Japan's Medium-term Economic Outlook
—*July 2012*—

Japan faces fork in the road as globalization/graying of society progress

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Summary

■ We have revised our January 2012 medium-term outlook for Japan's economy. In the last half year, the European sovereign debt crisis and the slowing of emerging economies have increased uncertainties bearing on the world economy. In our current forecast, we adopted a more conservative view of the world economy and assumed more restrained growth of social insurance benefits reflecting the growing need to rebuild government finances. As a result, we now forecast that Japan's economy will increase 1.4% (real) and 1.9% (nominal) over the next 10 years (annualized average rates).

■ Whether the advance of manufacturing industries overseas will cause domestic economic activity to contract will depend on the magnitude of substitution and scale effects. Companies moving operations abroad does not necessarily result in the hollowing out of the economy. A quantitative analysis has revealed a relationship where an accelerated shift to offshore production by the chemical, iron/nonferrous metal/other metal, and electrical machinery industries gives rise to higher exports from Japan.

■ Turning to the age and cohort effects, keywords for consumption in a super-aged society will be "home-oriented/leisure", "maintenance", and "safety/security". In terms of growth strategies, since diverse human resources and the reeducation of workers will be necessary in the years to come, the provision of goods and services that lessen household duties will be required.

■ When viewed in the long term, the unemployment rate is experiencing a secular rise through the downward rigidity of nominal wages and increase in the ratio of non-regular to overall employees. An examination of the consumption structure by employment category discloses that the ascent of the proportion of non-regular employees has increased demand for necessities and reduced that for non-essential and non-urgent goods.

Economic Research

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Medium-term Outlook for Japan's Economy (as of Jul 2012)

	Actual		DIR estimates		
	FY2002-06	FY2007-11	FY2012-21	FY2012-16	FY2017-21
Real GDP (Y/y %)	1.7	-0.2	1.4	1.4	1.4
Private final consumption	1.1	0.5	0.7	0.8	0.6
Private capital investment	3.5	-2.7	3.7	4.2	3.2
Private housing investment	-0.3	-6.6	-1.1	-0.8	-1.4
Public fixed capital formation	-7.5	-1.0	1.2	-0.3	2.7
Government final consumption	1.2	1.5	1.0	0.7	1.4
Exports of goods and services	10.1	0.4	5.1	4.3	5.9
Imports of goods and services	4.7	0.5	4.3	4.4	4.3
Nominal GDP (Y/y %)	0.3	-1.6	1.9	2.0	1.7
GDP deflator (Y/y %)	-1.4	-1.4	0.5	0.7	0.3
Corporate Goods Price Index (Y/y %)	0.6	0.4	1.0	1.2	0.8
Consumer Price Index (Y/y %)	-0.2	-0.2	1.2	1.4	1.0
O/N call rate (%)	0.0	0.2	0.3	0.0	0.5
Yields on 10-yr JGBs (%)	1.4	1.3	2.1	1.5	2.7
Exchange rate(Y/$)	114.5	94.4	76.8	75.3	78.4
Current balance (% of nominal GDP)	3.5	3.1	1.1	0.7	1.5
Nominal employee compensation (Y/y %)	-1.1	-0.8	0.9	0.3	1.3
Unemployment (%)	4.7	4.5	3.7	3.9	3.5
Labor's share (ratio of employee compensation to national income)	68.7	70.0	66.8	67.0	66.6
Central & local government (% of nominal GDP)					
Fiscal balance	-5.7	-6.6	-4.8	-5.1	-4.4
Primary balance	-3.9	-5.0	-3.8	-4.3	-3.4
Central & local government debt (% of nominal GDP)	172.8	203.2	236.3	231.9	240.3

Source: Compiled by DIR.
Notes: 1) Period avg.
2) Some FY11 figures: DIR estimates.
3) Fiscal balance: excl. ad-hoc factors.

Main Economic Indicators

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(FY)	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Nominal GDP (Y tril)	509.1	513.0	489.5	473.9	479.3	469.9	481.9	488.7	502.0	512.1	519.9	525.7	534.1	543.8	553.8	564.5
(Y/y %)	0.7	0.8	-4.6	-3.2	1.1	-2.0	2.6	1.4	2.7	2.0	1.5	1.1	1.6	1.8	1.8	1.9
Nominal GNI (Y tril)	524.2	530.8	504.8	486.9	492.6	484.9	493.2	500.0	514.2	525.2	533.9	540.0	548.7	558.6	568.7	579.4
(Y/y %)	1.1	1.2	-4.9	-3.5	1.2	-1.6	1.7	1.4	2.8	2.1	1.7	1.1	1.6	1.8	1.8	1.9
Real GDP (Chained [2005]; Y tril)	516.0	525.5	505.8	495.4	511.1	511.1	524.0	530.1	535.1	543.3	546.7	551.4	558.9	567.5	576.2	585.1
(Y/y %)	1.8	1.8	-3.7	-2.0	3.2	0.0	2.5	1.2	0.9	1.5	0.6	0.8	1.4	1.6	1.5	1.5
Domestic demand (contribution to real GDP growth; % pt)	1.0	0.6	-2.7	-2.2	2.4	1.0	3.6	1.1	0.8	1.5	0.2	0.5	1.2	1.3	1.3	1.3
Foreign demand (contribution to real GDP growth; % pt)	0.8	1.2	-1.1	0.2	0.8	-1.0	-1.2	0.1	0.2	0.0	0.4	0.3	0.2	0.3	0.2	0.2
Per capita real GDP (Chained [2005]; Y mil)	4.0	4.1	4.0	3.9	4.0	4.0	4.1	4.2	4.2	4.3	4.3	4.4	4.4	4.5	4.6	4.7
(Y/y %)	1.6	1.7	-3.8	-2.0	3.2	0.0	2.8	1.3	1.1	1.8	0.9	1.2	1.7	1.9	1.9	2.0
Real GDI (Chained [2005]; Y tril)	510.3	514.4	491.8	488.3	498.9	492.5	506.9	513.2	516.4	522.2	523.9	526.5	531.8	538.5	545.3	552.5
(Y/y %)	1.0	0.8	-4.4	-0.7	2.2	-1.3	2.9	1.2	0.6	1.1	0.3	0.5	1.0	1.3	1.3	1.3
Index of Industrial Production (2005 = 100)	105.3	108.1	94.4	86.1	94.1	93.2	97.1	98.3	99.0	101.0	101.1	101.7	103.4	105.5	107.6	109.8
(Y/y %)	4.6	2.7	-12.6	-8.8	9.4	-1.0	4.1	1.3	0.8	2.0	0.1	0.6	1.7	2.1	2.0	2.0
Corporate Goods Price Index (2010 = 100)	99.7	102.0	105.2	99.8	100.2	101.6	101.0	101.6	104.7	105.8	107.7	108.4	109.4	110.3	111.3	112.2
(Y/y %)	2.0	2.3	3.2	-5.1	0.4	1.3	-0.6	0.7	3.0	1.1	1.8	0.7	0.8	0.8	0.9	0.9
Consumer Price Index (2010 = 100)	100.6	101.0	102.1	100.4	99.9	99.8	100.1	100.9	103.7	105.1	107.0	108.1	109.2	110.2	111.3	112.4
(Y/y %)	0.2	0.4	1.1	-1.7	-0.4	-0.1	0.3	0.8	2.8	1.4	1.8	1.0	1.0	1.0	1.0	1.0
O/N call rate (%)	0.2	0.5	0.4	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.8	1.0
Yield on 10-yr JGBs (%)	1.8	1.6	1.5	1.4	1.1	1.0	0.9	1.1	1.3	1.9	2.2	2.3	2.5	2.6	2.8	2.9
Y/$	117	114	100	93	86	79	76	74	73	75	78	79	80	79	78	76
Y/EUR	150	162	143	131	113	109	106	102	99	99	102	103	103	102	100	98
Current balance (Y tril)	21.2	24.5	12.3	15.8	16.1	7.4	1.6	2.9	3.6	3.5	5.5	6.8	7.4	8.5	9.2	10.0
(% of nominal GDP)	4.2	4.8	2.5	3.3	3.4	1.6	0.3	0.6	0.7	0.7	1.1	1.3	1.4	1.6	1.7	1.8
Labor force (0000)	6,669	6,686	6,674	6,643	6,630	6,578	6,550	6,520	6,489	6,470	6,454	6,424	6,393	6,361	6,333	6,309
(Y/y %)	0.2	0.2	-0.2	-0.5	-0.2	-0.8	-0.4	-0.5	-0.5	-0.3	-0.2	-0.5	-0.5	-0.5	-0.4	-0.4
No. employed (0000)	6,398	6,431	6,399	6,301	6,301	6,280	6,263	6,256	6,241	6,232	6,217	6,186	6,159	6,135	6,114	6,097
(Y/y %)	0.5	0.5	-0.5	-1.5	0.0	-0.3	-0.3	-0.1	-0.2	-0.2	-0.2	-0.5	-0.4	-0.4	-0.3	-0.3
No. of employees (0000)	5,493	5,539	5,544	5,488	5,508	5,501	5,510	5,521	5,524	5,532	5,535	5,524	5,514	5,508	5,505	5,505
(Y/y %)	1.3	0.8	0.1	-1.0	0.4	-0.1	0.2	0.2	0.1	0.1	0.1	-0.2	-0.2	-0.1	-0.1	0.0
No. unemployed (0000)	272	255	275	343	328	298	287	263	248	238	237	238	234	226	219	213
Unemployment rate (%)	4.1	3.8	4.1	5.2	5.0	4.5	4.4	4.0	3.8	3.7	3.7	3.7	3.7	3.6	3.5	3.4
Nominal employee compensation (Y tril)	256	256	254	243	244	244	238	241	244	248	251	255	258	261	265	269
(Y/y %)	0.7	0.0	-0.5	-4.4	0.5	0.1	-2.4	0.9	1.4	1.5	1.5	1.4	1.4	1.2	1.3	1.5
Nominal household disposable income (Y tril)	292	291	288	288	287	280	281	281	286	293	298	304	308	313	320	325
(Y/y %)	0.8	-0.4	-0.9	-0.1	-0.5	-2.2	0.4	-0.1	1.7	2.4	1.8	2.0	1.4	1.6	2.1	1.8
Labor's share (%)	67.6	67.1	71.7	71.0	69.9	70.2	67.6	67.0	66.7	66.6	67.0	67.1	67.0	66.6	66.3	66.1
Household savings rate (%)	1.5	0.3	1.5	2.6	2.6	1.3	0.2	-1.6	-2.8	-2.6	-2.7	-2.1	-2.0	-1.4	-0.2	0.4
Central & local government																
Fiscal balance (Y tril)	-15.9	-12.5	-21.8	-44.1	-40.3	-41.0	-31.5	-28.4	-23.8	-23.2	-21.7	-22.6	-23.3	-24.0	-24.8	-25.9
(% of nominal GDP)	-3.1	-2.4	-4.5	-9.3	-8.4	-8.7	-6.5	-5.8	-4.7	-4.5	-4.2	-4.3	-4.4	-4.4	-4.5	-4.6
Primary balance (% of nominal GDP)	-1.7	-1.1	-2.9	-7.6	-6.7	-6.9	-5.6	-4.9	-3.9	-3.7	-3.4	-3.4	-3.4	-3.4	-3.4	-3.4
Central & local government debt (Y tril)	910	929	933	979	1,025	1,063	1,100	1,134	1,163	1,192	1,219	1,248	1,277	1,307	1,338	1,371
(% of nominal GDP)	178.7	181.2	190.7	206.6	213.8	226.3	228.3	232.0	231.6	232.7	234.4	237.3	239.1	240.4	241.7	242.8

Source: Compiled by DIR.
Notes: 1) Through FY11: actual; some FY11 figures: DIR estimates.
2) Fiscal balance: excl. ad-hoc factors.

Nominal Gross Domestic Expenditure (Y tril)

(FY)		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Nominal GDP		509.1	513.0	489.5	473.9	479.3	469.9	481.9	488.7	502.0	512.1	519.9	525.7	534.1	543.8	553.8	564.5
	(Y/y %)	0.7	0.8	-4.6	-3.2	1.1	-2.0	2.6	1.4	2.7	2.0	1.5	1.1	1.6	1.8	1.8	1.9
Domestic demand		502.0	505.0	491.1	469.6	475.0	476.2	491.0	496.4	509.8	521.0	527.5	532.3	540.3	549.1	558.4	568.2
	(Y/y %)	0.7	0.6	-2.7	-4.4	1.2	0.3	3.1	1.1	2.7	2.2	1.2	0.9	1.5	1.6	1.7	1.8
Private final consumption		293.4	294.7	288.1	284.2	284.2	284.8	285.6	290.4	298.7	305.0	311.0	315.5	319.7	322.7	325.8	329.6
	(Y/y %)	0.3	0.5	-2.2	-1.3	0.0	0.2	0.3	1.7	2.9	2.1	2.0	1.4	1.3	0.9	1.0	1.2
Private housing investment		18.8	16.4	16.5	12.6	13.0	13.6	14.9	14.8	14.8	14.4	14.0	13.7	13.7	13.6	13.6	13.6
	(Y/y %)	2.1	-12.9	1.1	-23.5	2.8	4.3	9.8	-0.8	0.0	-2.6	-2.8	-1.7	-0.6	-0.3	0.1	-0.6
Private capital investment		74.7	76.8	71.0	60.8	62.0	62.0	65.4	67.9	69.8	72.3	74.1	76.4	78.8	80.9	83.1	85.3
	(Y/y %)	5.7	2.9	-7.6	-14.4	2.1	0.0	5.5	3.8	2.8	3.5	2.5	3.1	3.1	2.7	2.8	2.6
Change in private inventories		0.5	1.7	1.3	-5.1	-1.3	-3.5	0.1	2.0	5.0	6.3	2.9	-1.6	-2.8	-1.7	-0.1	1.2
Government final consumption		91.9	93.3	92.9	94.2	95.8	97.1	100.7	98.4	99.5	100.6	102.0	103.7	105.6	107.2	108.7	110.3
	(Y/y %)	-0.5	1.4	-0.4	1.5	1.6	1.3	3.7	-2.2	1.1	1.1	1.4	1.7	1.8	1.6	1.4	1.5
Public fixed capital formation		22.8	22.1	21.2	22.8	21.4	22.2	24.2	22.9	22.0	22.4	23.5	24.5	25.4	26.3	27.2	28.2
	(Y/y %)	-6.0	-3.0	-4.0	7.7	-6.1	3.7	9.0	-5.4	-4.2	1.9	4.9	4.4	3.5	3.3	3.6	3.8
Change in public inventories		0.0	0.1	0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports of goods and services		84.1	92.4	78.6	64.5	73.8	70.9	69.8	71.6	74.4	79.0	85.1	91.2	97.5	103.0	107.8	112.3
	(Y/y %)	11.9	10.0	-15.0	-17.9	14.4	-3.9	-1.5	2.6	3.9	6.2	7.7	7.3	6.9	5.6	4.7	4.2
Imports of goods and services		76.9	84.4	80.2	60.2	69.5	77.3	78.9	79.4	82.3	87.9	92.6	97.8	103.7	108.3	112.4	116.1
	(Y/y %)	12.3	9.7	-4.9	-25.0	15.5	11.2	2.2	0.5	3.7	6.9	5.3	5.7	6.0	4.4	3.8	3.2

Real Gross Domestic Expenditure (chained [2005]; Y tril)

(FY)		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Real GDP		516.0	525.5	505.8	495.4	511.1	511.1	524.0	530.1	535.1	543.3	546.7	551.4	558.9	567.5	576.2	585.1
	(Y/y %)	1.8	1.8	-3.7	-2.0	3.2	0.0	2.5	1.2	0.9	1.5	0.6	0.8	1.4	1.6	1.5	1.5
Domestic demand		503.7	506.9	493.1	482.1	493.8	498.7	516.6	522.0	525.9	533.6	534.6	537.3	543.4	550.3	557.4	564.7
	(Y/y %)	1.0	0.6	-2.7	-2.2	2.4	1.0	3.6	1.0	0.7	1.5	0.2	0.5	1.1	1.3	1.3	1.3
Private final consumption		295.0	297.4	291.4	295.1	299.6	303.0	304.6	308.5	310.1	313.8	315.5	318.2	320.6	321.9	323.2	325.0
	(Y/y %)	0.8	0.8	-2.0	1.2	1.5	1.1	0.5	1.3	0.5	1.2	0.6	0.8	0.8	0.4	0.4	0.6
Private housing investment		18.4	15.7	15.5	12.3	12.6	13.0	14.4	14.2	13.7	13.1	12.5	12.2	12.0	11.9	11.8	11.6
	(Y/y %)	0.1	-14.5	-1.1	-21.0	2.4	3.6	10.4	-1.4	-3.5	-4.0	-4.6	-2.5	-1.4	-1.1	-0.7	-1.4
Private capital investment		74.8	77.0	71.1	62.6	64.8	65.4	69.8	73.3	75.4	78.1	80.2	83.0	86.0	88.7	91.4	93.8
	(Y/y %)	5.9	3.0	-7.7	-12.0	3.5	0.9	6.9	4.9	2.8	3.6	2.6	3.5	3.6	3.1	3.0	2.7
Change in private inventories		0.5	1.8	1.8	-5.2	-1.2	-3.3	0.1	2.0	4.8	6.0	2.7	-1.5	-2.6	-1.5	-0.1	1.1
Government final consumption		92.7	93.8	93.4	95.9	98.2	99.9	104.4	102.2	101.9	102.6	103.4	104.8	106.5	108.1	109.3	110.6
	(Y/y %)	0.4	1.2	-0.4	2.7	2.3	1.8	4.4	-2.1	-0.2	0.6	0.8	1.4	1.6	1.4	1.2	1.2
Public fixed capital formation		22.4	21.3	19.8	22.1	20.6	21.3	23.3	22.0	20.3	20.4	21.0	21.7	22.3	22.8	23.4	24.0
	(Y/y %)	-7.3	-4.9	-6.7	11.5	-6.7	3.1	9.3	-5.7	-7.7	0.6	3.0	3.4	2.6	2.4	2.6	2.8
Change in public inventories		0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports of goods and services		80.8	88.4	79.0	71.3	83.6	82.4	83.0	86.2	90.6	95.9	101.9	108.9	116.0	122.9	129.4	135.9
	(Y/y %)	8.7	9.4	-10.6	-9.8	17.2	-1.4	0.8	3.9	5.1	5.8	6.3	6.9	6.6	5.9	5.3	5.0
Imports of goods and services		68.5	70.1	66.8	59.6	66.7	70.3	75.8	77.8	80.5	84.5	87.1	91.0	95.5	99.5	103.4	107.2
	(Y/y %)	3.8	2.4	-4.7	-10.7	12.0	5.3	7.8	2.7	3.4	5.0	3.1	4.5	5.0	4.2	3.9	3.7

Deflator (chained [2005])

(FY)		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
GDP deflator		98.7	97.6	96.8	95.6	93.8	91.9	92.0	92.2	93.8	94.3	95.1	95.3	95.6	95.8	96.1	96.5
	(Y/y %)	-1.0	-1.0	-0.9	-1.2	-2.0	-2.0	0.1	0.2	1.8	0.5	0.9	0.3	0.2	0.2	0.3	0.4
Domestic demand		99.7	99.6	99.6	97.4	96.2	95.5	95.0	95.1	97.0	97.6	98.7	99.1	99.4	99.8	100.2	100.6
	(Y/y %)	-0.3	-0.1	0.0	-2.2	-1.2	-0.7	-0.5	0.1	1.9	0.7	1.1	0.4	0.4	0.4	0.4	0.4
Private final consumption		99.4	99.1	98.9	96.3	94.9	94.0	93.8	94.1	96.3	97.2	98.6	99.2	99.7	100.3	100.8	101.4
	(Y/y %)	-0.5	-0.4	-0.2	-2.5	-1.5	-0.9	-0.2	0.4	2.4	0.9	1.4	0.6	0.6	0.5	0.6	0.6
Private housing investment		102.3	104.2	106.5	103.1	103.4	104.2	103.7	104.2	108.0	109.6	111.6	112.6	113.5	114.4	115.4	116.4
	(Y/y %)	2.1	1.8	2.2	-3.2	0.4	0.7	-0.5	0.6	3.6	1.5	1.9	0.8	0.8	0.8	0.8	0.9
Private capital investment		99.8	99.8	99.9	97.1	95.8	94.9	93.7	92.7	92.7	92.6	92.5	92.0	91.6	91.2	91.0	90.9
	(Y/y %)	-0.2	-0.1	0.2	-2.8	-1.4	-0.9	-1.3	-1.1	0.0	-0.1	-0.1	-0.5	-0.5	-0.4	-0.2	-0.1
Government final consumption		99.2	99.4	99.4	98.2	97.6	97.1	96.5	96.4	97.7	98.1	98.6	98.9	99.1	99.3	99.5	99.7
	(Y/y %)	-0.9	0.2	0.0	-1.2	-0.7	-0.4	-0.7	-0.1	1.3	0.4	0.5	0.3	0.2	0.2	0.2	0.3
Public fixed capital formation		101.9	103.9	106.8	103.2	103.8	104.4	104.2	104.5	108.4	109.9	111.9	113.0	114.1	115.2	116.3	117.5
	(Y/y %)	1.3	2.0	2.9	-3.4	0.6	0.6	-0.2	0.3	3.7	1.4	1.9	1.0	0.9	0.9	1.0	1.0
Exports of goods and services		104.1	104.6	99.5	90.5	88.3	86.1	84.1	83.0	82.1	82.4	83.5	83.8	84.0	83.8	83.3	82.7
	(Y/y %)	3.0	0.5	-4.9	-9.1	-2.4	-2.5	-2.3	-1.3	-1.1	0.3	1.3	0.4	0.3	-0.3	-0.6	-0.7
Imports of goods and services		112.4	120.4	120.2	101.0	104.1	110.0	104.2	102.0	102.2	104.1	106.3	107.6	108.6	108.8	108.7	108.2
	(Y/y %)	8.3	7.1	-0.2	-16.0	3.1	5.6	-5.3	-2.1	0.2	1.8	2.2	1.2	0.9	0.2	-0.1	-0.4

Source: Compiled by DIR.
Note: Through FY11: actual.

Assets and Labor and Capital Supply

(FY)	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Potential GDP (Real GDP chained [2005]; Y tril)	515.1	522.3	516.5	520.3	526.4	524.2	527.5	530.5	533.3	539.3	544.1	548.8	554.7	561.3	568.3	575.9
Hourly labor productivity (yen)	4,359	4,445	4,395	4,445	4,551	4,543	4,642	4,706	4,769	4,838	4,877	4,935	5,011	5,093	5,174	5,254
(Y/y %)	1.3	2.0	-1.1	1.1	2.4	-0.2	2.2	1.4	1.4	1.4	0.8	1.2	1.5	1.6	1.6	1.5
Hours worked per annum and per capita	1,813	1,803	1,768	1,741	1,757	1,762	1,766	1,764	1,761	1,764	1,765	1,766	1,769	1,773	1,777	1,781
(Y/y %)	0.1	-0.5	-2.0	-1.5	0.9	0.3	0.2	-0.1	-0.2	0.2	0.0	0.1	0.2	0.2	0.2	0.2
Labor participation rate (%)	60.5	60.4	60.2	59.9	59.7	59.2	59.0	58.8	58.5	58.4	58.3	58.1	57.9	57.7	57.6	57.6
Net corporate sector capital stock (2000 prices; Y tril)	1,034	1,042	1,045	1,040	1,036	1,032	1,030	1,030	1,032	1,036	1,042	1,049	1,057	1,067	1,078	1,090
(Y/y %)	0.9	0.8	0.4	-0.5	-0.3	-0.3	-0.3	0.0	0.2	0.4	0.5	0.7	0.8	0.9	1.0	1.1
Household financial assets (Y tril)	1,598	1,520	1,469	1,493	1,501	1,494	1,501	1,503	1,506	1,509	1,509	1,513	1,522	1,538	1,562	1,590
(% of nominal GDP)	313.9	296.3	300.1	315.1	313.2	318.1	311.6	307.5	300.1	294.6	290.2	287.8	285.0	282.9	282.1	281.7
External assets (Y tril)	620	623	573	595	604	593	577	568	568	584	612	630	649	661	671	680
(% of nominal GDP)	121.7	121.5	117.0	125.5	126.1	126.3	119.7	116.3	113.1	114.1	117.6	119.9	121.4	121.5	121.1	120.5
Net external assets (Y tril)	224	244	236	263	248	243	237	233	233	240	251	258	266	271	275	279
(% of nominal GDP)	44.0	47.6	48.1	55.4	51.7	51.8	49.1	47.7	46.4	46.8	48.3	49.2	49.8	49.8	49.7	49.4
Stock prices (TOPIX)	1,644	1,556	1,057	904	885	792	867	922	1,028	1,082	1,090	1,104	1,141	1,213	1,305	1,407
(Y/y %)	18.1	-5.4	-32.0	-14.5	-2.2	-10.5	9.4	6.4	11.4	5.3	0.7	1.2	3.4	6.3	7.6	7.8
Land Price Index (nationwide; all purposes; 2000 = 100)	64.8	64.2	62.9	59.9	57.3	55.1	55.7	57.7	57.9	59.8	59.4	60.3	61.9	63.4	65.0	66.1
(Y/y %)	-3.4	-0.9	-2.0	-4.8	-4.3	-3.8	1.1	3.5	0.4	3.3	-0.7	1.5	2.6	2.5	2.5	1.8

Assumptions

(FY)	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
World economic growth (PPP; y/y %)	5.3	4.7	1.9	0.9	4.9	3.8	3.5	3.8	4.1	4.2	4.2	4.2	4.3	4.3	4.3	4.2
Oil price (WTI; $/bbl)	64.9	82.2	85.9	70.7	83.4	97.3	89.6	98.8	102.9	106.3	108.7	111.0	113.4	115.7	118.1	119.9
(Y/y %)	8.3	26.7	4.5	-17.7	17.9	16.7	-7.9	10.2	4.2	3.3	2.2	2.2	2.1	2.1	2.0	1.6
Population (mil)	127.7	127.9	128.0	128.0	127.9	127.9	127.6	127.4	127.1	126.8	126.5	126.1	125.6	125.2	124.7	124.1
(Y/y %)	0.1	0.2	0.1	0.0	-0.1	0.0	-0.2	-0.2	-0.2	-0.2	-0.3	-0.3	-0.3	-0.4	-0.4	-0.4
Population 15-64 (mil)	83.8	83.1	82.5	81.9	81.6	81.2	80.0	78.8	77.6	76.6	75.8	75.1	74.4	73.8	73.2	72.7
Population over-65 (mil)	26.5	27.5	28.3	29.1	29.5	29.8	31.0	32.2	33.3	34.2	35.0	35.5	36.0	36.3	36.6	36.8
Ratio of those over 65 to overall population (%)	20.8	21.5	22.1	22.7	23.0	23.3	24.3	25.2	26.2	27.0	27.6	28.2	28.6	29.0	29.4	29.7
Consumption tax rate (%)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	8.0	9.0	10.0	10.0	10.0	10.0	10.0	10.0
Effective corporation tax rate (%)	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5
Employees' pension contribution rate (%)	14.5	14.8	15.2	15.6	15.9	16.3	16.6	17.0	17.3	17.7	18.0	18.3	18.3	18.3	18.3	18.3

Source: Compiled by DIR.
Note: Through FY11: actual; some FY11 figures: DIR estimates.

Introduction

We have revised our previous medium-term forecast, *Japan's Medium-term Economic Outlook: January 2012*. Our current forecast factors in changes in domestic and foreign conditions that have occurred in the last half year, and it also investigates such highly pertinent topics as the hollowing out of industry and changes in the consumption structure stemming from the aging of society.

Since our last forecast, uncertainties shadowing the world economy have darkened considerably on account of the European sovereign debt crisis and the slowing of emerging economies. In Greece, the epicenter of the sovereign debt crisis in 2010 and 2011, sovereign debt held by the private sector was restructured through grueling negotiations in March, and a momentary lull ensued. This respite, however, did not last for long. An opposition party contesting austerity measures that were a condition for receiving EU and other support achieved substantial gains in a May general election, and Greece was overtaken with political turmoil. This outcome increased the possibility of Greece leaving the euro, and markets were convulsed with fears about the future breakup of the eurozone. Then, in a repeat election held in June, the governing party favoring the continuation of fiscal austerity narrowly won, marking a measure of progress for Greece. In the meantime, the sovereign debt crisis has spread to Spain, whose economy and outstanding debts are far larger compared with Greece. At the same time, high long-term interest rates are increasing the difficulty of achieving growth and healthier public finances in Europe. In the case of China, its economy grew 7.6% y/y in Apr-Jun 2012, the slowest growth recorded since Jan-Mar 2009. Responding to this escalating loss of momentum, the Chinese government has taken a number of steps to stimulate the economy, such as successively reducing interest rates. Time will be needed, however, before the effect of these measures will be felt. In the US, where the economy was recovering at a gradual pace, improvement in the employment environment hit a wall in spring, and personal consumption has weakened. In addition to Europe and other foreign factors, the so-called fiscal cliff that threatens at year-end is becoming an ever real possibility. These prospects for the world economy will be discussed in brief in the first half of Section 1.

Although exports have turned sluggish due to the slowdown of the world economy, Japan's economy is beginning to improve through such policy effects as reconstruction projects related to the March 2011 disaster and eco-car subsidies. At the end of June, the House of Representatives passed a bill to increase the consumption tax after it was revised following discussion among the Democratic Party of Japan, the Liberal Democratic Party, and New Komeito. The likelihood is therefore high that the consumption tax rate will be increased from 5% to 8% in April 2014 and to 10% in October 2015. Moreover, a feed-in tariff system where all renewable electricity generated is purchased at a fixed price took effect on 1 July. Since the Great East Japan Earthquake, the upswing of electricity demand in summer and winter has been associated with the risk of electricity shortages. Thus, the development of new power sources to take the place of nuclear power is an urgent issue. It is hoped that the feed-in tariff system will provide one possible solution. In our current forecast, we assume that investments in renewable energy will increase and that electricity prices will consequently rise. Our forecasting premises, including those for energy policies, are presented in the second half of Section 1.

This report is structured as follows. In Section 1, we present our assumptions for framing the world economy and give an outlook for Japan's economy for the next 10 years. In Section 2, we analyze the effect on exports of Japanese companies shifting their operations abroad. In Section 3, we examine how the graying of society is changing the consumption structure in Japan and consider what changes this will bring. In Section 4, we discuss Japan's weak employment structure and how it bears on the economy. Finally, in Section 5, we use our medium-term macroeconomic forecasting model to simulate the degree to which Japan's economy will be affected by four scenarios including a higher consumption tax and a stronger yen.

1. World Economy and Japan's Economy over the Next 10 Years

1.1 The world economy over the next 10 years

1.1.1 Relationship between the world economy and Japan

The Lehman Shock gave way to a serious recession, which some have characterized as occurring once in 100 years. This recession bottomed in the summer of 2009.[1] Now, three years later, although the US economy is recovering at a gradual pace, this pace is only about half of what was achieved in past recoveries. Given how far the economy fell in 2008 and 2009, the current recovery can hardly be called robust. This situation underscores how seriously the economy was affected by the aftereffects of the collapse of the housing bubble. Because of its sluggish state, the economy lacks stability, and it remains vulnerable to external shocks.

Surging gasoline prices and the disruption of supply chains following the Great East Japan Earthquake in March 2011 are some of the domestic and foreign factors that have impacted Japan's economy. These factors, however, do not fully explain why many analysts, from spring/summer 2010 to 2011, repeatedly became bearish about the economy to the point of worrying about a double-dip recession. What this pattern ensued from was turmoil in financial markets caused by the European sovereign debt crisis spreading to the real economy. In each instance, the US responded with additional fiscal and monetary measures. Europe, although being at the epicenter of the crisis, favored policies that centered on rebuilding government finances at the expense of economic growth. Because of the focus on fiscal austerity, the eurozone experienced negative growth in Oct-Dec 2011, the first time in two and half years, which was followed by zero growth in Jan-Mar 2012. Similar to advanced economies, emerging economies were also engulfed by waves of financial turmoil unleashed by the Lehman Shock and by the ensuing synchronized world recession. Compared to advanced economies, however, emerging economies did not weaken as much, and they recovered at a faster pace. For example, production in advanced economies still remains below its 2008 peak, but that in emerging economies surpassed its former peak after about one year in 2H 2009. In fact, emerging economies intermittently tightened monetary policy in 2010 and 2011 out of inflationary concerns.

How has Japan fared in the three years since summer 2009? In a House of Representatives election of 30 August 2009, the Democratic Party of Japan (DPJ) won a major victory and took over the reins of power. Although the US has faced a DPJ administration in Japan in these three years since, the US media has focused on the Great East Japan Earthquake and its aftermath, the nuclear incident, Japan posting a trade deficit for the first time in 31 years, Japanese players seeking to join Major League Baseball, and political turmoil where prime ministers replace each other in succession. In 2012, Prime Minister Yoshihiko Noda visited the US and met with President Barack Obama. This was the first official visit by a Japanese prime minister since the trip made by Prime Minister Taro Aso in 2009 and was the first since the start of a DPJ administration. In the case of China, President Hu Jintao made a state visit to the US in 2011, and this was followed in February 2012 by Vice President Xi Jinping, viewed by many as China's next leader, who met with the Obama administration and congressional leaders. In the case of South Korea, President Lee Myung-bak made a state visit to the US in 2011 in relation to the conclusion of a free trade agreement. The difference in the US media's coverage of China and South Korea and its coverage of Japan is unmistakable. No country attracts so much US interest as China, which is evidenced by US-China Strategic and Economic Dialogue that occur on a regular basis. Contrasting with the growing presence of China and other emerging economies in the G-20, Japan's position has clearly ebbed in its relations with the US and the world.

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1. The US National Bureau of Economic Research announced in September 2010 that the recession starting in December 2007 ended in June 2009 and that the economy had begun to expand. This recession lasting one and a half years was the longest since World War II.

1.1.2 Assumptions for the world economy

In our current medium-term forecast, we assume that the world economy will grow an annualized 4.1% over the next 10 years (2012-21; Chart 1.1). Compared to our forecast of January 2012 (annualized 4.6%), we have downgraded our forecast by 0.5 percentage points. With respect to 2012 and 2013, for which forecasting probability is high, we lowered it from 4.0% to 3.6%. For the remaining eight years, we reduced it from an annualized 4.7% to 4.2%, largely paralleling the change for 2012 and 2013.

The world economy has been unable to recover smoothly since the Lehman Shock. The epicenter of the housing bubble and the financial crisis was the US, where the ensuing recovery has remained sluggish, despite three years passing since the bottoming of the economy. Whenever the European sovereign debt crisis reignites, sentiment swings to negative outlooks, and future uncertainties are suppressing personal consumption and capex. Also, the weak growth of capital stock is contributing to a lower potential growth rate in the medium to long term. In Europe, the effects of the worsening of the sovereign debt crisis have propagated through the financial system and the real economy and have undermined the EU economy beyond expectations. The sluggish recovery of foreign demand, on which hopes were placed, due to the slowing of emerging economies, is another negative for Europe. At the same time, the faltering of exports to Europe is a blow for emerging economies. These developments are generating a vicious circle between Europe and emerging economies.

In the first half of the next 10 years, we believe the world economy will grow an annualized 3.9%, a figure that will rise to 4.3% in the second half. These figures are far less than the annualized average of more than 4.5% seen during 2003-07, preceding the financial crisis. Nonetheless, we believe the world economy will trend firmly. A simulation using our medium-term macroeconomic forecasting model indicates that, should the growth rate of the world economy fall by 1 percentage point, the growth rate of Japan's economy would contract around 0.7 points as the sharp decrease in exports spreads to capex and personal consumption. Depending on the epicenter for the downturn, the yen may strengthen further, and Japan's economy may readily record zero growth.

Global Economic Outlook	Chart 1.1
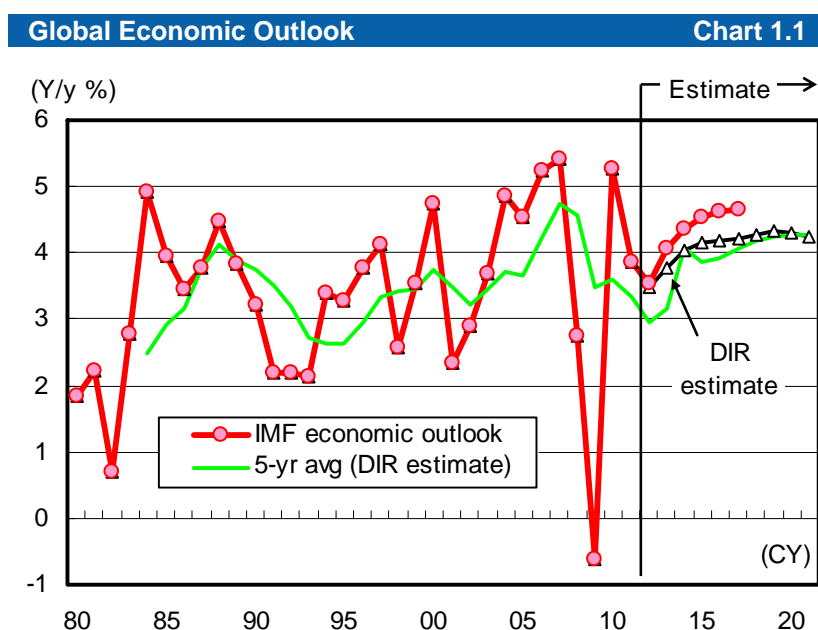
Source: IMF, World Economic Outlook, Apr 2012; compiled by DIR.
Note: Purchasing power parity basis.

1.1.3 Current state of the world economy: What has happened twice can happen again

We begin by discussing the current state of the world economy, on which our forecast of Japan's economy is based. The current year of 2012 is turning out to be no different than the last two years. In fact, from the perspective of the world economy including emerging economies, the situation may have grown more severe.

The European sovereign debt crisis has now entered its third year. As noted above, the focus of attention has now shifted to Spain, the fourth largest economy in the eurozone. During the latter half of July, the yield on 10-year Spanish government bonds repeatedly surpassed 7%, a level considered to be the danger zone. While measures were decided to support Spain's financial institutions in order to sever the vicious circle between the sovereign debt crisis and financial system uncertainties, a vague schedule and fuzzy specifics are casting doubts on their viability. As a result, these measures have not been able to still market uncertainties. Fiscal austerity is suppressing growth in the eurozone, and the deepening of the sovereign debt crisis has imparted an additional blow. Business sentiment has deteriorated markedly, and the eurozone economy is expected to remain weak over the long term—to support the economy, the ECB lowered interest rates by 25 bp in July, cutting the policy interest rate to an all-time low.

While emerging economies have grown firmly to date, slower economic growth and faltering demand in Europe are causing their exports to worsen. These changes have become a factor blunting the growth rates of emerging economies. For example, China's economy has now slowed y/y for the sixth quarter in a row. In Apr-Jun 2012, China's GDP grew 7.6% y/y in real terms, the first time since Jan-Mar 2009 following the Lehman Shock that the economy has grown less than 8%. For Europe, the driving force of its recovery has been robust exports to emerging economies. Hence, the deceleration of emerging economies is a painful development for Europe. In response to slower economic growth, China, Brazil, and India have turned to monetary easing measures, clear evidence of the difference from the situation of two years ago. Specifically, Brazil began to cut the policy interest rate at end-August 2011, continued to cut intermittently, and, with a 50 bp cut, posted a record low in July 2012.

Although optimistic sentiment gained favor in late 2011 and early 2012 in the US, with the deepening of the European sovereign debt crisis, concerns over the risk of a downswing triggered by turbulent global financial markets have returned in full force. While the slowing of exports to Europe since Oct-Dec 2011 has not necessarily had a large direct impact on the real economy, the turbulence of European financial markets, however, has spread to the US. After rebounding to regain its high of December 2007, the US stock market has been in decline since May. In addition to these external factors, awareness is slowly spreading domestically of the so-called fiscal cliff that will arrive between end-2012 and early 2013 when Bush-era tax cuts will expire and when huge spending cuts will take effect. Future uncertainties have soured consumer and business sentiment, and such uncertainties are dampening actual economic activity (consumption expenditures, capex, and employment plans). Specifically, personal consumption has slowed on account of the employment environment improving at an even weaker pace. Moreover, such uncertainties as the fiscal cliff have deflated consumer sentiment centering on the wealthy. While actual corporate activity has not faltered in the same degree as the worsening of business sentiment, there is no question that companies have toned down their active stance. Capex plans are being postponed, and there is less interest in hiring new employees. Also, even if new employees are taken on, the strong desire of firms to hold down costs continues to rule out prospects for higher wages. As a result, the recovery of the US economy eased further in Apr-Jun 2012, and the market consensus regarding the economic growth rate for 2H12 and 2013 has dimmed further. The Federal Reserve, which has announced that it will maintain a de facto zero interest rate policy at least through late 2014, has also decided to extend its Operation Twist program (scheduled to end-June) to end-2012. This decision, however, suggests that the Fed has fewer policy options available compared to the time when the second round of quantitative easing was introduced in

2010 or Operation Twist in 2011. An effective policy response that is still available is a third round of quantitative easing (QE3) where the Fed expands its balance sheet through massive purchases of mortgage-backed securities. A prerequisite for such action, however, is the economy receding far more than the outlooks held by the members of the Federal Reserve Board.

1.1.4 Short-term outlook: Europe and emerging economies

In view of the conditions discussed above, the IMF adjusted its 2012 and 2013 outlooks for the world economy in July, revising outlooks downward by a small margin compared to its April projections. Specifically, a forecast of 3.5% as of April 2012 was lowered by 0.1 percentage point to 3.5% for 2012 (the figures do not coincide because of rounding) and a forecast of 4.1% was reduced by 0.2 points to 3.9% for 2013.

Since last year, whenever the European sovereign debt crisis captured attention, concerned discussions took place of the likelihood of Europe subverting the world economy in the same degree as the US 2008 financial crisis. In the IMF's revisions, the forecast for eurozone economic growth for 2012 was unchanged from April at slightly negative (-0.3%). The forecast for 2013 was lowered by 0.2 percentage points to 0.7%, primarily in relation to Spain. While the eurozone is expected to be sluggish in the long term, the IMF appears to assume in its forecasts that a crisis situation capable of adversely impacting the entire world will be avoided.

Similar to the IMF, we assume that the European sovereign debt crisis will not devolve into an uncontrollable situation. The fact that the EU has made only gradual responses to this crisis likely explains why it continues to smolder. At the same time, the structural problems of the EU are a distant cause, and bold policy responses are difficult to anticipate. Meanwhile, the eurozone is moving away from the single-minded pursuit of fiscal austerity to implement stimulus measures that would promote growth and job creation. Such steps combined with the ECB's reduction of interest rates should contribute to the recovery of the eurozone. Some time, however, will be needed before the effect of these measures will be felt. We believe that personal consumption, capex, and exports will improve in 2013 and that the eurozone will return to positive growth. At the same time, the likelihood has increased that the eurozone will only see sluggish growth to around 2015. Thus, the ECB is unlikely to tighten monetary policy before 2015. Given the above, should resolution of the sovereign debt crisis be put off, the risk of the eurozone tipping into recession will intensify.

Contrasting to the situation for Europe, emerging economies generally have a wider range of policy options available, and they are in an advantageous position compared to advanced economies. China announced extensive fiscal policies after the Lehman Shock, but it also placed restrictions on real estate purchases out of concern of the buildup of bad debts. Such restrictive policies are thought to be a factor behind the slowing of the Chinese economy. Since May, however, China has implemented a range of policies to stimulate the economy. After reducing the deposit reserve ratio in December 2011, China lowered the policy interest rate for the first time in three and half years in June 2012 (the policy interest rate saw the second consecutive cut in July). China has also instituted fiscal measures, such as subsidies for energy-saving household appliances and the accelerated approval of large public-works projects. By supporting large state-run companies, China hopes to achieve the gradual recovery of its economy. With the exception of Brazil, emerging economies have not necessarily been aggressive in their pace of easing monetary policy. Inflationary concerns and fears that the domestic currency would weaken are some of the reasons that they have held back from aggressively reducing policy interest rates.

As described above, synchronization of the world economy is gradually strengthening, and the world economy is expected to become more unified in the medium to long term as trade and investment

relations deepen[2]. However, as underscored by the time that is being taken to harmonize policies within the EU, it will not be easy in actual practice to coordinate economic policies for the entire world. Also, the repeated crises unleashed by the European sovereign debt problem have weakened the endurance of the entire world, and the policy options available to nations are becoming limited. In other words, when exhaustion sets in, tolerance is less forthcoming, and emotional confrontations more easily arise. Furthermore, when policies that will be painful to citizens need to be promoted, politicians, in their pursuit of popularity, will be disinclined to make the case for them. The G-20 has been unable to adopt effective measures at its recent meetings, and its achievements seem limited to spotlighting the divide that separates nations. This situation has not been lost on markets.

Unlike advanced economies that strengthened their ties in the 2000s compared to the 1990s, such leading emerging economies as China and India remain synchronized only weakly with advanced economies even in the 2000s (Chart 1.2). However, compared to the pronounced inverse correlation that existed in the 1990s, China and India can be said to be relatively more synchronized. It is possible that these ties appear weaker than they actually are because of differences in how far economies contracted at the time of the Lehman Shock or in how well they recovered afterward. Thus, as evidenced by the advance of the companies of developed nations into China and India and by the strengthening relationship between the governments of the US and China, China and India are foreseen to strengthen their ties with advanced economies. On the other hand, given the differences that exist in economic maturity, it may be nonsensical to assume that China and India will become exactly the same as advanced economies.

Correlation Coefficients of Real Economic Growth in the 1990s and 2000s　　Chart 1.2

2000s (2001-2011) ＼ 1990s (1990-2000)	Worldwide	Advanced economies	Japan	US	EU	Asian NIEs	Emerging & developing economies	Emerging Asia	China	ASEAN-5	India	Russia	Central & Eastern Europe	Latin America	Brazil	Middle East & North Africa	Sub-Saharan Africa
Worldwide		0.92	0.27	0.52	0.80	0.23	0.82	-0.03	-0.37	0.13	0.45	0.72	0.51	0.08	0.26	-0.05	0.75
Advanced economies	0.94		0.12	0.65	0.89	0.12	0.54	-0.11	-0.42	-0.02	0.55	0.66	0.41	-0.10	0.10	-0.11	0.62
Japan	0.93	0.97		-0.57	0.07	0.63	0.43	0.04	-0.43	0.66	-0.18	0.32	-0.24	-0.08	-0.29	0.71	0.16
US	0.90	0.98	0.95		0.46	-0.33	0.13	0.02	0.08	-0.38	0.58	0.45	0.63	0.08	0.25	-0.55	0.42
EU	0.90	0.95	0.89	0.88		-0.10	0.46	-0.34	-0.54	-0.24	0.48	0.54	0.32	-0.20	0.06	-0.04	0.58
Asian NIEs	0.86	0.85	0.86	0.83	0.71		0.34	0.57	0.12	0.91	-0.09	0.18	-0.26	0.06	0.18	0.08	-0.06
Emerging & developing economies	0.94	0.78	0.79	0.73	0.76	0.75		0.07	-0.23	0.30	0.14	0.61	0.44	0.31	0.41	0.09	0.71
Emerging Asia	0.75	0.52	0.55	0.45	0.49	0.61	0.90		0.79	0.74	0.19	-0.40	0.24	0.32	0.59	-0.43	-0.08
China	0.65	0.46	0.46	0.36	0.50	0.47	0.82	0.95		0.28	-0.12	-0.76	0.16	0.54	0.63	-0.53	-0.40
ASEAN-5	0.93	0.86	0.89	0.85	0.75	0.89	0.89	0.70	0.55		-0.03	-0.07	-0.07	0.14	0.23	0.09	-0.01
India	0.66	0.41	0.47	0.38	0.32	0.59	0.80	0.93	0.79	0.64		0.03	0.60	-0.46	0.12	-0.45	0.66
Russia	0.86	0.90	0.85	0.85	0.96	0.61	0.75	0.45	0.47	0.76	0.24		0.23	-0.27	-0.36	0.36	0.38
Central & Eastern Europe	0.93	0.90	0.86	0.90	0.85	0.81	0.87	0.62	0.53	0.91	0.49	0.87		0.10	0.45	-0.47	0.66
Latin America	0.91	0.75	0.77	0.69	0.72	0.74	0.94	0.77	0.62	0.86	0.75	0.68	0.82		0.62	-0.05	-0.07
Brazil	0.78	0.65	0.71	0.56	0.60	0.77	0.77	0.62	0.47	0.81	0.60	0.55	0.67	0.88		-0.66	0.21
Middle East & North Africa	0.71	0.61	0.63	0.62	0.59	0.43	0.80	0.70	0.69	0.73	0.55	0.71	0.75	0.62	0.38		-0.12
Sub-Saharan Africa	0.76	0.79	0.73	0.73	0.80	0.73	0.68	0.46	0.49	0.70	0.22	0.80	0.84	0.60	0.62	0.49	

Source: IMF; compiled by DIR.
Note: Correlation coefficients for the annual real economic growth rates of nations and geographic regions. Figures above the diagonal line pertain to the 1990s and those below, the 2000s. Colored boxes show absolute values of more than 0.6.

1.1.5 Short-term outlook for the US economy: An important consideration for Japan

In the years since the collapse of the IT bubble, Japan's economy has grown more synchronized with the US, its most important partner (from the Japanese side). While the physical distance between these two nations has not diminished, the increasing speed of information transmission through the spread of IT technology and the unification of global financial markets have eliminated time differences, and it

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2. Regarding synchronization of the world economy, see "1.1 World Economy Sees Big Changes: Positives and negatives of globalization," in *Japan's Medium-term Economic Outlook (January 2012)*.

is reasonable to think that the Japanese and US economies have become more unified. What then are the short-term risks for the US economy?

We have downgraded our outlook for US economic growth for 2012 and 2013 from our previous outlook in January 2012. While the turmoil of financial markets arising from the European debt crisis has not seen any change, the premises of our previous outlook, such as that the situation would not worsen further or that a lull would continue, are beginning to crumble as such speculation as Greece leaving the euro has emerged as a possibility. As noted above, while US exports to Europe have slowed significantly, the US is not heavily relying on exports for its economic recovery (exports are merely one driving force of its economy), and thus there is no need to revise the outlook for the US economy downward by any significant degree. However, should the prolonged stagnation of the eurozone give way to the slowing of the Chinese and other emerging economies, the impact on the US economy will be magnified compared to the impact of Europe alone.

European financial uncertainties spreading to the US have without question an adverse effect that raises concern. In practical terms, this has the potential of increasing the fund-raising costs of borrowers. Analysis has been reported which shows that the European crisis has increased the debt issuance costs of US companies, especially those of financial institutions and companies with low credit ratings. Yields on US Treasuries have fallen sharply in 2012, reflecting a flight to quality. Yields on corporate bonds and the interest rates on housing loans, however, have not necessarily declined at the same pace. Similarly, in the housing market, where signs of a recovery are at last being seen, the appearance of a credit squeeze would quash the green shoots of recovery, and housing prices that are appearing to stabilize would risk falling further. The supply-demand balance for labor remains slack compared to the time prior to the US 2008 financial crisis. Even if payrolls grow at a certain pace, further time will be needed before this translates into higher wages.

Turning to US domestic risk factors, the standoff between the Republican Party and President Obama and the Democratic Party has worsened since the mid-term elections of November 2010, and little progress has been achieved in policy measures. Former Massachusetts Governor Mitt Romney, the presumptive nominee of the Republican Party, is placing greater emphasis on elucidating policy differences with President Obama who is seeking reelection in the upcoming November presidential election. The biggest difference involves the question of what to do about the Bush-era tax cuts that are to expire at end-2012 (also to expire are a payroll tax cut and extended unemployment benefits). As in the 2008 election, President Obama advocates increasing taxes on the wealthy (higher taxes were already imposed in 2011 on the very wealthy earning more than $1 million per year). In contrast, Mr. Romney, who himself is part of the very wealthy class, has pledged not to increase taxes on the wealthy.

As repeated many times by Federal Reserve Chairman Ben Bernanke, what is important in developing economic outlooks is the early elimination of future uncertainties. Since tax reform in 2013 and beyond is one of the issues being contested, it is overly optimistic to think that the problem of the fiscal cliff will be resolved before the November election. The key issue will be whether some solution can be reached in the two months between the election and the end of the year. If nothing is decided and the tax cuts expire, all households including low and middle income earners will see their taxes rise, which would be a major blow for the economy. Both President Obama and Mr. Romney hope to avoid this outcome. Since election results are involved, there is some uncertainty about when and in what manner a compromise can be reached. Still, it is reasonable to think that major spending cuts will be averted. The point of contention is how to deal with the wealthy. If tax cuts are maintained for persons earning less than $250,000 a year as President Obama insists, 98% of the US population would not see their taxes rise. In short, President Obama and the Democratic Party on one side and the Republican Party on the other have merely reiterated their assertions on how to deal with the wealthy

2%, and in the two years since the last mid-term elections, they have remained deadlocked in their periodic confrontations.

Although there are some differences between the market consensus (including DIR), the views of the IMF, OECD, and other multilateral institutions, and the views of the members of the Federal Reserve Board, all subscribe to a scenario where the US economy grows faster in 2013 than in 2012. In other words, what these views have in common is the belief that measures will be taken to forestall the materialization of downward pressure on the economy from the public sector should policy measures, such as the Bush-era tax cuts being allowed to expire at end-2012 and spending cuts taking effect at the start of 2013, be carried out as stipulated. Analysis by the Congressional Budget Office indicates that, should the fiscal cliff materialize in full, the US economy risks falling into recession for the first time in three and a half years.

In contrast, should measures be taken to avert higher taxes or spending cuts as the market anticipates, this will mean that the path to lower budget deficits will lengthen into the future, and the likelihood will increase of US Treasuries being downgraded. However, as long as Europe is in a worse situation, the effect of any downgrading on the bond market (a sharp rise in bond yields in the US) will fortunately be limited. Thus, in view of the deepening and prolongation of the European sovereign debt crisis, we have scaled back our assumption for long-term US interest rates compared to our previous forecast.

1.1.6 Medium- to long-term perspective

As noted at the start of our report, we assume in our current medium-term forecast that the world economy will grow at a gradual pace. Stated another way, our forecast assumes that risks of the sort that would unravel the existing global economic structure will not materialize. Here we revisit the three risks (conditions) listed in our previous forecast.

In Europe and the US, reasonable financial regulations such as the Volcker rule of the US are under discussion to respond to the financial and debt crisis and to address fundamental factors so as to avert recurring crises. What is, however, needed at the moment to pave the way to the next stage of growth is the resolution of fiscal problems after the fact and the adjustment of balance sheets. In this context, continuation of accommodative monetary policies will be an essential condition for the development of the world economy. We believe that the Federal Reserve will maintain a zero interest policy at least through late 2014, that the ECB will not change its monetary policy until 2015, and that the Bank of Japan (BOJ) will finally find a favorable environment for raising interest rates in the second half of our forecast period.

Next, another requisite assumption is that capital will continue to flow into emerging economies, which have grown driven by investment. Should risk tolerance decline and short-term funds and direct investments be withdrawn, emerging economies can no longer be expected to drive the growth of the world economy. However, unlike the time of the 1997 Asian currency crisis, emerging economies have succeeded in accumulating vast foreign-currency reserves in the last 10 years, and they have acquired the capacity to respond to shocks. According to the IMF, emerging economies' percentage share of the world economy was largely flat through the 1990s, began to gradually rise in the 2000s, and reached 49%, or nearly half, as of 2011 on a purchasing power parity basis (Chart 1.3). This is the outcome of emerging economies maintaining better performance (higher growth rates) than advanced economies during the last 10 years or so. In particular, this difference in performance widened when the financial crisis hit, and China and other emerging economies gained further importance in the world economy.

Finally, an important question is whether it will be possible to implement economic and social policies aiming to share and control the risks individuals and companies are exposed to through globalization. Despite trying fiscal conditions, nations will need to strive for governments of optimal size and to restructure government expenditures. Emerging economies will have to convert their industrial structures and enhance creativity if they are to break through walls obstructing growth.

Advanced vs. Emerging Economies   **Chart 1.3**

Advanced economies (PPP basis)

Emerging & developing economies (PPP basis)

Japan (PPP basis)

Emerging & developing economies (nominal GDP basis)

IMF estimate →
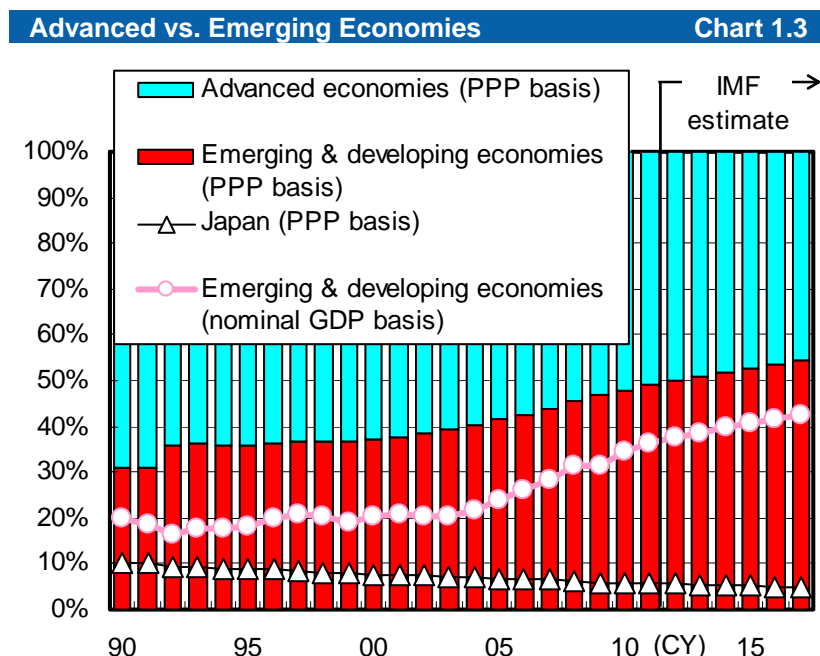
Source: IMF, World Economic Outlook, Apr 2012; compiled by DIR.
PPP: Purchasing power parity.

As economies become more synchronized at the global level, this will risk magnifying economic fluctuations since the economies of nearly all nations will be moving in the same direction. In other words, when economies are expanding, this has the potential of generating mutually positive effects and of accelerating growth. On the other hand, when an event like the Lehman Shock strikes a region, its impact will without exception spread to other regions. For this reason, the fiscal and monetary crises of Europe should not be viewed as remote events. It will be essential to carefully guard against crises propagating in a chain reaction from any region.

While currencies and monetary policies have been unified in the eurozone, fiscal policies being decided at the national level is a structural problem that has existed from the very start. With the advent of the sovereign debt crisis, however, some degree of fiscal unification will likely be achieved in the medium to long term. Since income transfers and the transfer of sovereignty to a unified governing entity will be accompanied with huge political and social costs, the path to the actual unification of fiscal policies will not be easy. Still, we do not see the eurozone heading toward a breakup, and we maintain as our main scenario the eurozone choosing a path toward deeper unification. The eurozone has expanded the size of its economy and market by increasing the number of member nations. It is difficult to imagine, however, new nations from the EU (non-euro area) joining the euro until the sovereign debt crisis is resolved. During our forecast period to 2021, while the likelihood is high that such small nations as Latvia and Lithuania will join the euro, we do not anticipate the same for Poland, a nation which would have a large impact since it has the largest population of the 10 prospective members.

1.1.7 Aging of societies progresses globally

As is widely known, a declining birth rate and an aging population are demographic issues weighing on Japan. In the medium to long term, the aging of society is an issue that all nations will face. Efforts to address this issue, however, can be expected to differ since the speed by which it is progressing varies greatly by nation.

Based on *World Population Prospects* by the United Nations (2010 revision), the median age of a nation (the age that divides in half the entire population ordered by age) will rise with the passage of time for all nations (Chart 1.4). For example, Japan's median age was 44.7 in 2010. This is far higher than the median age of 39.7 for all advanced economies and is similar to the figures for Germany (44.3) and Italy (43.2). Going forward, Japan's median age is expected to rise to 48.2 in 2020 and 52.3 in 2050.[3] Hence, Japan will maintain its position as the front runner in terms of the aging of society among the world's nations. Meanwhile, the median ages of Germany and Italy are expected to remain at the 49 level in 2050, and the difference between their median ages and that of Japan's is foreseen to widen.

The nation that is chasing Japan in relation to the median age is China. With the world's largest population at 1.34 billion (as of 2010), China's median age is 34.5, or about five years less than the figure for advanced economies as a whole. China's median age is expected to rise to 38.1 in 2020 and 48.7 in 2050. Thus, while Japan's median age is predicted to increase by 7.6 in the next 40 years, China's median age will rise by 14.1, or nearly twice as fast. India, with a population of 1.22 billion, had a median age of 25.1 in 2010, which will climb to 28.1 in 2020. Then in 2050, when India is anticipated to surpass China and become the world's most populous nation at 1.69 billion people, India will have a median age of 37.2. While India's median age will increase by 12.1 in the next 40 years, since this rise will start at a low level, the figure will still be relatively low in 2050.

One reason for the rapid aging of China's society is the one child policy that has existed since 1979[4]. This policy caused the birth rate to plummet, and the death rate also fell at the same time through economic development. With the rapid progress of such development, the percentage of people aged 65 or older has reached 8.2% in China (as of 2010). China's demographic structure is maturing while its economy is still going through the development stage. While social costs are rising in tandem with the aging of society, the working age population that supports such costs is increasing more slowly. As a result, the burden borne by people in their working years is growing substantially heavier. Specifically, by dividing the elderly population (those aged 65 and above) by the working age population (those aged 15-64), we learn that, as of 2010, 100 people in their working years supported 11 elderly, a burden that will increase to 17 elderly in 2020 and 42 elderly in 2050. Thus, the burden falling on the working age population is expected to increase around four times (Chart 1.5). Going forward, China will need to achieve economic growth even as it provides for the growing costs of its social security system.

In the case of Japan, whose population has aged more than most nations, 100 people in their working years supported 35 elderly in 2010. This is already a high ratio, and it is predicted to increase to 100 working people supporting 48 elderly in 2020 and 70 elderly in 2050. While the divergence of the median ages of China and Japan will rapidly narrow, in terms of the ratio of the elderly to working age people, Japan will continue to have a far higher ratio than China and other nations.

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3. According to UN estimates, the median age will fall to 47.8 in Japan in 2100 when Japan's population will contract nearly 30% compared to 2010. Based on estimates of the National Institute of Population and Social Security Research, Japan's median age will be 48.9 in 2020 and 56.0 in 2050.
4. Naoto Saito, Asumi Goto, Takayuki Nitta, *Aging Society in China, Implication from Japan's Experience*, DIR research quarterly, Jan 2012.

A nation with a demographic structure that greatly contrasts with China is the US. According to the US Census Bureau of the Department of Commerce, the US has a population of 314,028,006 (as of 26 July 2012), a figure that is exceeded only by China and India. The US population clock of the Census Bureau indicates that, as of July 2011, one person was born every 8 seconds and one person died every 14 seconds. With a birth rate that exceeds the death rate, the US population is undergoing natural growth. In addition, one person every 46 seconds emigrates from a foreign country to the US (net basis), which is another factor contributing to population growth. Taking these factors together, the US population is increasing by one person every 12 seconds. In 2010, the median age was 36.9 in the US, a somewhat lower figure than that for advanced economies as a whole, but one on the high side compared to China and India. While the US will be no exception to the aging of society, its median age will be 37.9 in 2020 and 40 in 2050. Thus, in the next 40 years, the median age will increase by only 3. Also, 100 people in their working years supported 20 elderly in 2010, a burden that will increase to 25 elderly in 2020 and 35 elderly in 2050. The burden borne by the working age population of the US will be half that of Japan in 2050. This burden will increase 1.8 times from 2010 to 2050, which is about half the speed for China.

The US has a demographic structure that will remain relatively young compared to other nations. Unlike Japan, where the aging of society is progressing, or China, where the aging of society will accelerate in the future, the aging of US society is anticipated to progress slowly. While the burden borne by the working age population will rise in the long term, this burden is still foreseen to be stable. In other words, as baby boomers grow older, their place will be taken by their children and then their grandchildren, making for a stable structure to support the elderly.

In the medium to long term, the US and China are anticipated to dominate the center stage of the world economy. From the perspective of the aging of society, however, the two countries will find themselves in diametrically different environments.

Change in Median Age of Population　　Chart 1.4
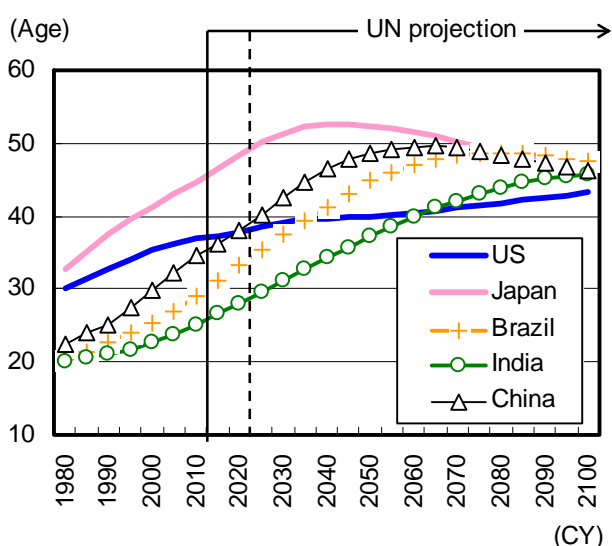
Source: United Nations; compiled by DIR.
Note: Actual figures through 2010; medium variant projection
　　　thereafter.

Old Age Dependency Rate*　　　　Chart 1.5
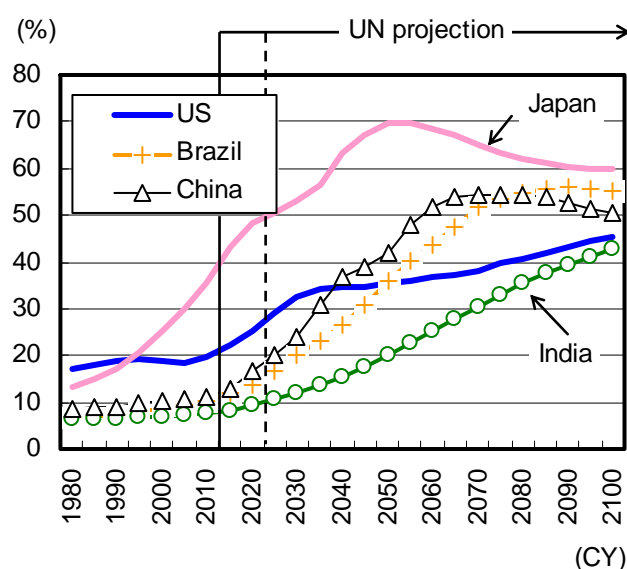
Source: United Nations; compiled by DIR.
*Those aged 65+ / Those aged 15-64.
Note: Actual figures through 2010; medium variant projection
　　　thereafter.

Aging of Society a Global Trend: Japan leads aging trend
Chart 1.6

(Medical care expenditure; % of nominal GDP)
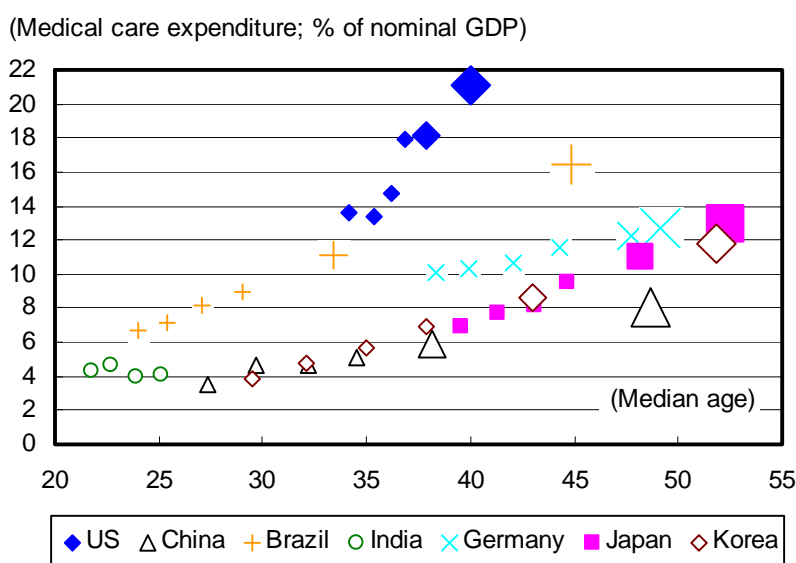
Source: World Bank, United Nations; compiled by DIR.
Note: The first four small symbols for each country (reading from left to right)
       correspond to actual values in 1995, 2000, 2005, and 2010. Medical care
       expenditures for 2020 (medium-sized symbols) and 2050 (large symbols) are
       DIR estimates based on the 1995-2010 relationship with median age. Median
       ages for 2020 and 2050 are UN projections. Actual values for India.

1.2 Japan's economy over the next 10 years

Outlook for Japan's economy

Forecast results factoring in our outlook for the world economy are as shown in the tables at the start of our report (pages 3 to 6). We predict that Japan's economy will grow 1.9% (nominal) and 1.4% (real) over the next 10 years (annualized average rates; Chart 1.7). If we divide our forecast period into two halves (FY12-16 and FY17-21), real GDP will increase by an average rate of 1.4% in each half. The characteristics of such growth, however, will differ greatly. In the first half, reconstruction demand and investments in renewable energy will expand. Prices will also rise as higher fuel costs for thermal power generation are passed through to electricity prices. In addition, the consumption tax will increase between FY14 and FY16.[5] Thus, during the first half, a range of economic shocks will magnify the fluctuations of the economy. In the second half, the acceleration of world economic growth and depreciation of the yen will spur the growth of exports. Domestically, as the ascent of the proportion of non-regular employees eases, prices and interest rates will head toward more normal levels, and we anticipate that the economy will expand stably even if at a gradual pace.

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5. We assumed that the consumption tax (incl local consumption tax) would increase from 5% to 8% in April 2014 and to 10% in October 2015. Since our current forecast is on a fiscal year basis, in our forecasting model the consumption tax will increase 3 percentage points in FY14 and 1 point each in FY15 and FY16.

GDP Growth Rate   **Chart 1.7**

(Y/y %)
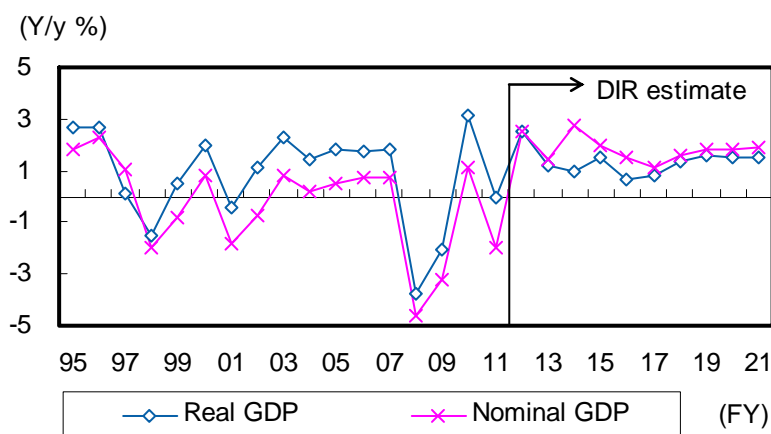
Source: Cabinet Office; compiled by DIR.

Compared to our previous forecast, we have downgraded the growth rate of real GDP by an average of 0.4 percentage points for the next 10 years. This is mainly the outcome of assuming a more conservative outlook for external demand for the first half of our forecast period and of restraining the growth of social security benefits, such as for pensions and health care. Pension benefits influence household income, and health and long-term care benefits influence government expenditures. Downward revisions were therefore mainly applied to the demand components of private final consumption and government final consumption. Compared to our previous forecast, sovereign debt risk has increased for Spain and Italy, and also the likelihood that the consumption tax rate will be raised as planned in Japan. For these reasons, we believe the government will step up its efforts to restrain social security benefits so as to rebuild government finances and to gain public acceptance of higher taxes.

One component that we revised upward is public works spending. In the three-party agreement on tax and social security reform bills, the text regarding the economy says that measures for the growth of Japan's economy will be examined, such as growth strategies and the prioritized allocation of funds to areas that will contribute to disaster prevention or mitigation. Issues looking for solutions if Japan is to achieve sustainable growth are the aging communities in/ongoing depopulation of rural areas, power shortages, and measures mitigating the impact of earthquakes. It will therefore be meaningful to direct public works spending toward such areas as the development of compact cities and smart cities, earthquake resistance, and disaster mitigation. In our current forecast, we assumed that public works spending would occur at a level where net investment excluding fixed capital consumption would not decrease (annual spending between Y20 trillion and Y24 trillion). Even when their objectives are laudable, investments that lack profitability or productivity will not only have limited economic effects, but the increase in repair and maintenance costs will put pressure on national and local government finances. Currently, the Liberal Democratic Party and New Komeito have proposed major public works spending plans. How much public works spending the government will actually undertake is still uncertain at the present moment. Whether economic effects can be expected from such spending is something that will have to be monitored.

Although we have downgraded the GDP growth rate, this does not mean that we have substantially revised our view of Japan's economy as portrayed in previous medium-term outlooks. As efforts are made to increase productivity while the population shrinks and as such issues as post-earthquake reconstruction, a declining birth rate and aging population, and the rebuilding of government finances are addressed, we believe that GDP growth in the mid-1% range will be achieved. However, since we foresee a primary deficit of 3.4% of GDP in FY20, the government target of achieving a primary surplus by FY20 at the latest is unlikely to be met (Chart 1.8). To restore government finances to

health, it will be necessary to raise taxes and reduce expenditures further. It will also be necessary to increase tax revenues by enlarging the economy through higher government expenditures and lower taxes. However, in view of the outcome of expansionary fiscal policies of the 1990s and the current state of southern European nations, expenditures should be curtailed and the taxpayer burden be increased even if at a gradual pace to steadily rebuild government finances.

Primary Balance (Central and local governments)	Chart 1.8

(% of nominal GDP)
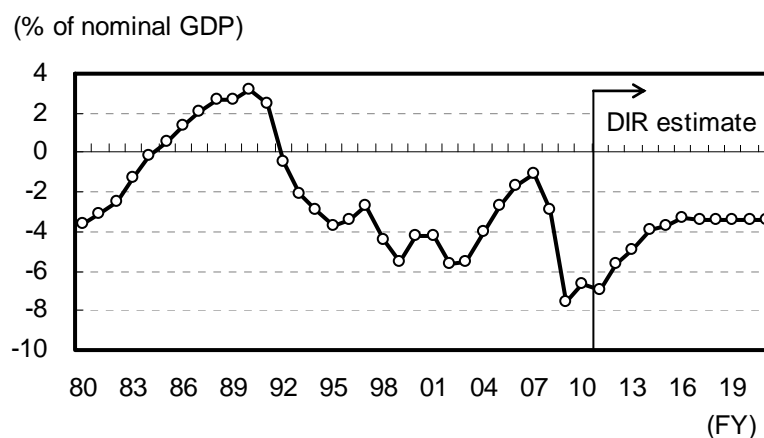
Source: Cabinet Office; compiled by DIR.

In the first half of our forecast period, reconstruction demand and investments in renewable energy will support expansion of the economy. Through the growth of corporate profits, household income will increase, and private final consumption expenditures will expand in turn. We forecast a growth rate averaging 0.8% in the first half, which is similar to the average growth rate between FY02 and FY11. Exports will be weak as the world economy slows in reflection of the prolonged European sovereign debt crisis and as the yen appreciates owing to narrowing inflation and interest rate spreads. Imports will grow faster than exports due to the expansion of domestic demand and also the increase of fossil fuel imports accompanying the higher operating rates of thermal power plants. As a result, the contribution of external demand will be negative on average in the first half.

Depending on how far fuel costs rise for thermal power generation, they have the potential of impeding the healthy economic activity of households and companies through higher electricity prices. In our current forecast, we anticipate that nuclear power plants will be decommissioned in succession starting with those that have already operated for 40 years and that the nuclear power plants undergoing stress tests will be gradually restarted. Also, electricity shortages resulting from the halting of nuclear power plants will be met by increasing the operating rate of thermal power plants. Hence, we believe that the fuel costs of thermal power generation will increase and that electricity prices will rise in FY12 and FY13 when the electricity produced by nuclear power and renewable power generation is limited.

The proportion of electricity prices (weighted by consumption value) in CPI is 3.17%. Simply stated, electricity prices rising 10% for households would push up CPI by more than 0.3 percentage points (10% x 0.0317). This is a considerable size increase for Japan, a nation undergoing mild deflation. In the service area of Tokyo Electric Power, electricity prices for households are scheduled to increase 8.46% on 1 September 2012. Should electricity prices be raised nationwide, the upside impact on prices would not be small. Cost-push inflation that is not associated with higher income will reduce the purchasing power of households and will place downward pressure on consumption through decreases in real income. Going forward, should dependence on thermal power generation rise further while crude oil prices remain high, the adverse impact on the real economy will grow, a situation that will need to be monitored.

We anticipate that the macro supply-demand balance will tighten with the expansion of the economy and that deflationary pressure brought to bear by the real economy will gradually weaken. Chart 1.9 illustrates the trend of the GDP gap (rate of deviation between actual and potential GDP). Since estimation of the GDP gap will differ according to methodology used, we have also listed figures for the GDP gap published by the Cabinet Office and BOJ. Looking back over the last 20 years, expansionary fiscal policies and monetary easing were deployed in the 1990s to stimulate Japan's economy following the collapse of the asset bubble, but such measures failed to increase demand more than supply capacity on account of the appreciation of the yen and the Asian currency crisis. As a result, deflationary pressure continued to bear down on the real economy. Then, in the longest expansionary period of the postwar period, which lasted from the start of 2002 to end-2007, the GDP gap rapidly narrowed and improved momentarily to the point where demand exceeded supply capacity. However, with the sharp contraction of demand caused by the Lehman Shock in September 2008, the GDP gap widened to around -5%. In FY11, the GDP gap improved to around -2.5%.

GDP Gap   **Chart 1.9**
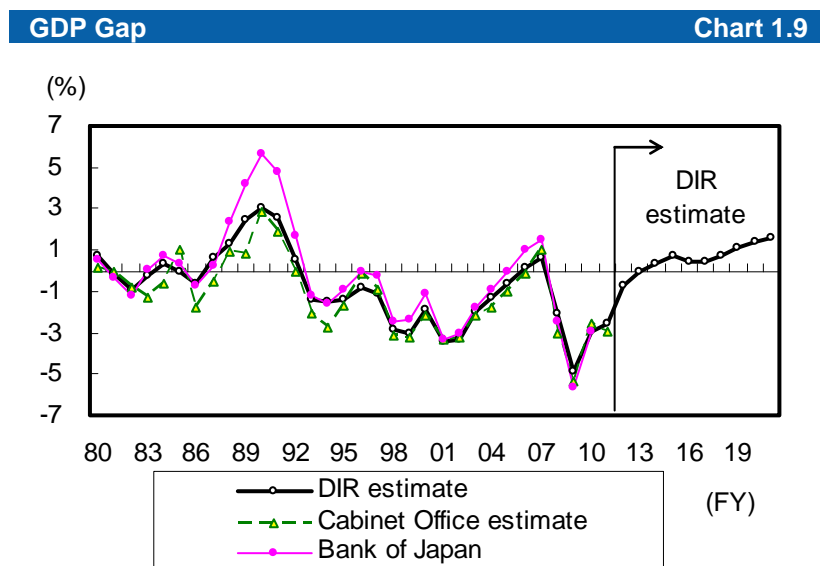
Source: Compiled by DIR based on various statistics/materials by Cabinet Office, BOJ, etc.

In our current forecast, we anticipate that the GDP gap will improve, particularly in the first half of our forecast period. This will mainly be the outcome of the economy expanding driven by domestic demand as reconstruction demand and investments in renewable energy increase. As a result, we foresee the economy growing faster than its potential growth rate of around 0.5% on average. On the supply side, the baby boomer generation (people born in 1947-49) will reach retirement age and begin leaving the labor market. This decrease in potential labor input will serve to suppress the potential growth rate. It is usually the case that, when the macro supply-demand balance improves and

inflationary pressure is brought to bear by the real economy, central banks will tighten monetary policy to quell future inflation. Japan, however, has not been able to break free from deflation over the long term and there is concern that a higher consumption tax will begin to affect the economy adversely in FY14. For this reason, BOJ is expected to maintain its zero interest rate policy for the time being and to support the economy from the monetary side (Chart 1.10).

Prices and Interest Rates — **Chart 1.10**
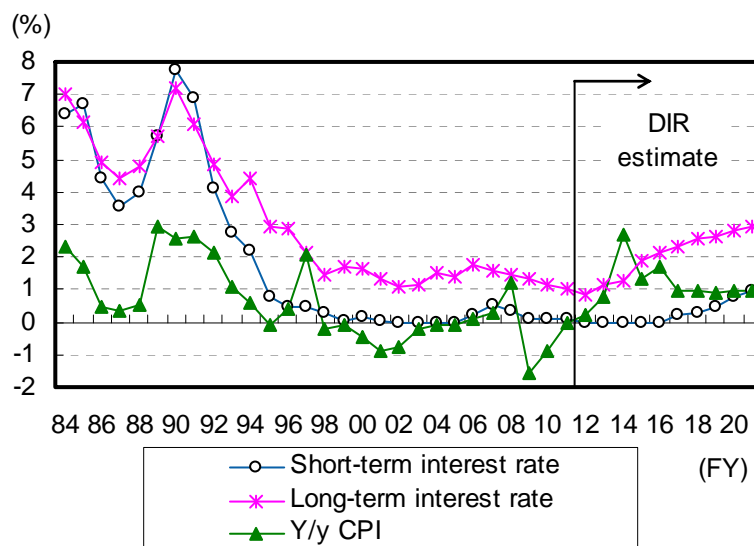
Source: Compiled by DIR based on various statistics.
Note: Short-term and long-term interest rates are call rate and 10-yr JGB yield, respectively.

In the second half of our forecast period, we anticipate the impact of a higher consumption tax on the economy will run its course. This, combined with likely expansion of the world economy and likely depreciation of the yen ensuing from a wider interest rate spread, will enable Japan's economy to grow stably from both the domestic and foreign demand sides. We anticipate CPI will increase 1.0% on average in the second half, a somewhat lower figure than that predicted for the first half (up 1.4%). However, since the figure for the first half includes the effect of a higher consumption tax, the figure for the second half can be said to represent a more normalized condition (deflation more or less ending). The influence of the ascent of the proportion of non-regular employees and the restraint of wage hikes that caused labor's share to decline in the first half will moderate in the second half as the easing of monetary policy leads to an optimal part-time employee ratio. Even so, CPI will grow only 1.0% in FY21, which is the same growth rate of 1% specified by BOJ as its price stability goal in the medium to long term. Hence, it should be borne in mind that the worsening of the external environment will be accompanied by the risk of deflation returning to Japan.

The household savings rate derived from disposable income and private consumption is expected to trend negatively for the most part during our forecast period. While the savings rate will see a wider decline in the first half of our forecast period, in the second half the decline will narrow and the figure turn slightly positive in FY21. The trend we anticipate for the household savings rate differs from a projection based on the life cycle theory. The long-term equilibrium formula of our current forecast, however, does factor in a downward trend over the very long term for Japan's household savings rate due to the aging of society. The plunge in the savings rate since the mid-1990s is thought to be a result of the complex interaction of many factors, such as the sharp decline in asset income received by households due to ultra-low interest rates, an increase in the outstanding balance of real financial assets due to deflation, the ratchet effect of stagnant wages, and, more broadly, distortions in the income
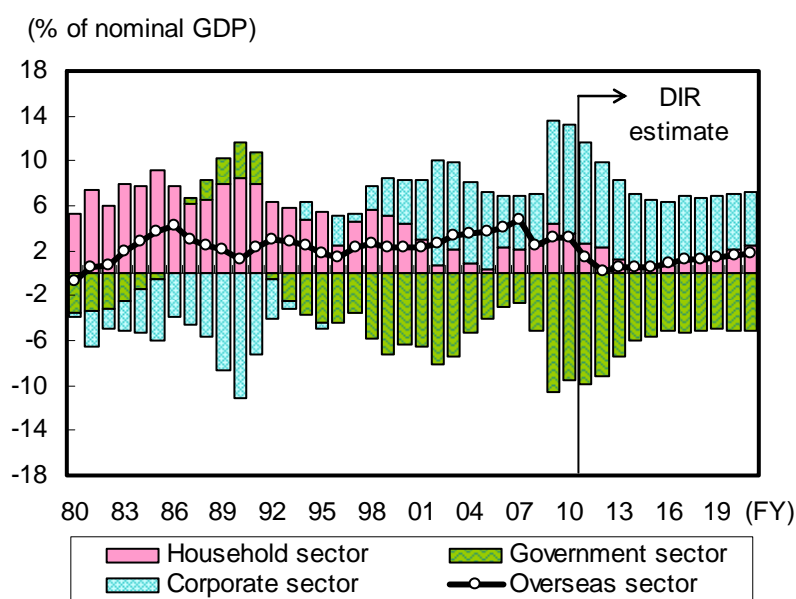
distribution structure between household and corporate sectors. While we anticipate that the household savings rate will decrease over the very long term, in the medium term of the next 10 years or so we believe it will see an upward correction from having fallen too far.

When viewed in terms of the I-S balance, the household sector is expected to record excess savings during our forecast period. This is because lower housing investments occasioned by a declining birth rate and an aging society will reduce the investment rate. Also, the excess savings of the corporate sector will not readily decline if we assume that capex will occur at around the level of our forecast. In contrast to the excess savings of the private sector going forward, ongoing fiscal deficits will continue. Once the consumption tax is increased, budget deficits are expected to trend at around 4.5% of GDP from FY14 to FY16. The difference between excess savings and fiscal deficits will balance out at the macro level as current account surpluses. During our forecast period, we believe that the current account surplus will trend between 0% and 2% as a percentage of GDP (Chart 1.11).

Our current forecast does not factor in the expansion of free trade, such as through the Trans-Pacific Partnership Agreement or a free trade agreement between Japan, China, and South Korea. Should it become possible to anticipate the promotion of free trade leading to the growth of trade volume, yielding such benefits as higher capexs, the expansion of employment, and the invigoration of domestic industries, our current forecast can be viewed as one having a conservative outlook (with upside prospects) in that degree.

Investment-Savings Balance (adjusted for ad hoc factors)

Chart 1.11

Source: Cabinet Office; compiled by DIR.
Note: Plus and minus signs inverted for overseas sector.

1.3 Assumptions of our forecast

1.3.1 Energy policies

In developing our assumptions for energy policies, we made reference to a draft proposal on energy mix choices (published 19 June 2012; "government proposal" hereafter) that will be the basis for the Basic Energy Plan the government intends to announce in summer 2012.

Specifically, now that the No. 3 and No. 4 reactors of the Ooi nuclear power plant have been restarted, we have assumed that other nuclear power plants will be restarted with due care, beginning with those that have passed stress tests and are assessed as meeting high safety standards. In the longer term, we have assumed that nuclear power plants that have operated for 40 years will be decommissioned, that new nuclear plants will not be built, and that the Fukushima Daiichi, the Fukushima Daini, and the Hamaoka nuclear power plants will not be brought back online even in the medium term (Chart 1.12).

We anticipate that electricity volume generated by renewable energy will increase, centering on wind power as indicated in the government proposal. Power generation from renewable energy will benefit from the promotion of related investments by the feed-in tariff system launched on 1 July 2012. The government proposal, however, assumes that renewable energy will account for 25% to 35% of power generation in 2030, which is quite ambitious. The massive installation of generation capacity for renewable energy, the supply of which is unstable, will be accompanied by transmission grid issues and considerable costs related to installing storage batteries and backup power sources (construction of new thermal and other power generation facilities that will be needed to take the place of renewable power generation when that is not available). For this reason, we have assumed that renewable energy will have a 25% share of power generation in 2030, the lower limit of the government proposal. In FY21, the final year of our forecast period, we anticipate that the proportion of power generation coming from renewable energy will be about 20% and that installed capacity will be 2.3 times the level of FY10, a more cautious outlook than the government proposal.

| Energy Policy Base Scenario Assumptions	Chart 1.12
Nuclear power	* The Fukushima Daiichi, Daini, and Hamaoka plants will be decommissioned or not be made operational. * Reactors will be decommissioned 40 years after start of operation. * No new nuclear power stations will be built, and those already begun will not be completed. * Facilities undergoing stress test and deemed to be safe will be restarted in turn toward July 2014. * Facilities not undergoing stress tests (due to routine inspection or being temporarily shut down, and hence will require thorough consideration) will be restarted in July 2015. * Power generation costs (incl damage of Y20 tril caused by the March 2011 quake/tsunami disaster) will be Y10.2/kWh in accordance with a Dec 2011 recommendation by a National Policy Unit committee commissioned with deciding electricity generation costs (Dec 2011 Government report).
Thermal power	* Operating rates will be raised significantly in response to a surge in power demand. * Costs of oil, LNG, coal fired generation will depend on operation rate in accordance with the Dec 2011 government report.
Co-generation	* Co-generation will increase at a fixed rate to meet the government proposal (co-generation will account for 15% of overall power generation in FY30).
Renewable energy	* Renewable energy will account for 20% in FY21 and 25% in FY30 of overall power generation; conservative outlook compared to the government proposal. * The feed-in tariff (cost) of solar power will decline to about 70% of the current rate in FY21 thanks to technological innovation and expansion of power plants.
Power demand	* Power demand will grow in line with DIR's medium-term economic outlook. However, energy-saving technologies and policy measures will gradually reduce demand, by 5% in FY21 compared to otherwise.

Source: Compiled by DIR.

The government proposal also assumes that electricity demand will fall substantially in the future compared to FY10. In our forecast of electricity demand, given the strong correlation between such demand and economic growth, we have assumed that electricity demand will continue to rise in

accordance with the economic growth forecast based on our medium-term macroeconomic forecasting model. However, given the prospects for a broad range of nationwide efforts to conserve electricity, we anticipate that electricity demand will be 5% less in 2021 compared to a situation where no conservation takes place.

Based on the above, our forecast assumes that the restart of nuclear power plants and the installation of renewable energy capacity will occur at a relatively gradual pace and that electricity demand will also increase. Thus, thermal power generation will surge for the time being, and fuel costs will rise (Chart 1.13). As a result, during the first half of our forecast period, pressure to increase electricity prices can be expected to mount. Then, in the second half, the electricity surcharge of the feed-in tariff system will have a noticeable impact, and electricity prices that fell from the restart of nuclear power plants will turn to rise again.

It should be kept in mind, however, that these premises have the potential of changing greatly in response to political circumstances or the management of electric utilities.

Chart 1.13 — Nuclear Power Operation Assumption
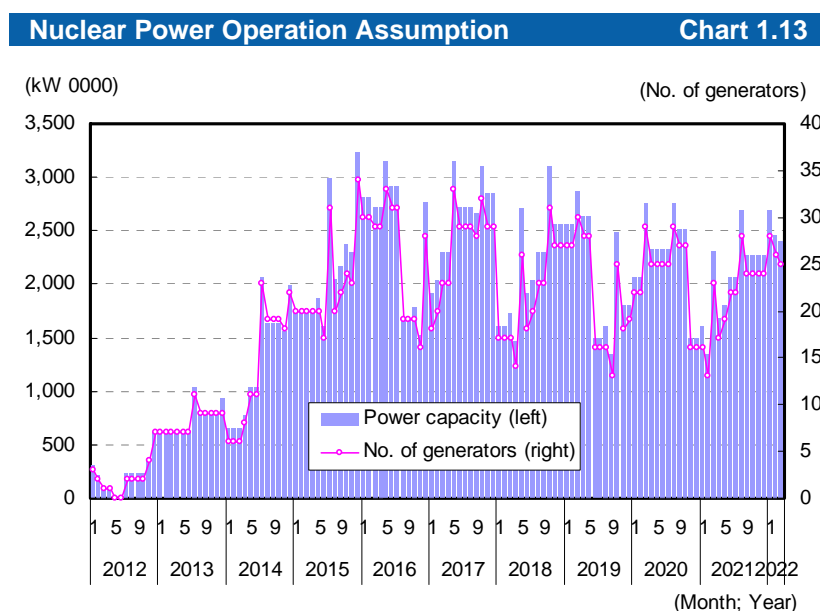
Source: Compiled by DIR.

1.3.2 Reconstruction, social security, and taxes

We have assumed that reconstruction demand related to the Great East Japan Earthquake will be about Y22 trillion for the public sector and about Y5 trillion for the private sector. We also assumed that reconstruction projects will primarily occur in a five-year period from 2H FY11 and that demand will mostly materialize in the first half of our forecast period. Since we have assumed that most public-sector reconstruction projects will be completed in FY12, government expenditures will decline sharply in FY13 and beyond.

Similar to our previous forecast, we have assumed that taxes will be increased by an amount totaling Y10.5 trillion to cover reconstruction costs. Specifically, plans to reduce the effective rate of the corporation tax by 5% will be deferred three years forward from FY12, a surtax of 2.1% will be applied to income tax for 25 years from January 2013, and a surtax of Y1,000 will be added to local residence taxes for a period of 10 years from June 2014. With respect to social security, Outline of Comprehensive Social Security and Tax Reform approved by the cabinet on 17 February 2012 and the three-party agreement that followed have been factored into our forecast.

# 2. Will the Hollowing Out of Industry Cause Exports to Decrease?

2.1 Relationship between hollowing out of industry and Japanese companies advancing overseas

2.1.1 Concerns over the hollowing out of industry reignite

Concerns have recently intensified over the hollowing out of industry resulting from Japanese companies advancing overseas. The specific subject of concern is domestic economic activity and employment contracting on account of companies establishing foreign subsidiaries to offshore the production of goods that they used to manufacture domestically. The advance of Japanese companies abroad began to increase in the 1990s, and this trend accelerated in the 2000s (Chart 2.1). In the midst of these changes, concerns that industry were being hollowed out were repeatedly asserted.

The yen's sharp appreciation following the Lehman Shock is thought to have intensified concerns about the economy being hollowed out. The argument that is frequently made is that export industries, unable to maintain international competitiveness due to appreciation of the yen, shift production abroad where production costs are low, which causes exports and domestic employment to contract. Certainly, the excessive appreciation of the yen (for example, the yen exchange rate exceeding an optimum level in terms of the purchasing power parity of trade good prices) would make the costs of domestic production more expensive than foreign production, and this situation would encourage companies seeking cheaper factors of production to move overseas. This assertion, however, implicitly assumes that offshoring equals hollowing out, meaning that companies advancing overseas directly results in the contraction of domestic economic activity and employment. Given the calls that are heard for Japan to globalize its economy in view of the expansion of global demand and concerns over a shrinking domestic workforce, does the advance of manufacturing industries overseas actually reduce domestic economic activity, particularly exports? In this section, we examine the effect on exports of Japanese manufacturers advancing overseas.

Outstanding FDI Balance of Japanese Companies   Chart 2.1
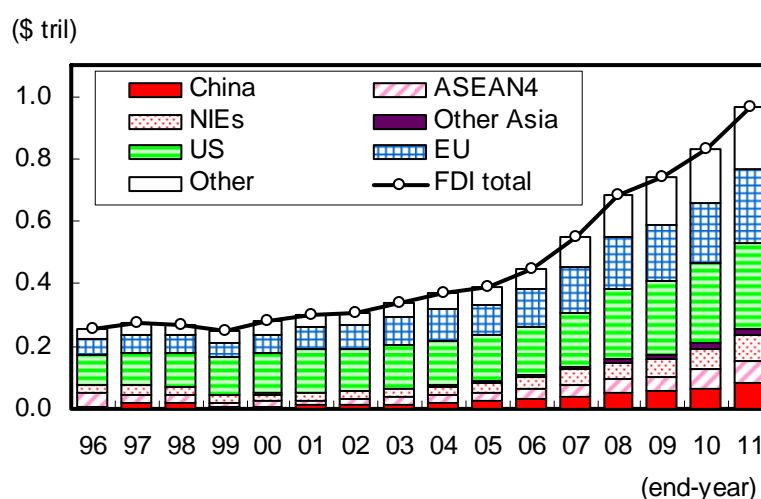
Source: Japan External Trade Organization; compiled by DIR.
FDI=foreign direct investment.

2.1.2 Substitution and scale effects

First, we clarify the effects of companies advancing overseas according to the study of economics. Should companies begin producing goods overseas that they formerly produced domestically, assuming that other conditions are unchanged, domestic economic activity would contract in that degree. This is known as the substitution effect. Companies advancing overseas, however, also have the positive effect of expanding domestic economic activity. This is the effect where the development of foreign markets results in higher sales or where the reallocation of the factors of production from exclusively domestic sources to include foreign sources entails greater efficiency (profitability), which will in turn expand domestic economic activity (scale effect). The expansion of offshore production can also be expected to induce the export of capital goods from Japan. Whether the advance of manufacturers overseas reduces domestic economic activity will depend on size difference between the substitution and scale effects, in other words the net effects of negatives (substitution effect) and positives (scale effect). In short, offshoring does not necessarily equal hollowing out[6].

2.2 Possibility that companies advancing overseas has increased exports

Measurement with the gravity model

To quantitatively measure whether companies advancing overseas increases exports, we turned to the gravity model. The gravity model seeks to explain trade volume between two countries by means of such factors as economic size (income), the physical distance between the two countries, and cultural and geographical ties (whether they speak the same language, share a land border). When the size of an economy is large, export supply capacity will also be large, and a high level of income will increase import volume. Thus, as economic size increases, so too will trade volume. On the other hand, if the geographic distance between the two nations is large, transport costs will increase, which will hold down trade volume. If geographic and cultural ties are strong, the flow of people, goods, and information will be vigorous, and trade volume will increase. Because of its clarity and explanatory power in empirical analysis, the gravity model is frequently used in the field of international trade.

Chart 2.2 presents a portion of estimation results (see the Appendix for estimation methodology and more detailed results). The bar graphs in the chart indicate the percentage by which exports (volume basis) increase when the outstanding balance of foreign direct investments increases 1% for different industries. The bar graphs outlined by dotted lines are those that are not statistically significant (the result was zero or whether the result was positive or negative could not be determined).

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6. Nobuaki Yamashita, Kyoji Fukao (2008) *The Effects of Overseas Operations on Home Employment of Japanese Multinational Enterprises,* Hitotsubashi University Research Unit for Statistical and Empirical Analysis in Social Sciences.

Change in exports when real outstanding balance of FDI by Japanese companies increases by 1%

% change in coefficient

Exports will increase

Exports will decrease
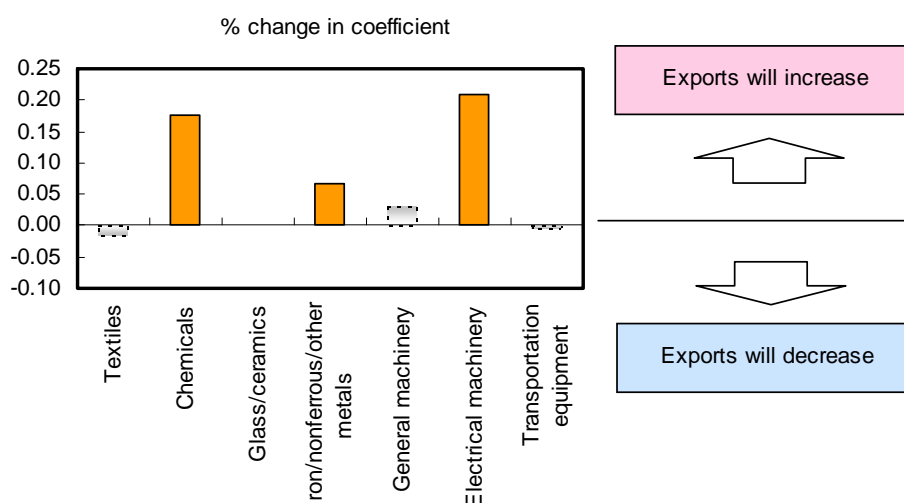
Source: Ministry of Finance, Bank of Japan, IMF; compiled by DIR.
Note: Dotted-line bar graphs are those where coefficients are not statistically significant. For details, see Appendix.

Of the industries that we examined, chemicals, iron/non-ferrous/other metals, and electrical machinery had statistically significant positive coefficients. In other words, when these industries accelerate their advance overseas, exports from Japan also increase (the scale effect exceeds the substitution effect). Of these three industries, electrical machinery had the largest coefficient. A vertical division of labor is progressing in the electrical machinery industry where manufacturing processes are distributed internationally. This process has established a trade structure where electronic components exported from Japan to China or other Asian trading partners are assembled by local subsidiaries into finished goods, which are then exported mainly to advanced economies. The size of the electrical machinery industry's coefficient can be viewed as an indication of the progress achieved in this international division of labor.

On the other hand, the relationship between offshoring and exports was unclear for textiles, glass/ceramics, and transportation equipment. In the case of the transportation equipment industry, whose outstanding balance of foreign direct investments is sizable among manufacturing industries, the effect on exports was uncertain not only for direct investments but also for the distance to trading partners. This is thought to be influenced by exports of automobiles (unit basis), a major product of the industry, being larger for the more distant US than for the geographically proximate Asia. Also, a horizontal division of labor is said to have progressed in the foreign production operations of the transportation equipment industry, where most manufacturing processes take place in the final demand nation. Since the horizontal division of labor has a strong substitution effect, an increase in the outstanding balance of direct investments will readily reduce exports. An important consideration, however, is the fact that the industry's coefficient in the chart is not negative in a statistically significant way. This is likely the consequence of direct investments not necessarily occurring in a completely horizontal manner but including some vertical characteristics as well. Auto parts have a 21.2% share (FY11) of the export value of Japan's transportation equipment industry, a share that is tending to rise (Chart 2.3). While the transportation equipment industry's advance overseas may not be positive, neither is it having a negative effect.

Share of Autos/Auto Parts in Transportation Equipment Exports
Chart 2.3
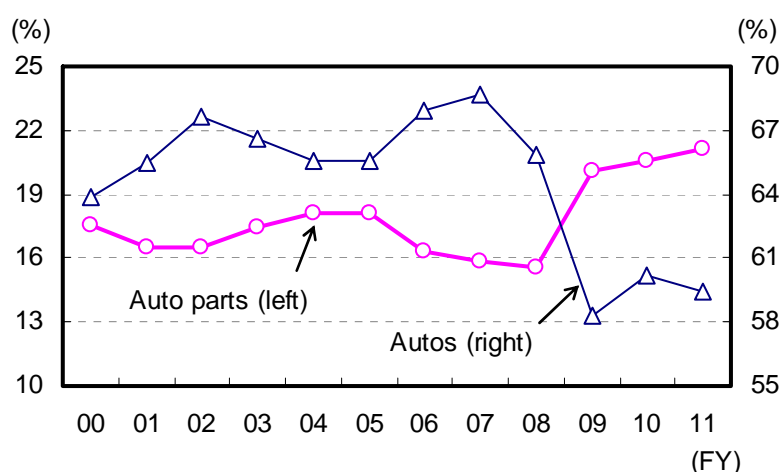
Source: Ministry of Finance; compiled by DIR.

Taken together, it is quite possible that advances overseas by manufacturing industries have increased exports, and viewing offshoring as equaling hollowing out is not necessarily appropriate. Previous research generally shows similar results. In a survey of prior research on the effect of companies advancing overseas, Sakura and Iwasaki (2012) state that, in macro-level and industry-level empirical research, while no consensus has been reached, in many cases direct investments are found to induce exports.[7] Moreover, in a questionnaire survey of listed companies by the Ministry of Economy, Trade, and Industry (2012), companies that increased overseas production in the most recent three years were also those that expanded their domestic business operations, and companies planning to increase foreign production in the future were also planning to expand domestic business operations.[8]

Thus, actively concluding free trade agreements and other such agreements will not only reduce tariffs and other trading costs but they can also be expected to bolster domestic economic activity through greater opportunities to develop foreign markets and through the increased efficiency of company production systems. While these effects may be positive at the macro level, there will be cases where they are associated with adjustment costs or where benefits are not received at the micro level of households and companies.

With the ongoing march of globalization, companies shifted such labor-intensive and low value-added work as the assembly of products from advanced economies to developing economies. As a result, the related demand for labor fell in advanced economies. The secular decline of employees in manufacturing industries has been observed in many advanced economies, and it is not a phenomenon that is unique to Japan. In fact, when the world economy grew strongly between 2002 and 2007, employment in manufacturing industries decreased not only in Japan and the US but also in such advanced industrial nations as Germany, South Korea, and Finland (Chart 2.4).

Companies and workers in sectors where demand for labor has diminished will need to shift to sectors that generate higher value added in response to changes in the global industrial structure. By doing so, the productivity of industries will increase overall without giving rise to unemployment, and many economic agents will benefit from higher income. In practical terms, however, not all economic agents

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7. Kenichi Sakura and Yuuto Iwasaki, *Kaigai seisan shifuto wo meguru ronten to jijitsu (Points at issue and facts regarding offshoring)*, Bank of Japan Reports & Research Papers, January 2012.
8. Ministry of Economy, Trade, and Industry, Industrial Structure Council, New Industrial Structure Subcommittee, *Keizai shakai bijon (Vision of economy and society)*, June 2012.
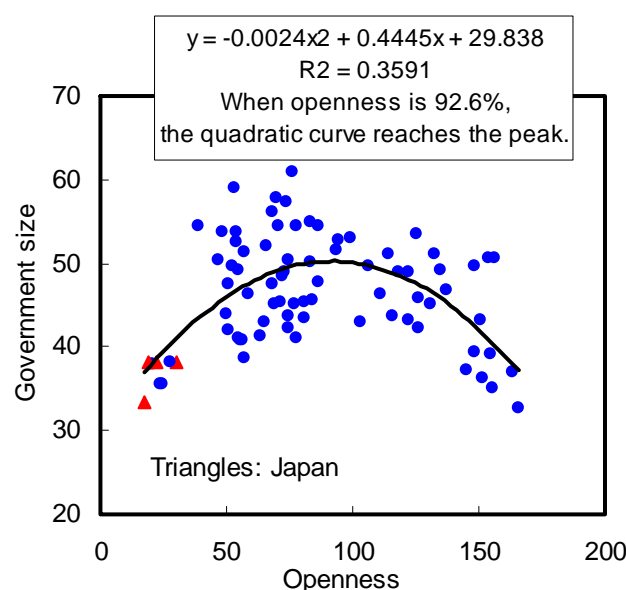
will be able to adapt smoothly to these changes. In the short term, cases will arise where economic agents will encounter difficulties (in the form of bankruptcies and frictional unemployment) from their inability to adapt to changes in the economic structure. For this reason, domestic policies are expected to become all the more significant. Chart 2.5 plots the relationship between openness of the economies of OECD member nations (for our purposes, the size of exports and imports relative to economic size) and sizes of their governments. In international terms, nations that are relatively more open to trade are those with a larger government size. When moving from less open to sufficiently open economies, the individuals and companies of a nation will be exposed to economic and social risks, and the role of the government in providing a safety net will increase.

In the chart, Japan is placed in the lower left position. To further increase openness and to partake of the benefits of globalization at the macro and micro levels, the government should not attempt to prevent bankruptcies or unemployment in industries that are structurally in decline (at a disadvantage to emerging economies). Rather, it should actively pursue policies that promote the launching of new businesses and the creation of jobs in high value-added industries. Given budgetary constraints, however, there is little room for increasing government expenditures. Thus, it will be necessary to curb the secular growth of social security benefit costs arising from the aging of society and to devise ways of allocating budgetary resources so as to augment the safety net for individuals and companies.

No. Employed in Manufacturing Industry Chart 2.4	Economic Openness vs. Government Size (OECD nations) Chart 2.5
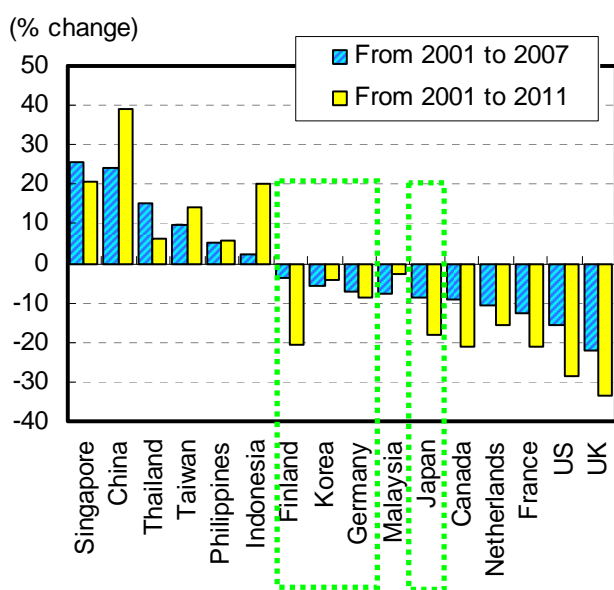
Note: Change in number of employees for the US. Jan-Sep 2011 avg for Malaysia's 2011 figure.

The equation shown in Chart 2.5:
$$y = -0.0024x^2 + 0.4445x + 29.838$$
$$R^2 = 0.3591$$
When openness is 92.6%, the quadratic curve reaches the peak.

Triangles: Japan

Notes: 1) Degree of economic openness = (export value + import value) x 100/GDP.
2) Government size = government expenditure x 100 / GDP.
3) Four 5-year periods from 1991 to 2010 for each nation, excl. Luxembourg (city state focusing on financial industry) and Korea (nation with exceptionally small government size).

Source: Haver Analytics, CEIC data, Cabinet Office, OECD; compiled by DIR.

Appendix: Impact on exports of manufacturers advancing overseas

Here, we explain the methodology used to measure the effect on exports of manufacturing industries advancing overseas portrayed in Chart 2.2. The gravity model is based on an analogy with Newton's law of universal gravitation where the force of gravity is directly proportional to the product of the masses of two objects and is inversely proportional to the square of the distance between them. In the gravity model, trade volume is directly proportional to the product of the economic sizes of two nations and is inversely proportional to the distance between them. There is empirical support for the gravity model, and it provides a useful explanation of the factors that cause trade volume to change between two nations.

The equation used is shown below. The estimation period is 2006 to 2011, and a panel data analysis was made of 19 nations with a large outstanding balance of foreign direct investment (NIEs, ASEAN-4, North America, China, India, Germany, UK, France, Netherlands, Belgium, Australia, and Brazil). We took into account differences among industries in terms of trade structure and characteristics of the goods produced, and we performed our analysis on an industry basis. When α_4 of the equation has a statistically significant positive value, this can be understood as indicating a situation where Japanese companies accelerating their advance overseas gives rise to higher Japanese exports (the scale effect exceeds the substitution effect).

$$\ln EX_{i,t}^m = \alpha_1 \times \ln Y_t^{Japan} + \alpha_2 \times \ln Y_t^m + \alpha_3 \times \ln(Dis^m) + \alpha_4 \times \ln(FDI_{i,t-1}^m) + \alpha_5 \times FTA\_dummy^m,$$

where $EX_{i,t}^m$ = exports of industry "i" in year "t" to nation/region "m"; Y^{Japan} = Japan's GDP;

Y^m = GDP of nation/region "m"; Dis^m = distance between Japan and nation/region "m";

FDI^m = real foreign direct investment in nation/region "m".

EX is export volume derived by adjusting nominal export value by the export unit value index (Ministry of Finance). Since the export unit value index is published on a national/regional basis, it is thought to provide a more accurate picture of the export trends of nations compared to using export prices (Bank of Japan) that are not published on the same basis.[9] *Y* is GDP on a PPP basis and *Dis* is the distance between Tokyo and the capital cities of other nations.[10] *FDI* is real foreign direct investment where nominal foreign direct investment (yen basis) is deflated by "(GDP deflator of the trading partner nation + Japan's GDP deflator denominated in the local currency) / 2." When Japanese companies engage in foreign direct investments, they do so by sourcing materials locally or by sourcing them as imports from Japan. Since such differences in sourcing are difficult to quantify, we simply took the arithmetic average of the GDP deflators of Japan and trading partner. Also, since the conclusion of free trade agreements promises the growth of exports to signatory nations, we added an FTA dummy variable as an independent variable.

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9. Ministry of Finance publishes Export Unit Value Indices on a national/regional basis, namely world, US, EU, Asia, NIEs, ASEAN, and China. For our panel data analysis of 19 nations, we used the index of the nation/region that corresponds to nation analyzed.

10. A typical gravity model adopts GDP and per capita GDP as independent variables. In our estimation, however, we excluded per capita GDP because multicollinearity occurred between Japan's GDP and per capita GDP. For the distance with China, we used the distance between Shanghai and Tokyo.

Impact of Production Overseas by Industry

	Total		Textiles		Chemicals		Glass & ceramics		Metals		General machinery		Electrical machinery		Transportation equipment	
GDP (Japan)	1.64	***	2.12	***	2.22	***	2.06	***	2.24	***	2.54	***	1.82	***	0.94	***
GDP (Trading partners)	0.29	**	0.52	***	0.27	***	0.32	***	0.46	***	0.45	***	0.25	***	0.55	***
Distance	-0.46	**	-1.39	***	-1.13	***	-1.08	***	-1.25	***	-0.58	***	-0.66	***	0.08	
Outstanding balance of real FDI (one year previous)	0.17	***	-0.02		0.17	***	0.00		0.07	***	0.03		0.21	***	0.00	
FTA dummy	0.08		0.27		-0.06		-0.28		0.94	***	0.23		0.27		0.41	*
R^2	0.05		0.60		0.70		0.64		0.76		0.47		0.58		0.30	

Source: Ministry of Finance, Bank of Japan, IMF; compiled by DIR.
Notes: 1) Estimated based on panel data analysis for 19 trading partners (for which FDI outstanding balance from Japan ranked from top to 19) over the 2006-2011 period with logarithmic variables. *, **, and *** denote significance of 10%, 5%, and 1%, respectively.
2) FDI=foreign direct investment.
3) FTA: Free trade agreement.
4) Metals: Iron, nonferrous, and other metals.

Estimation results are shown in the chart above. While the coefficients of the seven industries are statistically significant with the exception of the FTA dummy variable, the adjusted R^2 is extremely low at 0.05. This means that, of the factors regarding export variation, the percentage that can be explained with the five variables in the chart is 5%. This suggests the possibility that it is not appropriate to estimate Japanese export trends at the macro level, in other words, in a pack of all industries. Also, since our analysis used industry-level panel data, we were unable to reflect inter-industry influences (such as the direct investments of the chemical industry inducing capital goods exports from the general machinery industry), which is thought to be a factor reducing explanatory power.

Next, adjusted R^2 is generally high for result by industry, and the outstanding balance of foreign direct investment is a statistically significant positive value for the chemical, iron/nonferrous/other metal, and electrical machinery industries. In the relatively recent period of 2006 to 2011, companies in these industries advancing overseas served to increase exports. On the other hand, for such industries as transportation equipment and general machinery, which have a large outstanding balance of foreign direct investment, the relationship between companies advancing overseas and exports is unclear (nor is it negative).

Finally, the conclusion of free trade agreements may have augmented exports of the iron/nonferrous/other metal and electrical machinery industries. A free trade agreement (economic partnership agreement) with Singapore took effect in November 2002 and with ASEAN in December 2008. While such influences are thought to have contributed to the expansion of trade, the effect of concluding free trade agreements was uncertain for many industries. This was because of direct investments related to import substitution increasing at the same time or because of the possibility that the effects of free trade agreements had not fully materialized in the estimation period since they were concluded relatively recently.

3. Consumption in a Super-aged Society

With the arrival of a super-aged society, the lead actors of consumption for the entire economy shifts to the elderly. Should the consumption patterns of elderly households significantly differ from working-age households, demographic changes are likely to dramatically alter consumption patterns at the macro level. In this section, we analyze the effect of demographic changes on consumption according to such characteristics as age and cohort, here the latter meaning the generation people are born into.

First, we elucidate consumption patterns by age group in the current super-aged society and identify on what consumption items elderly households spend more than working-age households. Next, we categorize consumption patterns by the generation heads of households are born into (such as the baby-boomer generation), and based on such patterns we forecast medium-term consumption behavior. Finally, we present our outlook for long-term consumption patterns from changes to the broader environment surrounding households.

3.1 Changes in consumption patterns by age group

Chart 3.1 provides a breakdown of consumption expenditures in 2011 according to the age group of heads of households based on the *Family Income and Expenditure Survey* (Ministry of Internal Affairs and Communications; 10 major consumption items; all households). Here we standardized consumption expenditures by means of equivalent spending, which we determined by dividing per household consumption value by the square root of the number of household members so that consumption value would not be influenced by the size of households.[11]

Breakdown of Consumption Expenditure by Age of Household Head **Chart 3.1**
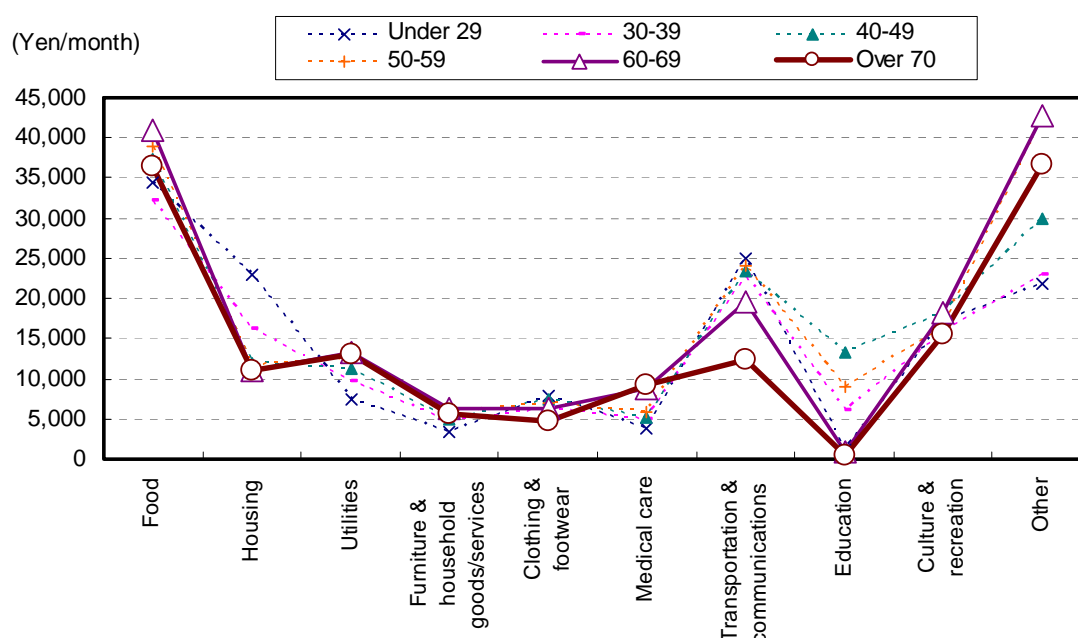
Source: Ministry of Internal Affairs and Communications; compiled by DIR.
Notes: 1) 2011 monthly avg; all households; equivalent spending (consumption expenditure per household divided by square root of no. of family members).
   2) Utilities include heating oil.

11. Consumption increases in proportion to the number of household members. However, in the case of durable goods like refrigerators, consumption value will not proportionally increase when the number of household members changes. Thus, for the middle aged with larger households, per capita costs will decrease. In contrast, per capita costs will increase for younger and older age ranges with fewer household members. Here, we have adjusted for this bias.

The chart shows that spending on food and "other" (social and miscellaneous expenses) accounts for the largest proportion of household consumption for all age groups. When examined more closely, however, differences in expenditure allocations are found between age groups.

3.1.1 Consumption that decreases in elderly households

Education expenses differ greatly between middle-age and elderly households. Such expenses are the largest for those between 40 and 49, the foremost age group of middle-age households, and extremely small for elderly households. This reflects the great difference between the life stages of the middle-age and elderly age groups, the former with children at the age when education expenses are highest and the latter whose child-rearing days are over.

Transportation/communication expenses are also small in elderly households. This is because vehicle-related expenditures and cell phone usage payments are small among those above 70. The use of cell phones and smart phones, however, is spreading rapidly among working-age households, and whether it will always be the case that communication expenses fall dramatically when people become elderly is uncertain. When analyzed by cohort, communication expenses tend to increase as ages rise in a given cohort, and communication expenses are higher the younger cohorts are. Thus, it cannot be said that communication expenses decrease sharply when people become elderly.

Such items as housing expenses and clothing (particularly jackets/slacks/skirts/etc)/footwear expenses are also expenditures that are small for elderly households. In the case of housing expenses, with the increase in home ownership among middle-age and elderly households, rent payments fall sharply. Also, with people spending less time away from home, the consumption of clothing and footwear declines.

3.1.2 Consumption that increases in elderly households

Naturally, medical care expenditures increase in a super-aged society. A closer examination, as in Chart 3.7 at the end of the section, reveals that spending on medical care services (portion of medical expense to be paid individually) and medicine rise for the elderly. Spending on supplements also increases, which is thought to be the result of a growing desire among the elderly to maintain their health. Even so, medical care expenditures do not increase all that much.

What accounts for a large proportion of overall expenditures in elderly households is "other consumption expenditures". Of such expenditures, social expenses (monetary gifts—congratulatory gifts, sympathy gifts, condolence gifts—, year-end gifts, dining expenses) are significantly large. It appears that expenditures related to maintaining social relationships rise for the elderly. Miscellaneous expenses include home care service fees and private health insurance premiums. Recently, there are a growing number of health insurance plans that accept elderly subscribers, and initiatives seeking reassurance in a super-aged society are reflected in consumption statistics.

Spending on utilities also tends to be large for elderly households. What stands out in particular is the higher spending on electricity, heating oil, and water. This is thought to be related to the fact that the elderly stay at home more. Also, higher electricity spending is thought to reflect a shift to electricity as the primary source of household energy, centering on the elderly who look for safety and security. With respect to housing expenses, owner-occupied homes that elderly households have lived in for years will need repairs, and repair- and maintenance-related expenditures will increase.

Food expenses are also generally large for elderly households. When such expenses are broken down, significant differences in consumption value are found between age groups. Broadly speaking, food expenses can be categorized into those related to eating out, the purchase of prepared food to eat at home or wherever one likes, and buying ingredients for preparing meals at home. Expenditures on

prepared food are not all that different between age groups. In contrast, expenditures on eating out and on preparing meals at home move in opposite directions according to age. While expenditures on eating out tend to be smaller for elderly households as households grow older, expenditures on preparing meals at home are larger. For elderly households, expenditures on seafood, vegetables/seaweed, fruit, cereals, and oil/seasonings are substantial. With more free time and more hours spent at home, the elderly have more time to prepare meals at home, which they previously might have thought bothersome. They also become more interested in checking the safety of food themselves. As will be discussed below, however, this situation greatly reflects the behavior of the current elderly. It is reasonable to doubt whether the future elderly will greatly increase expenditures on preparing meals at home. With respect to other foods (confectionery, beverages, and alcohol), expenditures on alcohol increase readily for the elderly.

The effect of the elderly spending more time at home is also seen in relation to expenditures on furniture and household goods/services. Consumption value increases for durable goods (household appliances), and the consumption of consumables (daily necessities) remains high. Also, since the strength of elderly people declines, the consumption of housekeeping services, or the outsourcing of household labor, increases.

Recreational expenses are directly linked with the increase in free time, and such consumption especially increases on travel packages and sports clubs.

3.1.3 Keywords are home-oriented/leisure, maintenance, and safety/security

Summarizing consumption behavior in a super-aged society, three characteristics can be mentioned: (1) an increase in consumption related to greater free time and more time spent at home, and decrease in consumption related to fewer opportunities to go out, (2) an increase in consumption for maintaining physical assets, personal health, and social relationships, and (3) an increase in consumption for safety and security.

For example, medical fees related to maintaining health and physical strength, repair and maintenance expenses for owner-occupied homes, expenses related to maintaining social relationships, food expenses related to preparing meals at home, and electricity charges and private health insurance premiums assuring safety/security increase for elderly households. In contrast, educational expenses and transportation expenses fall sharply. In this manner, elderly households rationally adjust their consumption behavior in response to changes in their life cycle.

3.2 What will happen to the consumption of elderly households going forward?

3.2.1 Three effects that determine consumption behavior

Elderly households in the future may have different preferences and display different consumption patterns compared to such households at the present. Consumption behavior is not only influenced by one's life cycle, that is to say by age (age effect), it is also strongly influenced by the cohort (generation one is born into, such as the baby-boomer generation; cohort effect), and by the trends of the period one is living through (period effect). It is these three effects working together that determine consumption behavior. Naturally, forecasting the trends of a period is not easy. It is reasonable to think, however, that the preferences and thinking acquired by a certain cohort will appear as characteristic behavioral patterns (cohort effect) and will be maintained to some extent as time goes by. If this cohort effect can be isolated to some degree, it may be possible to identify what sorts of changes will occur in the consumption of elderly households in the future.[12]

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12. Strictly speaking, empirical identification of the age effect, cohort effect, and period effect is said to be difficult. However, by using the cohort data stated in section 3.2.2, it is possible to grasp broad trends to some degree.

3.2.2 Consumption that is strongly influenced by the cohort effect

To investigate medium-term changes in consumption behavior, we grouped households by the cohort the head of the household was born into, and by analyzing differences in consumption behavior by age to also account for the cohort effect, we sought to examine in greater detail changes in consumption patterns in a super-aged society.

As shown by Chart 3.8 at the end of the section, overall consumption does not exhibit a cohort effect. While this may seem to indicate a strong age effect, there are items that peak for those in their late 40s and into their 50s and are better explained by the cohort effect than by the age effect.

For example, Chart 3.2 portrays the consumption of vegetables/seaweed by cohort and age group of heads of households. While no change is seen in consumption by age group, there are changes that can only be explained by the cohort. A similar pattern is found for the consumption of seafood and fruit. As underscored by Chart 3.1, the consumption of such fresh foods, which are a mainstay of meals prepared at home, is substantial for the current elderly.

Chart 3.2 also indicates that the consumption of fresh foods declines for younger cohorts, and there is no tendency for such consumption to increase as these cohorts grow older. Thus, the consumption of fresh foods is expected to gradually decline as younger cohorts grow older, and high consumption levels seen for current elderly households are unlikely to be maintained in the future. Other than foods, a similar pattern is found for books/magazines in the category of recreation.

Spending on Vegetables/seaweed by Cohort/Age of Household Head   **Chart 3.2**
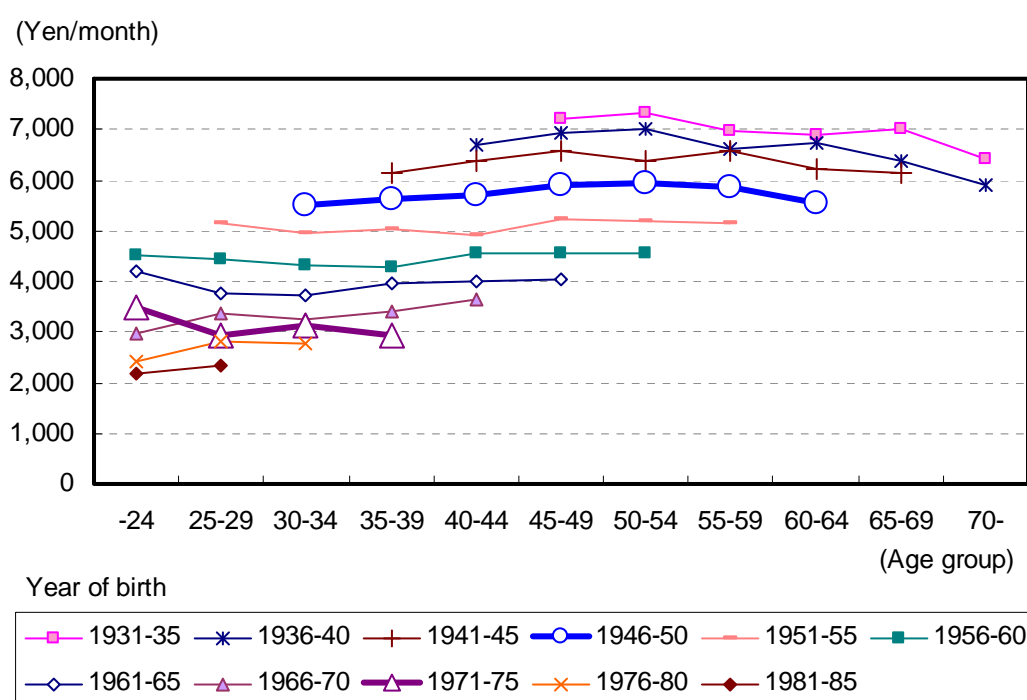
Source: Ministry of Internal Affairs and Communications; compiled by DIR.
Note: Spending deflated by CPI; equivalent spending.

3.2.3 Consumption that is augmented by both cohort and age effects

Should consumption increase as people age and should consumption levels be higher for younger generations, there is a strong likelihood that consumption will increase (or remain high at least) in a super-aged society even as Japan's population shrinks.

This possibility is illustrated in Chart 3.3, which depicts the trend of spending on electricity by the cohort and age group of heads of households. This case shows the combined influence of cohort and age effects. The chart indicates that the younger the cohort and the higher the age, the higher the spending on electricity. What this suggests is that spending on electricity will readily increase as a super-aged society advances further.
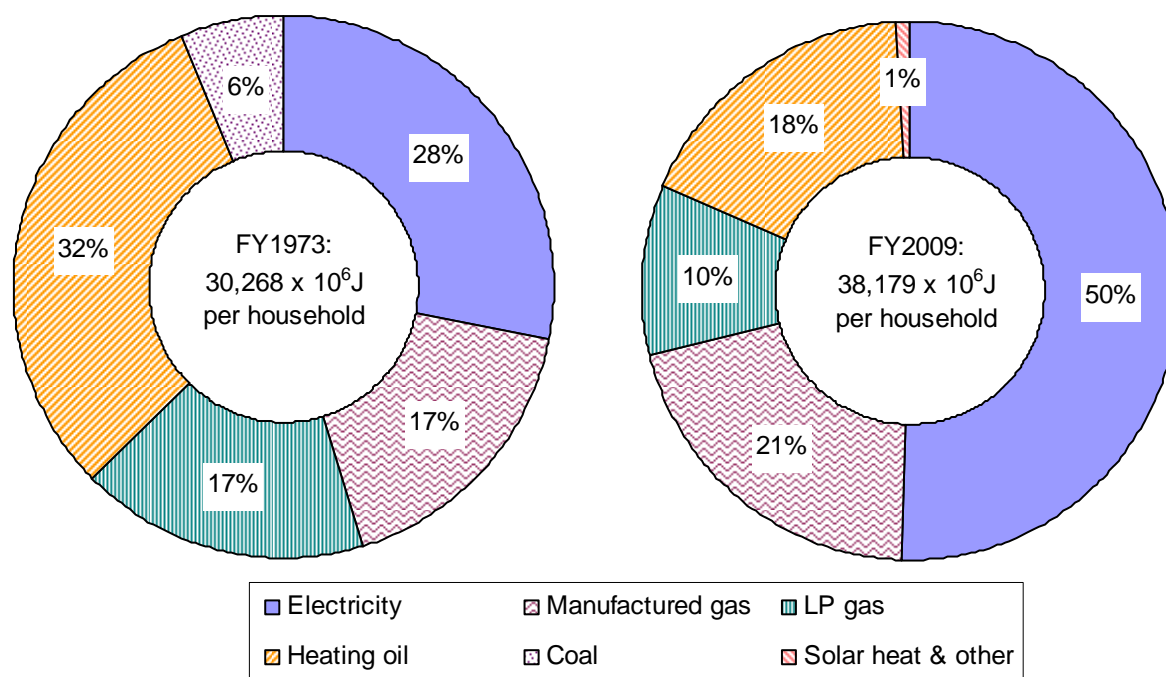
When people become older, their dependence on electricity as a safe source of energy grows. Also, society as a whole has increased its dependence on electricity for the convenience it offers. While such energy sources as gas and heating oil excel in providing heat, with the advance of technologies like heat pumps, the use of electricity to supply heat is increasing (Chart 3.4). Naturally, the spread of voluntary conservation activities following the Great East Japan Earthquake will curb the wasteful electricity demand of households and has the potential of reducing electricity expenditures. However, given the strong potential demand for safe and highly convenient electricity and given that electricity demand easily increases in line with economic growth and the improvement of living standards, to effectively curb electricity demand in the future it will be necessary to establish efficient electricity demand and supply systems using price incentives and ICT (information and communication technology).

Other consumption that easily increases from both cohort and age effects includes prepared foods, household consumables, medical care goods and devices, and communications. These are items whose consumption is highly likely to increase with the arrival of a super-aged society.

Spending on Electricity by Cohort/Age of Household Head   **Chart 3.3**
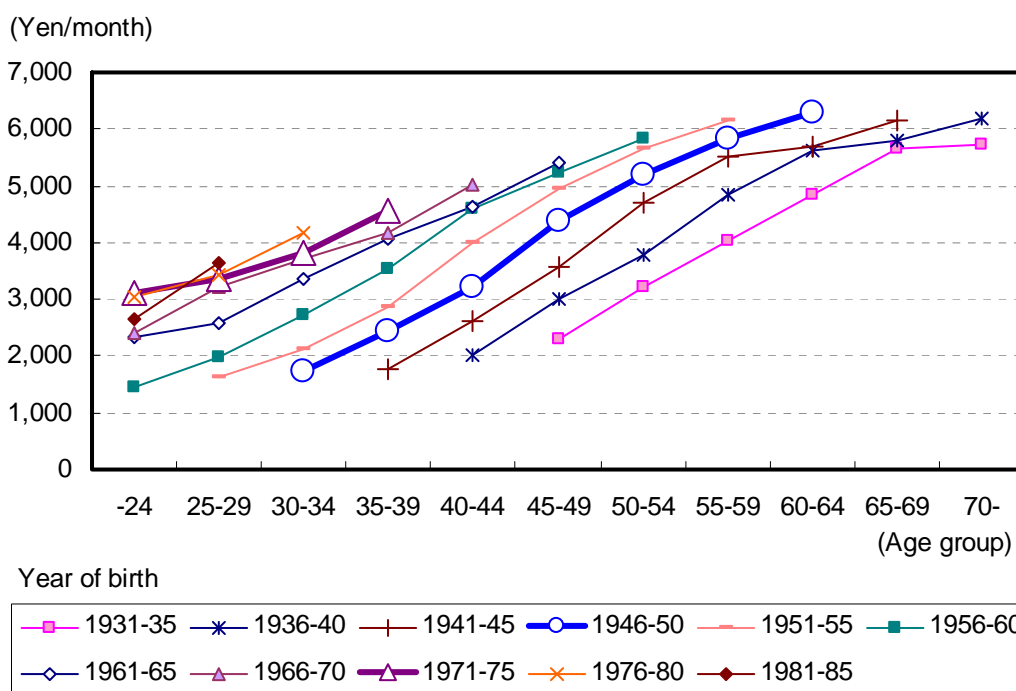
Source: Ministry of Internal Affairs and Communications; compiled by DIR.
Note: Spending deflated by CPI; equivalent spending.

FY1973:
30,268 x 10^6 J
per household

FY2009:
38,179 x 10^6 J
per household

Legend: Electricity · Manufactured gas · LP gas · Heating oil · Coal · Solar heat & other

Source: Institute of Energy Economics, Japan; Agency for Natural Resources and Energy; compiled by DIR.

3.2.4 Consumption that is strongly influenced by the age effect

Of consumption that is more strongly influenced by the age effect than the cohort effect, repair/maintenance expenses can be cited as consumption that increases with age (Chart 3.5). When people enter middle age, many move from rented accommodation to owner-occupied housing. Naturally, once they have lived in their own housing for some time, it will become necessary to repair any damage that has occurred. For this reason, as people age, expenditures to maintain such fixed assets increases. If one's physical strength, health, and social relationships are viewed as a form of stock, it is easy to understand that expenditures for their maintenance, such as medicine, medial care services, and social expenses will readily increase for elderly households. In fact, graphs of the spending on such items are similar to that of repair/maintenance expenditures for fixed assets.

Other items whose consumption is found to increase with age are oil/seasonings (in the category of food) and recreational services. The increase in such consumption, however, is related to elderly households having more free time, which takes the form of such behavior as preparing meals at home more often or as enjoying free time through travel packages.

In contrast, eating out is one category of consumption where the age effect is negative, meaning that consumption declines as people grow older (Chart 3.6). When people enter the second half of their 40s, per capita expenditures on eating out (expenditures adjusted by the number of household members) start to diminish. The cohort effect has a negligible impact on this decline. While a growing number of seniors born after World War II and who have their own lifestyle and values might make one think that eating out would increase, such a tendency is at least not found in statistics.

Naturally, eating out has an element of recreation. However, since elderly households have less income than people in their working years and since they have more free time even as they eat out less, elderly households will tend to refrain from eating out in preference to purchasing more economical prepared food or preparing meals at home.

Consumption that similarly declines with age without showing much relationship with the cohort effect is expenditures on footwear and other apparel, transportation, rent, and education. This is the outcome of such factors as fewer opportunities to go out and a higher home ownership ratio as people grow older.

Spending on Repairs/Maintenance by Cohort/Age of Household Head — Chart 3.5
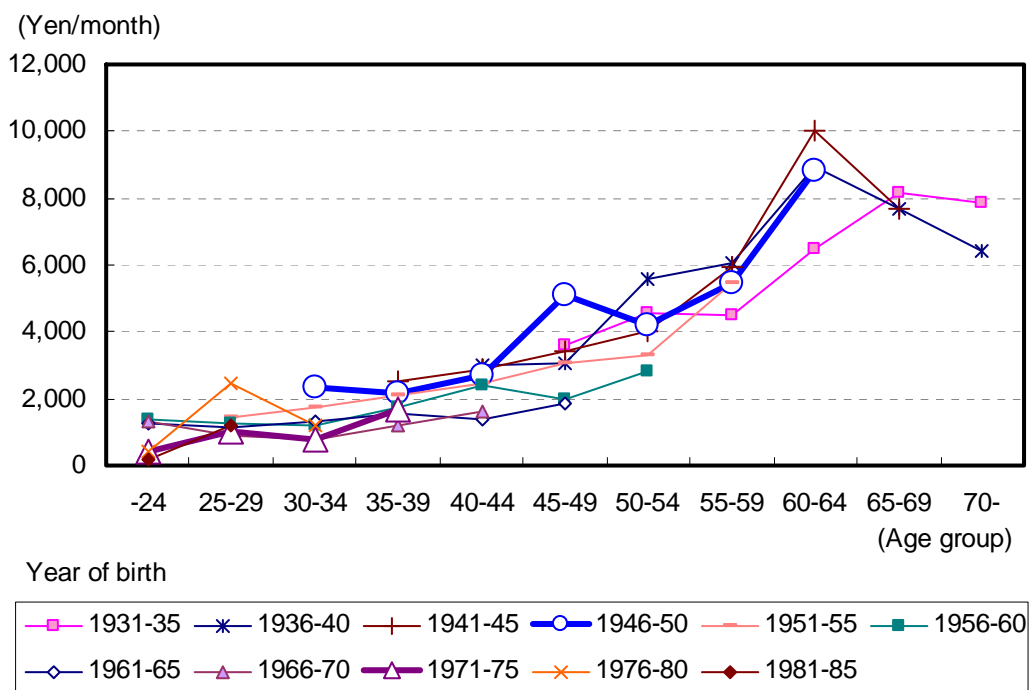
(Yen/month)

Source: Ministry of Internal Affairs and Communications; compiled by DIR.
Note: Spending deflated by CPI; equivalent spending.

Spending on Eating Out by Cohort/Age of Household Head — Chart 3.6
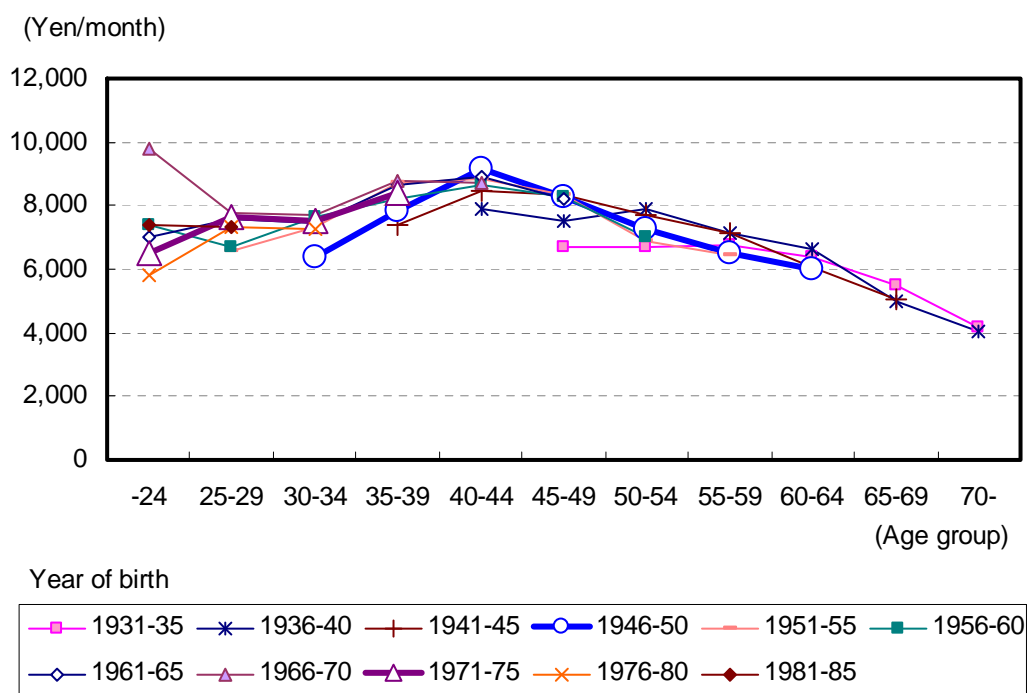
(Yen/month)

Source: Ministry of Internal Affairs and Communications; compiled by DIR.
Note: Spending deflated by CPI; equivalent spending.

3.2.5 Consumption patterns also differ according to cohort

In the paragraphs above, we presented an analysis of consumption patterns by cohort and by age group for different consumption items using cohort data. We found that, while overall consumption is strongly influenced by the age effect, many consumption items, such as food, electricity, daily necessities, and communications, are also strongly influenced by the cohort effect. Thus, in considering consumption in a super-aged society, what determines consumption patterns is not just the age effect but also the cohort effect.

3.3 Long-term outlook for consumption

In the preceding paragraphs, we analyzed the consumption structure in demographic terms based on differences according to age group and cohort. Consumption, however, is also influenced by technological advances like ICT as noted above and by such period factors as globalization, fashion trend, and urbanization. In bringing this section to a close, we provide a brief analysis of how these factors affect consumption. This aspect is also significant in relation to developing long-term growth strategies. In the process, it will be important to clarify how people go about determining their consumption behavior.

3.3.1 What changes consumption behavior?

Consumption usually increases along with income, but this is not always the case. When viewed in the long term, rising income levels have caused spending on eating out to grow, while the consumption of fresh foods has trended downward. Despite the recent sluggish growth of income, spending on electricity is on an upward trend. In other words, people decide optimal consumption patterns so as to increase personal satisfaction by considering not only their income but also a range of factors including preferences and the relative prices of goods and services.

One of these factors whose significance is growing is the time factor. A key factor in this context is the existence of household work. For example, buying an apple and eating it will provide direct satisfaction. There are items, however, that must be prepared with household work (household production activity) before they provide satisfaction. In other words, there are certain consumption items that include factors akin to factors of production in production activity by firms. Hence, trends of such items will need to be considered together with whether they include household work or not. Depending on whether the cost of household work is high or low, consumption patterns will change according to the choice made between deliberately producing the item at home or outsourcing it.

Factors that influence the cost of household work include the external labor environment (wages and employment opportunities) and changes in the value of time held by people. For example, should wages increase or employment opportunities expand for women who have traditionally provided most household work, the monetary cost and time cost (opportunity cost) of household work that had been provided for free will rise in relative terms. Also, people living in urban areas will enjoy a range of recreational consumption opportunities besides employment opportunities, and the opportunity cost forfeited through household work will tend to become large.

3.3.2 Changes in the structure of household consumption and growth strategies

Japan already belongs to the world's technological frontier. As ICT systems and globalization progress, it will be important to secure human resources capable of innovation to maintain growth of Japan's economy. For this reason, there will be a need to draw into the labor market a diverse range of human resources. This would include those who have been viewed as being outside the labor force in Japan, such as full-time housewives, the elderly, and young people (such as NEETs [not in education,
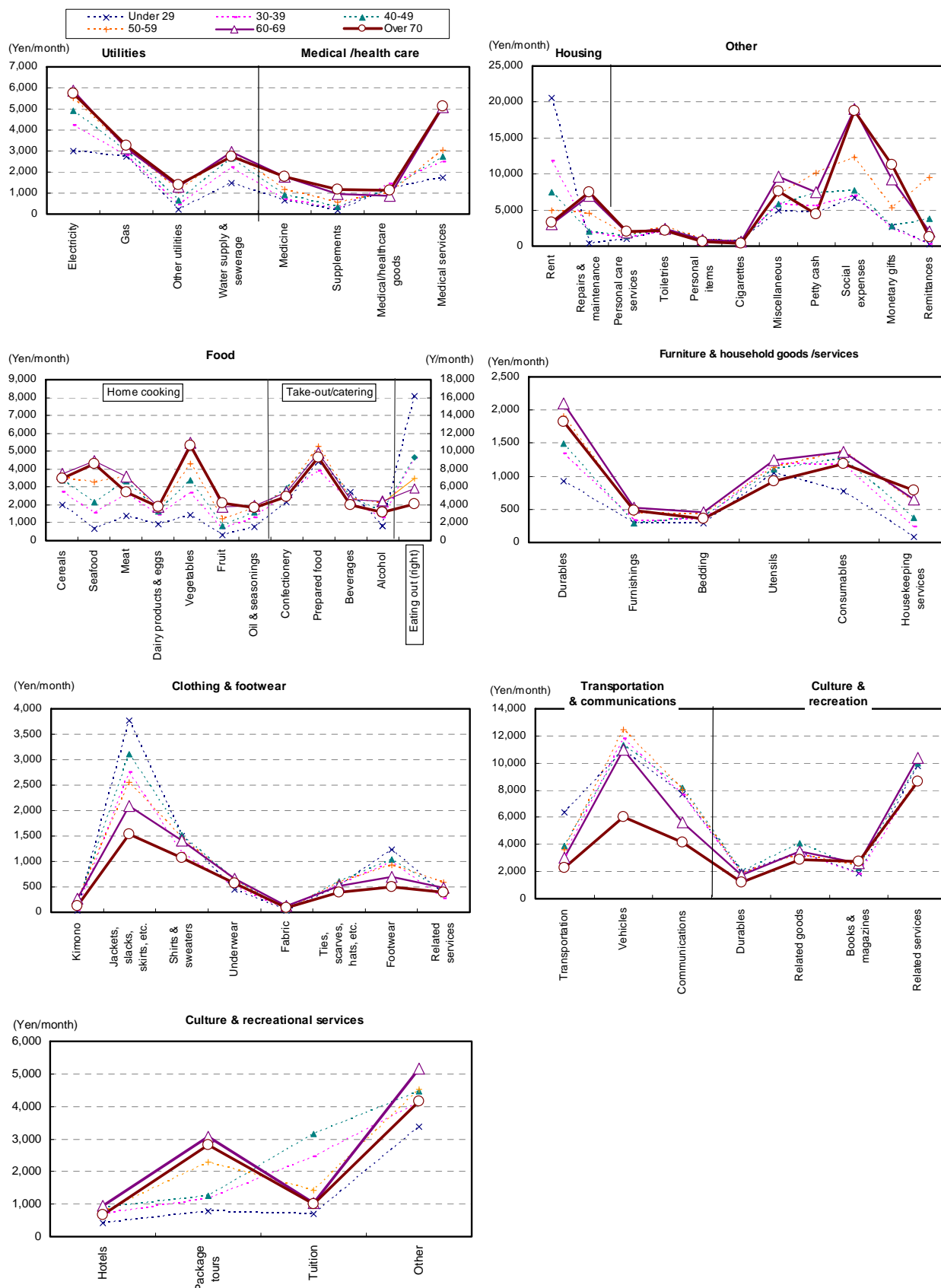
employment, or training]), and highly skilled human resources from abroad. Moreover, it will be important to provide a diverse range of places where workers as a whole can be retrained.

However, if existing employment and social systems/practices are left unchanged, unpaid household work, such as raising children and nursing care, will be an encumbrance, and it will be difficult to smoothly increase the supply of labor or to receive retraining. Thus, there will be a need to actively supply market-based goods and services that will reduce household work and enable such work to be outsourced.

Households are circumscribed by many restrictions. They include the restrictions of age and physical strength when people become very old, restrictions related to uncertainties about the future and about one's circumstances, and the restrictions of time and space. The desire for goods and services that will eliminate such restrictions is thought to be very strong. In fact, the use of mobile devices that free people from the restrictions of time and space is growing rapidly.

Consumption has generally increased in periods when employment and income environments improved. Given that such prospects cannot be hoped for in the short term, households are expected to prioritize the allocation of limited income toward limited consumption items. One priority area will be where the cost of household work weighs heavily. Consumption items also likely to see growing expenditures for the time being are prepared food/seasonings, electricity/heating/water supply, and daily necessities. Such growth will be enabled by elderly people with more free time spending more of their time at home, the growing desire for safety and security, and cohort-specific effects. Moreover, consumption akin to renewal investment is expected to increase, such as for health and maintenance (medical expenses, expenses related to repairs of owner-occupied homes, and social expenses). Corralling such demand that arises in a super-aged society will be extremely significant in promoting a growth strategy aiming to optimize Japan's industrial structure in accordance with demographic and environmental changes and to increase productivity.

Detailed Breakdown of Consumption Expenditure by Age of Household Head   **Chart 3.7**

Legend: Under 29 | 30-39 | 40-49 | 50-59 | 60-69 | Over 70

Utilities / **Medical /health care** (Yen/month)

Categories: Electricity, Gas, Other utilities, Water supply & sewerage | Medicine, Supplements, Medical/healthcare goods, Medical services

Housing / **Other** (Yen/month)

Categories: Rent, Repairs & maintenance, Personal care services, Toiletries, Personal items, Cigarettes, Miscellaneous, Petty cash, Social expenses, Monetary gifts, Remittances

Food (Yen/month) (Y/month)

Home cooking: Cereals, Seafood, Meat, Dairy products & eggs, Vegetables, Fruit, Oil & seasonings | Take-out/catering: Confectionery, Prepared food, Beverages, Alcohol, Eating out (right)

Furniture & household goods /services (Yen/month)

Categories: Durables, Furnishings, Bedding, Utensils, Consumables, Housekeeping services

Clothing & footwear (Yen/month)

Categories: Kimono, Jackets slacks skirts etc., Shirts & sweaters, Underwear, Fabric, Ties scarves hats etc., Footwear, Related services

Transportation & communications / **Culture & recreation** (Yen/month)

Categories: Transportation, Vehicles, Communications | Durables, Related goods, Books & magazines, Related services

Culture & recreational services (Yen/month)

Categories: Hotels, Package tours, Tuition, Other

Source: Ministry of Internal Affairs and Communications; compiled by DIR.
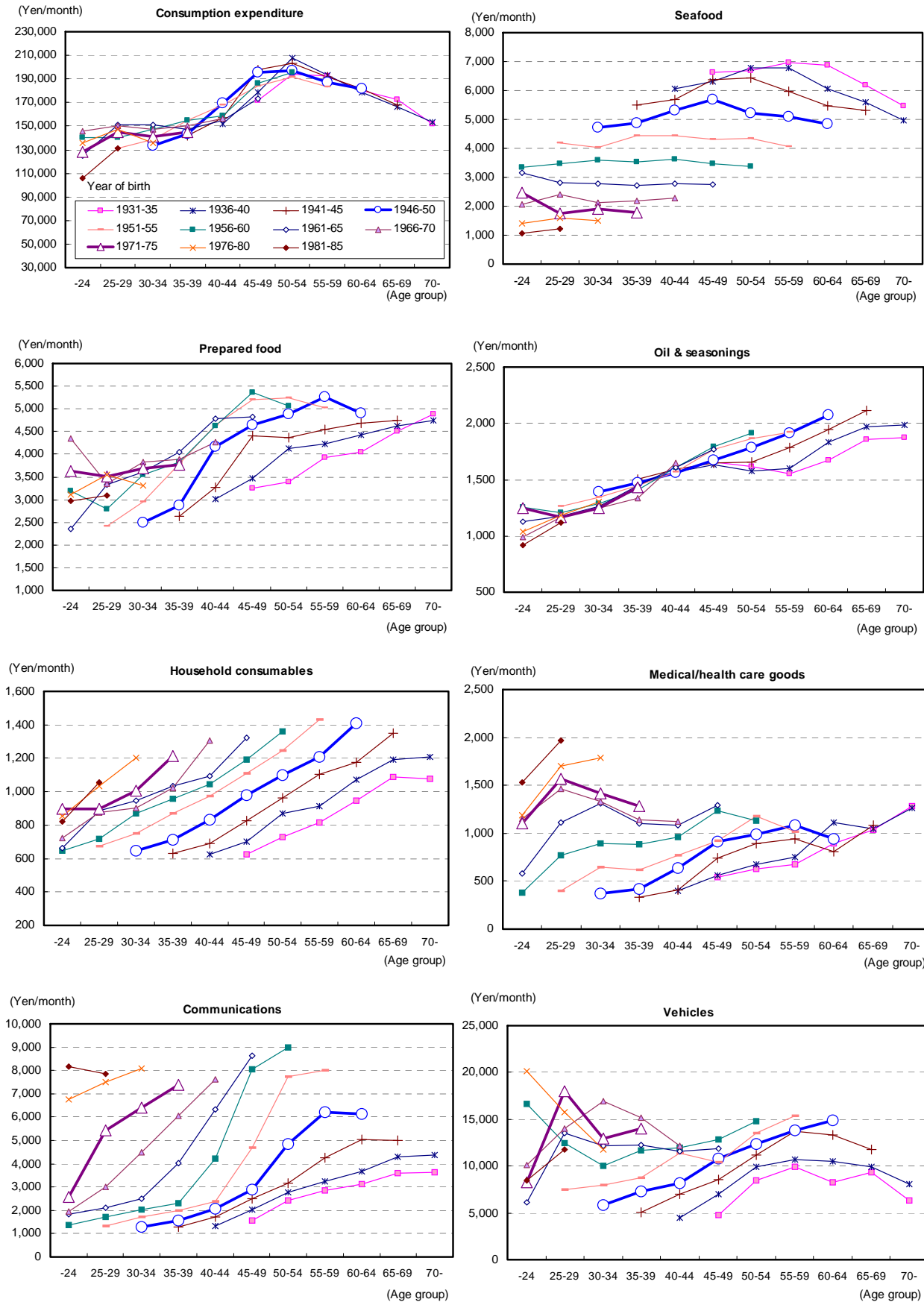Notes: 1) 2011 monthly avg; equivalent spending.
2) Two-or-more-person households nationwide for "Culture & recreational services"; other: all households.
3) "Social expenses" are overall and include "Monetary gifts" which are given to relatives/friends/colleagues to express congratulations, sympathy, and condolence.
4) "Remittances" are given to children living away from home and attending university/college, and used for tuition fees and living expenses.

Consumption expenditure

Seafood

Prepared food

Oil & seasonings

Household consumables

Medical/health care goods

Communications

Vehicles

Source: Ministry of Internal Affairs and Communications; compiled by DIR.
Note: 2011 monthly avg; all households; nationwide; equivalent spending.

4. A Weak Employment Structure Sees No Improvement

Japan's unemployment rate was 4.4% (SA) in May 2012 and is gradually improving. When viewed over a period of 20 years, however, the unemployment rate has experienced a secular rise. That is to say, an unemployment rate that trended at the 2% level to the first half of the 1990s rose to the 4% level in the second half of the 1990s and then trended at around 5%. Even during the longest postwar expansionary period that lasted about six years from January 2002, the unemployment rate improved no further than 3.6% (July 2007).

A high unemployment rate suggests that there are far larger numbers of constantly unemployed than before as a result of such structural factors as the labor market's diminished adjustment capacity (mismatching in terms of jobs and skills). A number of explanations have been cited for this situation in previous research. [13] In this section, we focus on two factors that are thought to be notably influencing the increase in the unemployment rate: (1) the downward rigidity of nominal wages and (2) the ascent of the ratio of non-regular employees. [14] Then, we examine the ways Japan's weak employment structure with a high ratio of non-regular employees is affecting personal consumption and housing investment based on the characteristics of the employment and consumption structure portrayed by employment categories.

4.1 Increase in the unemployment rate under deflation and growth of non-regular employees

4.1.1 Downward rigidity of nominal wages strengthens a tendency to adjust jobs rather than wages

The downward rigidity of nominal wages describes a situation where companies need to reduce the wages of employees because of declining earnings, but are unable to do so. A number of explanations are given for such a situation. For example, Bewley (1999)[15], from a survey of US companies, states that companies want to avoid reducing wages out of concern that this would erode employee morale. Kawaguchi and Ohtake (2004)[16] have reached a similar conclusion from a survey of Japanese companies in Japan's Chubu region.

Kuroda and Yamamoto (2005)[17] have offered a reason for the downward rigidity of nominal wages from the research results of behavioral economics. According to this view, people base their judgments not on absolute levels but on the deviation from reference points that they establish—here, in the case of a decrease being the same as an increase, people would feel the loss more strongly than the gain. Accepting this way of thinking, employees will use the wage level of their most recent payday as a

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13. An outlook derived from empirical research carried out since the 1990s is presented in Souichi Ohta, Yuji Genda, and Hiroshi Teruyama, "*1990 nendai iko no nihon no shitsugyo: tenbo*" (*Japan's unemployment since the 1990s: Outlook*), Bank of Japan Working Paper Series (February 2008).

14. In Isamu Yamamoto, "*Chingin chosei koyo chosei to firippusu kyokusen no henka—1990 nendai no henka to sono haikei*" (*Wage adjustments, employment adjustments, and changes to the Phillips curve: Changes in the 1990s and their background*), *Rodo shijo to shotoku haibun* (*Labor markets and income allocation*) vol. 6 ch. 2, Keio University Press (June 2009), the appearance of the downward rigidity of wages, the slow speed of employment adjustments, and the waning of the discouraged worker effect are offered as causes for the unemployment rate remaining high since the 1990s.

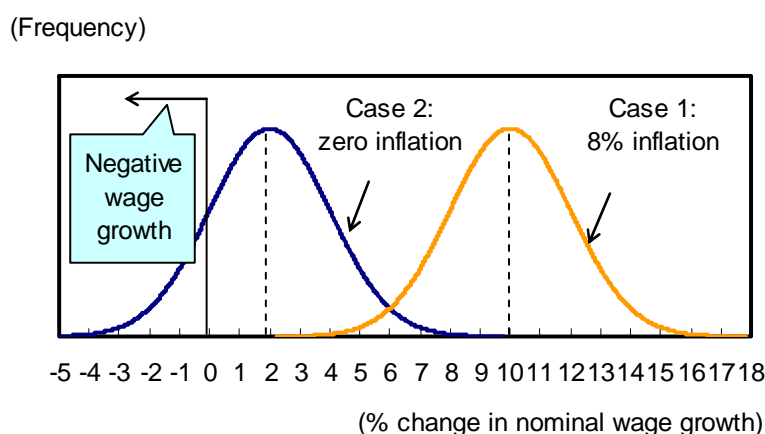15. Truman F. Bewley (1999), *Why wages don't fall during a recession*, *Harvard University Press.*

16. Daiji Kawaguchi and Fumio Ohtake (2004), *Testing the Morale Theory of Nominal Wage Rigidity,* Institute of Social and Economic Research, Osaka University.

17. Sachiko Kuroda and Isamu Yamamoto, "*Naze meimoku chingin niwa kaho kochokusei ga ari, waga kuni dewa sono doai ga chiisai no ka?: kodo keizaigaku to rodo shijo tokusei makuro keizai kankyo no chigai ni yoru setsumei*" (*Why are nominal wages downwardly rigid and why is this rigidity small in Japan?: An explanation based on behavioral economics and on differences in labor market characteristics and the macroeconomic environment*), Bank of Japan Institute for Monetary and Economic Studies Discussion Paper Series (August 2005).

reference point and will feel wages being reduced below that level as being enormously unfair. Employees, however, may be willing to accept wage decreases, feeling them as fair, when they believe the company is doing poorly. Thus, the downward rigidity of nominal wages is not observed at all times. When viewed together with other research, the downward rigidity of nominal wages has been observed in Japan and abroad, and the degree of this rigidity is said to differ by nation and period.

When the downward rigidity of nominal wages exists at a time when inflation is low or when deflation has taken hold, the adjustment of wages will become all the more difficult. To explain this situation, we developed a chart based on a simple hypothesis. Chart 4.1 is a distribution map of companies, with frequency (the number of companies) along the vertical axis and change in nominal wages along the horizontal axis. The two bell curves represent the normal distribution of real wages increasing an average of 2% with a standard deviation of 2%. Higher points along the curve indicate a higher number of companies. The rate of inflation, however, differs between the two curves. In Case 1, the inflation rate is 8% (the average growth rate of nominal wages is 2%+8%=10%) and in Case 2 it is 0% (2%).

Conceptual Image of Downward Wage Rigidity   Chart 4.1

(Frequency)

Case 2: zero inflation

Case 1: 8% inflation

Negative wage growth

-5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

(% change in nominal wage growth)

Source: IMF, *1999 World Economic Outlook*; compiled by DIR.
Note: Normal distributions of nominal wages for the scenario of 2% real GDP growth on average and a standard deviation of 2 percentage points.

Let us now assume that companies need to adjust labor costs. In Case 1, since the inflation rate is high, no company will need to reduce the level of nominal wages, and companies will be able to adjust real wages by holding the increase of nominal wages below the inflation rate. For this reason, the downward rigidity of nominal wages will have only a limited effect at the macro level. In Case 2, where the inflation rate is zero, the rate of increase of nominal wages and that of real wages are equal. For those companies whose nominal wages are not rising, they will need to reduce the level of nominal wages. When the number of such companies is large, the effect of the downward rigidity of nominal wages will strengthen at the macro level. If nominal wages cannot be reduced, under deflationary conditions real wages will remain high, and companies will seek to reduce labor costs by adjusting employee levels. As a result, the number of employees will decrease, and the unemployment rate will rise.

The inflation rate fell to around zero in the mid-1990s in Japan, and mild deflationary conditions have persisted for the most part from around 1998 to the present. It may be through such a process that companies leaned further toward adjusting labor costs through employee levels compared to the past. Chart 4.2 plots the Phillips curve with the unemployment rate along the horizontal axis and CPI rate of

change along the vertical axis. In textbook terms, the Phillips curve is said to become vertical in the long term. However, fitting a regression line to a scatter plot of the last 30 years reveals a non-linear relationship. The positions of the plots for each decade indicate that the Phillips curve was nearly vertical from the 1980s to the first half of the 1990s, after which it flattened. The flattening suggests the possibility of a growing tendency to adjust labor costs through employee levels rather than through nominal wages, which is thought to explain why the downward rigidity of nominal wages since the 1990s has elevated the unemployment rate.

Non-linear Phillips Curve　　　　　　　　　　　　　　**Chart 4.2**
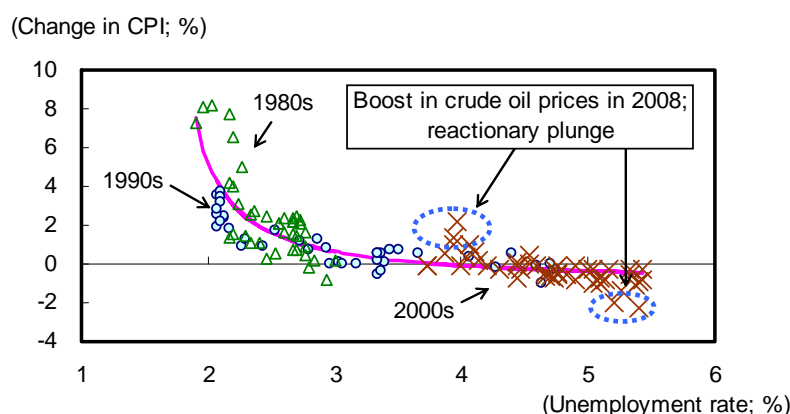
(Change in CPI; %)

Source: Ministry of Internal Affairs and Communications; compiled by DIR.
Note: Non-linear Phillips curve function defined as follows:
　　(% change in CPI) = -1.06 + 2.32 x (1 / [unemployment rate – 1.63]).
　　Estimation period: Jan-Mar 1980 to Jan-Mar 2012.
　　Significance of all coefficients: 1%.

4.1.2 Non-regular employee ratio and secular rise of the structural unemployment rate

In the 1990s, despite the rapid worsening of Japan's economy from the collapse of an asset bubble, companies continued to expand payrolls, centering on regular employees (Chart 4.3). During this period, with the institution of two-day weekends, total hours worked per employee fell, but real wages compared to labor productivity continued to rise to the mid-1990s owing to such factors as lackluster company earnings, excess employment, and the downward rigidity of nominal wages (Chart 4.4). Real wages remained at a high level to about 1998. Then, with the Asian currency crisis in summer 1997 and financial system uncertainties in autumn 1998 deflating company earnings, deep adjustments were made to regular employee levels from 1998 to 2004 (line graph of Chart 4.3). According to Kuroda and Yamamoto (2006), while the downward rigidity of nominal wages was observed from around 1992 to 1997, it was not observed after 1998.[18] The sharp worsening of corporate earnings is thought to have promoted deep adjustments to the level of regular employees. However, according to the analysis of Yamamoto (2007), the downward rigidity of nominal wages is still found for regular wages in the 2000s.[19]

From 1998 to 2004, major adjustments were made to the number of regular employees. The decline in regular employees was mainly seen in the manufacturing and construction industries, and the brunt of

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18. Sachiko Kuroda and Isamu Yamamoto, "*Defure ka no chingin hendo: meimoku chingin no kaho kochokusei to kinyu seisaku*" (*Wage fluctuations under deflation: The downward rigidity of nominal wages and monetary policy*), University of Tokyo Press (September 2006).
19. Isamu Yamamoto, "*Defure dakkyakuki ni okeru chingin no shinshukusei—kokusai hikaku no kanten kara—*" (*Wage elasticity when deflation is ending: an international comparison*), Mita Shogaku Kenkyu (Mita Business Review) 50 (5), (December 2007), Keio University.

adjustments fell on male employees aged 40 years and older. The number of regular employees contracted by 2.78 million for all industries from February 1999 to 2004. During this period, regular employees fell by 1.6 million in the manufacturing industry and by 570,000 in the construction industry. Meanwhile, non-regular employees who experienced a pronounced change were temp staff (full-time non-regular workers with direct contracts or those dispatched from staff agencies), whose numbers grew by 2.67 million. Temp staff increased mainly in the non-manufacturing sector, such as the service and wholesaling/retailing industries. The growth of non-regular employment has such positive attributes as more diverse employment opportunities and a greater employment adjustment capacity for the economy as a whole. However, if non-regular employment exceeds a certain level, its aspect as fragile employment fraught with future uncertainties will come to the fore.
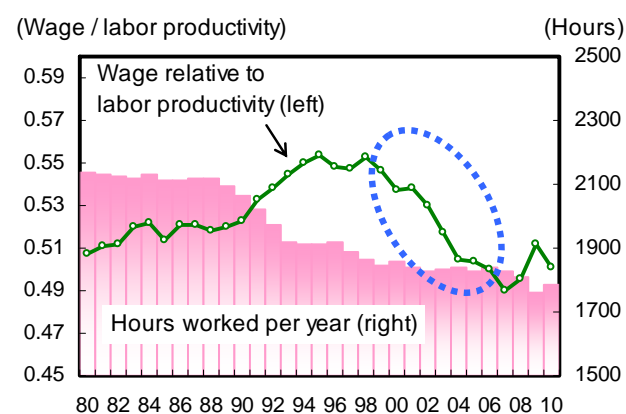

No. of Employees (Change from 1990)   **Chart 4.3**
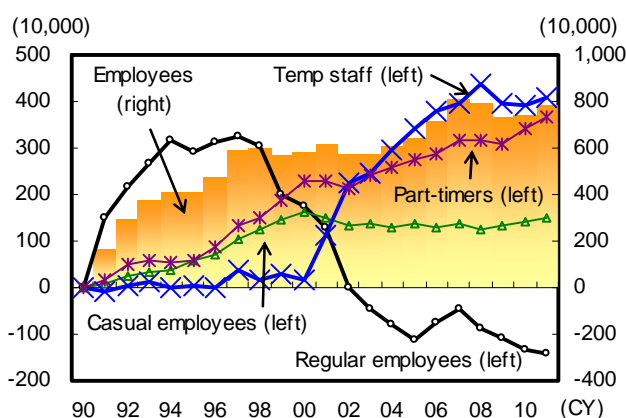
Source: Ministry of Internal Affairs and Communications; compiled by DIR.
Notes: 1) Excl. executive officers.
2) Temp staff=full-time non-regular workers with direct contracts or those dispatched from staff agencies.
3) Casual employees=ad hoc workers.

Wages Relative to Hours Worked   **Chart 4.4**

Source: Cabinet Office; compiled by DIR.
Note: Wage=man-hours and in real terms.

Japanese companies have a strong tendency for labor hoarding (retaining employees even in bad economic times), and they frequently adjust employee levels by soliciting voluntary separation. This is the case for regular employees, and people hired as such employees can work in a relatively stable environment. In contrast, people who have shifted from regular to non-regular positions or people who have begun working as non-regular employees are constantly exposed to the risk of losing their jobs because of cyclical factors. Also, even if they desire to transfer to a regular position, opportunities for doing so are limited, and if they are low skilled, changing jobs will be difficult. Under current conditions where regular employment does not increase and only non-regular employment increases, mismatching between jobs and skills is widening as periods of unemployment lengthen.
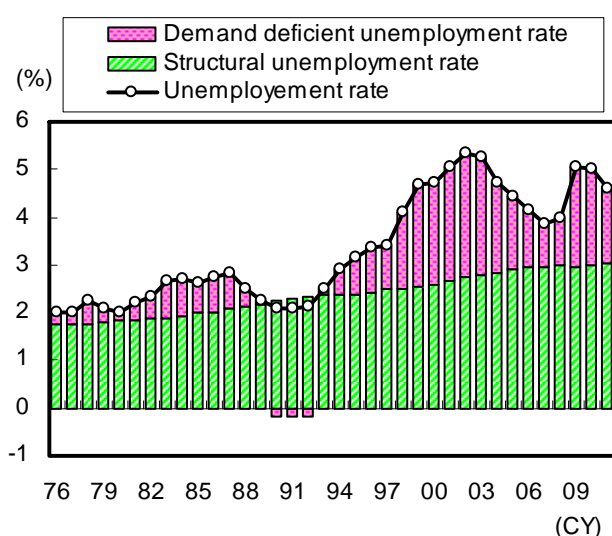
Chart 4.5 provides a factor analysis of the unemployment rate in terms of mismatches and other structural factors (structural unemployment rate) and factors that change with the business cycle (demand deficient unemployment rate). We can see in the chart that the demand deficient unemployment rate has fluctuated while the structural unemployment rate has experienced a secular rise. In 2011, the structural unemployment rate was estimated at 3.0%, about two-thirds of the entire unemployment rate. Until the mid-1990s, structural factors accounted for most of the unemployment rate and the structural rate was low at around 2%. Thus, the overall unemployment rate trended at a low level. In subsequent years, however, the demand deficient unemployment rate rose rapidly, and the structural unemployment rate also increased gradually. As a result, the overall unemployment rate has held to a high level.

The long-term unemployed (people who have been unemployed for one year or more) as a percentage of the total unemployed is trending upward in line with the non-regular employee ratio (Chart 4.6). In 1996, the percentage of the long-term unemployed was 19.3%, a figure that doubled to 39.4% in 2011. This is a high percentage compared to the OECD average (33.6%). What kinds of work do the long-term unemployed desire? In the *2010 Labor Force Survey* (Ministry of Internal Affairs and Communications), of those desiring employed positions, 64% wanted regular employment. The long-term unemployed desiring regular employment as a percentage of the total unemployed is trending upward and has risen 9 percentage points from 29% in 2002, when the statistic began to be compiled, to 38% in 2010. While many of the long-term unemployed desire regular employment, since demand for regular employees remains sluggish, it is difficult for them to find the positions they desire, prolonging periods of unemployment.
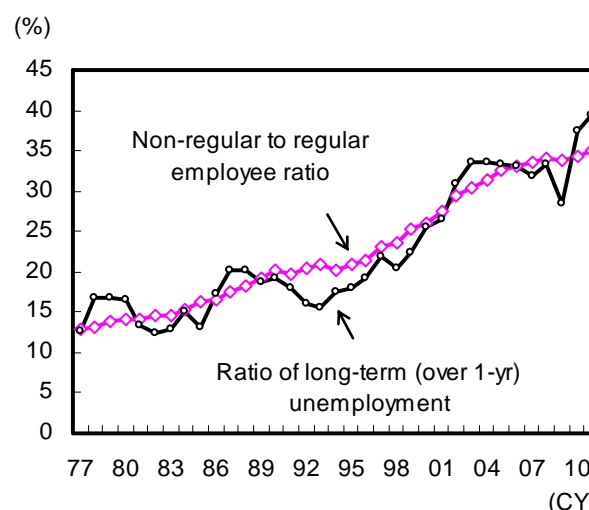
Breakdown of Unemployment	Non-regular Employee Ratio and
Chart 4.5	Long-term Unemployment Ratio Chart 4.6

Source: OECD; Ministry of Health, Labour, and Welfare; Ministry of Internal Affairs and Communications; compiled by DIR.
Notes: 1) DIR estimate based on UV-curve over the 1976-2011 period with 1% significance of coefficients, logarithmic variables as follows:
Employee-based unemployment rate = −0.42 x (vacancy rate) + 0.22 x (non-regular worker ratio) + 0.80 x (employee-based unemployment rate one quarter previous).
2) Structural unemployment rate defined as unemployment rate where employee-based unemployment rate matches vacancy rate. Non-regular worker ratio through 1983 estimated referring to changes in the short-term worker ratio.

Many workers, centering on young people with weak economic capacity, accept non-regular positions even though such jobs fall short of providing the livelihood they desire. Chart 4.7 illustrates changes in the non-regular employee ratio (from 2002 to 2011). While the ratio has increased for all age groups, it has risen notably for young workers (between the ages of 15 and 34) and older workers (55 or older). The ascent of the ratio for older workers reflects the effect of the pension eligibility age being raised and such workers being rehired as non-regular employees. When the effect of this systemic change is excluded, the ratio is found to be increasing for young workers (particularly men). Chart 4.8 shows the results of the Ministry of Health, Labour, and Welfare questioning young non-regular workers about the sorts of jobs they would like to have in the future. The percentage of those desiring to transfer to regular positions is the highest for both men and women. About 70% of male workers desire regular employment. In the case of women, a high percentage wished to continue working as non-regular employees. One of the advantages of non-regular employment is greater flexibility in balancing work with one's lifestyle. Many women are thought to choose non-regular positions for this reason.
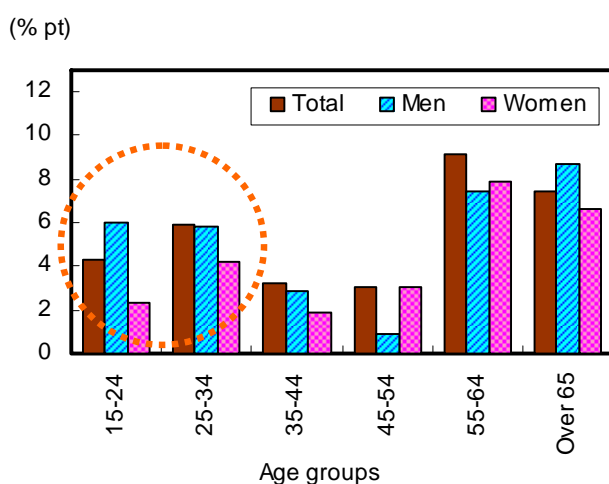
The lengthening period of unemployment and young men being reluctantly employed in non-regular positions draw our attention to the problem of an employment structure where non-regular

employment is being forced to assume the role taken by regular employment in household finances. Previously, family members other than the head of the household often chose non-regular jobs that matched their lifestyles, and even if they lost these jobs in economic downturns, the income of the head of the household provided a safety net. Currently, although heads of households may desire regular employment, many are forced to accept non-regular positions with less job security since demand for regular employees is weak. For such households, if jobs are lost during economic downturns, daily life will be immediately affected. The growing numbers of those unable to adequately prepare against unemployment risk and the difficulty of transferring to regular positions from being unemployed or in non-regular employment have become structural problems for Japan's economy.
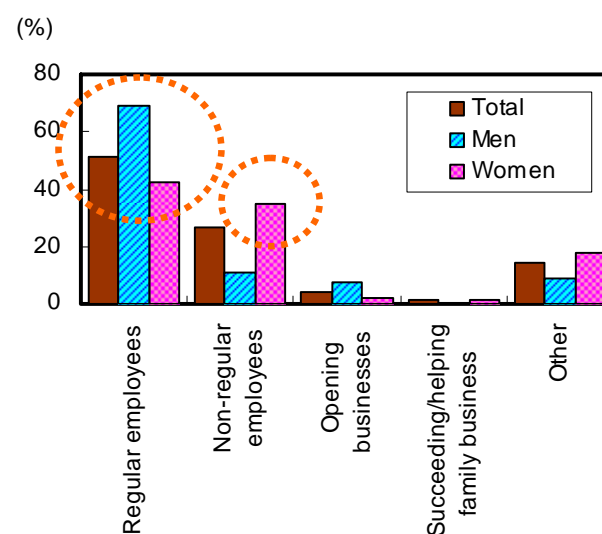
Non-regular Employee Ratio (Change from 2002 to 2011) **Chart 4.7**	Positions Non-regular Employee Would Like (Non-regular workers aged 15-34) **Chart 4.8**

Note: As of 1 Oct 2009 (MHLW survey).

Source: Ministry of Internal Affairs and Communications; Ministry of Health, Labour, and Welfare (MHLW); compiled by DIR.

4.2. Adverse impact of a weak employment structure on the economy
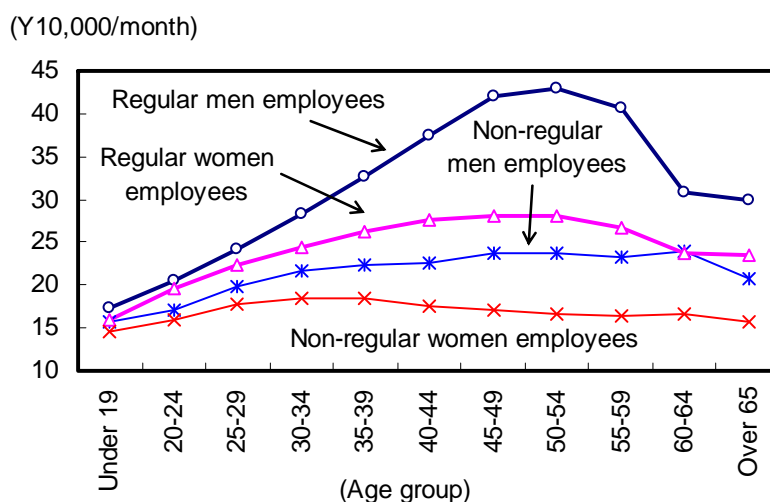
4.2.1 A wage curve that differs greatly by employment category

Non-regular employees face the constant risk of losing employment opportunities. In addition, the longer they stay in non-regular positions, the lower their lifetime wages become compared to regular employees. Since the 1990s, regular employee earnings, while fluctuating according to the business cycle, have been largely flat on average at the macro level. During this period, the number of regular employees declined, the number of non-regular employees increased, and the number of employees grew overall. As a result, the number of high income earners with low employment risk has fallen, and the number of low income earners with high employment risk has climbed. Currently, more than one in three employees is a non-regular employee. Also, 16% of working households have heads of households who are non-regular employees (*2009 National Survey of Family Income and Expenditure*, Ministry of Internal Affairs and Communications; all households). Extrapolating from such data, it is reasonable to think that the impact of changes in the employee structure on personal consumption and housing investment has grown to the point where it can no longer be ignored.

How much do wages differ between regular and non-regular employees? Chart 4.9 portrays wage curves (2011 regular pay basis) for men and women in different employment categories. Under the seniority-based pay scale that is widely used in Japan, young workers receive wages that are less than their value of marginal product (contribution to the company when they work for a certain period). As

these workers become older, they receive wages that exceed their value of marginal product. The chart indicates that the wage curve of male regular employees rises steadily, peaking for the age range of 50 to 54 (Y429,000 per month). In contrast, the wage curve of male non-regular employees has a much more gradual slope. This slope becomes nearly flat when they reach their 30s, after which their monthly wages remain between Y200,000 and Y250,000. Assuming the wage curves of the chart, a simple arithmetic calculation shows that the lifetime wages of a male employee working from the age of 20 to 64 would be Y180 million for regular employees and Y120 million for non-regular employees, a difference of about Y60 million. Moreover, since this is the sum of regular pay, performing the same calculation for annual wages including overtime pay and bonuses yields a difference of around Y100 million.

Wage Curve by Gender and Position　　　　　　　**Chart 4.9**

(Y10,000/month)

Regular men employees

Regular women employees

Non-regular men employees

Non-regular women employees

(Age group)

Source: Ministry of Health, Labour, and Welfare; compiled by DIR.
Note: 2011 regular payment.

4.2.2 Non-regular employees seek to curb spending on non-essential, non-urgent items

Differences in the wage level and employment risk between regular and non-regular employees have a direct impact on consumption behavior. Chart 4.10 compares the employment income and net savings of regular and non-regular employees. Since consumption behavior is strongly influenced by such attributes as household members or gender, we compared males of one-person households. Figures in parentheses after the employment category represent average ages. Since each employment category is of a similar age, it should be possible to make comparisons without being overly concerned about the effect of age differences.

As can be seen in the chart, the income of non-regular employees, such as part-time and temporary employees, is quite low compared to regular employees. Regular employees earn about Y350,000 per month, but part-time employees earn about half that at Y170,000 per month. For households below 30 years old, the difference between non-regular and regular employees is about Y30,000. This difference in wages, however, widens as employment periods lengthen since the wage curve of non-regular employees has a much more gradual slope than that of regular employees. The difference in income also appears as differences in net savings. While regular employees have net savings of about Y4.5 million, part-time employees have about Y1.6 million and temporary employees about –Y0.7 million. The net savings of temporary employees are negative since more temporary employee households are paying down housing loans than part-time employees despite their low savings. In the case of the net savings of employees below 30 years old, part-time employees have more savings than regular

employees. Although they earn less, part-time employees are curtailing consumption to save more. Also, since part-time employees refrain from such large expenditures as automobile loans and housing loans, their low level of liabilities is contributing to increase savings. What this clearly shows are efforts to set aside savings for a rainy day.

Single Man Household Income and Net Financial Assets	Chart 4.10
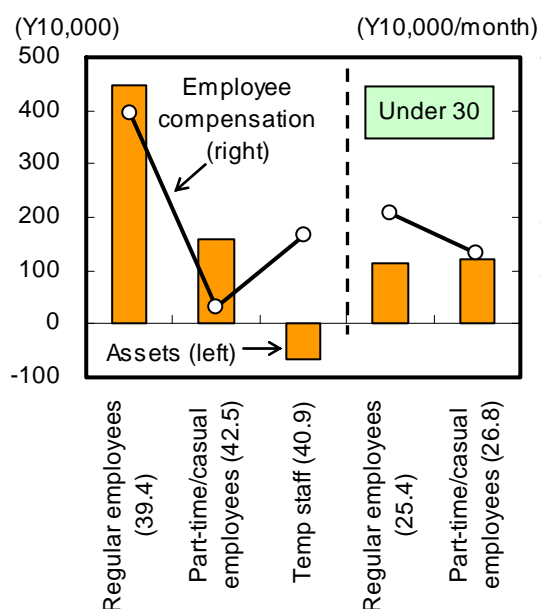
Single Man Household Spending	Chart 4.11
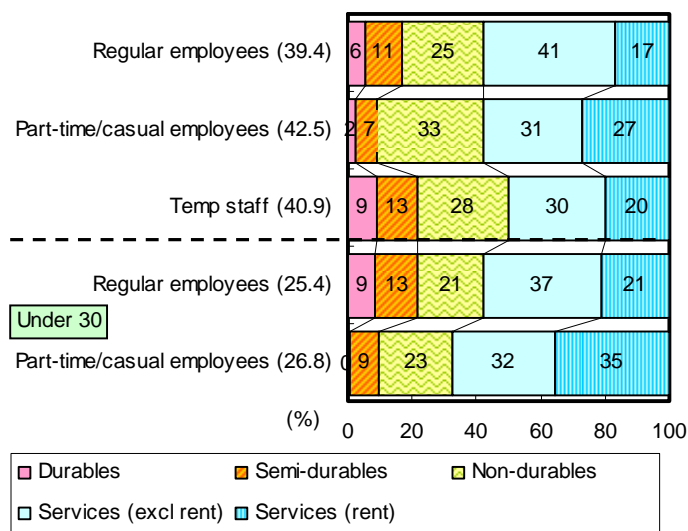
Source: Ministry of Internal Affairs and Communications, *2009 National Survey of Family Income and Expenditure*; compiled by DIR.
Notes: 1) Figures in parentheses are average ages. Data for workers aged under 30 dispatched from staff agencies not available.
2) Temp staff=full-time non-regular workers with direct contracts or those dispatched from staff agency.
3) Casual employees=ad hoc workers.

Chart 4.11 offers a breakdown of consumption by goods and services. Compared to regular employees, the proportion of non-durables (food but excl. eating out, daily necessities) is higher and that of durables (automobiles, household appliances, IT products) is lower for part-time employees. The consumption value of non-durables is high due to a significant proportion of food expenditures (excl eating out), meaning that part-time employees have more opportunities to eat at home than regular employees. Consumption value is small for a broad range of durables, and the proportion of expenditures on automobiles is particularly low. The proportion of expenditures on overall services (incl. rent) is the same as regular employees (on all age basis). Of expenditures on services, however, the proportion for rent is higher and that for expenditures other than rent is lower. This is a reflection of the relatively high percentage of part-time employee households paying rent. They are curbing income-elastic expenditures on recreational services like travel and eating out. A distinguishing feature of temporary employees is also their low level of expenditures on services other than rent compared to regular employees. Taken together, non-regular employees restrain to a great degree expenditures on non-essential and non-urgent items compared to regular employees, and the proportion of expenditures on daily necessities is high. Also, since their income is low and they have insufficient savings, the proportion of non-regular employees purchasing homes is less than that for regular employees, and the proportion of rent in consumption expenditures is high for non-regular employees.

Given these characteristics, the ascent of the non-regular employee ratio in recent years is believed to be increasing demand for daily necessities and reducing demand for non-essential and non-urgent items. Since most high value-added (high profit margin) goods and services are non-essential and non-urgent, companies are finding themselves in an environment where profits are all the more difficult to

realize. The purchase of housing requires stable income, and the increase in the non-regular ratio may be adversely affecting such purchases even more than durables and services. Also, the growing number of households setting aside savings because of future uncertainties despite having low incomes may have increased the price elasticity of demand on average. This may be one reason why private label products and inexpensive but highly functional apparel are selling well (apparently exhibiting considerable immunity to the business cycle) and also why the eco-point program and green car tax breaks and subsidies were more successful than initially imagined. This situation might be understood as one where companies can readily increase sales volume by lowering prices. However, if companies maintain a sales approach centering on price reductions, sales volume will stall once they can no longer maintain the rate of price cut, and they may no longer be able to realize profits. Such a deflationary approach to sales will induce companies to shift to non-regular employees to adjust labor costs, centering on the service industry and retail industry where labor costs account for a large proportion of operating expenses. This will further undermine an already weak employment structure and constrain the growth of personal consumption and housing investment.

4.2.3 Improving a weak employment structure

One way to begin to improve Japan's weak employment structure is to expand regular employment again in the manufacturing and construction industries where such employment continues to decline. This will not be easily achieved. Regular employment has the potential of increasing in the manufacturing industry if exports expand on a stable basis. The terms of trade, however, have continued to worsen from the yen's successive appreciation and from the ascent of resource prices, and massive efforts are required of exporting industries just to maintain international competitiveness. Moreover, the number of regular employees hoarded through employment adjustment subsidies is thought to be quite large. Given this situation, there is little reason to hope that regular employment will increase, at least not in the short term.

In the medium term, however, if the government promotes the conclusion of free trade agreements and measures to deal with deflation and a strong yen, it is reasonable to think that exports will grow and that the profitability of domestic production will improve for the manufacturing industry. This, in turn, will strengthen job creation capacity and contribute to the growth of regular employment. As noted in Section 1, companies advancing overseas has the effect of increasing exports for industries such as the electrical machinery industry. Thus, offshoring does not necessarily lead to the hollowing out of industry. Also, as discussed in our previous forecast, a general relationship is seen in the world where large exporting nations also make large foreign direct investments. Germany and South Korea, Japan's competitors in world markets, have increased both exports and foreign direct investments. Meanwhile, the rebuilding of social infrastructure, such as renewable energy generation, smart cities, and compact cities, will promise the stable supply of electricity and the provision of efficient public services. These changes can also be expected to increase the profitability of the construction industry where company earnings are suffering from the slowing of public works projects.

There is also a need to develop an environment that will make it easy for labor to move to such service industries as health care and long-term care where there is a huge capacity for job creation. Wages are usually difficult to increase in labor-intensive industries with low productivity. However, it should be borne in mind that the labor productivity of Japan's service sector is less than that in the US and there is room to increase productivity. In other words, it will be necessary to spur the shift of labor and at the same time, to increase productivity in the service sector through greater IT investments and higher IT usage.

Finally, it will be important to create a system that lowers the barrier between regular and non-regular employment. What is needed is a process where the risk of unemployment is shared by society as a whole rather than having it fall exclusively on some segments of the population. Specifically, the

current termination system for regular employees could be made more flexible, and the compensation of non-regular employees could be improved. How to balance a more flexible termination system and improved compensation for non-regular employees will require a national debate. For example, the practice of downsizing employees by reducing non-regular employees should be terminated so as to reduce the unemployment risk attaching to non-regular employees. Another possibility is to lower the corporate contribution to employee social insurance premiums (benefits only for those satisfying certain conditions), and, instead, to increase corporate tax to create a system where society as a whole supports the social security of workers. This would reduce the employment costs of companies, which can be expected to increase their interest in hiring regular employees. In promoting such systemic reforms, all citizens, including regular employees, will need to face up to the risk of unemployment, and labor unions, the business world, and the government will need to engage in a vigorous debate on balancing greater employment flexibility and shorter unemployment periods.

5. Overview of Model and Simulation Results

In this section, we provide an overview of DIR's medium-term macroeconomic model and discuss the effects on Japan's economy under four different scenarios, including a consumption tax hike.

The DIR medium-term macroeconomic model comprises roughly 450 equations (of which about 70 are estimating equations) and about 650 variables (of which about 200 are exogenous variables). An overview of the model is shown in Chart 5.1. If real GDP changes, the GDP gap (rate of deviation between potential GDP and actual GDP) changes, which affects prices and short-term interest rates, the effects of which will, in turn, spread to other areas, such as financial markets. Such a change in each variable occurs simultaneously and the expected value of each variable is generated by running the model. We treated foreign economic and demographic data as exogenous variables—for instance, the future values of global GDP reflect IMF and DIR forecasts. Mainly for demand components, the estimating equations incorporate not only variables that explain short-term changes (impact of employee compensation on consumer spending) but also terms that adjust deviation from long-term equilibrium based on economic theory.

In *Japan's Medium-term Economic Outlook: July 2012*, we made revisions to the model's structure and estimating equations, factoring in *National Accounts for 2010* (Cabinet Office) and reflecting a change in the benchmark year to 2005. Regarding model structure and estimating equations for the social security sector, we have also taken account of effects of the government's Comprehensive Reform of Social Security and Taxation Systems.

Conceptual Image of Daiwa's Medium-term Macroeconomic Model   **Chart 5.1**
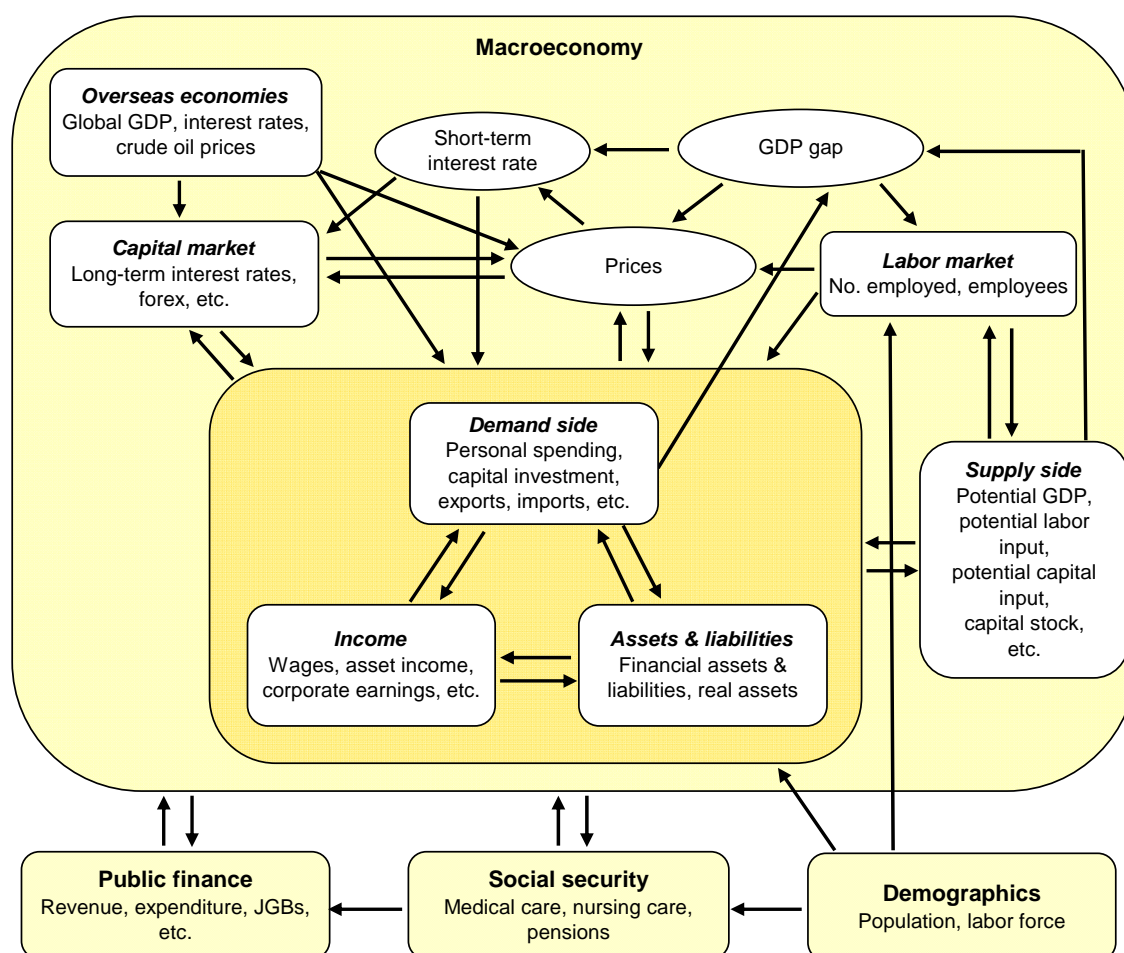
Source: Compiled by DIR.

Using DIR's medium-term macroeconomic model, we carried out simulations to determine the effect on the real economy of four scenarios: (1) a 1%-pt hike in the consumption tax; (2) a 10% rise in the import prices of crude oil; (3) a 10% appreciation of the yen against the dollar; and (4) a 1%-pt rise in the long-term interest rate. The results are shown in Chart 5.2. There are some points to consider when interpreting simulation results. Figures in Chart 5.2 show the degree of impact on each component and represent deviation from the standard scenario (what would have occurred in the absence of the event simulated in each scenario). For example, the chart shows that if the consumption tax is raised 1% point, the effect on real GDP is –0.22% in the first year and –0.28% in the second year. This means that real GDP will be 0.22% lower in the year when the consumption tax rate is raised than it would otherwise have been, and that it will be another 0.06%-point lower (–0.28% minus –0.22% lower) in the second year. Deviations are shown in percentages, except those for interest rates and those measured as % of nominal GDP, which are shown in percentage points.

Next, it is assumed that the short-term interest rate is in positive territory when any of the four scenarios arises. The short-term interest rate is currently zero, and if the economy is adversely impacted under such circumstances, the adverse effect would be exacerbated to the degree that the short-term interest does not decline. Because these simulations are performed based on the assumption that there is room for the short-term interest rate to decline, when there is a negative impact on the economy the short-term interest rate will simultaneously decline, leading to a decline in the long-term interest rate, and this will have the effect of buoying the economy through a weaker yen and increased investment.

Lastly, simply multiplying simulation results by a constant to change the alternative conditions did not yield substantially different results. For example, when we performed a simulation for a 5%-pt rise rather than a 1%-pt hike in the consumption tax, the resulting real GDP deviation was –1.42% in the fifth year. This is close to 5X the deviation (–0.32% x 5 = –1.60%) shown for the fifth year in the first scenario presented in Chart 5.2. Accordingly, by simply multiplying the simulation results by a constant that corresponds to the desired condition, it is possible, to some degree, to grasp the effect on the real economy.

Simulation Results | Chart 5.2

(1) 1%-pt hike in consumption tax rate (deviation from standard scenario; %, %pt)

	Real GDP	Private final consumption	Private housing investment	Private capital investment	Government final consumption	Public fixed capital formation	Exports	Imports	Nominal GDP	GDP deflator	Potential GDP	GDP gap
1st year	-0.22	-0.47	0.00	0.07	-0.40	0.35	0.00	-0.64	0.42	0.64	-0.08	-0.14
2nd year	-0.28	-0.45	-0.39	0.11	-0.44	0.46	0.01	-0.36	0.39	0.68	-0.10	-0.18
3rd year	-0.31	-0.48	-0.57	-0.05	-0.31	0.52	0.05	-0.30	0.34	0.65	-0.11	-0.21
4th year	-0.33	-0.53	-0.71	-0.17	-0.28	0.54	0.12	-0.33	0.27	0.59	-0.11	-0.21
5th year	-0.32	-0.57	-0.77	-0.14	-0.28	0.52	0.19	-0.35	0.20	0.52	-0.11	-0.21

	Unemployment rate	Y/$	CPI	Short-term interest rate	Long-term interest rate	Current balance	Fiscal balance	Primary balance
							(Central & local governments)	
							(% of nominal GDP)	
1st year	0.03	0.21	0.73	-0.09	-0.05	0.10	0.32	0.32
2nd year	0.06	0.42	0.73	-0.11	-0.07	0.07	0.45	0.44
3rd year	0.07	0.64	0.71	-0.15	-0.09	0.08	0.46	0.44
4th year	0.08	0.82	0.67	-0.16	-0.09	0.10	0.46	0.43
5th year	0.08	0.96	0.61	-0.18	-0.10	0.12	0.48	0.44

(2) 10% rise in oil import prices (deviation from standard scenario; %, %pt)

	Real GDP	Private final consumption	Private housing investment	Private capital investment	Government final consumption	Public fixed capital formation	Exports	Imports	Nominal GDP	GDP deflator	Potential GDP	GDP gap
1st year	-0.06	0.00	0.00	-0.15	-0.09	0.10	0.00	0.17	-0.33	-0.27	-0.02	-0.04
2nd year	-0.07	-0.10	0.31	-0.24	0.01	0.10	0.00	-0.13	-0.13	-0.06	-0.03	-0.04
3rd year	-0.07	-0.08	-0.40	-0.12	-0.01	0.10	0.03	-0.05	-0.12	-0.05	-0.03	-0.04
4th year	-0.05	-0.06	-0.27	-0.11	-0.03	0.07	0.07	-0.01	-0.11	-0.06	-0.03	-0.03
5th year	-0.03	-0.04	-0.08	-0.07	0.02	0.02	0.09	0.00	-0.09	-0.07	-0.02	-0.01

	Unemployment rate	Y/$	CPI	Short-term interest rate	Long-term interest rate	Current balance	Fiscal balance	Primary balance
							(Central & local governments)	
							(% of nominal GDP)	
1st year	0.01	0.06	0.00	-0.02	-0.01	-0.35	-0.10	-0.09
2nd year	0.01	0.16	-0.03	-0.05	-0.03	-0.04	-0.03	-0.03
3rd year	0.01	0.27	-0.06	-0.07	-0.04	0.01	-0.01	-0.01
4th year	0.01	0.26	-0.07	-0.04	-0.02	0.01	0.00	0.00
5th year	0.01	0.18	-0.07	-0.01	-0.01	0.01	0.01	0.00

Source: Compiled by DIR based on DIR's medium-term macroeconomic model.

(3) 10% appreciation of the yen against the dollar (deviation from standard scenario; %, %pt)

	Real GDP	Private final consumption	Private housing investment	Private capital investment	Government final consumption	Public fixed capital formation	Exports	Imports	Nominal GDP	GDP deflator	Potential GDP	GDP gap
1st year	0.03	-0.10	0.00	0.02	0.12	-0.05	0.00	-0.36	-0.07	-0.10	0.01	0.02
2nd year	-0.32	-0.11	-0.47	-1.27	0.01	0.52	-2.10	-1.48	-0.37	-0.04	-0.12	-0.21
3rd year	-0.49	-0.08	0.06	-1.22	-0.07	0.73	-2.25	-0.75	-0.55	-0.06	-0.20	-0.29
4th year	-0.77	-0.08	0.38	-0.76	-0.10	1.14	-1.79	1.53	-0.88	-0.10	-0.32	-0.45
5th year	-0.66	-0.09	0.41	-0.45	-0.03	0.96	-1.20	1.62	-0.88	-0.21	-0.29	-0.38

	Unemployment rate	Y/$	CPI	Short-term interest rate	Long-term interest rate	Current balance	Fiscal balance	Primary balance
							(Central & local governments)	
							(% of nominal GDP)	
1st year	0.00	-9.97	-0.03	-0.01	-0.01	0.08	0.01	0.01
2nd year	0.04	-6.42	-0.04	-0.17	-0.10	-0.20	-0.08	-0.08
3rd year	0.08	-3.81	-0.07	-0.24	-0.13	-0.30	-0.11	-0.11
4th year	0.14	-1.70	-0.11	-0.38	-0.22	-0.61	-0.17	-0.18
5th year	0.14	-0.37	-0.20	-0.34	-0.19	-0.53	-0.14	-0.15

(4) 1%-pt rise in long-term interest rates (deviation from standard scenario; %, %pt)

	Real GDP	Private final consumption	Private housing investment	Private capital investment	Government final consumption	Public fixed capital formation	Exports	Imports	Nominal GDP	GDP deflator	Potential GDP	GDP gap
1st year	-0.04	0.00	0.00	-0.68	0.11	0.06	0.00	-0.16	-0.04	0.00	-0.01	-0.03
2nd year	-0.35	-0.40	-1.77	-2.16	0.10	0.53	-0.10	-1.15	-0.35	0.01	-0.14	-0.21
3rd year	-0.35	-0.32	-1.21	-1.30	0.00	0.43	-0.09	-0.40	-0.41	-0.05	-0.18	-0.17
4th year	-0.29	-0.29	-0.56	-0.50	-0.04	0.27	0.00	0.03	-0.40	-0.11	-0.18	-0.11
5th year	-0.21	-0.28	-0.29	-0.26	-0.07	0.13	0.10	-0.02	-0.38	-0.17	-0.15	-0.05

	Unemployment rate	Y/$	CPI	Short-term interest rate	Long-term interest rate	Current balance	Fiscal balance	Primary balance
							(Central & local governments)	
							(% of nominal GDP)	
1st year	0.01	-0.46	0.00	-0.02	0.99	-0.07	-0.19	-0.19
2nd year	0.05	0.04	0.01	-0.14	-0.08	-0.04	-0.28	-0.24
3rd year	0.06	0.45	-0.04	-0.18	-0.10	0.07	-0.20	-0.13
4th year	0.05	0.73	-0.10	-0.19	-0.11	0.02	-0.15	-0.07
5th year	0.03	0.71	-0.15	-0.11	-0.06	0.05	-0.10	-0.03

Source: Compiled by DIR based on DIR's medium-term macroeconomic model.