How Households' Balance Sheets Affect their Asset Allocation—Implications for Future Private Outflows from Japan

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Outline for Today's Presentation

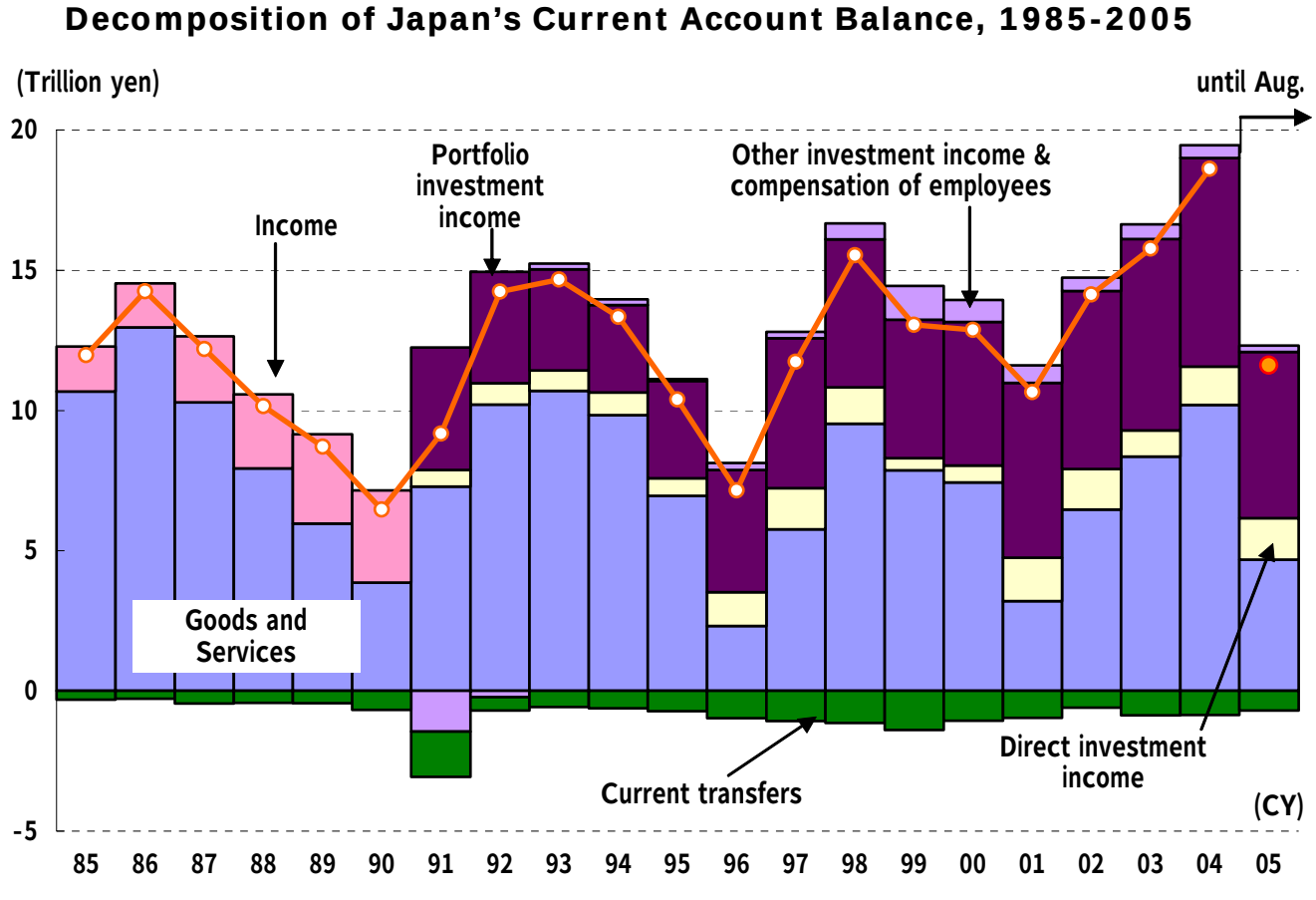
I. Background

- Demographic change
- Home ownership in the balance sheet
- Bubble bursting

II. Characteristics of Japanese households' asset allocation

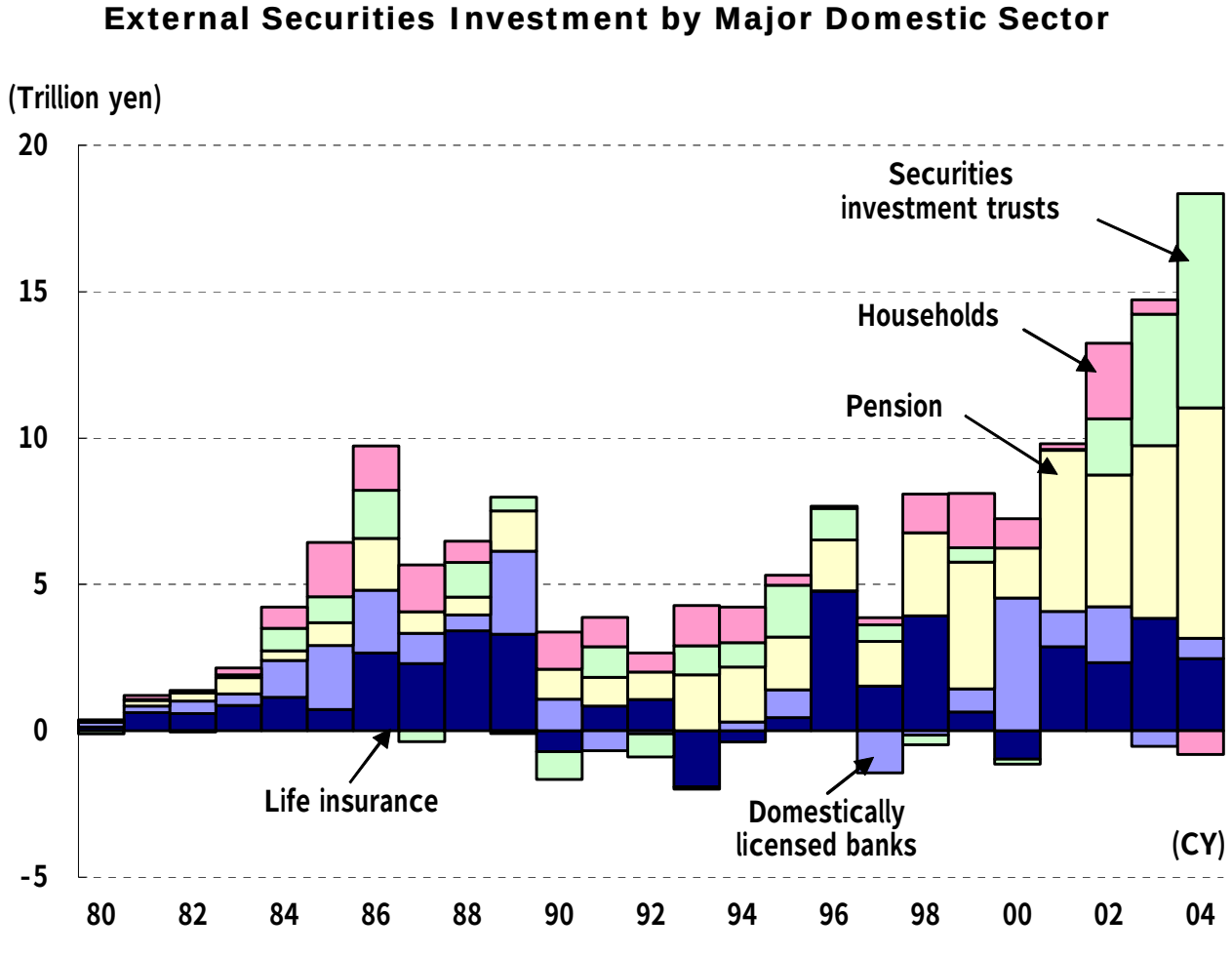
III. Implications for future money flows to risk financial assets—and foreign assets

Japan's Net Income from Portfolio Investment is Increasing . . .



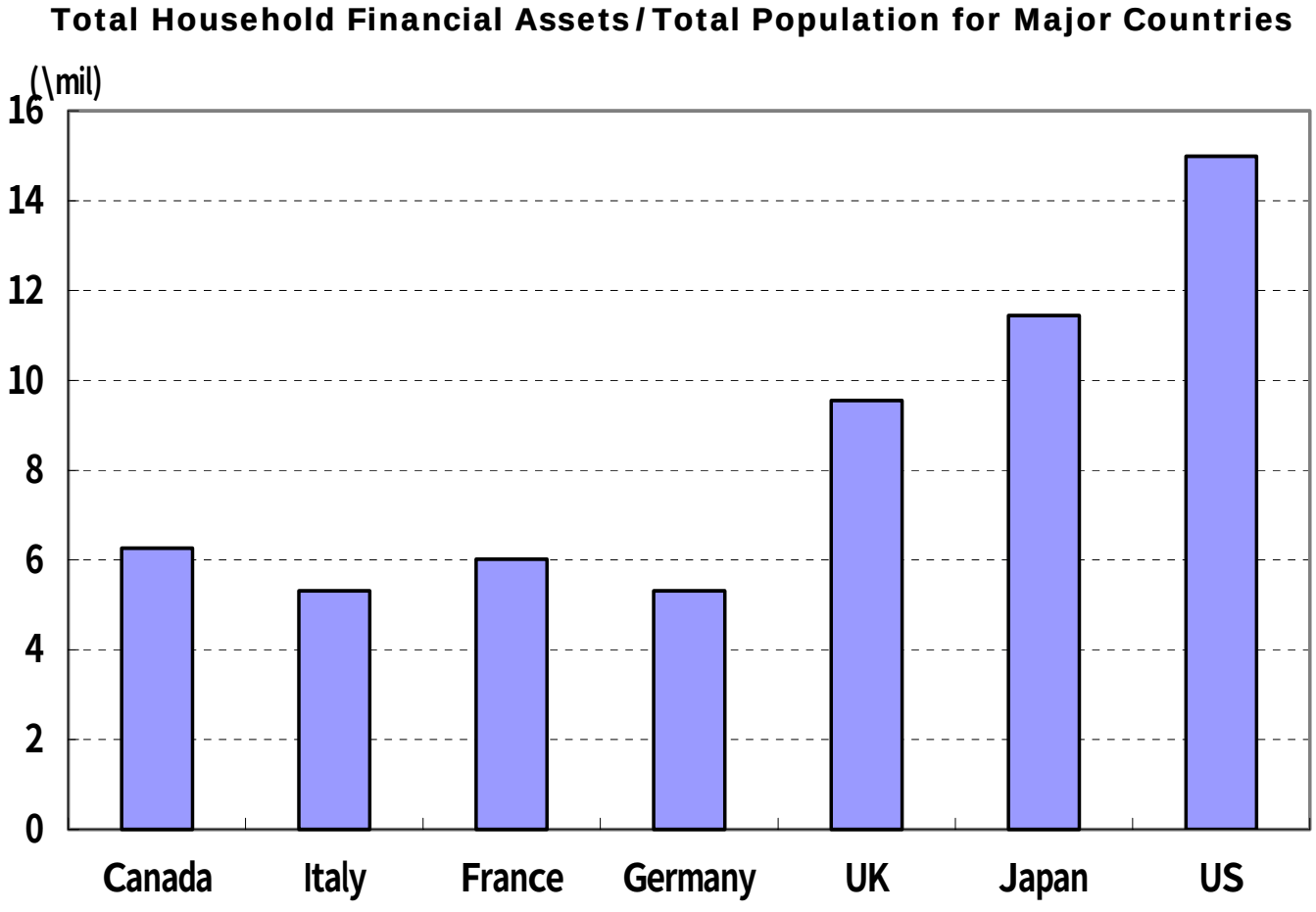
Note: Income was decomposed into income from direct investment, portfolio investment, and other investment and compensation of employees.
Data for 2005 cover up to August.
Source: Bank of Japan

The Main Players in External Securities Investment are Shifting



Source: Bank of Japan.

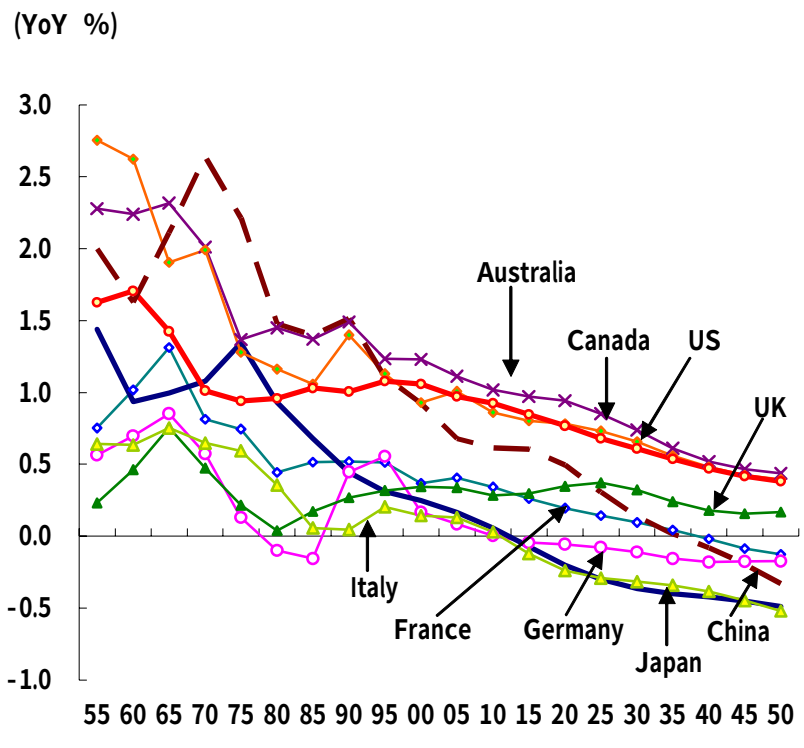
Japan Ranks Just Behind the United States in Financial Asset Holdings Per Capita



Source: BOJ.

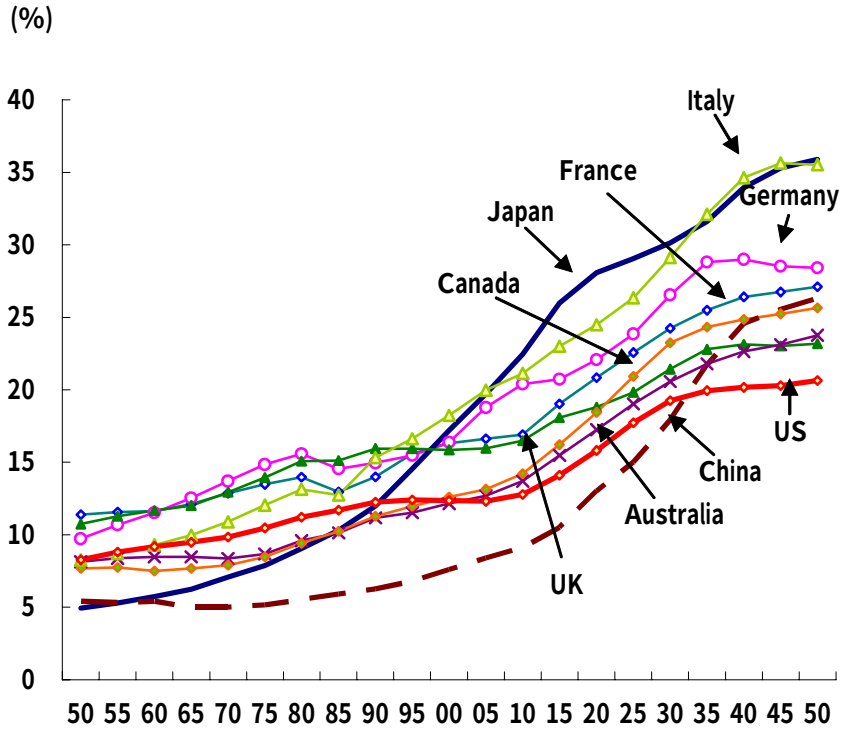
Japan Leads Other Major Countries in Population Aging

Population Change in Major Countries



Source: United Nations Population Division

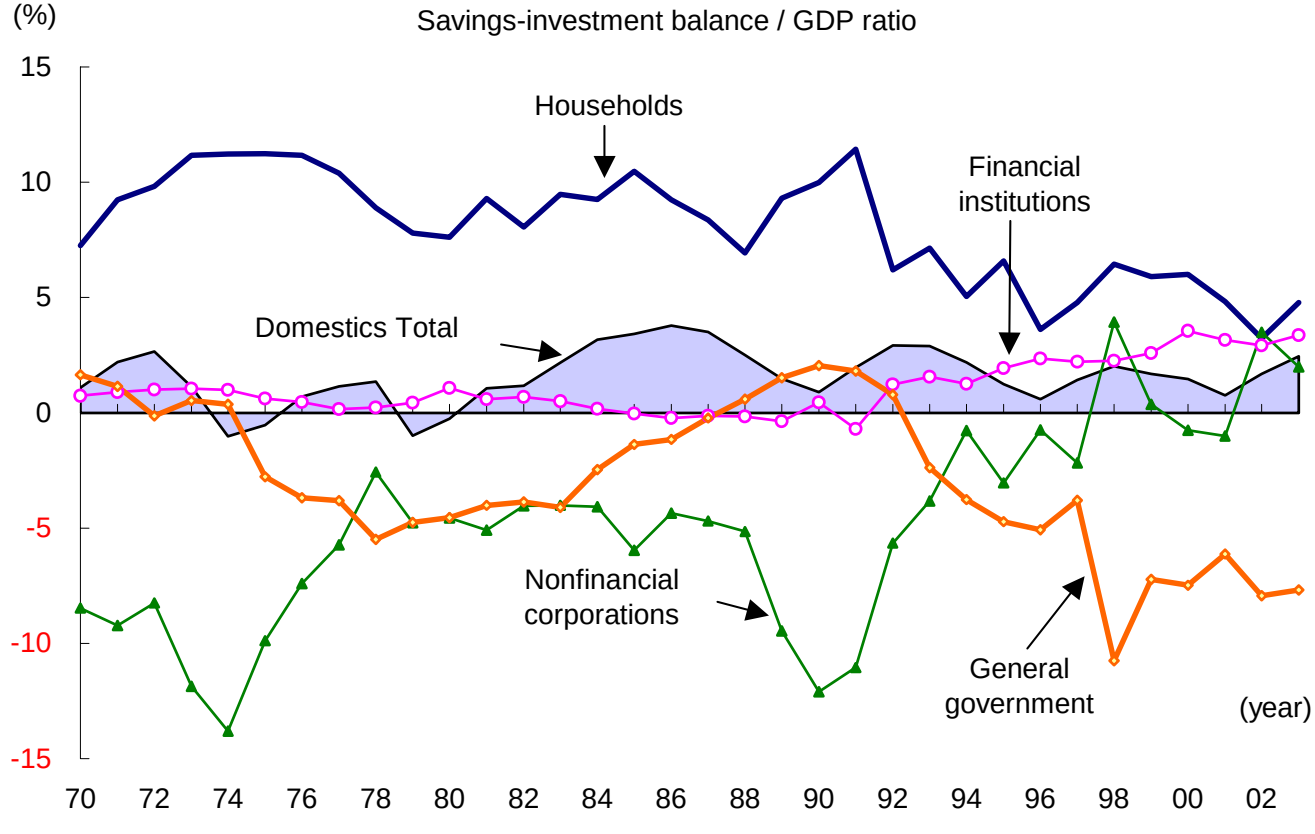
Elderly Population Ratio in Major Countries



Note: Elderly population ratio is the percent of people aged 65 and older in the total population.
Source: United Nations Population Division

Implication of Decreasing Household Savings: Diminishing Flows to Risky Financial Assets?

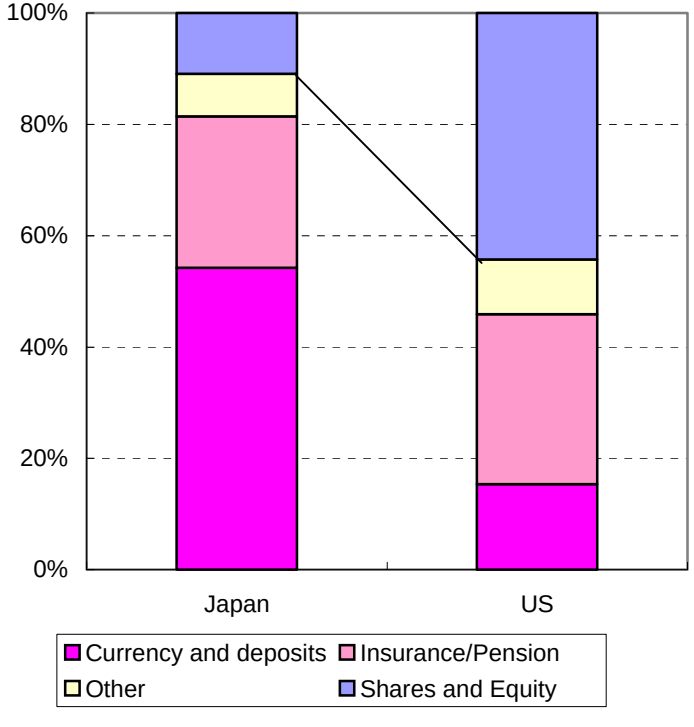
Savings-Investment Balance Ratio to GDP 1970-2003



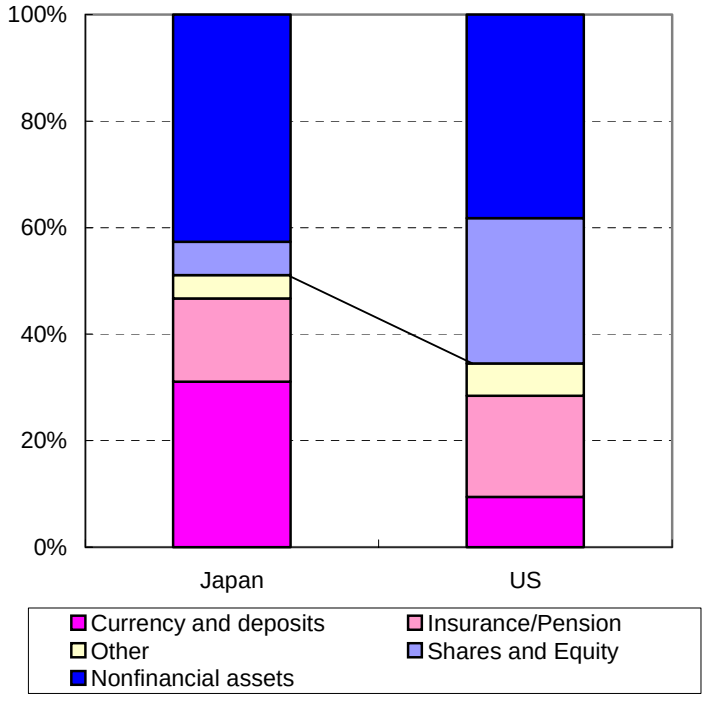
Note: Data are 68 SNA series until 1979 and 93SNA series for 1980 and later.
Source: Bank of Japan and Nomura Securities.

Do Japanese Prefer Safe Assets?

Composition of Financial Assets



Composition of Total Assets



Note: Japan includes private unincorporated enterprises. US includes nonprofit organizations. UK includes nonprofit institutions. The data is at the end of 2003 for Japan and 2004 for US and UK.
Source: Cabinet Office Annual Reports on National Accounts; FRB Flow of Funds; ONS Blue Book.

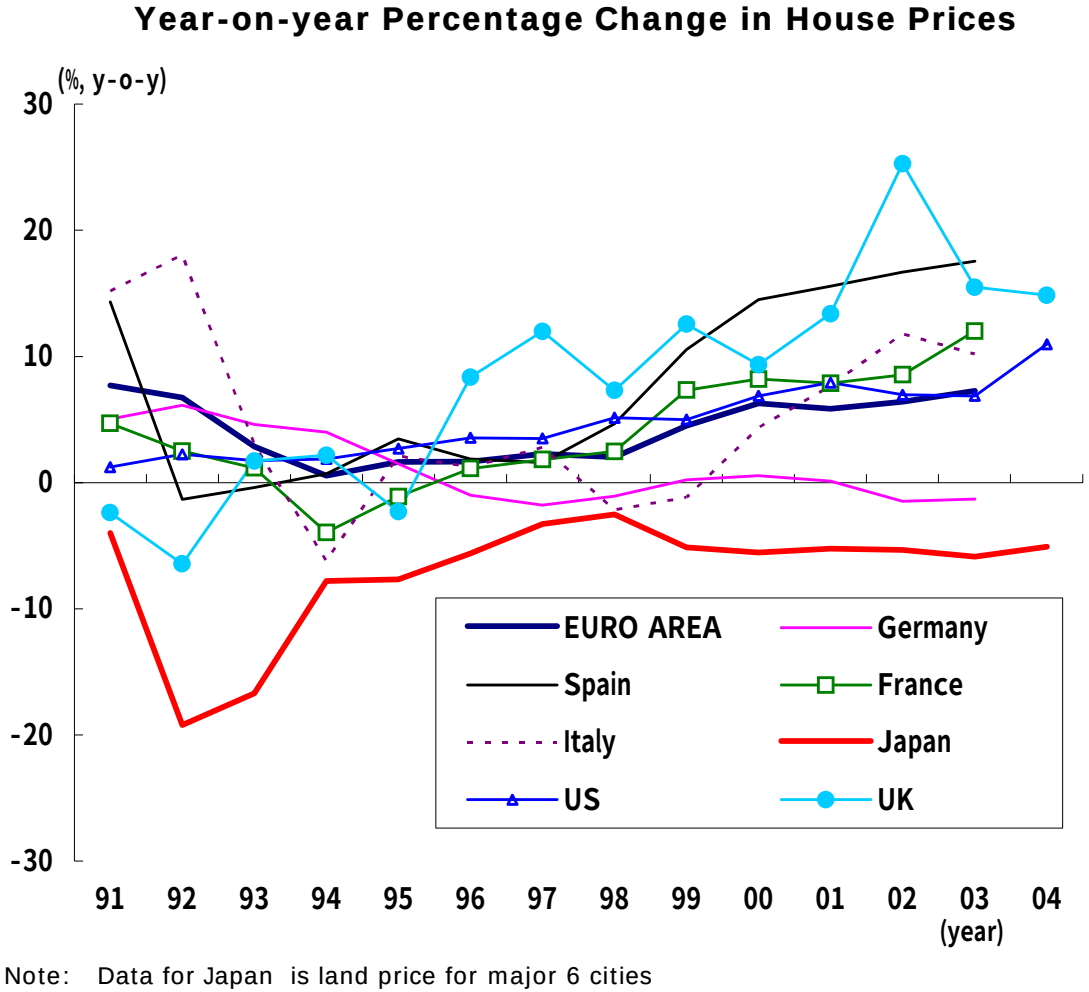
Home Ownership Is a Big Item in Japanese Household Balance Sheets

Home Purchase Characteristics in Japan, the United States and the UK

	Japan 2003	US 2003	UK 2003
House price/income	5.60	2.8	4.41
House loan/house price	73.0	75.0	68.4
House loan/income	4.09	3.06	2.72

Notes: Data refer to owner-occupied, new housing.
Japan data from Government Housing Loan Corporation, Survey Report of GHLC Borrowers (Purchasers of Built-for Sale Homes)
US data from American Housing Survey for the United States: 2003, Current Housing Reports, U.S. Department of Commerce and US Department of Housing and Urban Development Office of Policy Development and Research, H150/Q3, Sept. 2004 .
Price/income and loan/price are median values for houses less than 4 years old.
UK data from Housing Statistics 2004, Office of National Statistics, http://www.odpm.gov.uk/embedded_object.asp?id=1156399

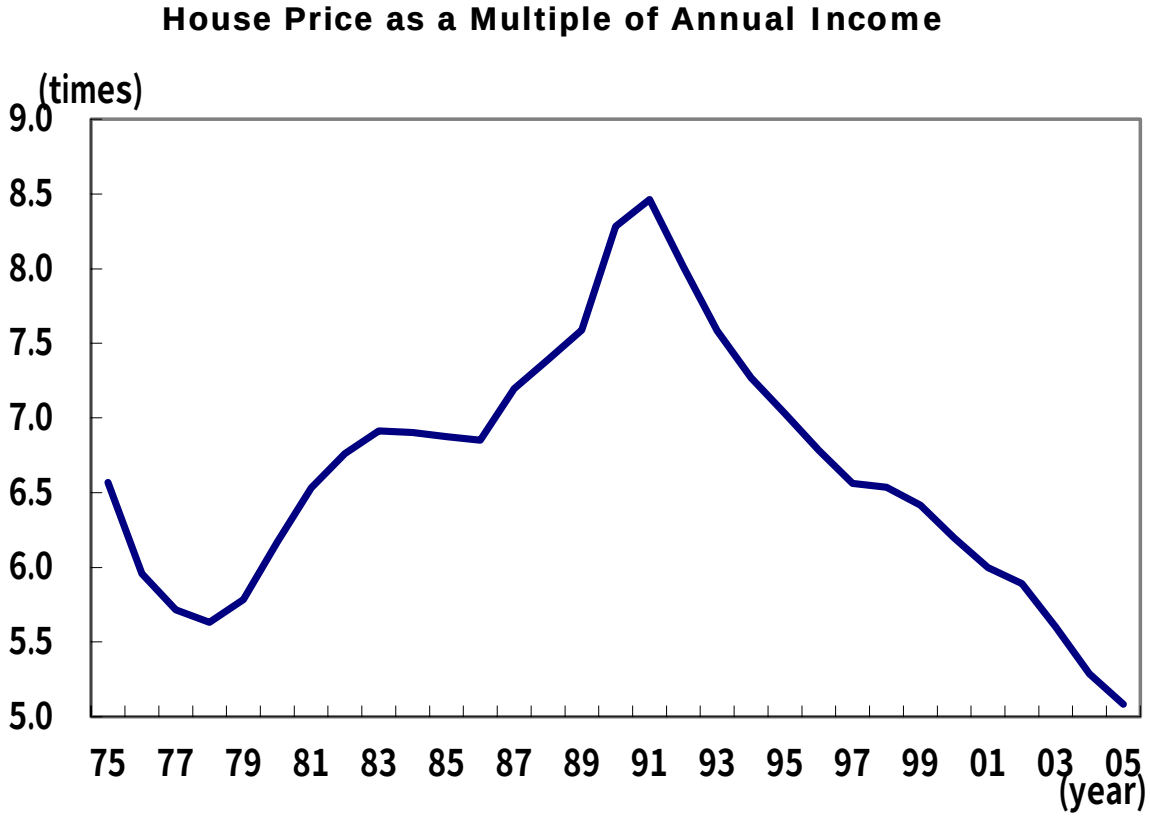
Housing is Performing Poorly in Japan Compared with Many Other Countries



Note: Data for Japan is land price for major 6 cities

Source: Office of Federal Housing Enterprise, ECB, Nationwide and Japan Real Estate Research

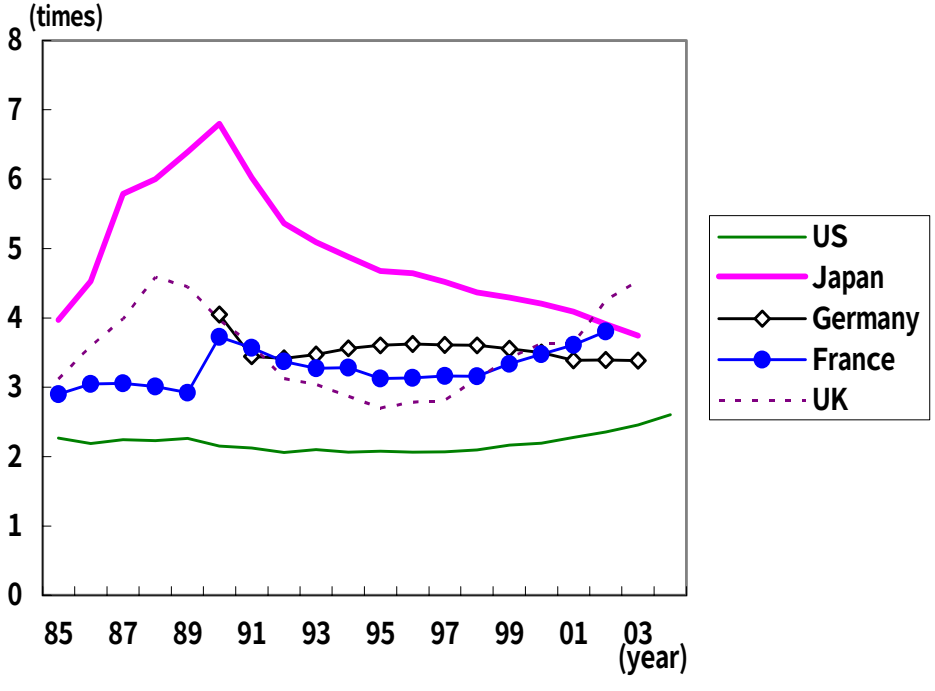
For Japanese, House Prices are Low Compared to the Past



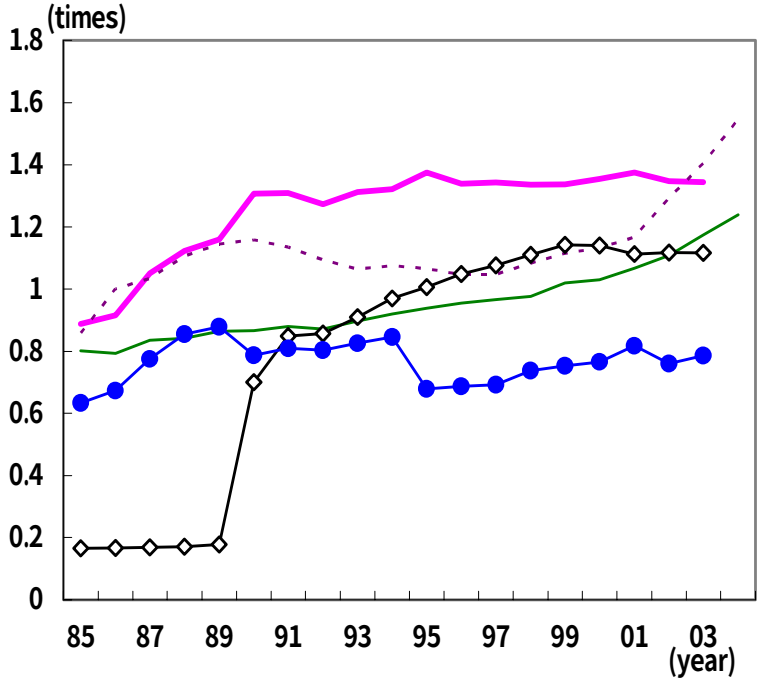
Note: According to a survey by the Government Housing Loan Corporation, the ratio of total housing price to annual income was 5.6 in 2003. The ratio in the chart is calculated from indexes for land prices and earned income assuming a value of 5.6 in 2003.
Source: Government Housing Loan Corporation, Japan Real Estate Research Institute, Health, Labor and Welfare Ministry, and Financial and Economic Research Center, Nomura Securities.

On Both Asset and Liability Sides, Real Assets are Relatively More Important in Japan

Ratio of Real Assets to Disposable Income

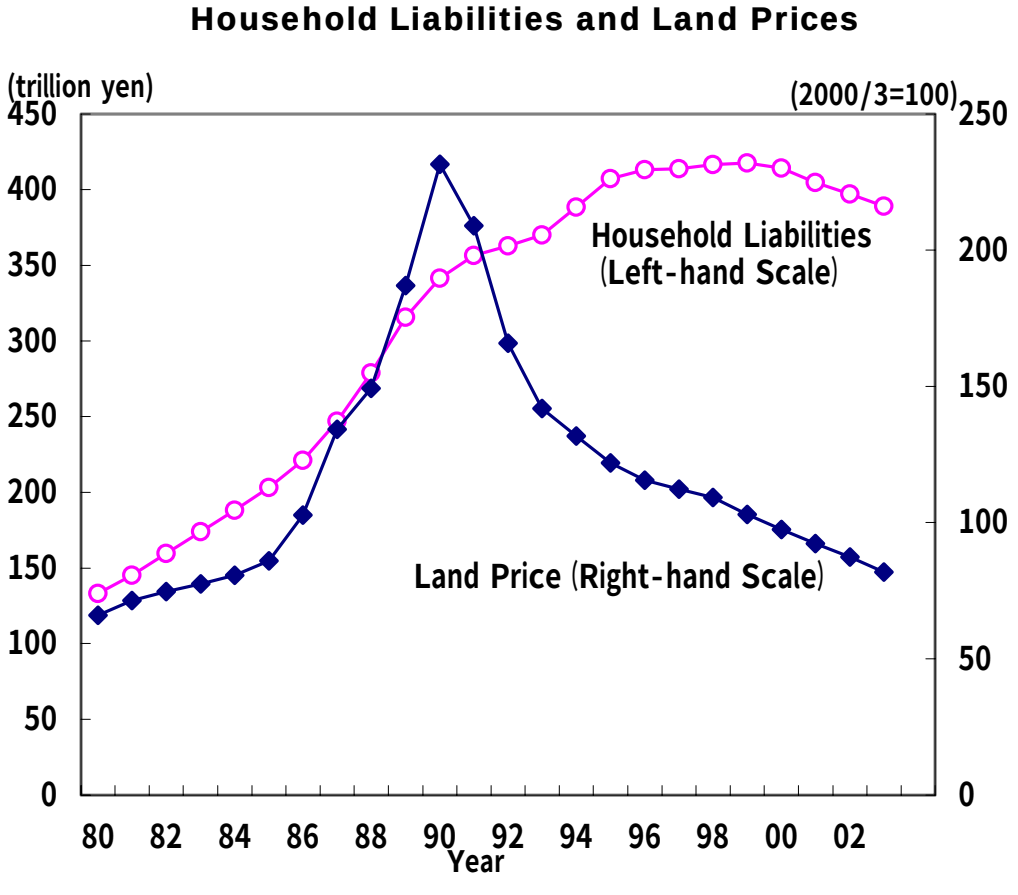


Ratio of Liabilities to Disposable Income



Source: OECD.

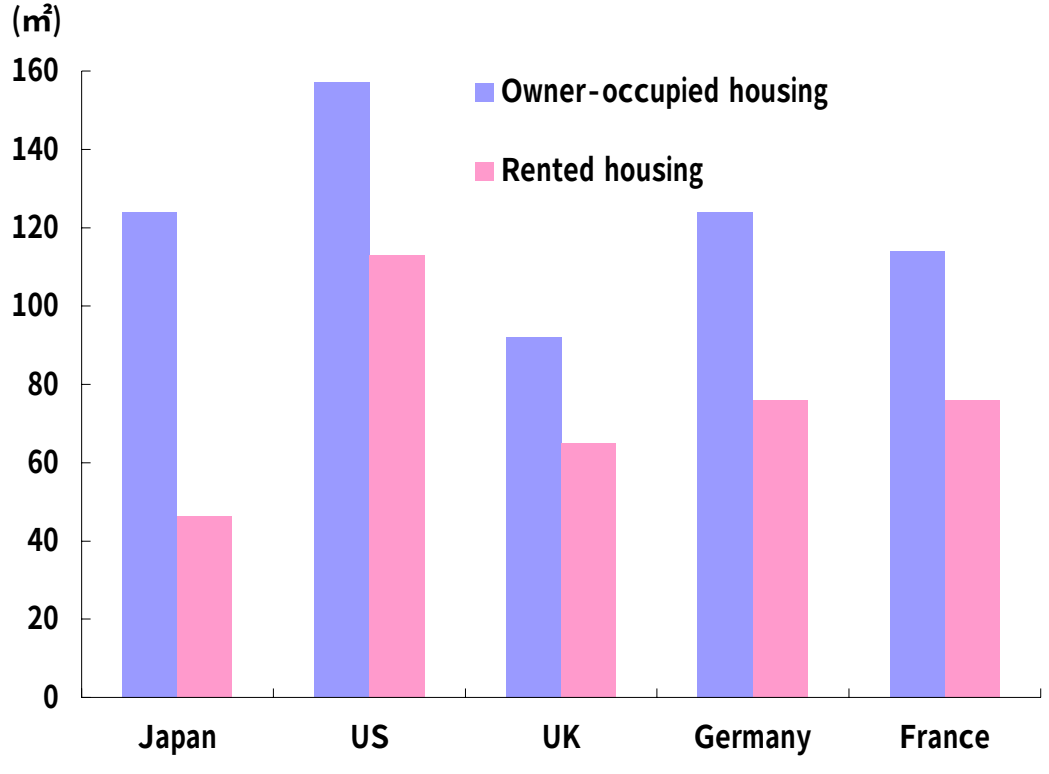
Dramatic Change from the Early 1990s



Note: Land price is an index for 6 major cities.
Source: Japan Real Estate Research Institute, Bank of Japan, and Financial and Economic Research Center, Nomura Securities.

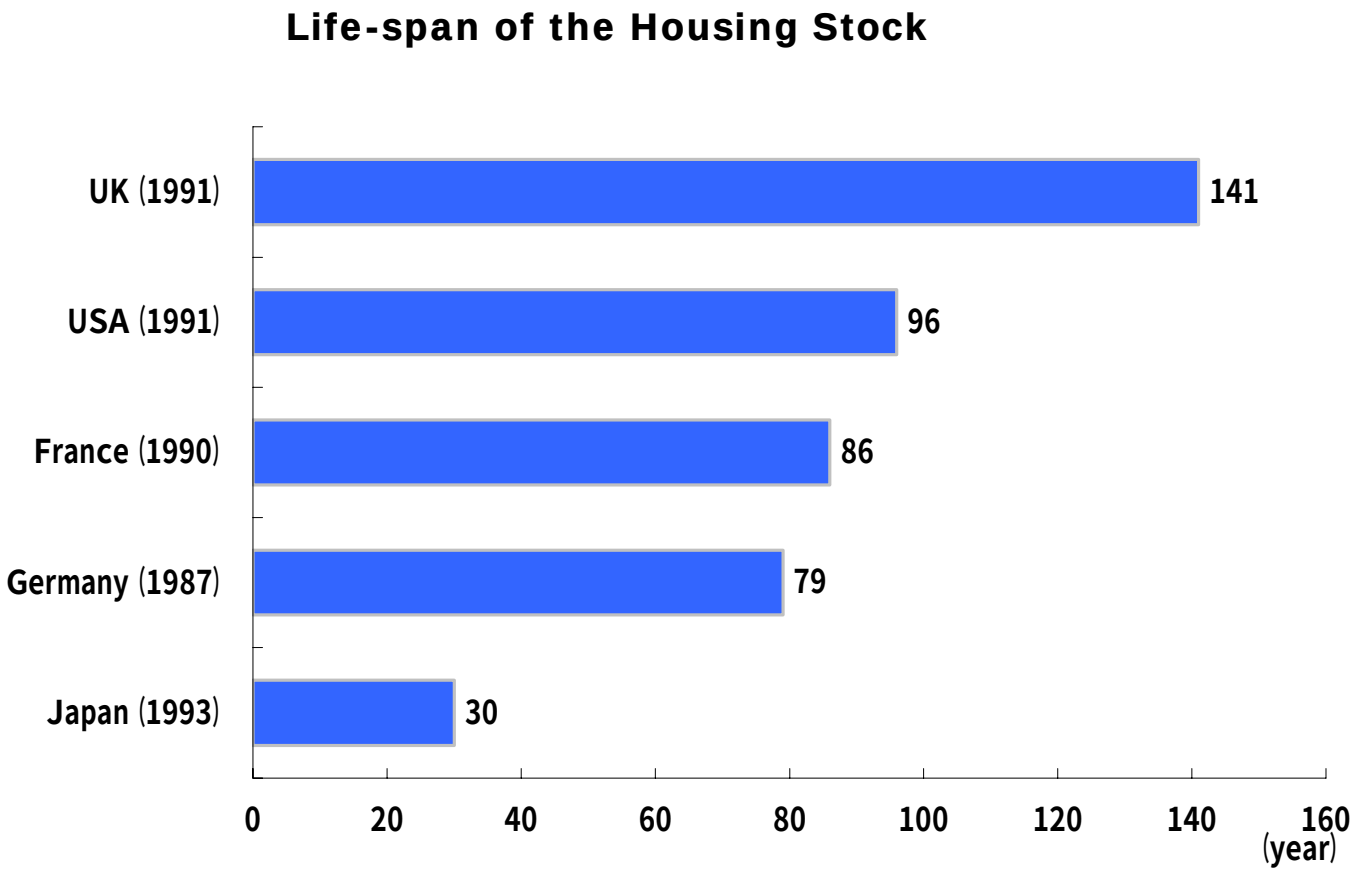
Why do Japanese Keep Holding a Large Share of Real Assets? 1: Quality and Quantity

Size of Rental vs. Owner-occupied Housing in Major Countries



Source: Ministry of Internal Affairs and Communications "Housing and Land Survey", US Census Bureau "American Housing Survey", and UK Office of the Deputy Prime Minister "English House Survey".

Why do Japanese Keep Holding a Large Share of Real Assets? 2: Market Value



Note: Number of years to replace the current housing stock calculated as total housing stock / number of new units built in one year, assuming the newly build stock just replaces number of structures destroyed.
Source: Ministry of Internal Affairs and Communications, Housing Stock Survey, 1993.

Where we are so far . . .

- Japanese households' large holdings of financial assets could have a big impact on capital flows if households changed their allocation
- Rather than simply saying, "Japanese are risk averse", maybe we should examine the effect of the big place of housing in the asset and liability sides of balance sheet
- How do liabilities affect household asset allocation?
- We chose to use the Sharpe Tint allocation model to look at Japanese households' portfolio allocation because it does incorporate liabilities.

Optimizing Asset Allocation including Liabilities: The Sharpe-Tint Model

Maximize $\{ \text{Expected}(R_A) - [\text{Variance}(R_A)]/t + [2k\, L_0/A_0\, \text{Covariance}(R_A, R_L)]/t \}$

R_A	is return on assets
R_L	is return on liabilities
t	is risk tolerance
k	is the degree of importance of liabilities and
L_0/A_0	is the liability ratio in the current period

- allows us to consider both investors' risk tolerance and the liability ratio in the optimal asset allocation decision
- as easy to estimate as the more familiar traditional asset-only allocation model.

Data

- Annual data 1960 to 2000.
- Calculated the risk, return, and correlation for each asset at five-year intervals, starting with 1980 based on the data for the previous 20 years.

Return on :	Calculated from:
Financial assets	
short-term	overnight call rate
bonds	Nomura BPI aggregate index
equities	Japan total Performance Index
Financial liabilities	long-term prime rate
Real assets	urban land price index, house rent and households' land & fixed assets

- L_0/A_0 from Flow of Funds and SNA statistics

Results: Actual Allocation vs. Optimal Allocation with Constant Risk Tolerance

Household Asset Allocation, Assuming Constant Risk Tolerance

	Liability Ratio	Risk Tolerance	Asset Allocation					
			Real Assets		Risk Financial Assets		Low-risk Financial Assets	
			Model Result	Actual	Model Result	Actual	Model Result	Actual
1980	13.5%	0.50	100%	63%	0%	5%	0%	32%
1985	13.8%	0.50	86%	57%	14%	8%	0%	35%
1990	12.5%	0.50	79%	63%	21%	8%	0%	30%
1995	15.5%	0.50	48%	52%	17%	7%	35%	41%
2000	15.6%	0.50	2%	47%	23%	7%	75%	47%

Note: Risk financial assets include equities, investment derivatives mutual funds, foreign securities, and foreign currency deposits. All other financial assets are included as low-risk assets.
Source: Actual asset amounts from Bank of Japan and SNA statistics. Calculation by Financial and Economic Research Center, Nomura Securities.

Results: Optimal Allocation Given Actual Real Asset Holdings of Japanese Households

Household Asset Allocation Based on Actual Holdings of Real Assets

	Liability Ratio	Risk Tolerance	Asset Allocation					
			Real Assets		Risk Financial Assets		Low-risk Financial Assets	
			Model Result	Actual	Model Result	Actual	Model Result	Actual
1980	13.5%	0.16	63%	63%	4%	5%	33%	32%
1985	13.8%	0.16	57%	57%	16%	8%	27%	35%
1990	12.5%	3.20	63%	63%	37%	8%	0%	30%
1995	15.5%	2.18	52%	52%	48%	7%	0%	41%
2000	15.6%	1.70	19%	47%	77%	7%	4%	47%

Note: Risk financial assets include equities, investment derivatives mutual funds, foreign securities, and foreign currency deposits. All other financial assets are included as low-risk assets. Due to the poor relative performance of real assets for the year 2000, the model generates the maximum allocation to real assets, 19%, when risk tolerance is 1.70. Raising risk tolerance above 1.70 results in greater allocation to equities and less to real assets.
Source: Actual asset amounts from Bank of Japan and SNA statistics. Calculation by Financial and Economic Research Center, Nomura Securities.

Liabilities (housing loan burden) ⇒ Risk Tolerance & Risk Asset Holdings

As the Liability Ratio declines, risk tolerance increases

Liability Ratio	Risk Tolerance	Financial Asset Allocation	
		Risk Assets	Low-risk Assets
0%	1.79	100%	0%
5%	1.76	98%	2%
10%	1.73	97%	3%
15%	1.70	95%	5%
20%	1.68	93%	7%
25%	1.65	92%	8%
30%	1.62	90%	10%
35%	1.60	89%	11%
40%	1.58	88%	12%
45%	1.55	86%	14%
50%	1.52	85%	15%

The burden of a housing loan means less allocation to risk assets

Owner households:	Liability Ratio	Risk Tolerance	Financial Assets Allocation	
			Risk Assets	Low-risk Assets
Without housing loan	0%	1.79	100%	0%
With housing loan	30%	1.62	90%	10%

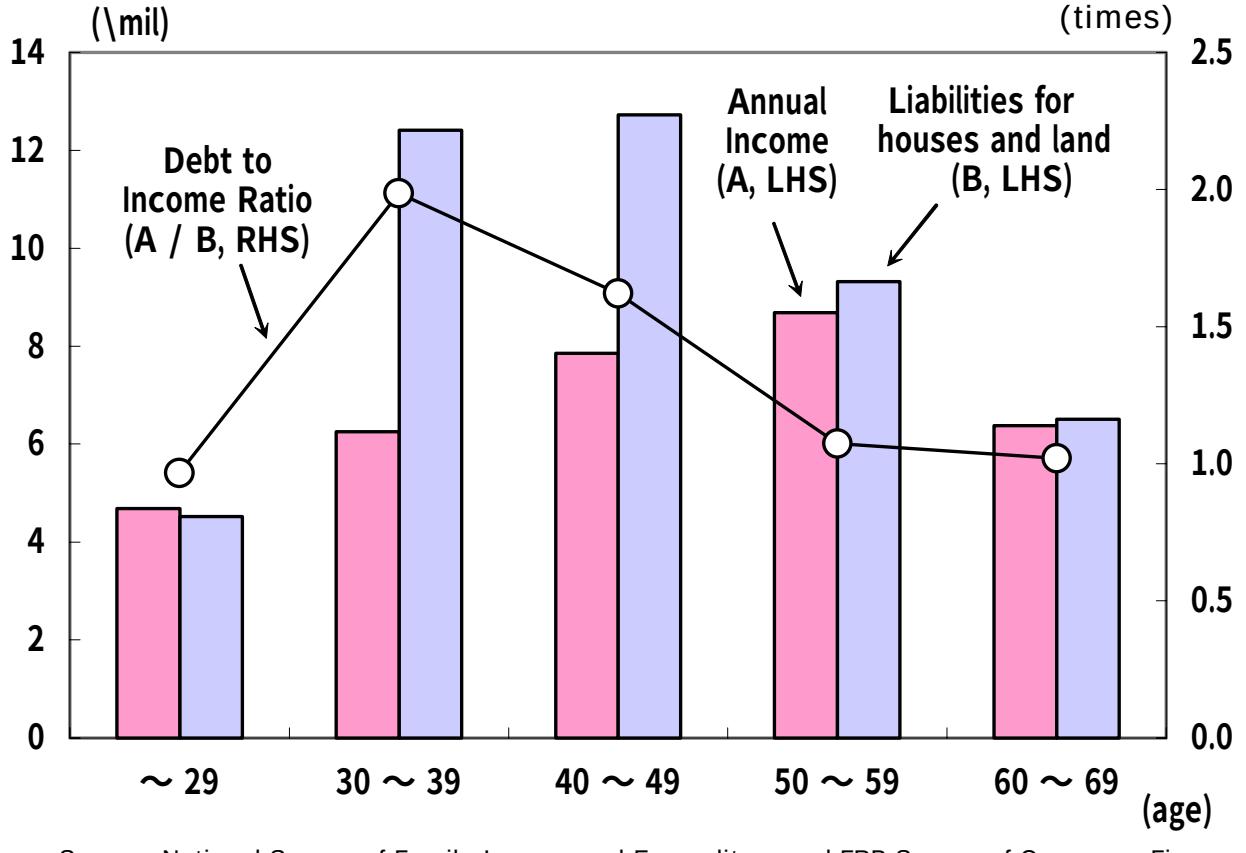
Note: The calculation is based on the model using 2000 data.
Source: The liability ratio is from the National Survey of Family Income and Expenditure, Ministry of Internal Affairs and Communications, 2000. Calculated by Financial and Economic Research Center, Nomura Securities.

What are the implications for future asset allocation?

- Japanese buy a house only once in their lifetimes, typically in their 30s or 40s.
- Since most households try to pay off the housing loan by the time the wage-earner retires, liability ratios tend to be lower for households with heads in their 50s and 60s.
- To understand the impact of aging population on financial assets and financial flows, we need to look at how balance sheets “age” along with households

Structure of Japanese Household Balance Sheets is Closely Related to Age

Age of the Head of Household and the Ratio of Housing Debt to Annual Income



Source: National Survey of Family Income and Expenditure and FRB Survey of Consumer Finance.

To understand the future impact we need to look at how balance sheets "age" along with households

Relationship between Age of Household Head and Household Asset Allocation

Householder's Age	Liability Ratio	Risk Tolerance	Financial Assets Allocation	
			Risk Assets	Low-risk Assets
30-39	27%	1.64	91%	9%
40-49	20%	1.68	94%	6%
50-59	10%	1.73	97%	3%
60-69	4%	1.76	98%	2%

Note: The calculation is based on the model using 2000 data.
Source: The liability ratio is from the National Survey of Family Income and Expenditure, Ministry of Internal Affairs and Communications, 2000. Calculated by Financial and Economic Research Center, Nomura Securities.

Statistics Confirm that Older Households Do Hold Risk Assets

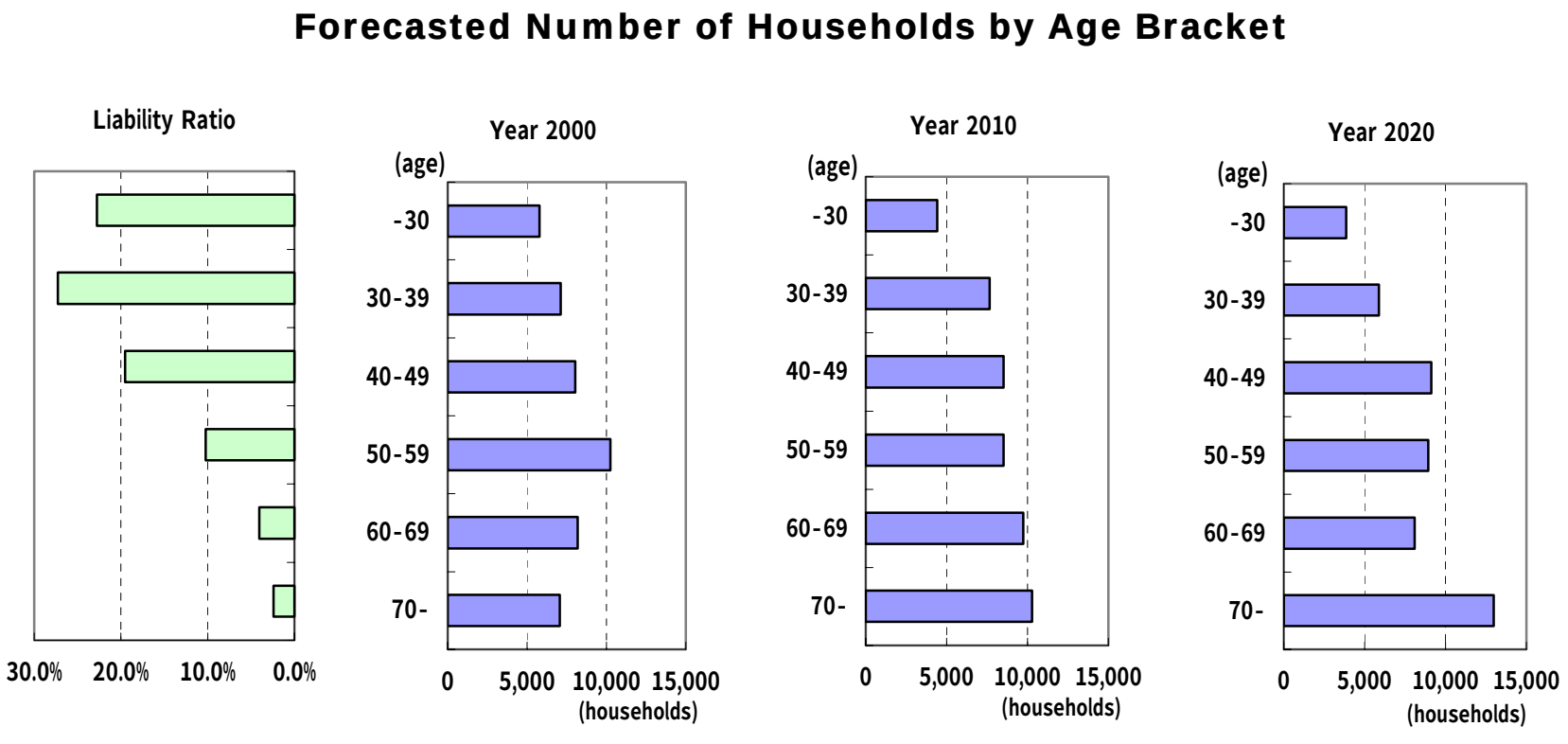
Amount and Asset Composition of Household Savings by Age of Household Head

(All Households)

	under 30	30-39	40-49	50-59	60-69	over 70
Total Savings (million yen)	3.5	7.1	11.6	17.3	23.8	25.2
Financial institutions (%)	93.2	93.2	94.4	96.3	98.6	99.6
Demand deposits	39.9	24.5	15.1	14.7	14.1	14.6
Time deposits	33.0	35.4	37.4	42.2	47.7	51.8
Life insurance, etc.	16.5	26.8	35.8	29.4	25.3	18.0
Securities	3.4	6.5	6.0	9.9	11.5	15.3
Stocks & shares, unit & open-end trusts	2.6	4.5	4.1	7.4	7.5	8.9
Loan trusts & money in trust	0.0	0.6	0.3	0.9	0.9	1.6
Public & corporate bonds, open-end bond trus	0.9	1.4	1.6	1.7	3.1	4.8
Non-financial institutions	7.1	6.8	5.6	3.7	1.4	0.4

Source: Ministry of Internal Affairs and Communications National Survey of Family Income and Expenditure.

Current Household Liability Ratio by Age Brackets and Aging of Households



Source: National Survey of Family Income and Expenditure, Ministry of Internal Affairs and Communications, National Institute of Population and Social Security Research.

Calculated Impact of "Balance Sheet Aging" on Risk Financial Assets

Projected Change in Risk Financial Assets by 2010

Age of Household Head	Financial Assets per Household in 2000	Difference in Risk Financial Assets as % of Total Financial Assets	Change in Risk Financial Assets per Household	Number of Households in 2010	Total Change in Risk Financial Assets
	(A)	(B)	(C = A * B)	(D)	(E = C * D)
	(\ thousands)	(%)	(\ thousands)	(thousands)	(\ millions)
under 30	3,651	N.A.	N.A.	4,426	N.A.
30-39	7,072	-1.1	-76	7,662	-582,558
40-49	11,083	2.3	255	8,522	2,174,664
50-59	16,183	2.9	465	8,527	3,964,770
60-69	21,894	1.4	312	9,734	3,041,508
over 70	22,229	1.0	216	10,272	2,220,038
				Total	10,818,422

Note:1. Risk asset holdings as a percent of total assets by age bracket in 2000 is calculated from 1) the liability ratio by age of household head from the MIC survey and 2) model estimates of risk assets as a percent of total assets by liability ratio. Column B shows the difference in this ratio from 2000 to 2010 assuming each age group advances to the next age group in 2010.
2. The number of households in 2010 (Column D) is from estimates by the National Institute of Population and Social Security Research.
3. Coverage of the MIC survey is 47% of BOJ Flow of Funds data coverage.
Source: Data from Ministry of Internal Affairs and Communications (MIC) and National Institute of Population and Social Security Research. Calculation by Financial and Economic Research Center, Nomura Securities.

The Future of Japanese Household Asset Allocation

- The model confirmed that Japanese households were forced to tolerate more risk because they also had to keep their poorly performing holdings of real assets during the 1990s—so they could not take on more risky financial assets.

- The keys to thinking about future asset allocation are risk tolerance, return on assets, and the liability ratio.

- As the liability burden of housing continues to decline, the model suggests we can expect Japanese households will have more room for risk-taking.

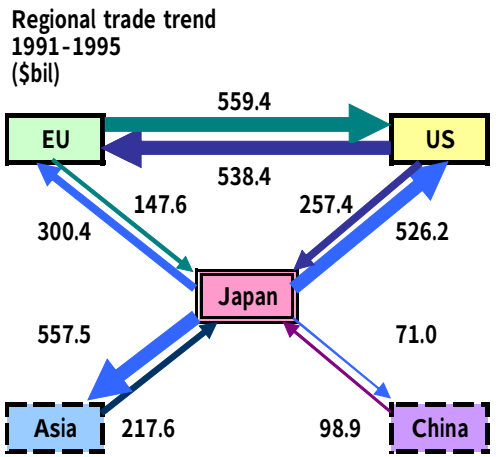
- The real estate market will become an important factor in household asset allocation because it affects both the return on real assets and the liability burden from home ownership.

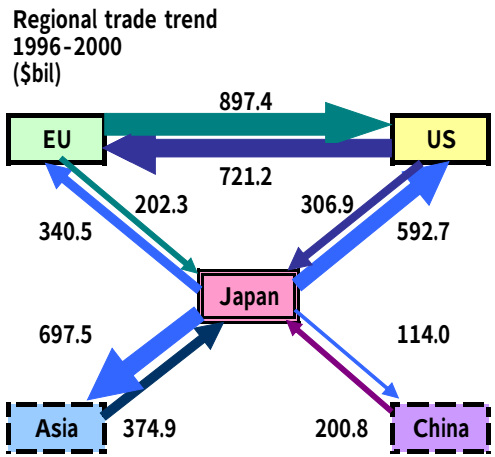
The Future of Private Outflows from Japan

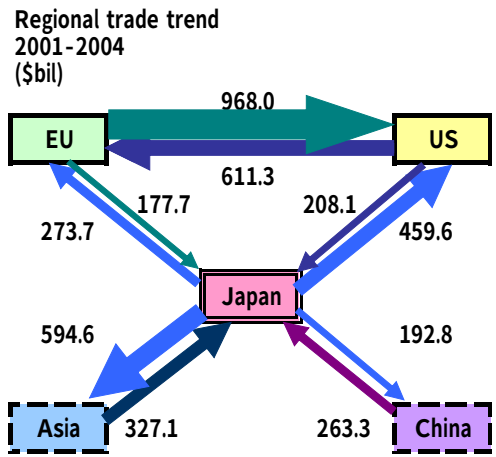
- In the future, changes in the debt burden as households age will result in increased potential for risk-taking in the allocation of Japanese household assets

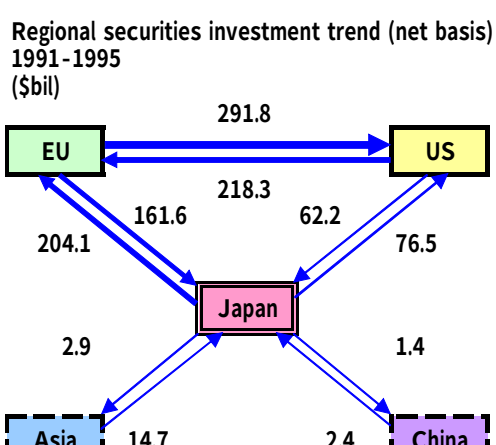
- For Japanese households, aging will not necessarily mean decreasing risk assets along with a declining savings rate.

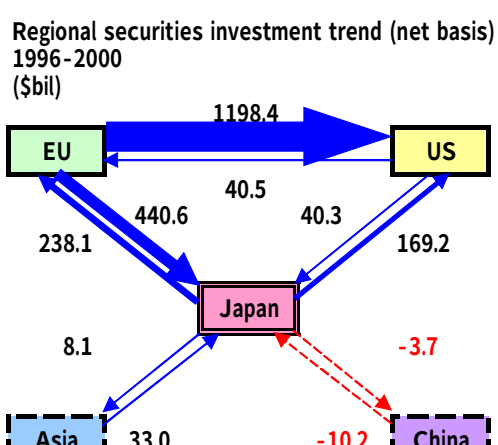
Appendix: Regional flows of Trade and Investment by 5-year periods, 1991 – 2004

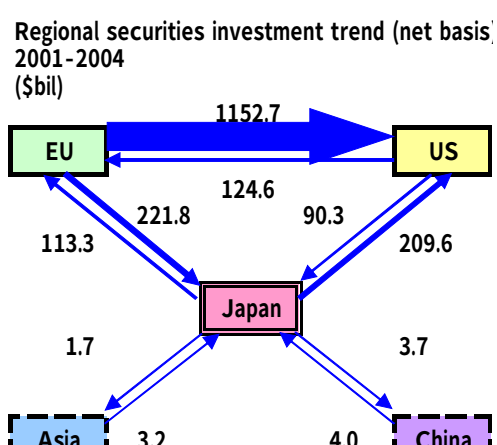












Note: Data for each period sum to global total. Asia excludes China. Japanese statistics used for exports & investment to US from Japan and among Japan, EU, Asia, and China. US statistics used for exports & investment from US to Japan and between US and EU. The red arrow indicates investment withdrawing from the arrow's last point toward the starting point

Japanese investment to foreign securities

Billion dollars			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Securities Assets	Total		85.3	100.8	45.0	96.9	154.5	82.4	107.0	81.6	177.7	175.5
		North America	15.0	54.4	31.2	22.8	42.3	13.3	64.4	24.2	62.6	61.1
		U.S.A	15.0	50.9	33.2	28.5	40.8	15.9	65.5	23.2	59.7	61.2
		Asia	2.3	7.1	-1.3	-2.9	1.7	-0.1	-1.3	-1.1	-0.5	8.1
		ASEAN	0.2	1.9	-1.0	-1.6	1.2	-0.1	-0.1	-0.7	-0.4	-0.2
		P.R.China	0.1	-0.0	-1.3	-0.7	-0.8	-0.8	-0.4	-0.3	0.9	3.5
		Cent & South America		13.8	20.2	34.6	40.7	21.5	26.4	41.6	18.3	60.1
		Cayman Islands						18.4	26.0	45.1	20.1	59.7
		Oceania		4.9	-3.2	-5.1	1.2	-2.1	2.1	2.2	4.8	5.3
		Western Europe	60.2	27.6	26.0	69.4	80.6	44.9	1.8	2.0	76.0	35.8
		EU	59.5	26.3	24.7	66.6	77.5	43.0	3.6	0.7	73.1	36.0
		U.K.	31.7	8.5	13.4	14.2	12.4	-2.7	-2.2	-4.5	10.8	3.8
		Est Europe, Russi, etc.		-0.9	-1.4	-1.2	-1.4	-1.0	-0.8	-0.3	0.1	1.7
		Middle East		0.2	0.1	0.4	0.3	0.4	0.0	0.3	-0.0	0.0
		Africa		0.3	0.1	0.0	0.2	-0.1	0.7	-0.1	0.2	-0.3
	Stocks	Total	-0.1	8.3	13.5	14.1	32.2	19.7	11.5	37.2	4.3	31.8
		North America	2.3	3.7	10.5	3.2	13.7	10.9	11.8	22.9	2.5	10.1
		U.S.A	2.3	3.2	10.0	3.6	12.9	10.2	12.0	22.2	1.8	9.2
		Asia		-2.0	-4.4	-1.8	1.7	1.9	0.1	1.2	0.7	5.4
		ASEAN		-0.1	-2.6	-0.9	1.0	0.0	-0.2	0.1	-0.1	-0.2
		P.R.China		-0.0	0.2	-0.0	0.1	-0.1	0.1	0.2	0.4	1.8
		Cent & South America		0.2	0.1	2.0	4.7	1.5	2.9	6.8	3.1	7.7
		Cayman Islands						1.4	2.0	6.6	2.7	6.7
		Oceania		0.3	0.1	-0.1	0.8	0.0	0.3	0.6	-0.2	1.3
		Western Europe	1.2	5.6	6.9	10.8	11.3	5.3	-4.0	5.7	-2.7	6.6
		EU	0.7	4.9	6.2	9.5	10.7	4.8	-3.4	4.7	-2.6	6.6
		U.K.	0.3	0.8	1.7	1.0	3.1	3.0	0.8	2.5	-2.5	1.9
		Est Europe, Russi, etc.		0.1	0.1	-0.0	0.0	-0.0	-0.0	0.0	-0.0	-0.1
		Middle East		-0.0	-0.0	-0.0	0.0	-0.0	0.0	-0.0	-0.0	0.0
		Africa		0.4	0.0	0.0	-0.1	0.0	-0.0	-0.0	-0.0	-0.0
	Bonds	Total	85.4	92.5	31.4	82.8	122.3	62.7	95.5	44.4	173.4	143.7
		North America	12.7	-50.7	20.7	19.7	28.5	2.4	52.6	1.3	60.1	51.0
		U.S.A	12.8	47.6	23.2	24.9	27.8	5.7	53.5	1.0	57.9	52.0
		Asia	2.3	9.1	3.1	-1.1	-0.0	-2.1	-1.4	-2.3	-1.2	2.7
		ASEAN	0.2	2.0	1.5	-0.7	0.2	-0.1	0.1	-0.8	-0.7	0.0
		P.R.China	0.1	-0.0	-1.5	-0.7	-0.8	-0.8	-0.5	-0.6	0.6	1.7
		Cent & South America		13.6	20.1	32.5	36.0	19.9	23.4	34.8	15.2	52.3
		Cayman Islands						17.0	24.0	38.5	17.3	53.0
		Oceania		4.6	-3.4	-5.0	0.5	-2.1	1.8	1.6	0.3	0.5
		Western Europe	59.0	21.9	19.1	58.6	69.3	39.6	5.8	-3.6	78.7	29.2
		EU	58.9	21.4	18.5	57.1	66.8	38.2	7.0	-4.0	75.7	29.4
		U.K.	31.5	7.7	11.6	13.2	9.3	-5.7	-3.0	-7.0	13.3	2.0
		Est Europe, Russi, etc.		-1.0	-1.5	-1.2	-1.4	-0.9	-0.7	-0.3	0.2	1.7
		Middle East		0.2	0.1	0.4	0.3	0.4	0.0	0.3	-0.0	0.0
		Africa		-0.1	0.0	-0.0	0.2	-0.1	0.7	-0.1	0.3	-0.3

Note: Plus means Japanese investors purchase foreign securities, and minus means that of sell. The numbers from the assets side.
Source: Bank of Japan, Ministry of Finance, Financial and Economic Research Center, Nomura Securities

Model of the Current Account Balance with Population Aging and Net Wealth

$$\left(\frac{CA}{Y}\right)_{it} = \alpha_i + \beta \cdot work_{it} + \gamma_i \cdot \left(\frac{NW}{Y}\right)_{it} + \delta \cdot \left(\frac{T-G}{Y}\right)_{it}$$

where,

CA is current account
Y is GDP
Work is the ratio of population in age 20-64 to the all population
NW is households' net wealth
T is government revenue
G is government spending

Note: Subscripts i and t refer countries and time, respectively.
CA/Y and T-G/Y are shown as % while NW/Y is shown as ratio.
Estimation method is pooled estimation.
The Coefficients for "Work" and "(T-G)/Y" are common while the coefficient for (NW/Y) is cross-section specific.

Source: Data from OECD. Calculation by Financial and Economic Research Center, Nomura Securities.

Dependent Variable: CA/Y
Method: Pooled Least Squares
Sample: 1985 2004
Included observations: 20
Number of cross-sections used: 7
Total panel (unbalanced) observations: 124

Variable	Coefficient	Std. Error	t-Statistic	Prob.
WORK	0.597	0.268	2.230	0.028
(T-G)/Y	0.162	0.045	3.595	0.001
US--NW/Y	-2.903	1.020	-2.848	0.005
JP--NW/Y	-1.255	0.653	-1.921	0.057
DE--NW/Y	7.587	7.021	1.081	0.282
FR--NW/Y	10.765	4.547	2.368	0.020
IT--NW/Y	-0.733	0.724	-1.013	0.313
UK--NW/Y	-2.082	0.663	-3.139	0.002
CA--NW/Y	3.856	1.792	2.151	0.034
Fixed Effects (Cross)				
US--C	-26.003			
JP--C	-27.989			
DE--C	-49.990			
FR--C	-38.867			
IT--C	-33.539			
UK--C	-27.714			
CA--C	-48.677			

Effects Specification
Cross-section fixed (dummy variables)

R-squared	0.6834	Mean dependent var	-0.3748
Adjusted R-squared	0.6395	S.D. dependent var	2.2046
S.E. of regression	1.3237	Sum squared resid	189.25
Log likelihood	-202.16	F-statistic	29.144
Durbin-Watson stat	0.6361	Prob(F-statistic)	0