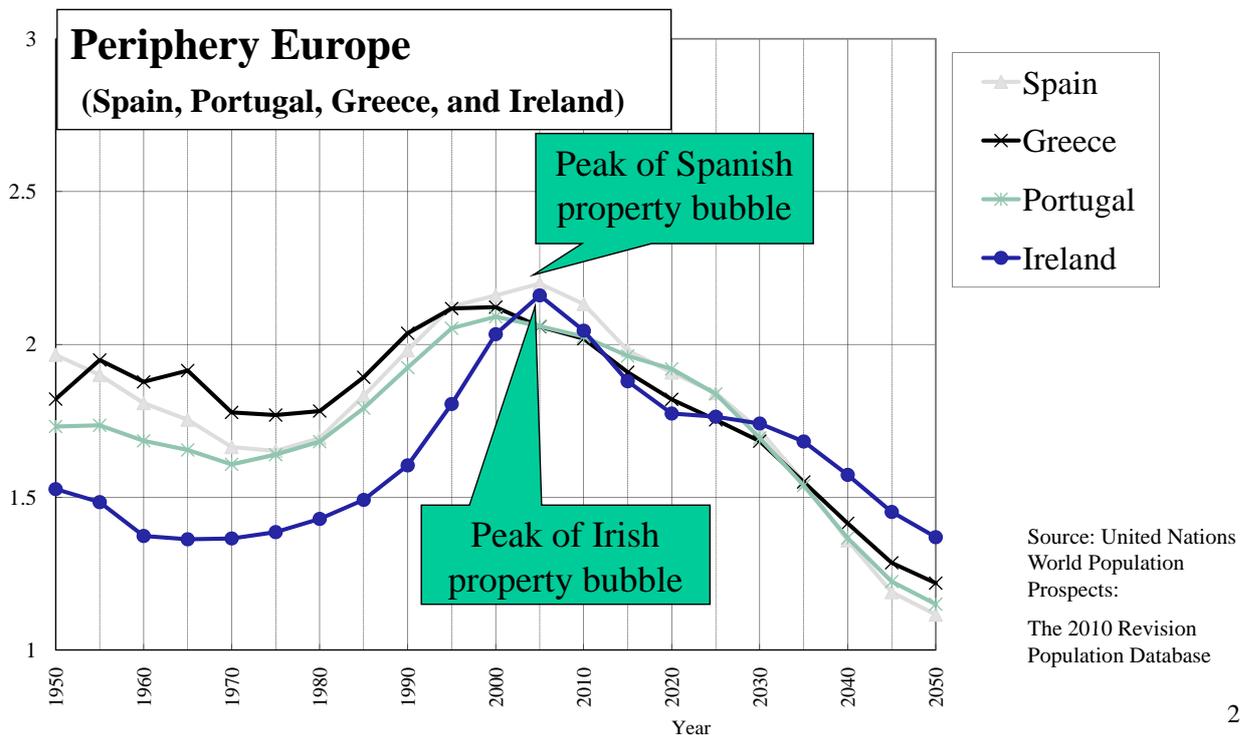
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(Figure A.2)

Population Change and Bubble: Periphery Europe

Inverse Dependency Ratio: Ratio of Working-Age Population to the Rest

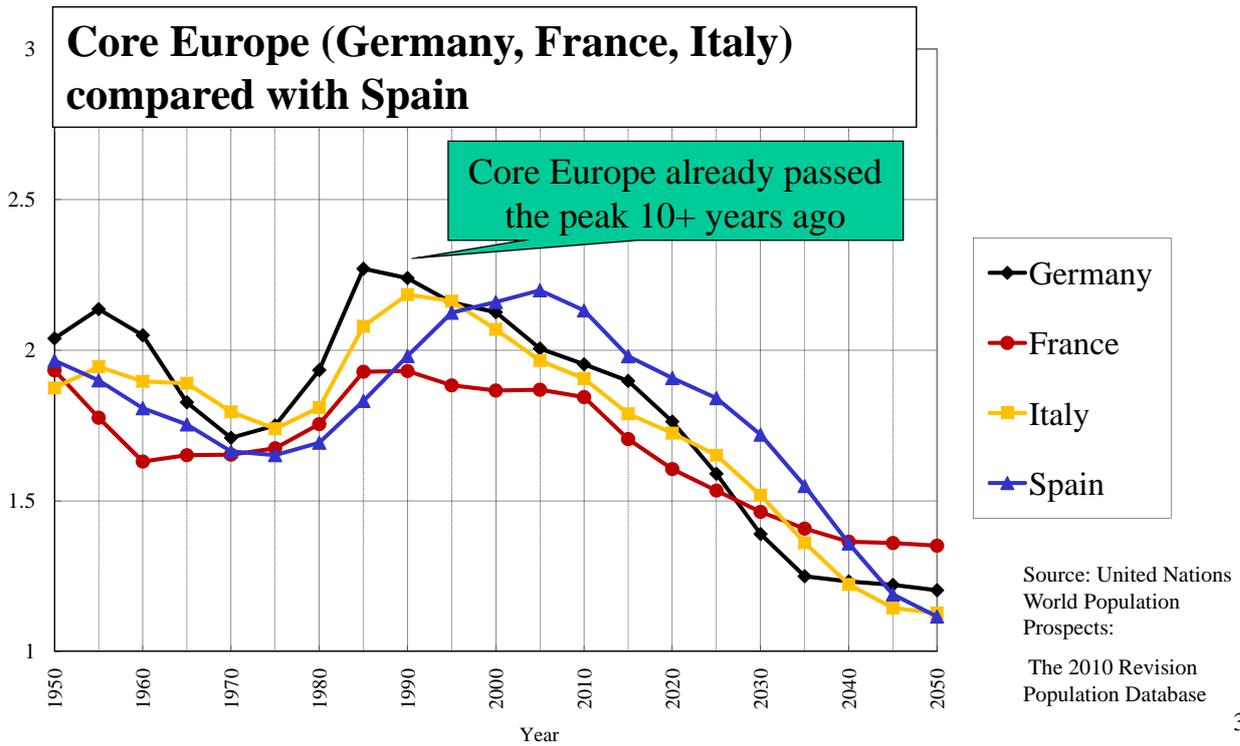
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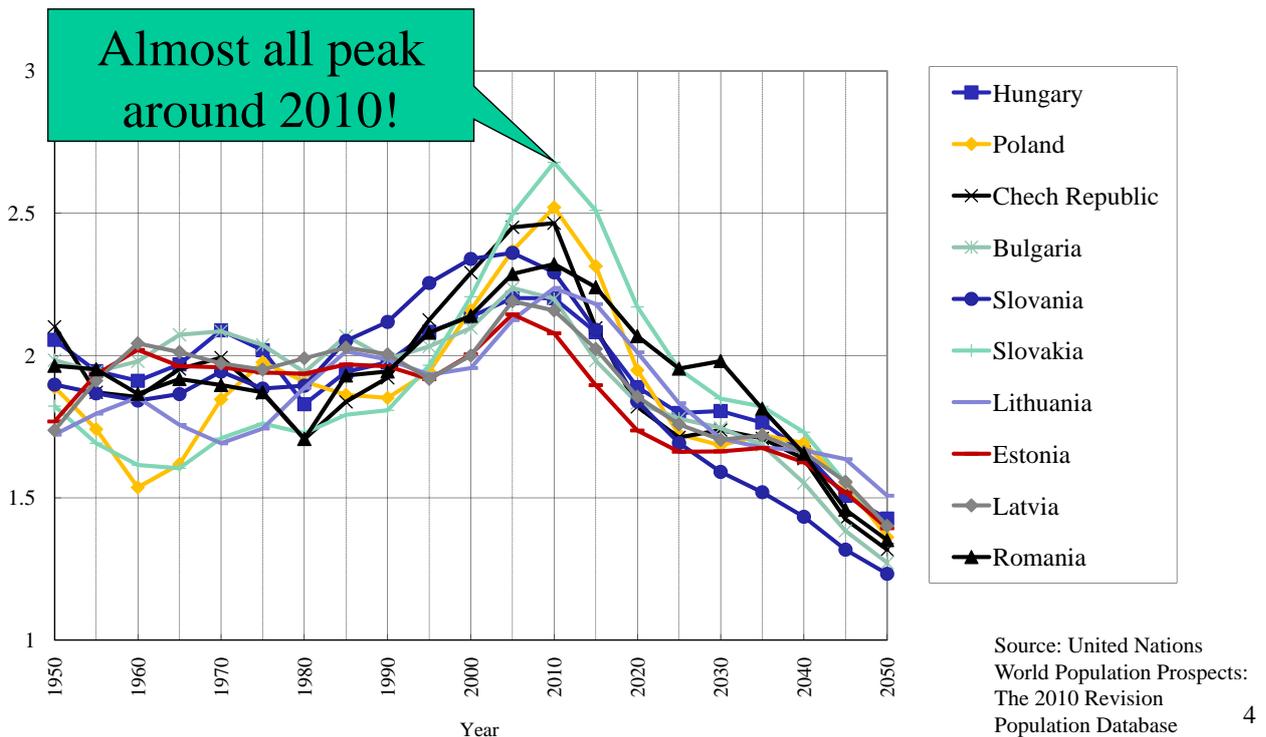
(Figure A.3) Core Europe compared with Periphery Europe

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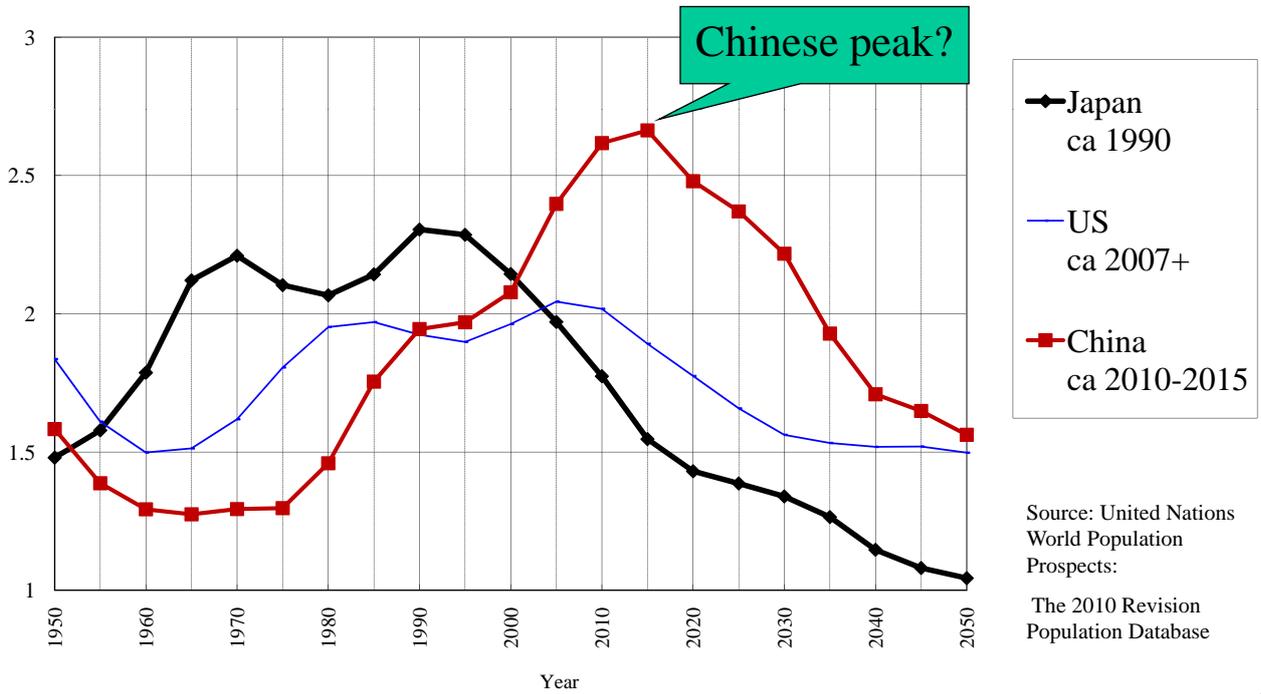
(Figure A.4) New and Potential Members of EU

Inverse Dependency Ratio: Ratio of Working-Age Population to the Rest
 = How many people of working age have to provide for one dependent person?



(Figure A.5) China compared with Japan and US

Inverse Dependency Ratio: Ratio of Working-Age Population to the Rest
= How many people of working age have to provide for one dependent person?



(Figure A.6) Asia: Some Will See a Sharper Turn

Inverse Dependency Ratio: Ratio of Working-Age Population to the Rest
= How many people of working age have to provide for one dependent person?

