

# I. Overview of Japan's Economic Structure in 2011

## 1. Japan's economic structure in 2011 (market valuation)

The following are the characteristics of Japan's economic structure in 2011 as viewed in the 2011 Simple Updated Input-Output Table (across 53 sectors), which was constructed based on 2011 price evaluations (or market valuations; hereafter, they are referred to as "nominal values"):

### (1) Gross supply and gross demand

The value of gross supply (which matches gross demand) in 2011 amounted to 977.8 trillion yen, of which domestic production, representing the supply side, accounted for 894.8 trillion yen, with its composition ratio relative to gross supply at 91.5%, and imports accounted for 82.9 trillion yen, with its composition ratio at 8.5%.

On the demand side, intermediate demand accounted for 436.3 trillion yen, with its composition ratio relative to gross demand at 44.6%, domestic final demand accounted for 469.6 trillion yen, with its composition ratio at 48.0%, and exports accounted for 71.9 trillion yen, with its composition ratio at 7.4%.

#### 1) Comparisons with 2010

The composition ratio of domestic production in relation to gross supply decreased, while that of imports increased.

The composition ratio of intermediate demand in relation to gross demand increased, while that of both domestic final demand and exports decreased (Table 1-1).

#### 2) Comparisons with 2005

The composition ratio of domestic production in relation to gross supply decreased, while that of imports increased.

The composition ratio of exports in relation to gross demand increased, while that of both intermediate demand and domestic final demand decreased (Table 1-1).

### (2) Domestic final demand

On the demand side, dividing domestic final demand into consumption and investment shows that consumption accounted for 369.8 trillion yen, with its composition ratio relative to gross demand at 37.8%, and investment accounted for 99.8 trillion yen, with its composition ratio at 10.2%.

#### 1) Comparisons with 2010

The composition ratio of consumption in relation to gross demand decreased, while that of investments increased (Table 1-1).

#### 2) Comparisons with 2005

The composition ratio of consumption in relation to gross demand increased, while that of investments decreased (Table 1-1).

### (3) Intermediate inputs and gross value added

Dividing domestic production into intermediate inputs and gross value added shows that intermediate inputs accounted for 436.3 trillion yen, with its composition ratio relative to domestic production at 48.8%, and gross value added accounted for 458.6 trillion yen, with its composition ratio at 51.2%.

#### 1) Comparisons with 2010

The composition ratio of intermediate inputs in relation to domestic production increased, while that of gross value added decreased (Table 1-1).

#### 2) Comparisons with 2005

The composition ratio of intermediate inputs in relation to domestic production increased, while that of gross value added decreased (Table 1-1).

Table 1-1. Flow of goods and services as viewed in the 2011 Simple Updated Input-Output Table  
(market value evaluation table)

Major item (Market valuation)	Value by calendar year (billion yen)			Growth rate (%)			Degree of contribution to growth rate compared to 2010	Composition ratio (%)			Difference in composition ratio compared to 2005		Difference in composition ratio compared to 2010
	2005	2010	2011	2010 vs. 2005	2011 vs. 2005	2011 vs. 2010		2005	2010	2011	2010	2011	
	Basic table	Updated table	Simple table										
Domestic production	947,702	894,334	894,838	-5.6	-5.6	0.1	0.1	92.9	92.3	91.5	-0.6	-1.4	-0.7
Intermediate input	456,180	428,285	436,277	-6.1	-4.4	1.9	0.8	(48.1)	(47.9)	(48.8)	-0.2	0.6	0.9
= Intermediate demand								44.7	44.2	44.6	-0.5	-0.1	0.4
Gross value added	491,522	466,049	458,561	-5.2	-6.7	-1.6	-0.8	(51.9)	(52.1)	(51.2)	0.2	-0.6	-0.9
Total final demand	564,006	540,991	541,476	-4.1	-4.0	0.1	0.1	55.3	55.8	55.4	0.5	0.1	-0.4
Domestic final demand	490,237	467,098	469,591	-4.7	-4.2	0.5	0.3	48.1	48.2	48.0	0.1	0.0	-0.2
Consumption	374,366	369,726	369,791	-1.2	-1.2	0.0	0.0	36.7	38.1	37.8	1.4	1.1	-0.3
Consumption expenditure outside households (column)	16,803	15,206	15,191	-9.5	-9.6	-0.1	0.0	1.6	1.6	1.6	-0.1	-0.1	0.0
Consumption expenditure (private)	280,873	274,986	274,812	-2.1	-2.2	-0.1	0.0	27.5	28.4	28.1	0.8	0.6	-0.3
Consumption expenditure of general government	76,690	79,534	79,788	3.7	4.0	0.3	0.0	7.5	8.2	8.2	0.7	0.6	0.0
Investment	115,871	97,371	99,800	-16.0	-13.9	2.5	0.3	11.4	10.0	10.2	-1.3	-1.2	0.2
Capital formation (public)	23,818	20,923	19,734	-12.2	-17.1	-5.7	-0.1	2.3	2.2	2.0	-0.2	-0.3	-0.1
Capital formation (private)	89,984	75,493	77,589	-16.1	-13.8	2.8	0.2	8.8	7.8	7.9	-1.0	-0.9	0.1
Increase in stocks	2,069	956	2,476	-0.5	0.2	1.6	0.2	0.2	0.1	0.3	-0.1	0.1	0.2
Exports	73,769	73,893	71,886	0.2	-2.6	-2.7	-0.2	7.2	7.6	7.4	0.4	0.1	-0.3
Imports	72,483	74,942	82,915	3.4	14.4	10.6	0.8	7.1	7.7	8.5	0.6	1.4	0.7
Gross supply value = Gross demand value	1,020,185	969,276	977,753	-5.0	-4.2	0.9	0.9	100.0	100.0	100.0			

\* Numbers in parentheses are composition ratios in relation to domestic production.

Notes: 1. The 2005 basic table used as a reference of comparison is a recomposed 2005 Input-Output Table originally published by the Ministry of Internal Affairs and Communications with a revision made to no longer categorize the provisional sector dealing with private transportation (e.g., passengers and freight) and to exclude the natural deterioration of infrastructure.

2. In conducting a time-series comparison, it is preferable to use updated input-output tables, unless the latest table is available. Because the 2009 Simple Table, the 2008 Updated Table, and tables created thereafter are based on the 2005 standard, and the 2007 or prior tables were constructed based on the 2000 standard, the newer and older tables are not consistent with each other (for more details, see "Reference 5: Overview of 2005 standard revision").

3. The terms "exports" and "imports" used in the Input-Output Table include customs duties, duty on imported goods, and adjustment categories in addition to ordinary trade, non-ordinary trade, and direct purchase.

4. Due to the rounding of figures, there are cases in which the sum of breakdowns does not match the total (the same applies to all the tables below).

## 2. Japan's economic structure in 2011 (2005 fixed price evaluation)

The following are trends of Japan's economic structure in 2011 (based on real value) as viewed in the 2011 Simple Updated Input-Output Table (across 53 sectors), which was based on 2005 fixed prices, (hereafter, referred to as "real value") replacing the 2011 nominal value using a deflator (all simple updated input-output tables used in this Section I are based on 2005 fixed prices and represent 53 sectors):

### (1) Structure of gross supply and gross demand

The value of gross supply (which matches gross demand) in 2011 amounted to 964.4 trillion yen, of which domestic production, representing the supply side, accounted for 887.4 trillion yen, with its composition ratio relative to gross supply at 92.0%, and imports accounted for 77.0 trillion yen, with its composition ratio at 8.0%.

On the demand side, intermediate demand accounted for 415.1 trillion yen, with its composition ratio relative to gross demand at 43.0%, domestic final demand accounted for 471.0 trillion yen, with its composition ratio at 48.8%, and exports accounted for 78.3 trillion yen, with its composition ratio at 8.1% (Table 2-1).

#### 1) Comparisons with 2010

The value of gross supply (which matches gross demand) increased by 0.2% from 2010.

Breaking down gross supply, domestic production decreased by 0.1% from 2010 (0.1% decrease in degree of contribution to growth rate), while imports increased by 4.3% (0.3% increase in degree of contribution to growth rate); in terms of composition ratio, domestic production decreased by 0.3 points, while imports increased by 0.3 points.

Breaking down gross demand, intermediate demand (0.1% increase in degree of contribution to growth rate) and domestic final demand (0.4% increase in degree of contribution to growth rate) increased by 0.2% and 0.9%, respectively, from 2010, while exports decreased by 3.0% (0.3% decrease in degree of contribution to growth rate); in terms of composition ratio, intermediate demand and exports decreased by 0.0 and 0.3 points, respectively, while domestic final demand increased by 0.3 points (Table 2-1).

#### 2) Comparisons with 2005

The value of gross supply (which matches gross demand) decreased by 5.5% from 2005.

Breaking down gross supply, domestic production decreased by 6.4% from 2005, while imports increased by 6.2%; in terms of composition ratio, domestic production decreased by 0.9 points, while imports increased by 0.9 points.

Breaking down gross demand, intermediate demand and domestic final demand decreased by 9.0% and 3.9%, respectively, from 2005, while exports increased by 6.1%; in terms of composition ratio, intermediate demand decreased by 1.7 points, while domestic final demand and exports increased by 0.8 and 0.9 points, respectively (Table 2-1).

Table 2-1. Flow of goods and services as viewed in the 2011 Simple Updated Input-Output Table  
(fixed price evaluation table)

Major item (Fixed price evaluation)	Value by calendar year (billion yen)			Growth rate (%)			Degree of contribution to growth rate compared to 2010	Composition ratio (%)			Difference in composition ratio compared to 2005		Difference in composition ratio compared to 2010
	2005	2010	2011	2010 vs. 2005	2011 vs. 2005	2011 vs. 2010		2005	2010	2011	2010	2011	
	Basic table	Updated table	Simple table										
Domestic production	947,702	888,381	887,410	-6.3	-6.4	-0.1	-0.1	92.9	92.3	92.0	-0.6	-0.9	-0.3
Intermediate input	456,180	414,499	415,140	-9.1	-9.0	0.2	0.1	(48.1)	(46.7)	(46.8)	-1.5	-1.4	0.1
= Intermediate demand								44.7	43.1	43.0	-1.6	-1.7	0.0
Gross value added	491,522	473,882	472,269	-3.6	-3.9	-0.3	-0.2	(51.9)	(53.3)	(53.2)	1.5	1.4	-0.1
Total final demand	564,006	547,679	549,260	-2.9	-2.6	0.3	0.2	55.3	56.9	57.0	1.6	1.7	0.0
Domestic final demand	490,237	466,951	470,959	-4.7	-3.9	0.9	0.4	48.1	48.5	48.8	0.5	0.8	0.3
Consumption	374,366	370,951	371,122	-0.9	-0.9	0.0	0.0	36.7	38.6	38.5	1.9	1.8	-0.1
Consumption expenditure outside households (column)	16,803	15,543	15,352	-7.5	-8.6	-1.2	0.0	1.6	1.6	1.6	0.0	-0.1	0.0
Consumption expenditure (private)	280,873	278,667	278,557	-0.8	-0.8	0.0	0.0	27.5	29.0	28.9	1.4	1.4	-0.1
Consumption expenditure of general government	76,690	76,740	77,214	0.1	0.7	0.6	0.0	7.5	8.0	8.0	0.5	0.5	0.0
Investment	115,871	96,000	99,837	-17.1	-13.8	4.0	0.4	11.4	10.0	10.4	-1.4	-1.0	0.4
Capital formation (public)	23,818	19,598	19,092	-17.7	-19.8	-2.6	-0.1	2.3	2.0	2.0	-0.3	-0.4	-0.1
Capital formation (private)	89,984	75,507	78,190	-16.1	-13.1	3.6	0.3	8.8	7.8	8.1	-1.0	-0.7	0.3
Increase in stocks	2,069	896	2,555	-0.6	0.2	1.9	0.2	0.2	0.1	0.3	-0.1	0.1	0.2
Exports	73,769	80,728	78,301	9.4	6.1	-3.0	-0.3	7.2	8.4	8.1	1.2	0.9	-0.3
Imports	72,483	73,797	76,991	1.8	6.2	4.3	0.3	7.1	7.7	8.0	0.6	0.9	0.3
Gross supply value = Gross demand value	1,020,185	962,178	964,400	-5.7	-5.5	0.2	0.2	100.0	100.0	100.0	-	-	-

\* Numbers in parentheses are composition ratios in relation to domestic production.

## (2) Structure of domestic production

Domestic production in 2011 amounted to 887.4 trillion yen, of which goods accounted for 341.3 trillion yen, with its composition ratio at 38.5%, and services accounted for 546.1 trillion yen, with its composition ratio at 61.5% (Table 2-2).

### 1) Comparisons with 2010

Domestic production decreased by 0.1% from 2010.

Dividing domestic production into goods and services reveals that goods decreased by 1.3% from 2010 (0.5% decrease in degree of contribution to growth rate) but services increased by 0.6% (0.4% increase in degree of contribution to growth rate). Among goods sectors, "primary products" (0.0% decrease in degree of contribution to growth rate) and "manufactured products" (0.6% decrease in degree of contribution to growth rate) decreased by 2.2% and 1.7%, respectively, from 2010, while "construction" increased by 1.6% (0.1% increase in degree of contribution to growth rate). Breaking down "manufactured products" shows that "raw material products" (0.3% increase in degree of contribution to growth rate) and "other products" (0.1% increase in degree of contribution to growth rate) increased by 2.3% and 1.8%, respectively, from 2010 but "processed and assembled products" decreased by 6.6% (0.9% decrease in degree of contribution to growth rate).

Among service sectors, "finance and real estate" (0.4% decrease in degree of contribution to growth rate) and "transport and information and communications" (0.3% decrease in degree of contribution to growth rate) decreased by 3.3% and 2.6%, respectively, from 2010, while "commerce" (0.6% increase in degree of contribution to growth rate), "public services" (0.4% increase in degree of contribution to growth rate) and "other services" (0.0% increase in degree of contribution to growth rate) increased by 5.9%, 2.5% and 0.2%, respectively.

In terms of composition ratio, goods decreased by 0.5 points from 2010, while services increased by 0.5 points. Among goods sectors, "primary products" and "manufactured products" decreased by 0.0 and 0.5 points, respectively, from 2010, while "construction" increased by 0.1 points. Breaking down "manufactured products" shows that "raw material products" and "other products" increased by 0.3 and 0.1 points, respectively, from 2010 but "processed and assembled products" decreased by 0.9 points.

Among service sectors, "commerce," "public services" and "other services" increased by 0.6, 0.4 and 0.0 points, respectively, from 2010, while "finance and real estate" and "transport and information and communications" decreased by 0.4 and 0.2 points, respectively (Table 2-2).

Table 2-2. Domestic production

	Domestic production (billion yen)			Growth rate (%)			Degree of contribution to growth rate compared to 2010	Composition ratio (%)			Difference in composition ratio compared to 2005	Difference in composition ratio compared to 2010
	2005	2010	2011	2010 vs. 2005	2011 vs. 2005	2011 vs. 2010		2005	2010	2011		
Total	947,702	888,381	887,410	-6.3	-6.4	-0.1	-0.1	100.0	100.0	100.0	-	-
Goods	382,952	345,710	341,289	-9.7	-10.9	-1.3	-0.5	40.4	38.9	38.5	-1.9	-0.5
Primary products	14,163	13,500	13,197	-4.7	-6.8	-2.2	0.0	1.5	1.5	1.5	0.0	0.0
Manufactured products	305,552	284,979	280,092	-6.7	-8.3	-1.7	-0.6	32.2	32.1	31.6	-0.7	-0.5
Raw material products	109,209	96,422	98,663	-11.7	-9.7	2.3	0.3	11.5	10.9	11.1	-0.4	0.3
Processed and assembled products	130,173	125,468	117,182	-3.6	-10.0	-6.6	-0.9	13.7	14.1	13.2	-0.5	-0.9
Other products	66,170	63,089	64,247	-4.7	-2.9	1.8	0.1	7.0	7.1	7.2	0.3	0.1
Construction	63,237	47,231	48,001	-25.3	-24.1	1.6	0.1	6.7	5.3	5.4	-1.3	0.1
Services	564,750	542,671	546,120	-3.9	-3.3	0.6	0.4	59.6	61.1	61.5	1.9	0.5
Commerce	106,275	92,021	97,410	-13.4	-8.3	5.9	0.6	11.2	10.4	11.0	-0.2	0.6
Finance and real estate	107,793	103,704	100,330	-3.8	-6.9	-3.3	-0.4	11.4	11.7	11.3	-0.1	-0.4
Transport and information and communications	86,716	89,694	87,383	3.4	0.8	-2.6	-0.3	9.2	10.1	9.8	0.7	-0.2
Public services	142,710	142,645	146,218	0.0	2.5	2.5	0.4	15.1	16.1	16.5	1.4	0.4
Other services	121,257	114,607	114,780	-5.5	-5.3	0.2	0.0	12.8	12.9	12.9	0.1	0.0

Note 1: 53 sectors of goods and services (the same applies to all the tables below).

- 1) Goods: Primary products: agriculture, forestry and fishery; mining; coal mining, crude petroleum and natural gas  
Raw material products: textile products; timber, wooden products and furniture; pulp, paper and processed paper products; chemical basic products; synthetic resins; petroleum and coal products; plastic products; ceramic, stone and clay products; iron and steel; non-ferrous metals; metal products; reuse and recycling  
Processed and assembled products: general machinery; machinery for office and service industry; electrical devices and parts; other electrical machinery; household electric appliances; household electronics equipment; electronic computing equipment and its accessories; electronic components; passenger motor cars; other cars; motor vehicle parts and accessories; other transport equipment; precision instruments  
Other products: beverages and foods; wearing apparel and other textile products; printing, plate making and book binding; final chemical products; medicaments; miscellaneous manufacturing products  
Construction: construction
- 2) Services: Commerce: commerce  
Finance and real estate: finance and insurance; real estate; house rent (imputed house rent)  
Transport and information and communications: transport; other information and communications; information services  
Public services: electricity, gas and heat supply; water supply and waste disposal business; public administration; education and research; medical service, health, social security and nursing care  
Other services: advertising services; goods rental and leasing services; other business services; personal services; others

Note 2: Years 2005, 2010 and 2011 refer to the 2005 Input-Output Table, 2010 Updated Input-Output Table, and 2011 Simple Updated Input-Output Table, respectively (the same applies to all the tables below).

Looking at goods sectors in terms of their growth rate, sectors that recorded an increase in their growth rate include: "reuse and recycling," "electrical devices and parts" (e.g., electric motors, wiring devices and supplies) and "general machinery" (e.g., turbines, sawmill, wood working, veneer and plywood machinery). Sectors that recorded a decline in their growth rate include: "household electronics equipment" (e.g., radio and television sets, electric audio equipment), "electronic computing equipment and its accessories" (e.g., personal computers, electronic computing equipment (accessory equipment)) and "passenger motor cars."

Looking at service sectors in terms of their growth rate, sectors that recorded a decline in their growth rate include: "transport" (e.g., facility service for road transport, hired car and taxi transport), "information services" (computer programming and other software services, data processing and research and information services) and "goods rental and leasing services" (e.g., industrial equipment and machinery rental and leasing (except construction machinery), car rental and leasing). Sectors that recorded an increase in their growth rate include: "commerce" (wholesale trade, retail trade), "gas and heat supply" (gas supply) and "other business services" (e.g., worker dispatching services, civil engineering and construction services) (Figure 2-1).

Looking at goods sectors in terms of their contribution to growth, sectors that contributed to growth include: "general machinery" (e.g., metal machine tools, machinery and equipment for construction and mining), "petroleum and coal products" (e.g., heavy oil B and C, gasoline) and "beverages and foods" (e.g., other liquors, feeds). Sectors that made a negative contribution to growth include: "household electronics equipment" (e.g., radio and television sets, video recording and playback equipment), "passenger motor cars" and "motor vehicle parts and accessories" (e.g., motor vehicle parts and accessories, motor vehicle bodies).

Looking at service sectors in terms of their contribution to growth, sectors that made a negative contribution to growth include: "transport" (e.g., facility service for road transport, railway transport (passengers)), "house rent (imputed house rent)" and "personal services" (general eating and drinking places (except coffee shops), game hall). Sectors that contributed to growth include: "commerce" (wholesale trade, retail trade), "medical service, health, social security and nursing care" (e.g., medical service (medical corporations, etc.), medical service (non-profit foundations, etc.)) and "other business services" (e.g., worker dispatching services, civil engineering and construction services) (Figure 2-2).

Figure 2-1. Growth rates of domestic production by sector (in comparison with 2010)

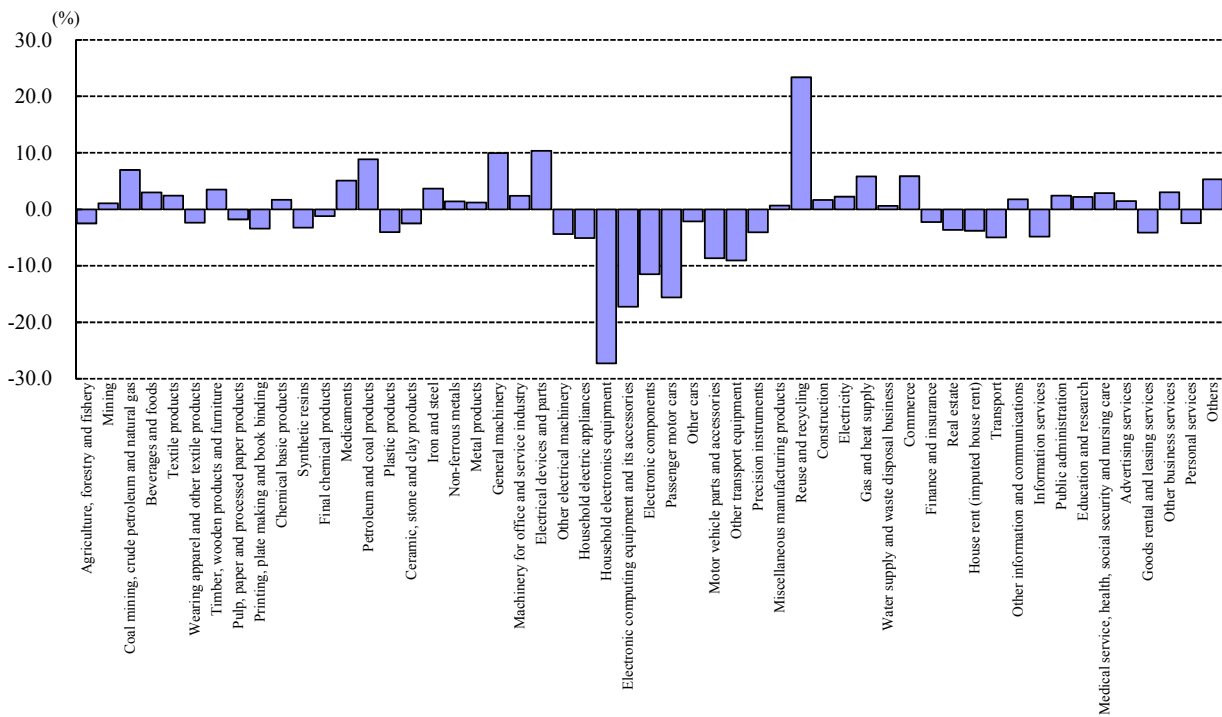
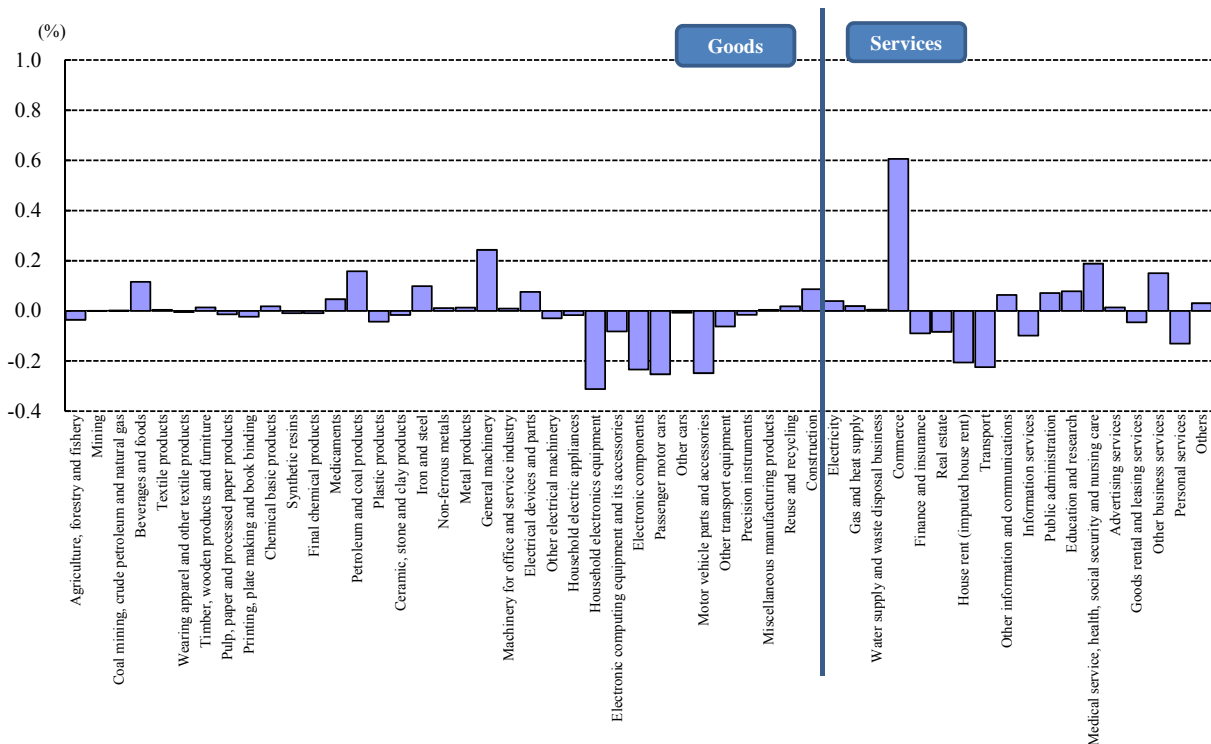


Figure 2-2. Degree of contribution to growth rates of domestic production by sector (in comparison with 2010)



2) Comparisons with 2005

Domestic production decreased by 6.4% from 2005.

Dividing domestic production into goods and services reveals that both goods and services decreased by 10.9% and 3.3%, respectively, from 2005.

Among goods sectors, "primary products," "manufactured products" and "construction" all decreased by 6.8%, 8.3% and 24.1%, respectively, from 2005. Breaking down "manufactured products" shows that "raw material products," "processed and assembled products" and "other products" all decreased by 9.7%, 10.0% and 2.9%, respectively, from 2005.

Among service sectors, "transport and information and communications" and "public services" increased by 0.8% and 2.5%, respectively, from 2005, while "commerce," "finance and real estate" and "other services" decreased by 8.3%, 6.9% and 5.3%, respectively.

In terms of composition ratio, goods decreased by 1.9 points from 2005, while services increased by 1.9 points.

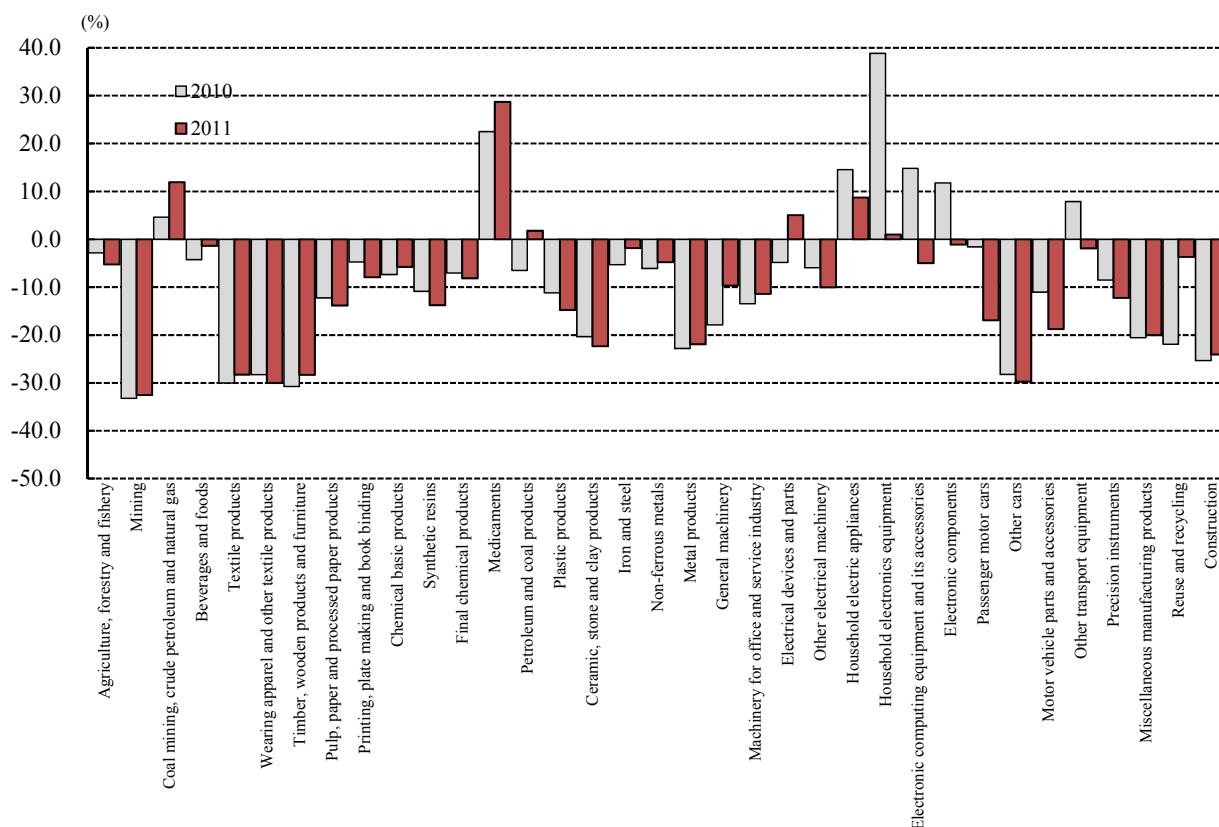
Among goods sectors, "primary products," "manufactured products" and "construction" all decreased by 0.0, 0.7 and 1.3 points, respectively, from 2005. Breaking down "manufactured products" shows that "raw material products" and "processed and assembled products" decreased by 0.4 and 0.5 points, respectively, from 2005 but "other products" increased by 0.3 points.

Among service sectors, "commerce" and "finance and real estate" decreased by 0.2 and 0.1 points, respectively, from 2005, while "transport and information and communications," "public services" and "other services" increased by 0.7, 1.4 and 0.1 points, respectively (Table 2-2).

Looking at goods sectors in terms of their growth rate, sectors that recorded an increase in their growth rate include: "medicaments," "coal mining, crude petroleum and natural gas" (e.g., natural gas, crude petroleum) and "household electric appliances" (household air-conditioners). Sectors that recorded a decline in their growth rate include: "mining" (e.g., crushed stones, gravel and quarrying), "wearing apparel and other textile products" (e.g., knitted apparel, bedding) and "other cars" (two-wheel motor vehicles, trucks, buses and other cars) (Figure 2-3).

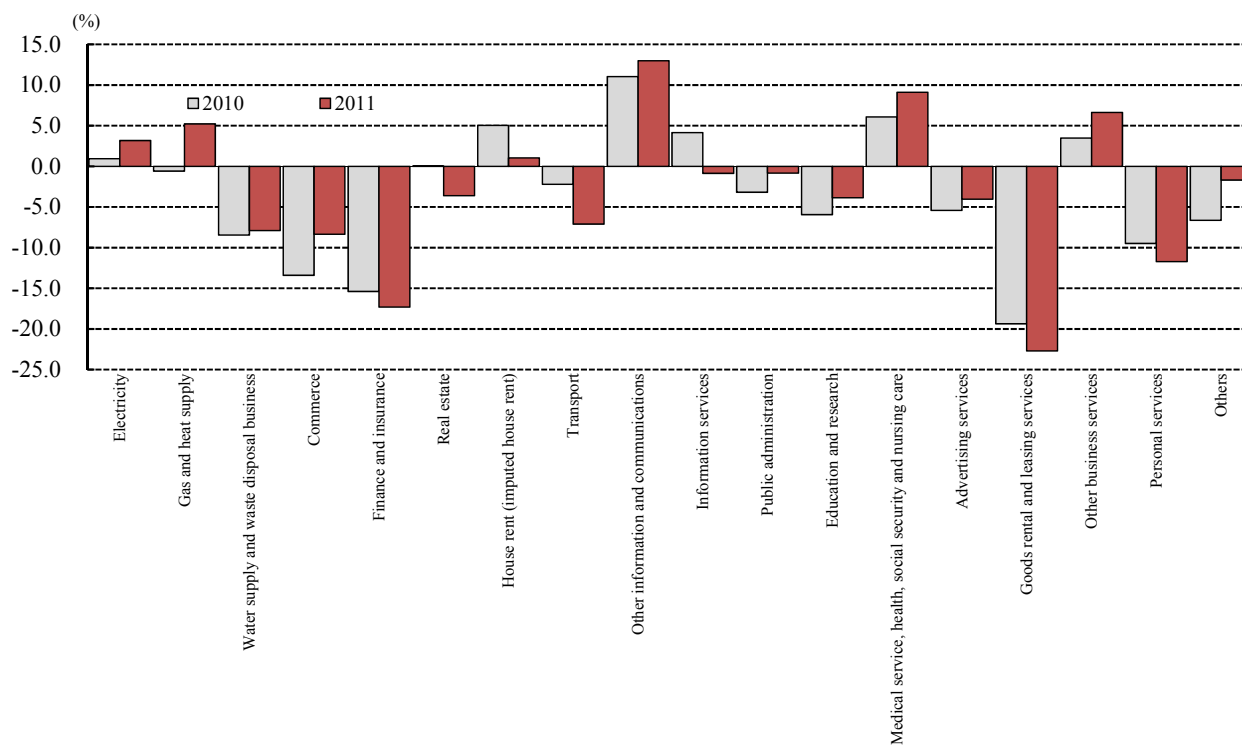


Figure 2-3. Growth rates of domestic production (goods) by sector (in comparison with 2005)



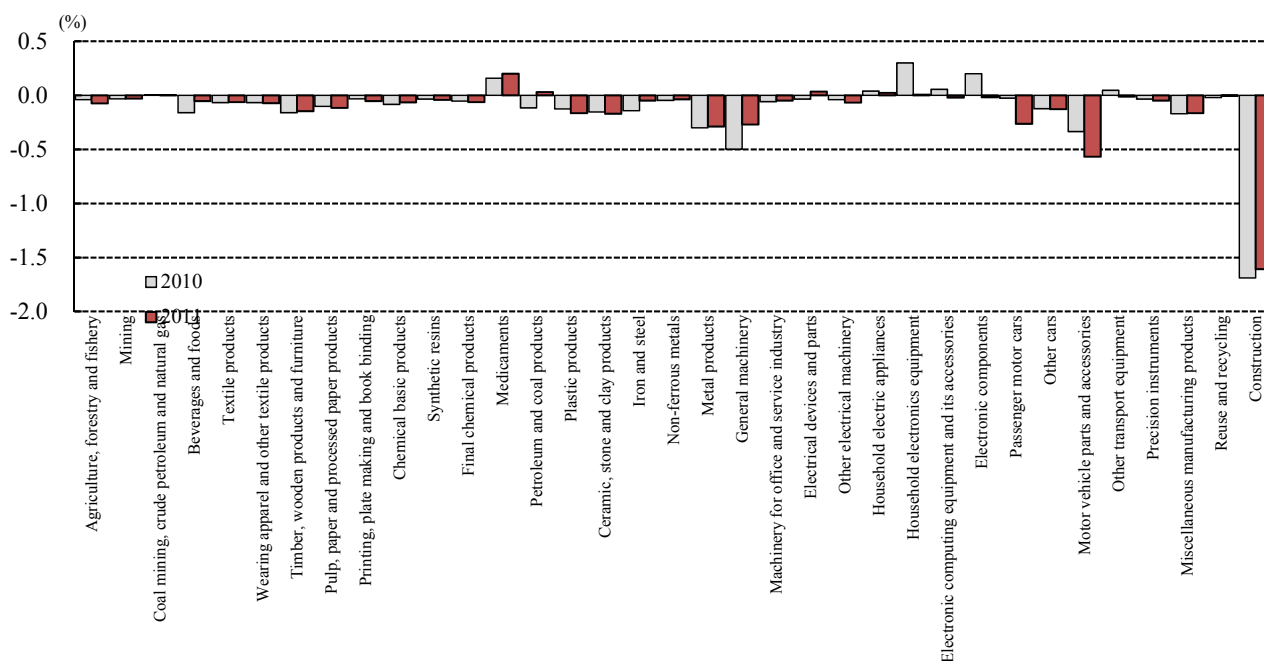
Looking at service sectors in terms of their growth rate, sectors that recorded an increase in their growth rate include: "other information and communications" (e.g., Internet-based services, cable broadcasting), "medical service, health, social security and nursing care" (e.g., social welfare (private, non-profit), social welfare (profit-making)) and "other business services" (e.g., worker dispatching services, building maintenance services). Sectors that recorded a decline in their growth rate include: "goods rental and leasing services" (e.g., industrial equipment and machinery rental and leasing (except construction machinery), car rental and leasing), "finance and insurance" (e.g., financial service (commission) public, financial service (imputed interest) public) and "personal services" (e.g., entertainment, n.e.c., theatrical companies, photographic studios) (Figure 2-4).

Figure 2-4. Growth rates of domestic production (services) by sector (in comparison with 2005)



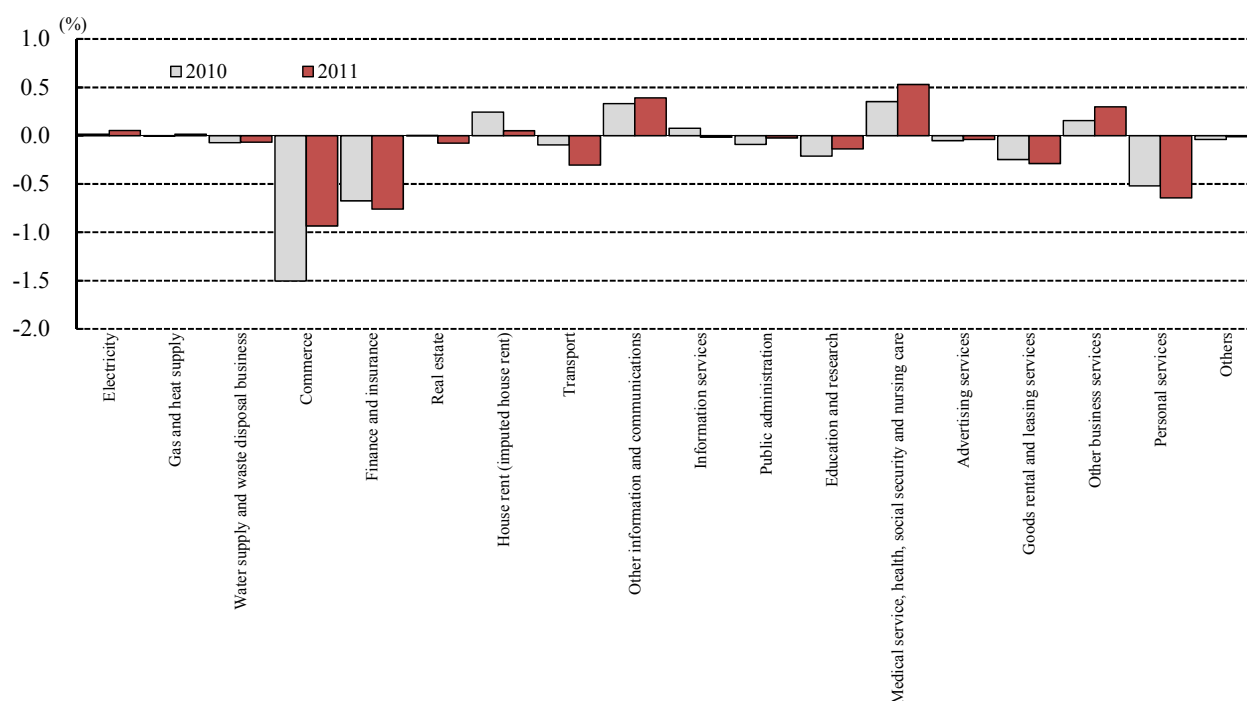
Looking at goods sectors in terms of their contribution to growth, sectors that contributed to growth include: "medicaments," "electrical devices and parts" (e.g., electric motors, electrical equipment for internal combustion engines) and "petroleum and coal products" (e.g., light oils, gasoline). Sectors that made a negative contribution to growth include: "construction" (e.g., residential construction (non-wooden), non-residential construction (non-wooden)), "motor vehicle parts and accessories" (e.g., motor vehicle parts and accessories, internal combustion engines for motor vehicles and parts) and "metal products" (e.g., metal products for construction, metal products for architecture) (Figure 2-5).

Figure 2-5. Degree of contribution to growth rates of domestic production (goods) by sector (in comparison with 2005)



Looking at service sectors in terms of their contribution to growth, sectors that contributed to growth include: "medical service, health, social security and nursing care" (e.g., medical service (medical corporations, etc.), medical service (non-profit foundations, etc.)), "other information and communications" (e.g., mobile telecommunication, Internet-based services) and "other business services" (e.g., worker dispatching services, building maintenance services). Sectors that made a negative contribution to growth include: "commerce" (wholesale trade), "finance and insurance" (e.g., financial service (commission) private, financial service (imputed interest) public) and "personal services" (e.g., hotel business, game hall) (Figure 2-6).

Figure 2-6. Degree of contribution to growth rates of domestic production (services) by sector  
(in comparison with 2005)



### (3) Input structure

#### 1) Amounts and ratios of intermediate inputs

Intermediate inputs across all industries in 2011 amounted to 415.1 trillion yen and the intermediate input ratio (= intermediate input value / domestic production value) was 46.8%.

Dividing industries into goods and service sectors reveals that intermediate inputs used by goods industries was 221.7 trillion yen and those by service industries was 193.5 trillion yen. The intermediate input ratio for goods industries was 64.9% and that for service industries was 35.4% (Table 2-3).

Looking at the shares of goods and services in the intermediate input ratio across all industries (46.8%), goods accounted for 23.6% and services accounted for 23.2%. Dividing industries into goods and service sectors reveals that in the intermediate input ratio for goods industries (64.9%), goods accounted for 45.5% and services accounted for 19.4%. In the intermediate input ratio for service industries (35.4%), goods accounted for 10.0% and services accounted for 25.5% (Table 2-4).

Breaking down further the share of services in the intermediate input ratio (23.2%) by sector, "other business services" accounted for 4.3%, followed by "commerce" at 3.1%, and "finance and insurance" at 2.8% (Figure 2-7).

i) Comparisons with 2010

Intermediate inputs across all industries increased by 0.2% from 2010 (Table 2-1) and the intermediate input ratio increased by 0.1 points.

Dividing industries into goods and service sectors reveals that the intermediate input ratio for goods industries increased by 0.8 points from 2010 but that for service industries decreased by 0.1 points.

Among goods sectors, "primary products" and "manufactured products" increased by 2.6 and 1.4 points, respectively, from 2010, while "construction" decreased by 3.1 points.

Among service sectors, "commerce," "finance and real estate," "public services" and "other services" decreased by 0.6, 0.2, 0.9 and 0.7 points, respectively, from 2010, while "transport and information and communications" increased by 2.4 points (Table 2-3).

Table 2-3. Input structure

		Total (All industries)													
		Goods industries							Service industries						
		Primary products	Manufactured products	Manufactured products			Construction	Commerce	Finance and real estate	Transport and information and communications	Public services	Other services			
Raw material products	Processed and assembled products			Other products											
Domestic production (billion yen)	2005	947,702	382,952	14,163	305,552	109,209	130,173	66,170	63,237	564,750	106,275	107,793	86,716	142,710	121,257
	2010	888,381	345,710	13,500	284,979	96,422	125,468	63,089	47,231	542,671	92,021	103,704	89,694	142,645	114,607
	2011	887,410	341,289	13,197	280,092	98,663	117,182	64,247	48,001	546,120	97,410	100,330	87,383	146,218	114,780
Intermediate input (billion yen)	2005	456,180	253,768	6,778	212,946	76,472	95,975	40,499	34,044	202,411	33,463	24,722	35,326	54,960	53,940
	2010	414,499	221,801	6,164	189,675	67,276	84,888	37,510	25,962	192,698	29,646	22,335	36,182	55,755	48,780
	2011	415,140	221,650	6,363	190,390	68,766	83,330	38,294	24,897	193,490	30,833	21,401	37,308	55,868	48,082
Gross value added (billion yen)	2005	491,522	129,184	7,385	92,606	32,737	34,198	25,671	29,193	362,339	72,811	83,070	51,390	87,750	67,317
	2010	473,882	125,910	7,336	95,305	29,146	40,579	25,579	21,269	349,973	62,375	81,369	53,512	86,890	65,827
	2011	472,269	119,639	6,833	89,702	29,897	33,852	25,954	23,104	352,630	66,577	78,929	50,075	90,350	66,699
Intermediate input ratio (%)	2005	48.1	66.3	47.9	69.7	70.0	73.7	61.2	53.8	35.8	31.5	22.9	40.7	38.5	44.5
	2010	46.7	64.2	45.7	66.6	69.8	67.7	59.5	55.0	35.5	32.2	21.5	40.3	39.1	42.6
	Difference from 2005	-1.5	-2.1	-2.2	-3.1	-0.3	-6.1	-1.7	1.1	-0.3	0.7	-1.4	-0.4	0.6	-1.9
	2011	46.8	64.9	48.2	68.0	69.7	71.1	59.6	51.9	35.4	31.7	21.3	42.7	38.2	41.9
	Difference from 2005	-1.4	-1.3	0.4	-1.7	-0.3	-2.6	-1.6	-2.0	-0.4	0.2	-1.6	2.0	-0.3	-2.6
	Difference from 2010	0.1	0.8	2.6	1.4	-0.1	3.5	0.1	-3.1	-0.1	-0.6	-0.2	2.4	-0.9	-0.7
Rate of gross value added (%)	2005	51.9	33.7	52.1	30.3	30.0	26.3	38.8	46.2	64.2	68.5	77.1	59.3	61.5	55.5
	2010	53.3	35.8	54.3	33.4	30.2	32.3	40.5	45.0	64.5	67.8	78.5	59.7	60.9	57.4
	Difference from 2005	1.5	2.1	2.2	3.1	0.3	6.1	1.7	-1.1	0.3	-0.7	1.4	0.4	-0.6	1.9
	2011	53.2	35.1	51.8	32.0	30.3	28.9	40.4	48.1	64.6	68.3	78.7	57.3	61.8	58.1
	Difference from 2005	1.4	1.3	-0.4	1.7	0.3	2.6	1.6	2.0	0.4	-0.2	1.6	-2.0	0.3	2.6
	Difference from 2010	-0.1	-0.8	-2.6	-1.4	0.1	-3.5	-0.1	3.1	0.1	0.6	0.2	-2.4	0.9	0.7

Notes: 1. Intermediate input ratio = intermediate input value / domestic production value; rate of gross value added = gross value added / domestic production value  
2. Goods and service sectors are listed in the upper row.

Looking at the shares of goods and services in the intermediate input ratio across all industries, the share of goods decreased by 0.1 points from 2010 and the share of services increased by 0.2 points.

Dividing industries into goods and service sectors reveals that both the shares of goods and services in the intermediate input ratio for goods industries increased by 0.4 points, respectively, from 2010. In the intermediate input ratio for service industries, the share of goods decreased by 0.1 points but the share of services increased by 0.1 points (Table 2-4).

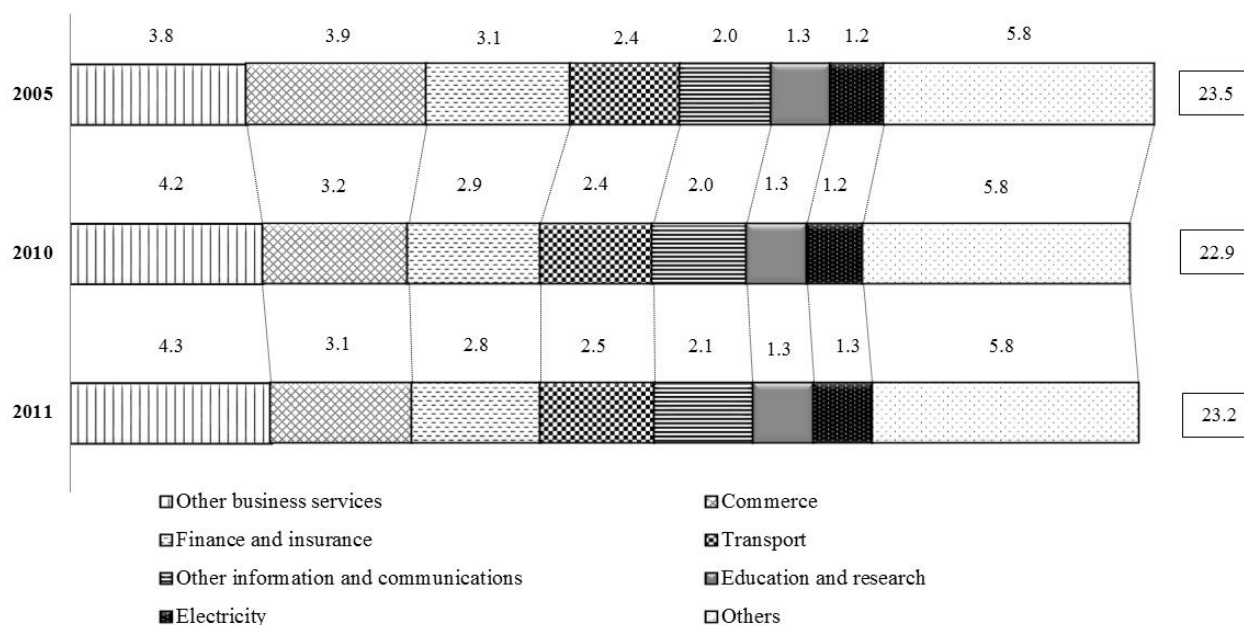
Table 2-4. Intermediate input ratios categorized by goods and services

		Goods industries										Service industries			
		Manufactured products													
		Raw material products			Processed and assembled products			Other products							
		Total	Goods	Services	Total	Goods	Services	Total	Goods	Services	Total	Goods	Services		
	Total	48.1	66.3	47.9	69.7	70.0	73.7	61.2	53.8	35.8	31.5	22.9	40.7	38.5	44.5
	Goods	24.7	46.2	32.1	50.1	53.0	53.5	38.7	30.3	10.1	4.6	4.3	8.2	15.6	14.8
	Services	23.5	20.1	15.8	19.6	17.0	20.2	22.5	23.5	25.8	26.8	18.7	32.5	22.9	29.6
	Total	46.7	64.2	45.7	66.6	69.8	67.7	59.5	55.0	35.5	32.2	21.5	40.3	39.1	42.6
	Goods	23.7	45.1	31.0	48.3	53.1	49.8	37.8	30.1	10.1	4.4	3.9	7.6	16.4	14.3
	Services	22.9	19.0	14.7	18.3	16.7	17.9	21.6	24.8	25.4	27.8	17.6	32.7	22.7	28.3
Difference from 2005	Total	-1.5	-2.1	-2.2	-3.1	-0.3	-6.1	-1.7	1.1	-0.3	0.7	-1.4	-0.4	0.6	-1.9
	Goods	-0.9	-1.1	-1.1	-1.8	0.1	-3.7	-0.8	-0.2	0.0	-0.2	-0.3	-0.6	0.8	-0.5
	Services	-0.5	-1.1	-1.1	-1.3	-0.4	-2.4	-0.9	1.3	-0.3	0.9	-1.1	0.2	-0.2	-1.4
Difference from 2010	Total	46.8	64.9	48.2	68.0	69.7	71.1	59.6	51.9	35.4	31.7	21.3	42.7	38.2	41.9
	Goods	23.6	45.5	33.2	48.9	53.2	51.6	37.3	29.1	10.0	4.5	4.1	7.5	15.8	14.1
	Services	23.2	19.4	15.0	19.1	16.5	19.5	22.3	22.7	25.5	27.1	17.3	35.2	22.4	27.8
Difference from 2010	Total	-1.4	-1.3	0.4	-1.7	-0.3	-2.6	-1.6	-2.0	-0.4	0.2	-1.6	2.0	-0.3	-2.6
	Goods	-1.0	-0.7	1.1	-1.2	0.2	-1.9	-1.4	-1.2	-0.1	-0.1	-0.2	-0.7	0.3	-0.8
	Services	-0.3	-0.7	-0.8	-0.5	-0.6	-0.7	-0.2	-0.8	-0.3	0.3	-1.4	2.6	-0.6	-1.8
Difference from 2010	Total	0.1	0.8	2.6	1.4	-0.1	3.5	0.1	-3.1	-0.1	-0.6	-0.2	2.4	-0.9	-0.7
	Goods	-0.1	0.4	2.2	0.6	0.1	1.8	-0.6	-1.0	-0.1	0.1	0.1	-0.1	-0.5	-0.2
	Services	0.2	0.4	0.3	0.8	-0.2	1.6	0.7	-2.1	0.1	-0.6	-0.3	2.5		

Notes: 1. Intermediate input ratio = intermediate input value / domestic production value  
 2. Goods and service sectors are listed in the upper row; intermediate input ratios by goods and services are listed in the left column.

Breaking down by sector the share of services in the intermediate input ratio, "commerce" and "finance and insurance" lost their share compared to 2010 but "other business services," "transport," "other information and communications" and "electricity" increased their share (Figure 2-7).

Figure 2-7. Breakdown of services in the intermediate input ratio across all industries (in percent)



"Others" summed up sectors with their intermediate input ratio changed less than 0.1 points ("gas and heat supply," "water supply and waste disposal business," "real estate," "house rent (imputed house rent)," "public administration," "medical service, health, social security and nursing care," "advertising services," "goods rental and leasing services," "personal services" and "others").

## ii) Comparisons with 2005

Intermediate inputs decreased by 9.0% from 2005 (Table 2-1) and the intermediate input ratio decreased by 1.4 points.

Dividing industries into goods and service sectors reveals that the intermediate input ratio for goods industries decreased by 1.3 points from 2005 and that for service industries decreased by 0.4 points.

Among goods sectors, "primary products" increased by 0.4 points from 2005, while "manufactured products" and "construction" decreased by 1.7 and 2.0 points, respectively.

Among service sectors, "finance and real estate," "public services" and "other services" decreased by 1.6, 0.3 and 2.6 points, respectively, from 2005, while "commerce" and "transport and information and communications" increased by 0.2 and 2.0 points, respectively (Table 2-3).

Looking at the shares of goods and services in the intermediate input ratio across all industries, the share of goods decreased by 1.0 points from 2005 and the share of services also decreased by 0.3 points.

Dividing industries into goods and service sectors reveals that both the shares of goods and services in the intermediate input ratio for goods industries decreased by 0.7 points, respectively, from 2005. In the intermediate input ratio for service industries, the shares of goods and services decreased by 0.1 and 0.3 points, respectively (Table 2-4).

Breaking down by sector the share of services in the intermediate input ratio, "commerce" and "finance and insurance" lost their share compared to 2005 but "other business services," "transport," "other information and communications" and "electricity" increased their share (Figure 2-7).

## 2) Gross value added and the rate of gross value added

Gross value added in 2011 amounted to 472.3 trillion yen and the rate of gross value added (= gross value added / domestic production value) across all industries was 53.2%.

Dividing industries into goods and service sectors reveals that the gross value added for goods industries was 119.6 trillion yen and that for service industries was 352.6 trillion yen. The rate of gross value added for goods industries was 35.1% and that for service industries was 64.6% (Table 2-3).

### i) Comparisons with 2010

Gross value added decreased by 0.3% from 2010 (Table 2-1) and the rate of gross value added across all industries decreased by 0.1 points.

Dividing industries into goods and service sectors reveals that the rate of gross value added for goods industries decreased by 0.8 points from 2010 but that for service industries increased by 0.1 points (Table 2-3).

### ii) Comparisons with 2005

Gross value added decreased by 3.9% from 2005 (Table 2-1) and the rate of gross value added across all industries increased by 1.4 points.

Dividing industries into goods and service sectors reveals that the rate of gross value added for goods industries increased by 1.3 points from 2005 and that for service industries increased by 0.4 points (Table 2-3).

#### (4) Structure of domestic final demand

Domestic final demand in 2011 amounted to 471.0 trillion yen.

Dividing domestic final demand into consumption and investment shows that consumption accounted for 371.1 trillion yen and investment accounted for 99.8 trillion yen. Their composition ratios relative to domestic final demand were 78.8% for consumption and 21.2% for investment. Breaking down domestic final demand further, "private consumption expenditure" accounted for the largest proportion at 59.1%, followed by "private capital formation" at 16.6% and "consumption expenditure of general government" at 16.4% (Table 2-5).

##### 1) Comparisons with 2010

Domestic final demand increased by 0.9% from 2010.

Dividing domestic final demand into consumption and investment shows that consumption remained the same level as 2010 (0.0% increase in degree of contribution to growth rate) and investment increased by 4.0% from 2010 (0.8% increase in degree of contribution to growth rate). Breaking down consumption, "consumption expenditure outside households (column)" (0.0% decrease in degree of contribution to growth rate) and "private consumption expenditure" (0.0% decrease in degree of contribution to growth rate) decreased by 1.2% and 0.0%, respectively, from 2010 but "consumption expenditure of general government" increased by 0.6% (0.1% increase in degree of contribution to growth rate). Breaking down investment, "public capital formation" decreased by 2.6% from 2010 (0.1% decrease in degree of contribution to growth rate) but "private capital formation" increased by 3.6% (0.6% increase in degree of contribution to growth rate).

In terms of composition ratio relative to domestic final demand, consumption decreased by 0.6 points from 2010 but investment increased by 0.6 points. Breaking down consumption, "consumption expenditure outside households (column)," "private consumption expenditure" and "consumption expenditure of general government" all decreased by 0.1, 0.5 and 0.0 points, respectively, from 2010. Breaking down investment, "public capital formation" decreased by 0.1 points from 2010 but both "private capital formation" and "increase in stocks" increased by 0.4 points, respectively (Table 2-5).

Table 2-5. Domestic final demand

	Demand (billion yen)			Growth rate (%)			Degree of contribution to growth rate (%)	Composition ratio (%)			Difference in composition ratio compared to 2005	Difference in composition ratio compared to 2010
	2005	2010	2011	2010 vs. 2005	2011 vs. 2005	2011 vs. 2010	2011 vs. 2010	2005	2010	2011	2011	2011
Domestic final demand	490,237	466,951	470,959	-4.7	-3.9	0.9	0.9	100.0	100.0	100.0	-	-
Consumption	374,366	370,951	371,122	-0.9	-0.9	0.0	0.0	76.4	79.4	78.8	2.4	-0.6
Consumption expenditure outside households (column)	16,803	15,543	15,352	-7.5	-8.6	-1.2	0.0	3.4	3.3	3.3	-0.2	-0.1
Consumption expenditure (private)	280,873	278,667	278,557	-0.8	-0.8	0.0	0.0	57.3	59.7	59.1	1.9	-0.5
Consumption expenditure of general government	76,690	76,740	77,214	0.1	0.7	0.6	0.1	15.6	16.4	16.4	0.8	0.0
Investment	115,871	96,000	99,837	-17.1	-13.8	4.0	0.8	23.6	20.6	21.2	-2.4	0.6
Capital formation (public)	23,818	19,598	19,092	-17.7	-19.8	-2.6	-0.1	4.9	4.2	4.1	-0.8	-0.1
Capital formation (private)	89,984	75,507	78,190	-16.1	-13.1	3.6	0.6	18.4	16.2	16.6	-1.8	0.4
Increase in stocks	2,069	896	2,555	-	-	-	0.4	0.4	0.2	0.5	0.1	0.4



## 2) Comparisons with 2005

Domestic final demand decreased by 3.9% from 2005.

Dividing domestic final demand into consumption and investment shows that both consumption and investment decreased by 0.9% and 13.8%, respectively, from 2005. Breaking down consumption, "consumption expenditure outside households (column)" and "private consumption expenditure" decreased by 8.6% and 0.8%, respectively, from 2005 but "consumption expenditure of general government" increased by 0.7%. Breaking down investment, both "public capital formation" and "private capital formation" decreased by 19.8% and 13.1%, respectively.

In terms of composition ratio relative to domestic final demand, consumption increased by 2.4 points from 2005 but investment decreased by 2.4 points. Breaking down consumption, "private consumption expenditure" and "consumption expenditure of general government" increased by 1.9 and 0.8 points, respectively, from 2005 but "consumption expenditure outside households (column)" decreased by 0.2 points. Breaking down investment, "public capital formation" and "private capital formation" decreased by 0.8 and 1.8 points, respectively, from 2005 but "increase in stocks" increased by 0.1 points (Table 2-5).

## (5) Structure of exports

Exports in 2011 amounted to 78.3 trillion yen, of which goods accounted for 78.9% and services accounted for 21.1% (Table 2-6).

The 2011 export ratio (= export value / domestic production) across all industries was 8.8%. The export ratio for goods was 18.1% and that for services was 3.0% (Figure 2-9).

A breakdown by sector of "processed and assembled products," which marked the highest export ratio among goods, shows that "passenger motor cars," "other electrical machinery" and "electronic computing equipment and its accessories" recorded high export ratios (Figure 2-10).

## 1) Comparisons with 2010

Exports decreased by 3.0% from 2010. Dividing exports into goods and services reveals that goods decreased by 2.5% from 2010 (1.9% decrease in degree of contribution to growth rate) and services decreased by 4.9% (1.1% decrease in degree of contribution to growth rate).

A further breakdown shows that all goods sectors decreased. Among service sectors, all sectors decreased except for "finance and real estate," which increased by 1.2% from 2010 (0.0% increase in degree of contribution to growth rate).

In terms of composition ratio, goods increased by 0.4 points from 2010, while services decreased by 0.4 points.

Among goods sectors, "primary products" decreased by 0.0 points from 2010, while "manufactured products" increased by 0.4 points. Breaking down "manufactured products" shows that "raw material products" decreased by 0.1 points from 2010 but "processed and assembled products" and "other products" increased by 0.5 and 0.0 points, respectively.

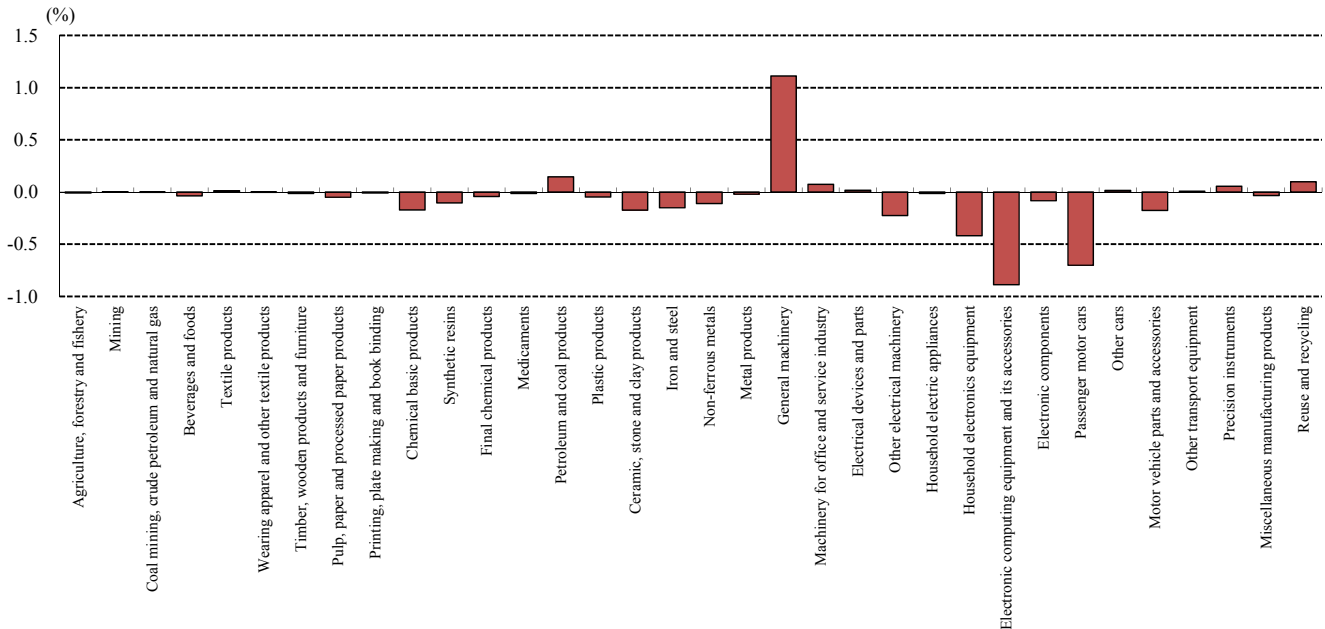
Among service sectors, "commerce" increased by 0.1 points from 2010, while "transport and information and communications" decreased by 0.5 points. All the other sectors remained the same level as 2010 (Table 2-6).

Table 2-6. Export values

	Exports (billion yen)			Growth rate (%)			Degree of contribution to growth rate (%)	Composition ratio (%)			Difference in composition ratio compared to 2005	Difference in composition ratio compared to 2010
	2005	2010	2011	2010 vs. 2005	2011 vs. 2005	2011 vs. 2010		2005	2010	2011		
Total	73,769	80,728	78,301	9.4	6.1	-3.0	-3.0	100.0	100.0	100.0	-	-
Goods	56,343	63,320	61,746	12.4	9.6	-2.5	-1.9	76.4	78.4	78.9	2.5	0.4
Primary products	94	99	93	6.0	-0.4	-6.0	0.0	0.1	0.1	0.1	0.0	0.0
Manufactured products	56,249	63,221	61,653	12.4	9.6	-2.5	-1.9	76.3	78.3	78.7	2.5	0.4
Raw material products	11,546	13,869	13,396	20.1	16.0	-3.4	-0.6	15.7	17.2	17.1	1.5	-0.1
Processed and assembled products	41,259	45,595	44,611	10.5	8.1	-2.2	-1.2	55.9	56.5	57.0	1.0	0.5
Other products	3,444	3,757	3,647	9.1	5.9	-2.9	-0.1	4.7	4.7	4.7	0.0	0.0
Construction	-	-	-	-	-	-	-	-	-	-	-	-
Services	17,426	17,408	16,555	-0.1	-5.0	-4.9	-1.1	23.6	21.6	21.1	-2.5	-0.4
Commerce	8,621	8,875	8,703	2.9	1.0	-1.9	-0.2	11.7	11.0	11.1	-0.6	0.1
Finance and real estate	674	428	433	-36.5	-35.8	1.2	0.0	0.9	0.5	0.6	-0.4	0.0
Transport and information and communications	6,003	5,588	5,019	-6.9	-16.4	-10.2	-0.7	8.1	6.9	6.4	-1.7	-0.5
Public services	449	428	411	-4.7	-8.5	-4.1	0.0	0.6	0.5	0.5	-0.1	0.0
Other services	1,680	2,090	1,990	24.4	18.4	-4.8	-0.1	2.3	2.6	2.5	0.3	0.0

Looking at goods sectors in terms of their contribution to growth, sectors that contributed to growth include: "general machinery" (e.g., metal machine tools, machinery and equipment for construction and mining), "petroleum and coal products" (e.g., kerosene, jet fuel oils) and "reuse and recycling." Sectors that made a negative contribution to growth include: "electronic computing equipment and its accessories" (e.g., electronic computing equipment (accessory equipment), personal computers), "passenger motor cars" and "household electronics equipment" (e.g., video recording and playback equipment, electric audio equipment) (Figure 2-8).

Figure 2-8. Degree of contribution to growth of export values (goods) by sector (in comparison with 2010)



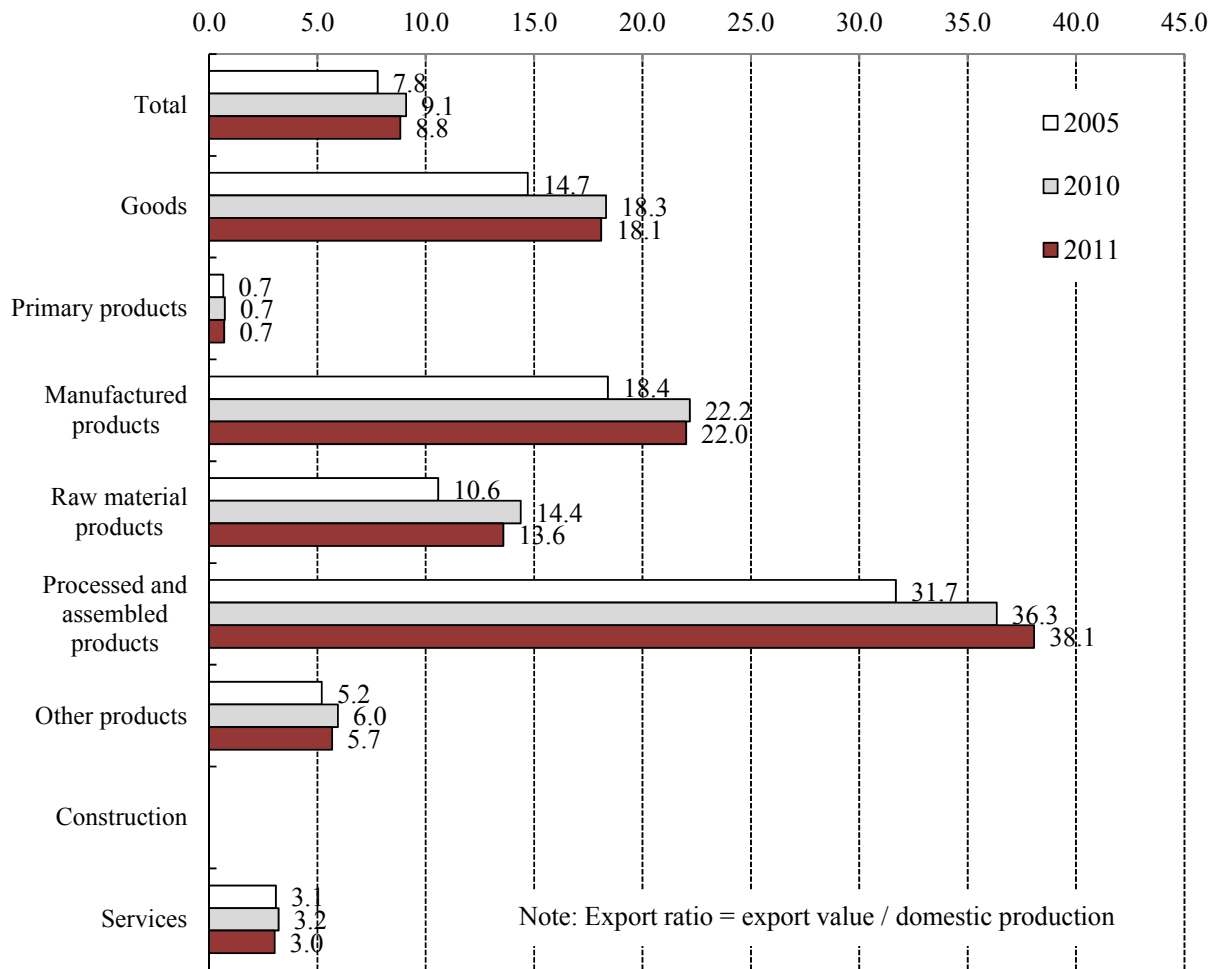
The export ratio declined by 0.3 points from 2010.

Both the export ratio for goods and that for services declined.

Among goods sectors, export ratios remained the same level in "primary products" and declined in "manufactured products."

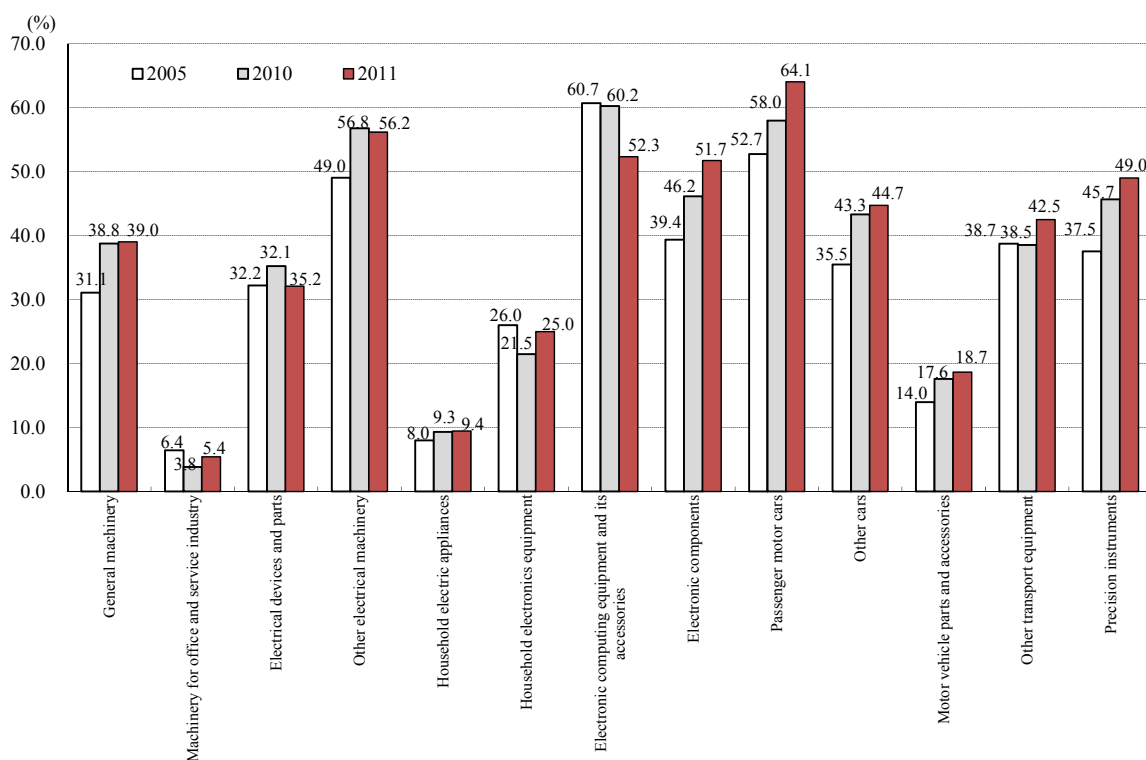
Breaking down "manufactured products," export ratios rose in "processed and assembled products" but declined in "raw material products" and "other products" (Figure 2-9).

Figure 2-9. Export ratios by type of goods and services



A breakdown by sector of "processed and assembled products," which marked the highest export ratio among "manufactured products," shows that sectors including "electronic computing equipment and its accessories" (electronic computing equipment (except personal computers)), "electrical devices and parts" (e.g., wiring devices and supplies, electric motors) and "synthetic resins" (e.g., vinyl chloride resins, polyethylene (high density)) recorded lower export ratios compared to 2010. In contrast, "passenger motor cars," "electronic components" (e.g., liquid crystal element, integrated circuits) and "other transport equipment" (e.g., aircrafts, internal combustion engines for vessels) recorded higher export ratios compared to 2010 (Figure 2-10).

Figure 2-10. Export ratios by sector (processed and assembled products)



## 2) Comparisons with 2005

Exports increased by 6.1% from 2005. Dividing exports into goods and services reveals that goods increased by 9.6% from 2005 but services decreased by 5.0%. A further breakdown shows that all goods sectors increased except for "primary products," which decreased by 0.4% from 2005. Among service sectors, "commerce" and "other services" increased by 1.0% and 18.4%, respectively but all the other sectors decreased.

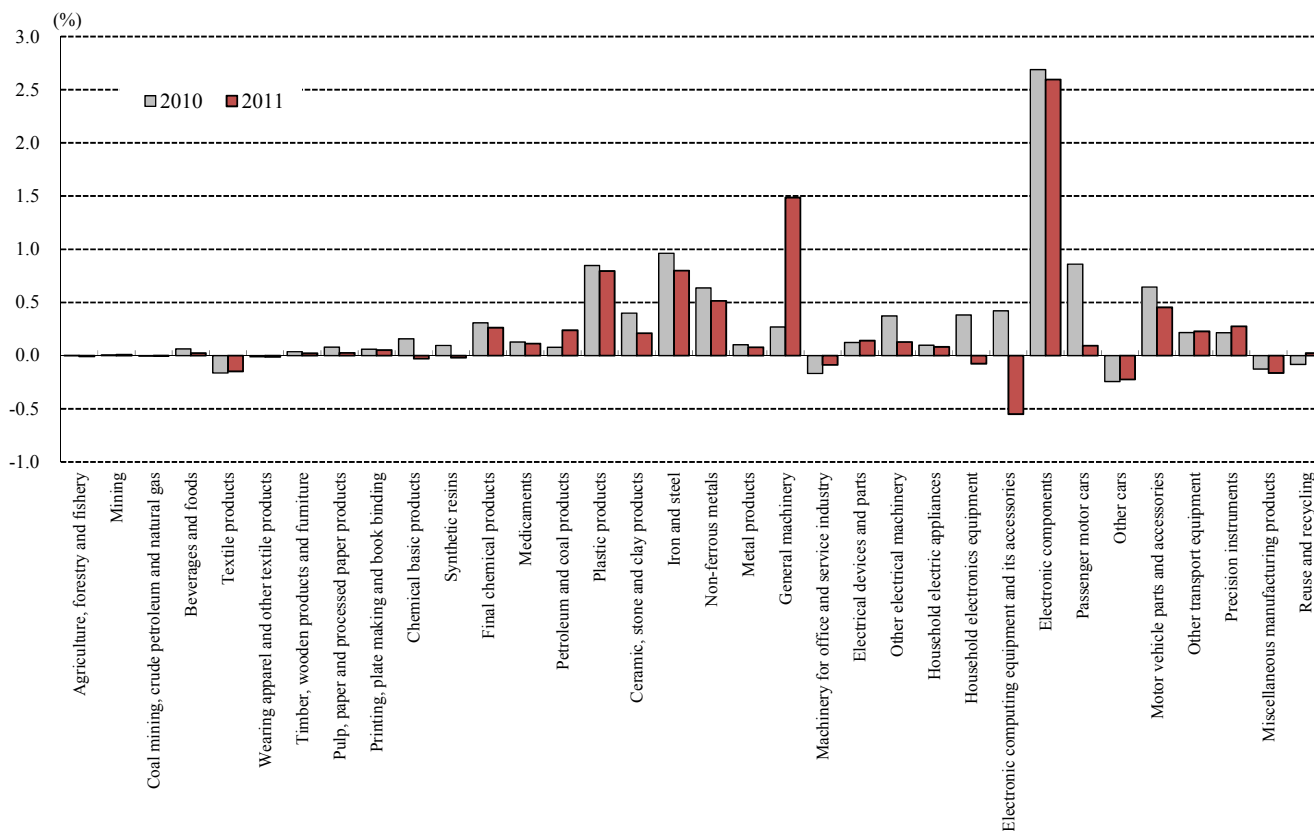
In terms of composition ratio, goods increased by 2.5 points from 2005, while services decreased by 2.5 points.

Among goods sectors, "primary products" decreased by 0.0 points from 2005, while "manufactured products" increased by 2.5 points. Breaking down "manufactured products" shows that "raw material products" and "processed and assembled products" increased by 1.5 and 1.0 points, respectively, from 2005 but "other products" decreased by 0.0 points.

Among service sectors, "other services" increased by 0.3 points from 2005 but "commerce," "finance and real estate," "transport and information and communications" and "public services" decreased by 0.6, 0.4, 1.7 and 0.1 points, respectively (Table 2-6).

Looking at goods sectors in terms of their contribution to growth, sectors that made a negative contribution to growth include: "electronic computing equipment and its accessories" (e.g., personal computers, electronic computing equipment (accessory equipment)), "other cars" (two-wheel motor vehicles) and "miscellaneous manufacturing products" (e.g., toys and games, sporting and athletic goods). Sectors that contributed to growth include: "electronic components" (e.g., integrated circuits, liquid crystal element), "general machinery" (e.g., semiconductor making equipment, metal machine tools) and "iron and steel" (e.g., hot rolled steel (special steel), steel strip (ordinary steel)) (Figure 2-11).

Figure 2-11. Degree of contribution to growth of export values (goods) by sector (in comparison with 2005)



The export ratio rose by 1.0 points from 2005.

The export ratio for goods rose but that for services declined.

Among goods sectors, export ratios remained the same level in "primary products" and rose in "manufactured products."

Breaking down "manufactured products," export ratios declined in all categories: "raw material products," "processed and assembled products" and "other products" (Figure 2-9).

A breakdown by sector of "processed and assembled products," which marked the highest export ratio among "manufactured products," shows that sectors including "electronic computing equipment and its accessories" (e.g., personal computers, electronic computing equipment (except personal computers)), "machinery for office and service industry" (e.g., copy machine, vending machines) and "household electronics equipment" (e.g., radio and television sets, other communication equipment) recorded lower export ratios compared to 2005. In contrast, sectors including "electronic components" (e.g., magnetic tapes and discs, liquid crystal element), "precision instruments" (e.g., camera, analytical instruments, testing machine, measuring instruments) and "passenger motor cars" recorded higher export ratios compared to 2005 (Figure 2-10).

## (6) Structure of imports

Imports in 2011 amounted to 77.0 trillion yen, of which goods accounted for 86.9% and services accounted for 13.1% (Table 2-7).

The 2011 import ratio (= import value / domestic demand [domestic production + import value – export value]) across all industries was 8.7%. The import ratio for goods was 19.3% and that for services was 1.9% (Figure 2-13).

Among goods sectors, a breakdown of "manufactured products" by sector shows that "electronic computing equipment and its accessories," "wearing apparel and other textile products" and "precision instruments" recorded higher import ratios (Figure 2-14).

### 1) Comparisons with 2010

Imports increased by 4.3% from 2010. Dividing imports into goods and services reveals that goods increased by 5.4% from 2010 (4.7% increase in degree of contribution to growth rate) but services decreased by 2.4% (0.3% decrease in degree of contribution to growth rate).

A further breakdown shows that all goods sectors increased except for "primary products," which decreased by 1.3% from 2010 (0.3% decrease in degree of contribution to growth rate). Among service sectors, "commerce" increased by 5.5% (0.1% increase in degree of contribution to growth rate), but all the other sectors decreased.

In terms of composition ratio, goods increased by 0.9 points from 2010, while services decreased by 0.9 points.

Among goods sectors, "primary products" decreased by 1.2 points from 2010, while "manufactured products" increased by 2.1 points. Breaking down "manufactured products" shows that "other products" decreased by 0.2 points from 2010 but "raw material products" and "processed and assembled products" increased by 1.6 and 0.7 points, respectively.

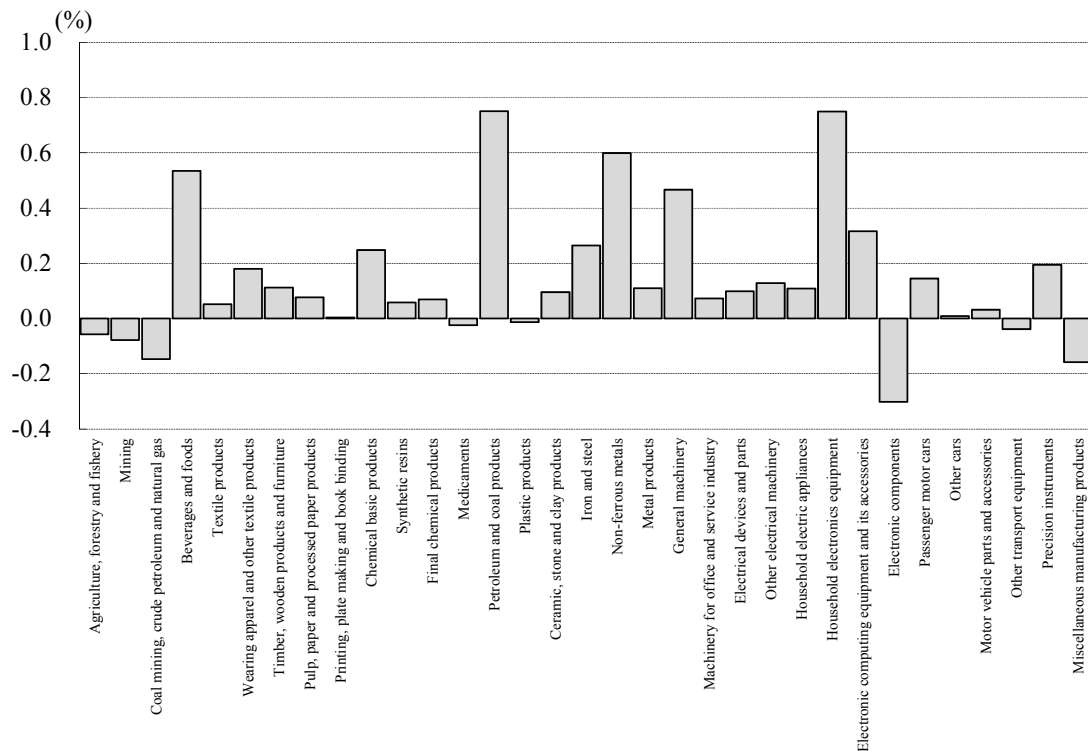
Among service sectors, "finance and real estate," "transport and information and communications," "public services" and "other services" decreased by 0.1, 0.4, 0.1 and 0.3 points, respectively, from 2010, while "commerce" remained the same level as 2010 (Table 2-7).

Table 2-7. Import values

	Imports (billion yen)			Growth rate (%)			Degree of contribution to growth rate (%)	Composition ratio (%)			Difference in composition ratio compared to 2005	Difference in composition ratio compared to 2010
	2005	2010	2011	2010 vs. 2005	2011 vs. 2005	2011 vs. 2010	2011 vs. 2010	2005	2010	2011	2011	2011
Total	72,483	73,797	76,991	1.8	6.2	4.3	4.3	100.0	100.0	100.0	-	-
Goods	61,637	63,464	66,902	3.0	8.5	5.4	4.7	85.0	86.0	86.9	1.9	0.9
Primary products	17,602	16,428	16,220	-6.7	-7.9	-1.3	-0.3	24.3	22.3	21.1	-3.2	-1.2
Manufactured products	44,035	47,036	50,683	6.8	15.1	7.8	4.9	60.8	63.7	65.8	5.1	2.1
Raw material products	12,740	11,983	13,720	-5.9	7.7	14.5	2.4	17.6	16.2	17.8	0.2	1.6
Processed and assembled products	17,759	21,886	23,350	23.2	31.5	6.7	2.0	24.5	29.7	30.3	5.8	0.7
Other products	13,536	13,166	13,613	-2.7	0.6	3.4	0.6	18.7	17.8	17.7	-1.0	-0.2
Construction	-	-	-	-	-	-	-	-	-	-	-	-
Services	10,846	10,333	10,088	-4.7	-7.0	-2.4	-0.3	15.0	14.0	13.1	-1.9	-0.9
Commerce	705	974	1,028	38.3	45.9	5.5	0.1	1.0	1.3	1.3	0.4	0.0
Finance and real estate	501	880	809	75.8	61.7	-8.0	-0.1	0.7	1.2	1.1	0.4	-0.1
Transport and information and communications	4,381	3,821	3,650	-12.8	-16.7	-4.5	-0.2	6.0	5.2	4.7	-1.3	-0.4
Public services	680	725	703	6.6	3.4	-3.0	0.0	0.9	1.0	0.9	0.0	-0.1
Other services	4,579	3,932	3,898	-14.1	-14.9	-0.9	0.0	6.3	5.3	5.1	-1.3	-0.3

Looking at goods sectors in terms of their contribution to growth, sectors that made a negative contribution to growth include: "electronic components" (e.g., integrated circuits, other electronic components), "miscellaneous manufacturing products" (e.g., jewelry and adornments, sporting and athletic goods) and "coal mining, crude petroleum and natural gas" (crude petroleum, coal mining). Sectors that contributed to growth include: "petroleum and coal products" (e.g., naphtha, gasoline), "household electronics equipment" (e.g., radio and television sets, cellular phones) and "non-ferrous metals" (e.g., other non-ferrous metals, non-ferrous metal scrap) (Figure 2-12).

Figure 2-12. Degree of contribution to growth of import values (goods) by sector (in comparison with 2010)



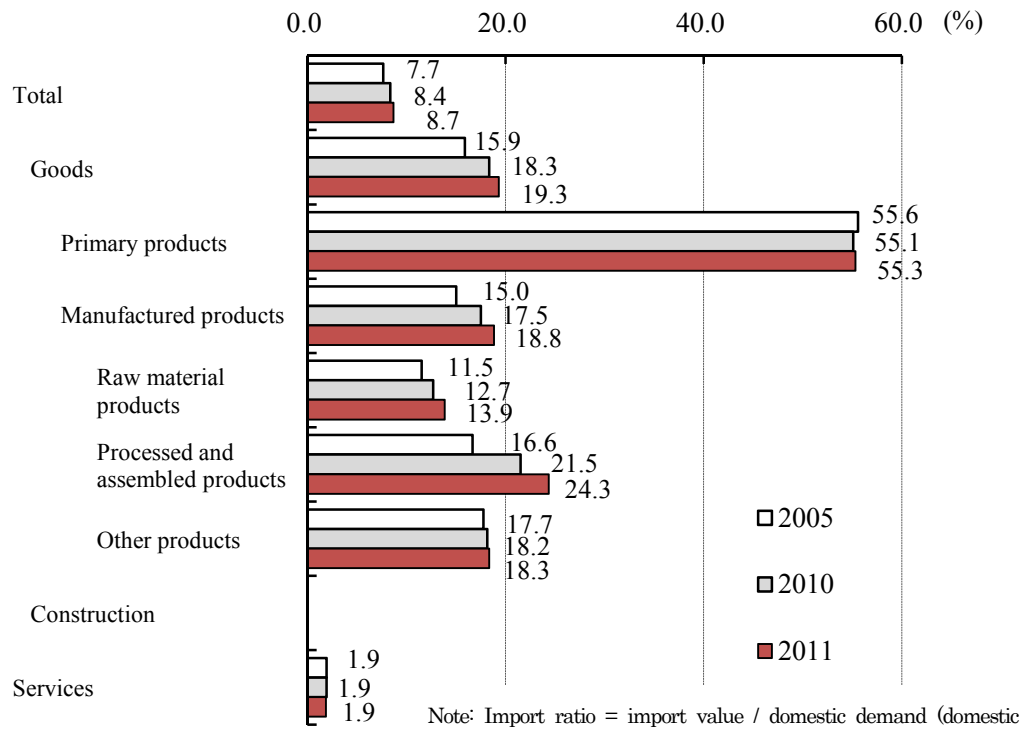
The import ratio rose by 0.3 points from 2010.

The import ratio for goods rose but that for services remained the same level.

Among goods sectors, import ratios rose both in "primary products" and "manufactured products."

Breaking down "manufactured products," import ratios rose in all categories: "raw material products," "other products" and "processed and assembled products" (Figure 2-13).

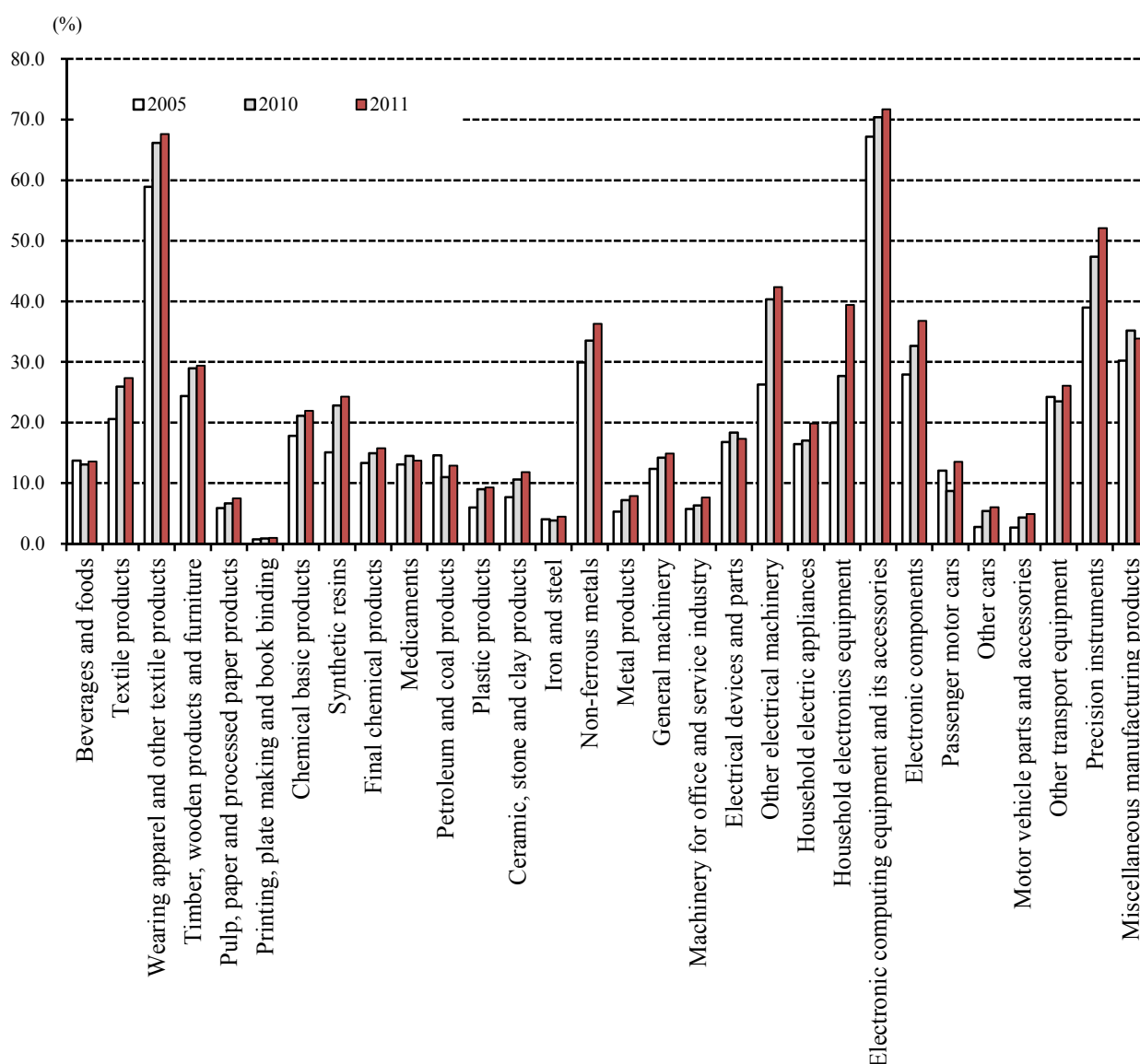
Figure 2-13. Changes in import ratios over time by type of goods and services



Breaking down "manufactured products" by sector, sectors that recorded lower import ratios compared to 2010 include: "miscellaneous manufacturing products" (e.g., toys and games, ordnance), "electrical devices and parts" (e.g., wiring devices and supplies, electric motors) and "medicaments." Sectors that recorded higher import ratio compared to 2010 include: "household electronics equipment" (e.g., radio and television sets, video recording and playback equipment), "passenger motor cars" and "precision instruments" (e.g., camera, analytical instruments, testing machine, measuring instruments) (Figure 2-14).



Figure 2-14. Changes in import ratios (manufactured products) over time



## 2) Comparisons with 2005

Imports increased by 6.2% from 2005. Dividing imports into goods and services reveals that goods increased by 8.5% from 2005 but services decreased by 7.0%.

Among goods sectors, "primary products" decreased by 7.9% from 2005, while "manufactured products" increased by 15.1%. Breaking down "manufactured products" shows that "raw material products," "processed and assembled products" and "other products" all increased by 7.7%, 31.5% and 0.6%, respectively, from 2005. Among service sectors, "commerce," "finance and real estate" and "public services" increased by 45.9%, 61.7% and 3.4%, respectively, from 2005, while "transport and information and communications" and "other services" decreased by 16.7% and 14.9%, respectively.

In terms of composition ratio, goods increased by 1.9 points from 2005, while services decreased by 1.9 points.

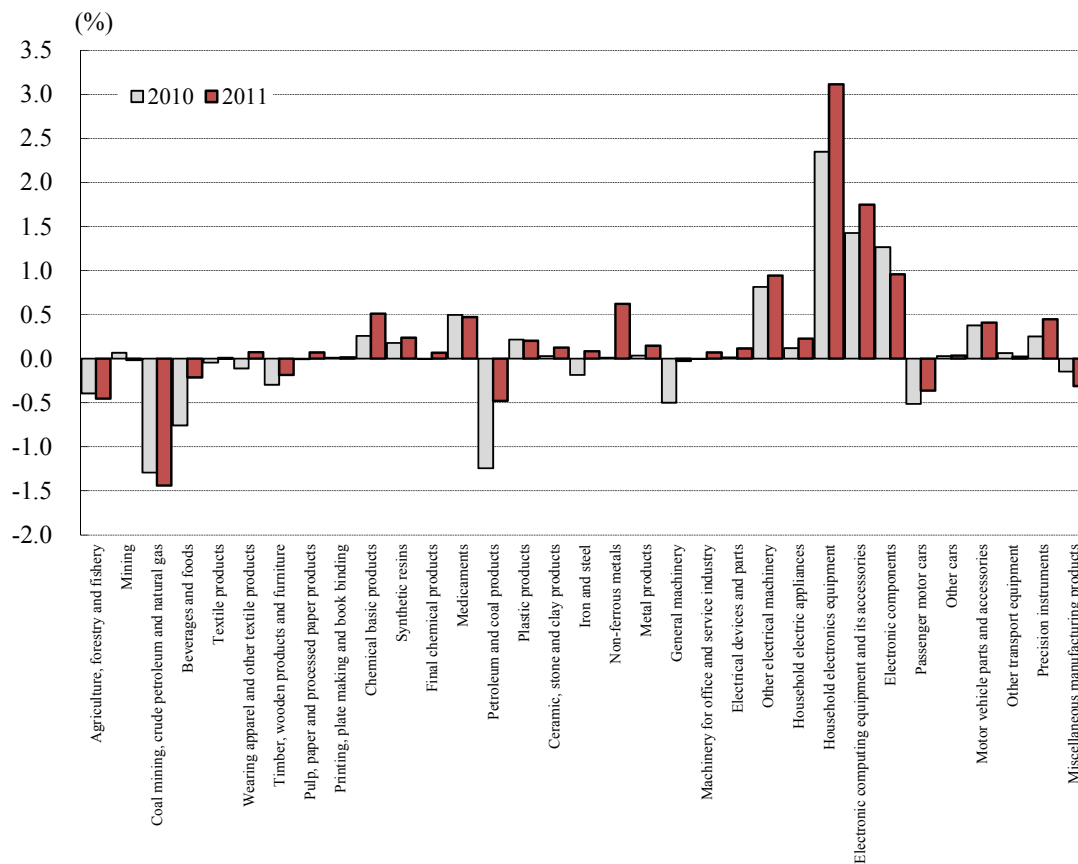
Among goods sectors, "manufactured products" increased by 5.1 points from 2005, while "primary products" decreased by 3.2 points. Breaking down "manufactured products" shows that "raw material products" and "processed and assembled products" increased by 0.2 and 5.8 points, respectively, from 2005

but "other products" decreased by 1.0 points.

Among service sectors, both "transport and information and communications" and "other services" decreased by 1.3 points, respectively, from 2005, while both "commerce" and "finance and real estate" increased by 0.4 points, respectively. "Public services" remained the same level (Table 2-7).

Looking at goods sectors in terms of their contribution to growth, sectors that made a negative contribution to growth include: "coal mining, crude petroleum and natural gas" (crude petroleum, coal mining), "petroleum and coal products" (e.g., naphtha, jet fuel oils) and "agriculture, forestry and fishery" (e.g., logs (imported), marine fisheries (imported)). Sectors that contributed to growth include: "household electronics equipment" (e.g., radio and television sets, cellular phones), "electronic computing equipment and its accessories" (personal computers, electronic computing equipment (accessory equipment)) and "electronic components" (e.g., integrated circuits, semiconductor devices) (Figure 2-15).

Figure 2-15. Degree of contribution to growth of import values (goods) by sector (in comparison with 2005)



The import ratio rose by 1.0 points from 2005.

The import ratio for goods rose but that for services remained the same level.

Among goods sectors, import ratios declined in "primary products" but rose in "manufactured products."

Breaking down "manufactured products," import ratios rose in all categories: "raw material products," "processed and assembled products" and "other products" (Figure 2-13).

Breaking down "manufactured products" by sector, sectors that recorded higher import ratios compared to 2005 include: "household electronics equipment" (e.g., wired communication equipment, cellular phones), "other electrical machinery" (e.g., other electrical devices and parts, applied electronic equipment) and "precision instruments" (e.g., camera, medical instruments). Sectors that recorded lower import ratios compared to 2005 include: "petroleum and coal products" (e.g., jet fuel oils, coke), "agriculture, forestry and fishery" (e.g., other fruits, special forest products (incl. hunting)) and "coal mining, crude petroleum and natural gas" (crude petroleum, coal mining) (Figure 2-14).

#### (7) Changes in price structure

A deflator, calculated using nominal or real values, is a measure of price changes with respect to a reference year; its value becomes greater than 1 when a price becomes higher than the reference year price, and its value becomes less than 1 when a price becomes lower than the reference year price. Referring to the major economic items of 2011, the domestic production deflator was 1.0084, export deflator was 0.9181, import deflator was 1.0770, and gross domestic supply deflator was 1.0223 (Table 2-8).

Table 2-8. Deflators

	Nominal value (billion yen)		Real value (billion yen)		Deflator		Difference from 2005		Difference from 2010
	2010	2011	2010	2011	2010	2011	2010	2011	2011
Domestic production	894,334	894,838	888,381	887,410	1.0067	1.0084	0.0067	0.0084	0.0017
Exports	73,893	71,886	80,728	78,301	0.9153	0.9181	-0.0847	-0.0819	0.0027
Imports	74,942	82,915	73,797	76,991	1.0155	1.0770	0.0155	0.0770	0.0614
Gross domestic supply	895,383	905,867	881,450	886,100	1.0158	1.0223	0.0158	0.0223	0.0065

Note: Gross domestic supply = domestic production + imports – exports

#### 1) Comparisons with 2010

##### i) Domestic production deflator

The domestic production deflator increased by 0.0017 points from 2010.

Dividing domestic production into goods and services reveals that both the domestic production deflator for goods and that for services increased by 0.0026 and 0.0014 points, respectively, from 2010.

Among goods sectors, "primary products" and "manufactured products" increased by 0.0000 and 0.0094 points, respectively, from 2010, while "construction" decreased by 0.0386 points.

Breaking down "manufactured products" shows that "raw material products" and "processed and assembled products" increased by 0.0057 and 0.0179 points, respectively, from 2010 but "other products" decreased by 0.0163 points (Table 2-9).

By sector, "non-ferrous metals," "other transport equipment" and "household electronics equipment" recorded a significant decrease.

#### ii) Export deflator

The export deflator increased by 0.0027 points from 2010.

Dividing exports into goods and services reveals that both the export deflator for goods and that for services increased by 0.0011 and 0.0104 points, respectively, from 2010.

Among goods sectors, both "primary products" and "manufactured products" increased by 0.0550 and 0.0010 points, respectively, from 2010.

Breaking down "manufactured products" shows that "raw material products" and "other products" increased by 0.0529 and 0.0277 points, respectively, from 2010 but "processed and assembled products" decreased by 0.0162 points (Table 2-9).

By sector, "non-ferrous metals," "household electronics equipment" and "ceramic, stone and clay products" recorded a significant decrease.

#### iii) Import deflator

The import deflator increased by 0.0614 points from 2010.

Dividing imports into goods and services reveals that both the import deflator for goods and that for services increased by 0.0696 and 0.0040 points, respectively, from 2010.

Among goods sectors, both "primary products" and "manufactured products" increased by 0.2946 and 0.0061 points, respectively, from 2010.

Breaking down "manufactured products" shows that "raw material products" and "other products" increased by 0.0065 and 0.0721 points, respectively, from 2010 but "processed and assembled products" decreased by 0.0385 points (Table 2-9).

By sector, "coal mining, crude petroleum and natural gas," "mining" and "agriculture, forestry and fishery" recorded a significant increase.

#### iv) Gross domestic supply deflator

The gross domestic supply deflator increased by 0.0065 points from 2010.

Dividing gross domestic supply into goods and services reveals that both the gross domestic supply deflator for goods and that for services increased by 0.0151 and 0.0011 points, respectively, from 2010.

Among goods sectors, "primary products" and "manufactured products" increased by 0.1636 and 0.0086 points, respectively, from 2010, while "construction" decreased by 0.0386 points.

Breaking down "manufactured products" shows that "processed and assembled products" increased by 0.0169 points from 2010 but "raw material products" and "other products" decreased by 0.0025 and 0.022 points, respectively (Table 2-9).

By sector, "coal mining, crude petroleum and natural gas," "mining" and "passenger motor cars" recorded a significant decrease.

Table 2-9. Changes in deflator values in relation to economic items

	2011 values (difference from 2005 base value [1.0000])				2011 values (difference from 2010 base value [1.0000])			
	Domestic production	Exports	Imports	Gross domestic supply	Domestic production	Exports	Imports	Gross domestic supply
Total	0.0084	-0.0819	0.0770	0.0223	0.0017	0.0027	0.0614	0.0065
Goods	0.0299	-0.1007	0.0921	0.0652	0.0026	0.0011	0.0696	0.0151
Primary products	-0.0034	0.0823	0.6096	0.3354	0.0000	0.0550	0.2946	0.1636
Manufactured products	0.0286	-0.1010	-0.0735	0.0391	0.0094	0.0010	0.0061	0.0086
Raw material products	0.1544	0.0741	0.1100	0.1591	0.0057	0.0529	0.0065	-0.0025
Processed and assembled products	-0.0539	-0.1660	-0.2663	-0.0535	0.0179	-0.0162	-0.0385	0.0169
Other products	-0.0141	0.0509	0.0724	-0.0014	-0.0163	0.0277	0.0721	-0.0022
Construction	0.0466	-	-	0.0466	-0.0386	-	-	-0.0386
Services	-0.0051	-0.0118	-0.0238	-0.0052	0.0014	0.0104	0.0040	0.0011

## 2) Comparisons with 2005

### i) Domestic production deflator

The domestic production deflator increased by 0.0084 points from 2005.

Dividing domestic production into goods and services reveals that the domestic production deflator for goods increased by 0.0299 points from 2005 but that for services decreased by 0.0051 points.

Among goods sectors, "primary products" decreased by 0.0034 points from 2005, while "manufactured products" and "construction" increased by 0.0286 and 0.0466 points, respectively.

Breaking down "manufactured products" shows that "raw material products" increased by 0.1544 points from 2005 but "processed and assembled products" and "other products" decreased by 0.0539 and 0.0141 points, respectively (Table 2-9).

By sector, "non-ferrous metals," "reuse and recycling" and "gas and heat supply" recorded a significant increase.

### ii) Export deflator

The export deflator decreased by 0.0819 points from 2005.

Dividing exports into goods and services reveals that both the export deflator for goods and that for services decreased by 0.1007 and 0.0118 points, respectively, from 2005.

Among goods sectors, "primary products" increased by 0.0823 points from 2005, while "manufactured products" decreased by 0.1010 points.

Breaking down "manufactured products" shows that "raw material products" and "other products" increased by 0.0741 and 0.0509 points, respectively, from 2005 but "processed and assembled products" decreased by 0.1660 points (Table 2-9).

By sector, "coal mining, crude petroleum and natural gas," "non-ferrous metals" and "reuse and recycling" recorded a significant decrease.

### iii) Import deflator

The import deflator increased by 0.0770 points from 2005.

Dividing imports into goods and services reveals that the import deflator for goods increased by 0.0921 points from 2005 but that for services decreased by 0.0238 points.

Among goods sectors, "primary products" increased by 0.6096 points from 2005, while "manufactured products" decreased by 0.0735 points.

Breaking down "manufactured products" shows that "raw material products" and "other products" increased by 0.1100 and 0.0724 points, respectively, from 2005 but "processed and assembled products" decreased by 0.2663 points (Table 2-9).

By sector, "mining," "coal mining, crude petroleum and natural gas" and "petroleum and coal products" recorded a significant increase.

### iv) Gross domestic supply deflator

The gross domestic supply deflator increased by 0.0223 points from 2005.

Dividing gross domestic supply into goods and services reveals that the gross domestic supply deflator for goods increased by 0.0652 points from 2005 but that for services decreased by 0.0052 points.

Among goods sectors, both "primary products," "manufactured products" and "construction" increased by 0.3354, 0.0391 and 0.0466 points, respectively, from 2005.

Breaking down "manufactured products" shows that "raw material products" increased by 0.1591 points from 2005 but "processed and assembled products" and "other products" decreased by 0.0535 and 0.0014 points, respectively (Table 2-9).

By sector, "mining," "coal mining, crude petroleum and natural gas" and "petroleum and coal products" recorded a significant increase.

## (8) Skyline charts

Take a look at the skyline charts that visually illustrate the 2011 industrial structure as well as trade structure.

In the skyline chart representing all industries, along the horizontal axis, it shows that service sectors including "commerce" and "medical service, health, social security, and nursing care" accounted for a large share of domestic production. Along the vertical axis, it shows that service self-sufficiency rates amounted to nearly 100%, with small percentages being represented by exports and imports (as indicated by short shaded bars), indicating that most services are produced and consumed domestically.

Among manufacturing industries, which account for larger proportions of imports and exports than other industries, sectors including "beverages and foods," "iron and steel," "general machinery," and "motor vehicle parts and accessories" represented a large share of domestic production as indicated by their wide widths along the horizontal axis.

Along the vertical axis, it shows that sectors including "passenger motor cars," "other cars" and "other electrical machinery" are represented by self-sufficiency rates much higher than 100% with large percentages being accounted for exports. On the other hand, large proportions of production rates for sectors including "wearing apparel and other textile products" and "electronic computing equipment and its accessories" are accounted for imports as indicated by tall shaded bars. With regard to the "electronic computing equipment and its accessories" sector, its large export ratio as well as large import ratio may be explained by the implementation

of product differentiations and international division of labor (Figure 2-16).

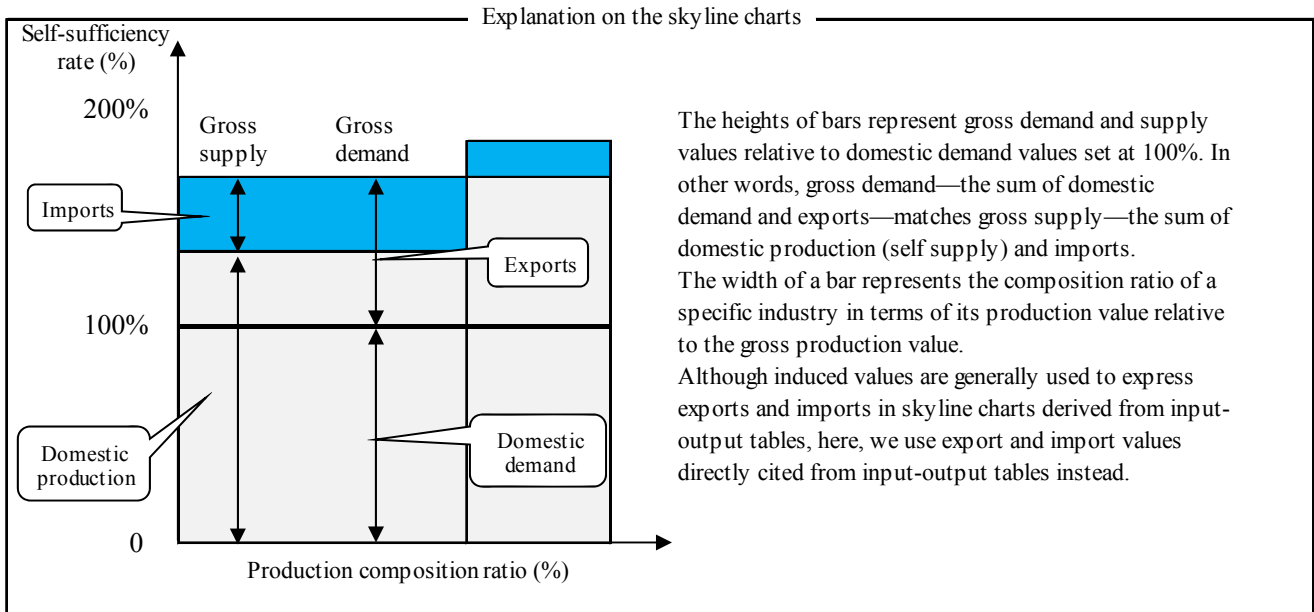
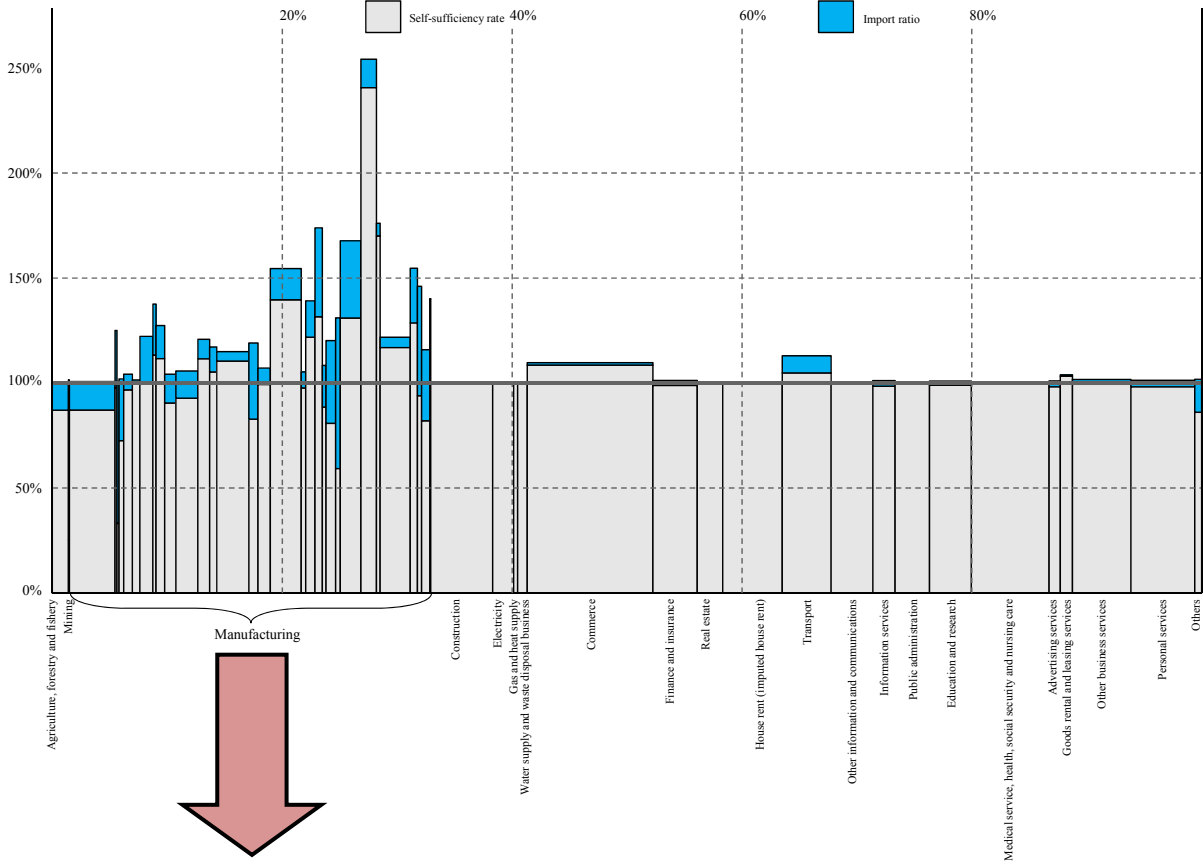
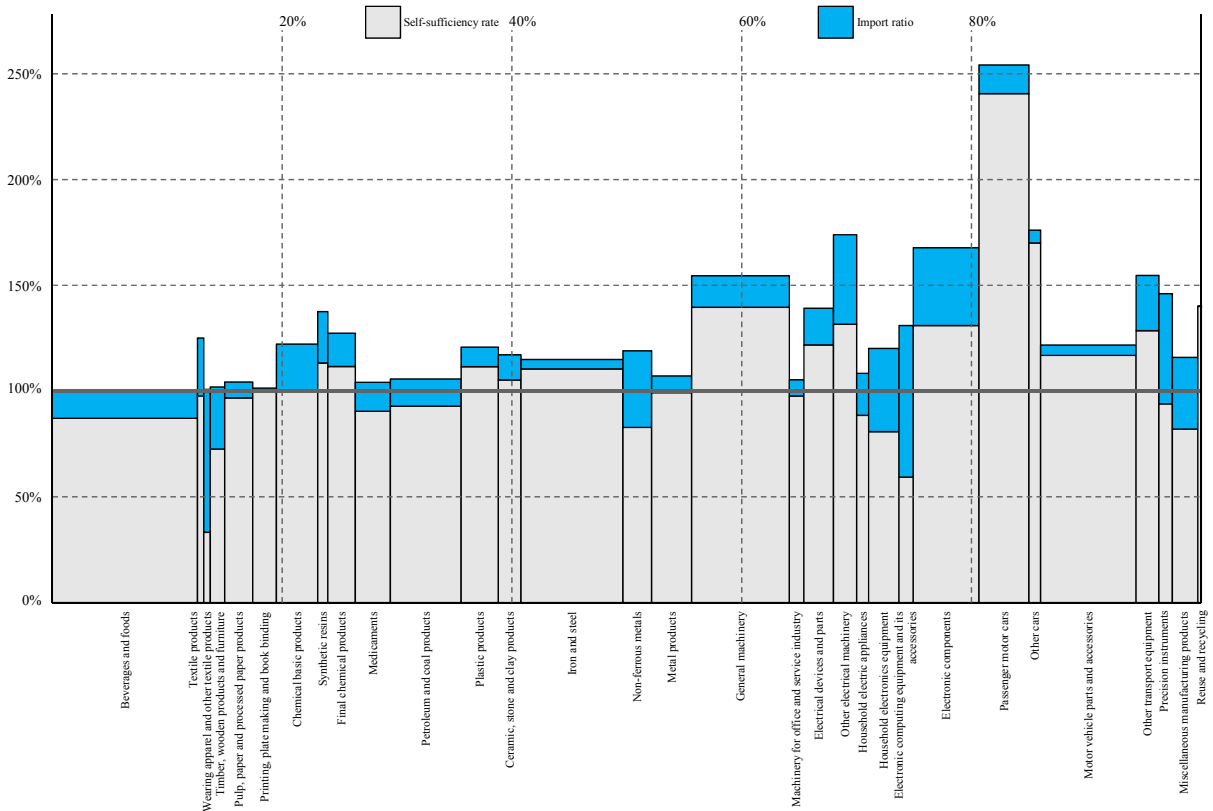


Figure 2-16. Skyline chart  
(2011 Simple Updated Input-Output Table based on fixed prices)

(All industries)



(Manufacturing industries)



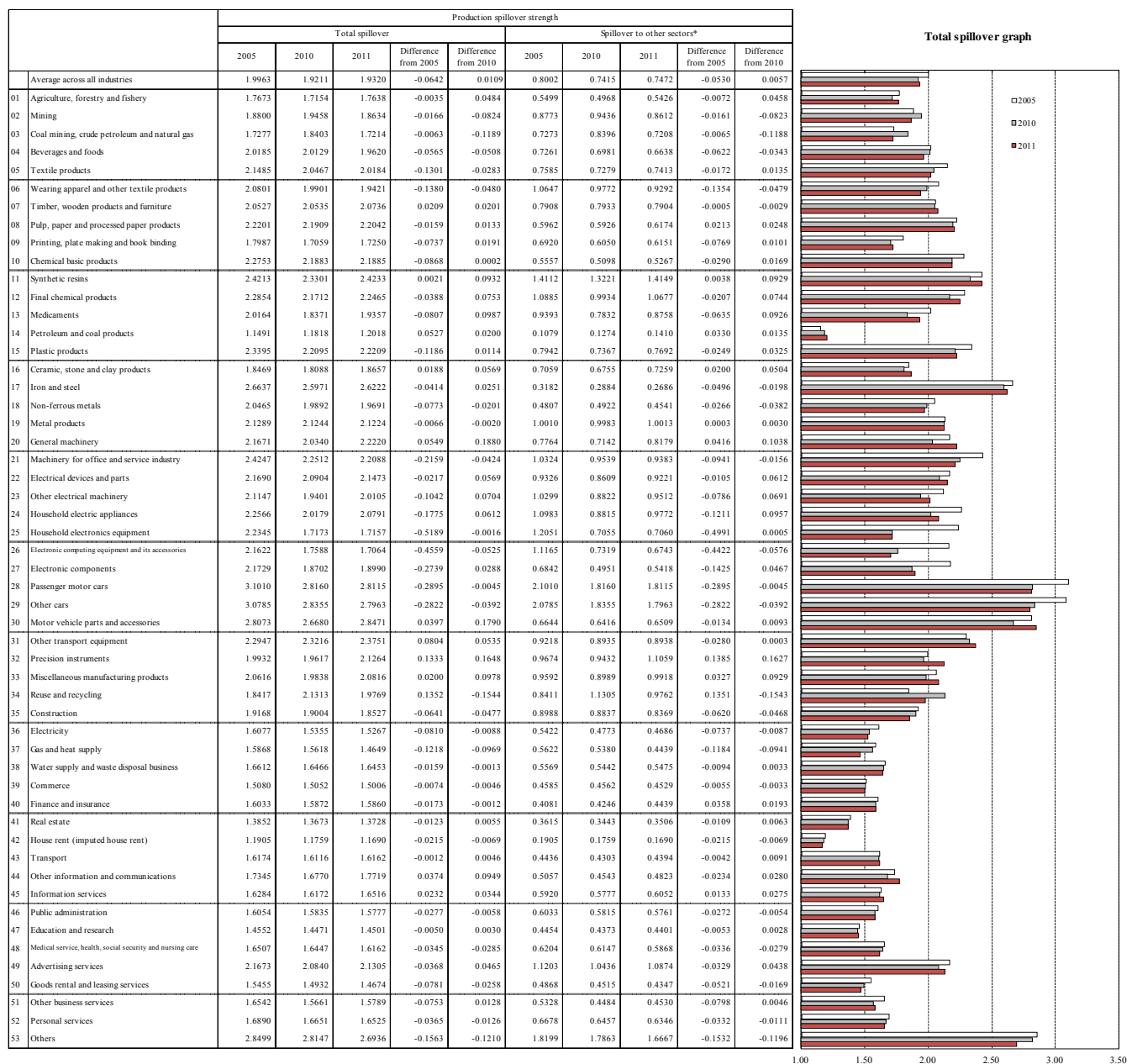


### 3. Structure of production spillover as being analyzed in the 2011 Input-Output Table

#### (1) Measure of production spillover strengths

Manufacturing activities of each industry spillover to other sectors successively through the purchasing of raw materials and services. With this principle in mind, take a look at changes in the strength of production spillover exerted toward the domestic products of each industry in terms of the Leontief inverse matrix (hereafter, this is referred to as "production spillover strength"), a measurement of gross effects on production of the same or different sector induced directly or indirectly when final demand in one industry increases by one unit.\*

Figure 3-1. Measure of production spillover strengths (in real terms)



\* "Spillover to other sectors" in Figure 3-1 is calculated by the following steps: divide the inverse of the coefficient matrix by intersection point values representing the focal sector; the intersection point value is subtracted from each sum of the columns in the inverse matrix coefficient table; and column totals are summed up.

Among production spillover strengths, the average 2011 total spillover across all industries was 1.9320 times that of initial demand.

By sector, the total spillover was high in "motor vehicle parts and accessories" (2.8471 times), "passenger motor cars" (2.8115 times), "other cars" (2.7963 times) and "iron and steel" (2.6222 times). Industries dealing with "other cars," "passenger motor cars" and "motor vehicle parts and accessories" purchase raw materials and such with high production spillover strengths, and purchases are made from many industries, extending production spillover strengths. The iron and steel industry also has high production spillover strength toward the same sector because of the input of steel products such as pig iron and crude iron, but has low production spillover strength toward other sectors.

The average spillover to other sectors across all industries was 0.7472 times that of initial demand. By sector, the spillover to other sectors was high in "passenger motor cars" (1.8115 times), "other cars" (1.7963 times) and "synthetic resins" (1.4149 times) (Figure 3-1).

#### 1) Comparisons with 2010

The total spillover increased by 0.0109 points from 2010.

By sector, the total spillover increased in 28 of 53 sectors, including "general machinery," "motor vehicle parts and accessories" and "precision instruments," while it decreased in 25 of 53 sectors, including "reuse and recycling," "coal mining, crude petroleum and natural gas" and "gas and heat supply."

The spillover to other sectors increased by 0.0057 points from 2010.

By sector, the spillover to other sectors increased in 31 of 53 sectors, including "precision instruments," "general machinery" and "household electric appliances," while it decreased in 22 of 53 sectors, including "reuse and recycling," "coal mining, crude petroleum and natural gas" and "gas and heat supply" (Figure 3-1).

#### 2) Comparisons with 2005

The total spillover decreased by 0.0642 points from 2005.

By sector, the total spillover increased in 12 of 53 sectors, including "reuse and recycling," "precision instruments" and "other transport equipment," while it decreased in 41 of 53 sectors, including "household electronics equipment," "electronic computing equipment and its accessories" and "passenger motor cars."

The spillover to other sectors decreased by 0.0530 points from 2005.

By sector, the spillover to other sectors increased in 11 of 53 sectors, including "precision instruments," "reuse and recycling" and "general machinery," while it decreased in 42 of 53 sectors, including "electronic computing equipment and its accessories," "household electronics equipment" and "passenger motor cars" (Figure 3-1).

Production spillovers generally decrease in response to:

- 1) lowered ratios of intermediate inputs (higher ratios of value added) by industries,
- 2) increased rates of import goods inputs (decreased rates of domestic goods inputs), or
- 3) increases in service industries.\*

\* The strengths of production spillovers by service industries are generally lower than those by goods industries; consequently, increases in ratios of services (= decreases in ratios of goods) in intermediate inputs result in

decreases in spillover strengths.

The 2011 production spillover strengths were higher than those in 2010. The rise is thought to be partly due to the fact that although each sector's intermediate input ratio declined and the share of services in intermediate inputs increased, all sectors—the processed and assembled products sector (with high spillover effects) in particular—showed an increase in their intermediate input ratio.

## (2) Final demand and production inducement

Looking at domestic production in 2011 in terms of the values induced by individual final demand items shows that domestic production induced by consumption, investment and exports amounted to 554.2, 168.4, and 164.8 trillion yen, respectively.

Looking at how much of domestic production in 2011 was induced by demand in individual final demand items, using production inducement dependency (composition of domestic production induced by individual final demand items), the production inducement dependency on consumption was 62.5%, followed by investment at 19.0% and exports at 18.6%. In a shift from 2010, the dependency on investment was higher than that on exports in 2011.

The 2011 production inducement coefficient—an index that indicates the level of domestic production induced per unit of demand in individual final demand items—for exports was 2.1048, followed by investment at 1.6865 and consumption at 1.4934 (Table 3-1).

### 1) Comparisons with 2010

Domestic production induced by individual final demand items shows that domestic production induced by consumption decreased by 0.7% from 2010, that by investment increased by 2.6%, and that by exports decreased by 0.7%.

The production inducement dependency on investment increased by 0.5% from 2010, while that on consumption and exports decreased by 0.4% and 0.1%, respectively.

The production inducement coefficient for exports increased by 0.0490 points from 2010, while that for consumption and investment decreased by 0.0118 and 0.0224 points, respectively (Table 3-1).

### 2) Comparisons with 2005

Domestic production induced by individual final demand items shows that domestic production induced by consumption and investment decreased by 3.7% and 20.1%, respectively, from 2005 but that by exports increased by 2.2%.

The production inducement dependency on consumption and exports increased by 1.7% and 1.6%, respectively, from 2005, while that on investment decreased by 3.3%.

Production inducement coefficients decreased in all final demand items from 2005 levels (Table 3-1).

Table 3-1. Trends by year of induced domestic production, production inducement coefficients, and production inducement dependency

	Induced domestic production (billion yen, %)									
	2005	2010	2011	Difference from 2005	Growth rate compared to 2005	Difference from 2010	Growth rate compared to 2010			
Consumption	575,746	558,364	554,226	-21,520	-3.7	-4,138	-0.7			
Consumption expenditure outside households	27,092	24,258	23,702	-3,390	-12.5	-556	-2.3			
Consumption expenditure (private)	426,398	412,426	409,411	-16,987	-4.0	-3,016	-0.7			
Consumption expenditure of general government	122,256	121,679	121,113	-1,143	-0.9	-566	-0.5			
Investment	210,740	164,060	168,376	-42,364	-20.1	4,316	2.6			
Capital formation (public)	44,468	35,555	33,706	-10,763	-24.2	-1,849	-5.2			
Capital formation (private)	162,122	126,529	130,224	-31,897	-19.7	3,696	2.9			
Increase in stocks	4,150	1,977	4,446	296	7.1	2,469	124.9			
Exports	161,216	165,957	164,808	3,592	2.2	-1,149	-0.7			
Total final demand	947,702	888,381	887,410	-60,293	-6.4	-971	-0.1			
	Production inducement coefficient					Production inducement dependency (%)				
	2005	2010	2011	Difference from 2005	Difference from 2010	2005	2010	2011	Difference from 2005	Difference from 2010
Consumption	1.5379	1.5052	1.4934	-0.0445	-0.0118	60.8	62.9	62.5	1.7	-0.4
Consumption expenditure outside households	1.6124	1.5607	1.5439	-0.0684	-0.0168	2.9	2.7	2.7	-0.2	-0.1
Consumption expenditure (private)	1.5181	1.4800	1.4698	-0.0484	-0.0102	45.0	46.4	46.1	1.1	-0.3
Consumption expenditure of general government	1.5942	1.5856	1.5685	-0.0256	-0.0171	12.9	13.7	13.6	0.7	0.0
Investment	1.8187	1.7090	1.6865	-0.1322	-0.0224	22.2	18.5	19.0	-3.3	0.5
Capital formation (public)	1.8670	1.8142	1.7654	-0.1016	-0.0488	4.7	4.0	3.8	-0.9	-0.2
Capital formation (private)	1.8017	1.6757	1.6655	-0.1362	-0.0102	17.1	14.2	14.7	-2.4	0.4
Increase in stocks	2.0052	2.2069	1.7397	-0.2655	-0.4672	0.4	0.2	0.5	0.1	0.3
Exports	2.1854	2.0558	2.1048	-0.0806	0.0490	17.0	18.7	18.6	1.6	-0.1
Total final demand	1.6803	1.6221	1.6156	-0.0647	-0.0064	100.0	100.0	100.0	0.0	0.0

### (3) Final demand and gross value-added inducement

Looking at induced gross value added in 2011, which is calculated by multiplying each sector's domestic production induced by each final demand item by each sector's gross value added rate, shows that gross value added induced by consumption, investment and exports amounted to 327.8, 80.1 and 64.3 trillion yen, respectively.

Looking at how much of gross value added in 2011 was induced by individual final demand items, using gross value-added inducement dependency (composition of gross value added induced by individual final demand items), the gross value-added inducement dependency on consumption was 69.4%, followed by investment at 17.0% and exports at 13.6%.

The gross value-added inducement coefficient—an index that indicates the level of gross value added induced per unit of demand in individual final demand items—for consumption was 0.8833, followed by exports at 0.8214 and investment at 0.8027 (Table 3-2).

#### 1) Comparisons with 2010

Gross value added induced by consumption decreased by 0.3% from 2010, that by investment increased by 3.4%, and that by exports decreased by 4.9%.

The gross value-added inducement dependency on consumption and investment increased by 0.0% and 0.6%, respectively, from 2010, while that on exports decreased by 0.7%.

Gross value-added inducement coefficients decreased in all final demand items from 2010 levels (Table 3-2).

## 2) Comparisons with 2005

Gross value added induced by consumption and investment decreased by 1.3% and 17.5%, respectively, from 2005, while that by exports increased by 3.2%.

The gross value-added inducement dependency on consumption and investment increased by 1.9% and 0.9%, respectively, from 2005, while that on exports decreased by 2.8%.

Gross value-added inducement coefficients decreased in all final demand items from 2005 levels (Table 3-2).

Table 3-2. Trends by year of induced gross value added, gross value-added inducement coefficients, and gross value-added inducement dependency

	Induced gross value added (billion yen, %)							Gross value-added inducement dependency (%)				
	2005	2010	2011	Difference from 2005	Growth rate compared to 2005	Difference from 2010	Growth rate compared to 2010	2005	2010	2011	Difference from 2005	Difference from 2010
Consumption	332,060	328,698	327,812	-4,249	-1.3	-886	-0.3	0.8870	0.8861	0.8833	-0.0037	-0.0028
Consumption expenditure outside households	14,324	13,280	13,077	-1,247	-8.7	-203	-1.5	0.8525	0.8544	0.8518	-0.0006	-0.0026
Consumption expenditure (private)	245,859	243,799	242,692	-3,167	-1.3	-1,107	-0.5	0.8753	0.8749	0.8712	-0.0041	-0.0036
Consumption expenditure of general government	71,877	71,620	72,043	165	0.2	423	0.6	0.9372	0.9333	0.9330	-0.0042	-0.0002
Investment	97,113	77,530	80,140	-16,973	-17.5	2,610	3.4	0.8381	0.8076	0.8027	-0.0354	-0.0049
Capital formation (public)	21,064	16,894	16,453	-4,611	-21.9	-441	-2.6	0.8844	0.8620	0.8618	-0.0226	-0.0003
Capital formation (private)	74,287	59,843	61,479	-12,808	-17.2	1,636	2.7	0.8256	0.7925	0.7863	-0.0393	-0.0063
Increase in stocks	1,762	793	2,209	447	25.4	1,416	178.5	0.8513	0.8854	0.8643	0.0130	-0.0211
Exports	62,349	67,654	64,317	1,968	3.2	-3,336	-4.9	0.8452	0.8380	0.8214	-0.0238	-0.0166
Total final demand	491,522	473,882	472,269	-19,253	-3.9	-1,613	-0.3	0.8715	0.8653	0.8598	-0.0117	-0.0054

## (4) Final demand and import inducement

Looking at imports induced by final demand in 2011 shows that imports induced by consumption, investment and exports amounted to 43.3, 19.7 and 14.0 trillion yen, respectively.

Looking at how much of imports in 2011 were induced by individual final demand items, using import inducement dependency (composition of imports induced by individual final demand items), the import inducement dependency on consumption was 56.3%, followed by investment at 25.6% and exports at 18.2%.

The import inducement coefficient—an index that indicates the level of imports induced per unit of demand in individual final demand items—for investment was 0.1973, followed by exports at 0.1786 and consumption at 0.1167 (Table 3-3).

## 1) Comparisons with 2010

Imports induced by consumption, investment and exports increased by 2.5%, 6.6%, and 7.0%, respectively, from 2010.

The import inducement dependency on investment and exports increased by 0.6% and 0.4%, respectively, from 2010, while that on consumption decreased by 1.0%.

Import inducement coefficients increased in all final demand items from 2010 (Table 3-3).

## 2) Comparisons with 2005

Imports induced by consumption, investment and exports increased by 2.4%, 5.0% and 22.5%, respectively, from 2005.

The import inducement dependency on exports increased by 2.4% from 2005, while that on consumption and investment decreased by 2.1% and 0.3%, respectively.

Import inducement coefficients increased in all final demand items from 2005 (Table 3-3).

Table 3-3. Trends by year of induced imports, import inducement coefficients, and import inducement dependency

	Induced imports (billion yen, %)									
	2005	2010	2011	Difference from 2005	Growth rate compared to 2005	Difference from 2010	Growth rate compared to 2010			
Consumption	42,305	42,253	43,311	1,005	2.4	1,058	2.5			
Consumption expenditure outside households	2,479	2,264	2,275	-204	-8.2	11	0.5			
Consumption expenditure (private)	35,014	34,869	35,864	851	2.4	996	2.9			
Consumption expenditure of general government	4,813	5,121	5,171	359	7.5	51	1.0			
Investment	18,758	18,470	19,697	938	5.0	1,227	6.6			
Capital formation (public)	2,754	2,704	2,639	-115	-4.2	-64	-2.4			
Capital formation (private)	15,697	15,664	16,711	1,014	6.5	1,047	6.7			
Increase in stocks	308	103	347	39	12.7	244	237.9			
Exports	11,419	13,074	13,983	2,564	22.5	909	7.0			
Total final demand	72,483	73,797	76,991	4,507	6.2	3,194	4.3			
	Import inducement coefficient					Import inducement dependency (%)				
	2005	2010	2011	Difference from 2005	Difference from 2010	2005	2010	2011	Difference from 2005	Difference from 2010
Consumption	0.1130	0.1139	0.1167	0.0037	0.0028	58.4	57.3	56.3	-2.1	-1.0
Consumption expenditure outside households	0.1475	0.1456	0.1482	0.0006	0.0026	3.4	3.1	3.0	-0.5	-0.1
Consumption expenditure (private)	0.1247	0.1251	0.1288	0.0041	0.0036	48.3	47.2	46.6	-1.7	-0.7
Consumption expenditure of general government	0.0628	0.0667	0.0670	0.0042	0.0002	6.6	6.9	6.7	0.1	-0.2
Investment	0.1619	0.1924	0.1973	0.0354	0.0049	25.9	25.0	25.6	-0.3	0.6
Capital formation (public)	0.1156	0.1380	0.1382	0.0226	0.0003	3.8	3.7	3.4	-0.4	-0.2
Capital formation (private)	0.1744	0.2075	0.2137	0.0393	0.0063	21.7	21.2	21.7	0.0	0.5
Increase in stocks	0.1487	0.1146	0.1357	-0.0130	0.0211	0.4	0.1	0.5	0.0	0.3
Exports	0.1548	0.1620	0.1786	0.0238	0.0166	15.8	17.7	18.2	2.4	0.4
Total final demand	0.1285	0.1347	0.1402	0.0117	0.0054	100.0	100.0	100.0	0.0	0.0

## (5) Indices of the power of dispersion and sensitivity of dispersion

The 2011 indices of the power of dispersion and sensitivity of dispersion indicated that many goods sectors had high index values for the power of dispersion and low index values for the sensitivity of dispersion. Among goods sectors, 25 sectors had index values for the power of dispersion greater than 1, while 10 sectors had values less than 1. In addition, eight goods sectors had index values for the sensitivity of dispersion greater than 1, while 27 goods sectors had values less than 1.

Sectors plotted in Quadrant [I] exert strong influence on entire industries and are sensitive to external influences; they include "iron and steel," "motor vehicle parts and accessories" and "chemical basic products."

Sectors plotted in Quadrant [IV] exert strong influence on entire industries and are weakly affected by external influences; they include "other cars" and "passenger motor cars."

Sectors plotted in Quadrant [II] exert weak influence on entire industries and are sensitive to external influences; they include "petroleum and coal products."

Sectors plotted in Quadrant [III] exert weak influence on entire industries and are weakly affected by external influences; they include "electronic computing equipment and its accessories," "household electronics equipment" and "coal mining, crude petroleum and natural gas" (Figure 3-2).

### Index of the power of dispersion

The index is calculated by the following procedure: each sum of the columns in the inverse matrix coefficient table is divided by the mean value of the entire vertical sum in the inverse matrix coefficient table. The index allows measurement of a relative strength being exerted by the corresponding industry toward entire industries. Industries with an index value greater than 1 exert above average influence.

### Index of the sensitivity of dispersion

The index is calculated by the following procedure: each sum of the rows in the inverse matrix coefficient table is divided by the mean value of the entire horizontal sum in the inverse matrix coefficient table. The index allows measurement of a relative strength of influence that the corresponding industry receives from all other industries. Industries with an index value greater than 1 have above average sensitivity to external influence.

Figure 3-2. Indices of the power of dispersion and sensitivity of dispersion (goods)

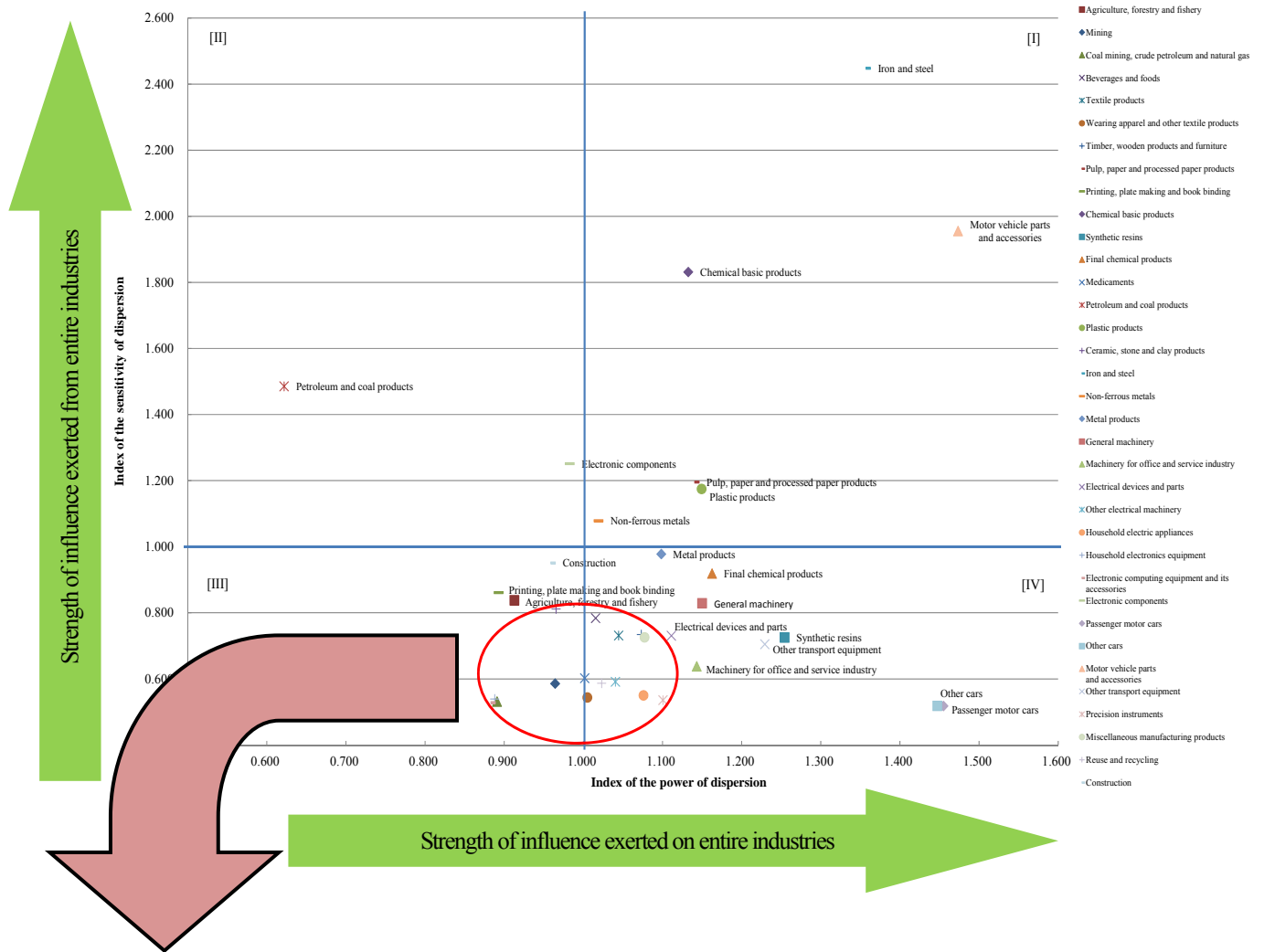
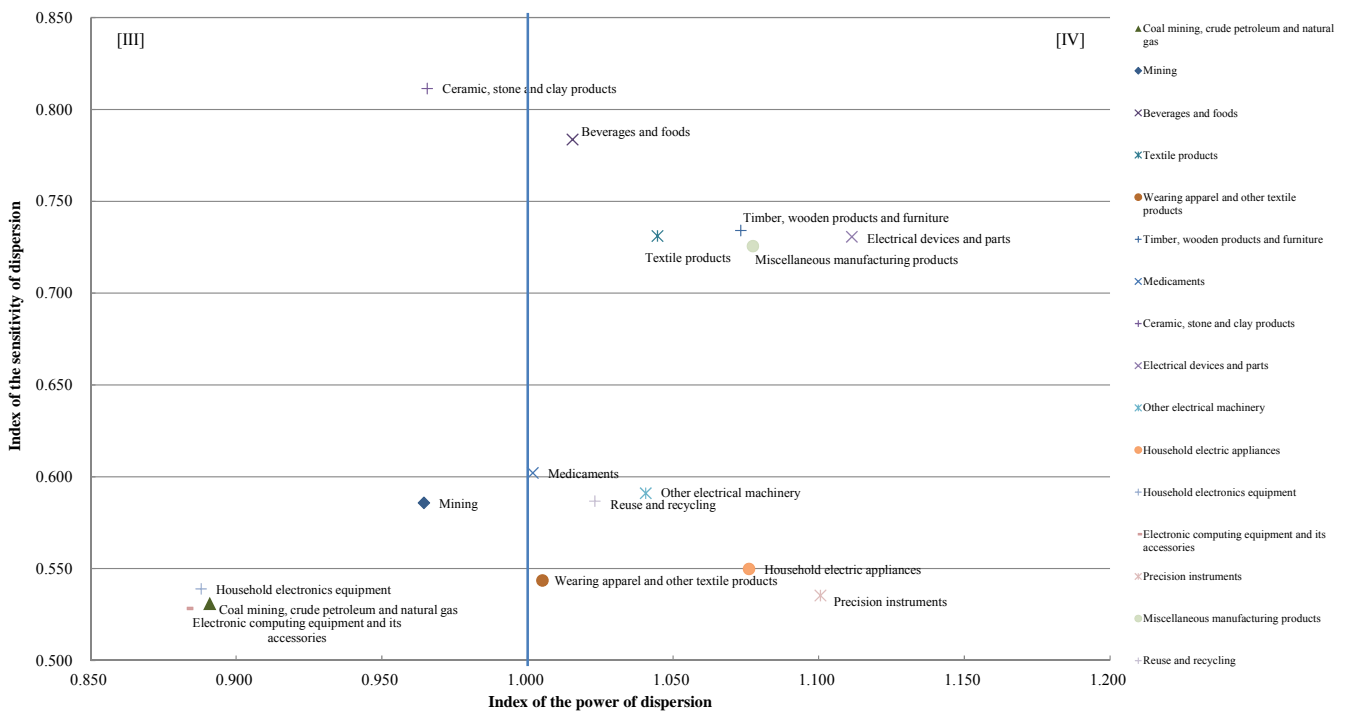


Figure 3-2. Indices of the power of dispersion and sensitivity of dispersion (goods) (enlarged figure)



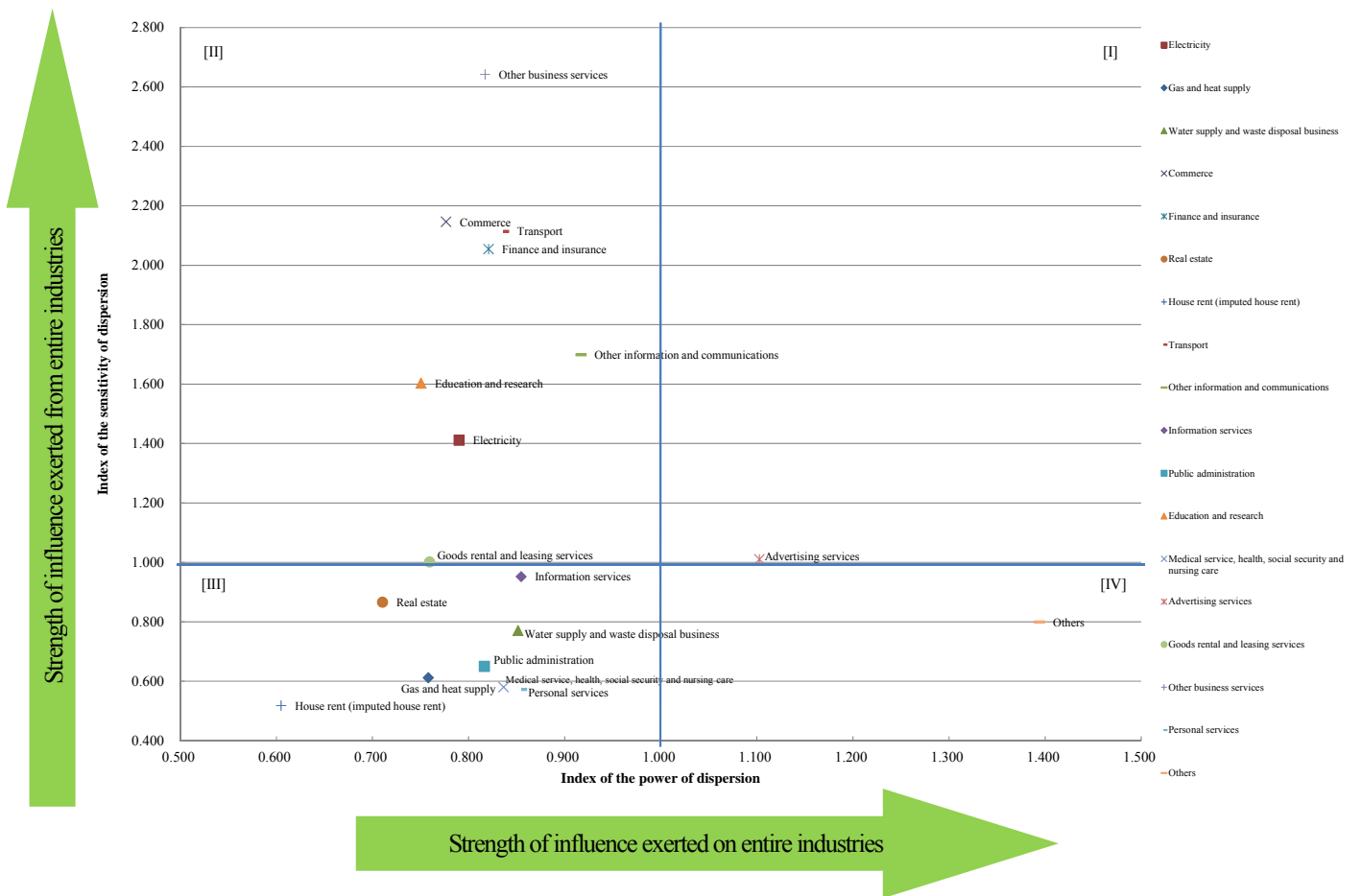


Most service sectors had low index values for the power of dispersion. Among service sectors, two sectors had index values for the power of dispersion greater than 1, while 16 sectors had values less than 1. In addition, nine service sectors had index values for the sensitivity of dispersion greater than 1, while nine service sectors had values less than 1.

Sectors plotted in Quadrant [II] exert weak influence on entire industries and are sensitive to external influences; they include "other business services," "commerce," "transport" and "finance and insurance."

Sectors plotted in Quadrant [III] exert weak influence on entire industries and are weakly affected by external influences; they include "house rent (imputed house rent)," "real estate" and "gas and heat supply" (Figure 3-3).

Figure 3-3. Indices of the power of dispersion and sensitivity of dispersion (services)



#### 4. Analysis of factors contributing to variations in production

An analysis of factors<sup>\*1</sup> was attempted based on the equation output model derived from input-output tables to explain the changes in 2011 domestic production values by year from the perspective of changes in production technology structure, changes in final demand scale,<sup>\*2</sup> changes in final demand inter-item structure, and changes in final demand merchandise composition.

##### (1) Comparisons with 2010

Looking at changes in production technology structure and changes in final demand, the changes in production technology structure made a negative contribution to growth of 0.22% and the changes in final demand made a negative contribution of 0.27%.

Breaking down the changes in final demand reveals that the largest contribution to domestic production growth in 2011 was made by the changes in final demand scale at 0.05%, followed by the changes in final demand inter-item structure and the changes in final demand merchandise composition, with both providing a negative contribution of 0.03% and 0.25%, respectively (Table 4-1).

Table 4-1 Factors contributing to variations in production  
(changes in production technology structure and final demand)

	2011		2011	
	Difference in value (billion yen)		Degree of contribution to growth rate (%)	
	From 2005	From 2010	From 2005	From 2010
Production value	-60,293	-971	-6.4	-0.1
Changes in production technology structure	-24,513	1,920	-2.59	0.22
Changes in final demand	-37,332	-2,431	-3.94	-0.27
Changes in final demand scale	-31,154	-483	-3.29	-0.05
Changes in final demand inter-item structure	-845	288	-0.09	0.03
Changes in final demand merchandise composition	-5,332	-2,236	-0.56	-0.25
Confounding item	1,553	-461	0.16	-0.05

Below, we examine the elements of the following factors: 1) changes in final demand inter-item structure and 2) changes in final demand merchandise composition—the two factors comprising the changes in final demand—, and 3) changes in production technology structure.

<sup>\*1</sup> See Annotation for a model equation to analyze factors contribution to variations.

<sup>\*2</sup> These factors: changes in final demand scale, changes in final demand inter-item structure, and changes in final demand merchandise composition, are considered to jointly contribute to changes in final demand.

1) Changes in final demand inter-item structure

Dividing the changes in final demand inter-item structure into consumption, investment and exports reveals that consumption and exports made a negative contribution to growth of 0.14% and 0.55%, respectively and investment made a positive contribution of 0.72% (Table 4-2).

2) Changes in final demand merchandise composition

Dividing the changes in final demand merchandise composition into consumption, investment and exports reveals that consumption and investment made a negative contribution to growth of 0.08% and 0.18%, respectively and exports made a positive contribution of 0.01% (Table 4-2).

Table 4-2. Changes in final demand

	2011		2011	
	Difference in value (billion yen)		Degree of contribution to growth rate (%)	
	From 2005	From 2010	From 2005	From 2010
Changes in final demand	-37,332	-2,431	-3.94	-0.27
Changes in final demand scale	-31,154	-483	-3.29	-0.05
Changes in final demand inter-item structure	-845	288	-0.09	0.03
Consumption	12,126	-1,248	1.28	-0.14
Investment	-28,692	6,438	-3.03	0.72
Exports	15,721	-4,902	1.66	-0.55
Changes in final demand merchandise composition	-5,332	-2,236	-0.56	-0.25
Consumption	-3,209	-743	-0.34	-0.08
Investment	-2,751	-1,574	-0.29	-0.18
Exports	628	81	0.07	0.01

Next, we look at consumption, investment and exports by sector.

i) Factors contributing to variations in consumption

Dividing consumption (with a negative contribution to growth of 0.08%) under "changes in final demand merchandise composition" into goods and services reveals that goods recorded a negative contribution of 0.27% and services recorded a positive contribution of 0.19%.

Among goods sectors, "primary products" made a positive contribution to growth of 0.05%, while "manufactured products" and "construction" made a negative contribution of 0.31% and 0.01%, respectively. Breaking down "manufactured products" shows that "other products" contributed to growth with a positive contribution of 0.19% but the rest of the sectors made a negative contribution to growth.

Among service sectors, "commerce" and "public services" contributed to growth with a positive contribution of 0.39% and 0.26%, respectively but the rest of the sectors made a negative contribution to growth (Table 4-3).

Table 4-3. Changes in merchandise composition in consumption

	Consumption			
	2011		2011	
	Difference in value (billion yen)		Degree of contribution to growth rate (%)	
	From 2005	From 2010	From 2005	From 2010
Total	-3,209	-743	-0.34	-0.08
Goods	-5,209	-2,400	-0.55	-0.27
Primary products	-37	449	0.00	0.05
Manufactured products	-5,211	-2,778	-0.55	-0.31
Raw material products	-1,015	-151	-0.11	-0.02
Processed and assembled products	-4,187	-4,356	-0.44	-0.49
Other products	-9	1,729	0.00	0.19
Construction	39	-71	0.00	-0.01
Services	2,000	1,657	0.21	0.19
Commerce	-480	3,469	-0.05	0.39
Finance and real estate	-798	-1,846	-0.08	-0.21
Transport and information and communications	2,341	-1,949	0.25	-0.22
Public services	4,593	2,321	0.48	0.26
Other services	-3,657	-339	-0.39	-0.04

ii) Factors contributing to variations in investment

Dividing investment (with a negative contribution to growth of 0.18%) under "changes in final demand merchandise composition" into goods and services reveals that goods recorded a negative contribution of 0.32% and services recorded a positive contribution of 0.15%.

Among goods sectors, "primary products" and "manufactured products" made a negative contribution to growth of 0.04% and 0.30%, respectively, while "construction" made a positive contribution of 0.02%. Breaking down "manufactured products" shows that "other products" contributed to growth with a positive contribution of 0.07% but the rest of the sectors made a negative contribution to growth.

Among service sectors, "commerce" and "finance and real estate" contributed to growth with a positive contribution of 0.26% and 0.01%, respectively but the rest of the sectors made a negative contribution to growth (Table 4-4).

Table 4-4. Changes in merchandise composition in investment

	Investment			
	2011		2011	
	Difference in value (billion yen)		Degree of contribution to growth rate (%)	
	From 2005	From 2010	From 2005	From 2010
Total	-2,751	-1,574	-0.29	-0.18
Goods	-8,674	-2,867	-0.92	-0.32
Primary products	-156	-377	-0.02	-0.04
Manufactured products	-2,822	-2,663	-0.30	-0.30
Raw material products	-2,571	-419	-0.27	-0.05
Processed and assembled products	-742	-2,904	-0.08	-0.33
Other products	491	660	0.05	0.07
Construction	-5,695	173	-0.60	0.02
Services	5,922	1,294	0.62	0.15
Commerce	3,896	2,338	0.41	0.26
Finance and real estate	229	131	0.02	0.01
Transport and information and communications	1,280	-742	0.14	-0.08
Public services	3	-93	0.00	-0.01
Other services	514	-341	0.05	-0.04

## iii) Factors contributing to variations in exports

Dividing exports (with a positive contribution to growth of 0.01%) under "changes in final demand merchandise composition" into goods and services reveals that goods recorded a positive contribution of 0.04% and services recorded a negative contribution of 0.03%.

Among goods sectors, "manufactured products" made a positive contribution to growth of 0.04%. Breaking down "manufactured products" shows that "raw material products" and "processed and assembled products" made a positive contribution to growth of 0.01% and 0.03%, respectively but "other products" made a negative contribution of 0.00%.

Among service sectors, "commerce" and "finance and real estate" contributed to growth with a positive contribution of 0.01% and 0.00%, respectively but the rest of the sectors made a negative contribution to growth (Table 4-5).

Table 4-5. Changes in merchandise composition in exports

	Exports			
	2011		2011	
	Difference in value (billion yen)		Degree of contribution to growth rate (%)	
	From 2005	From 2010	From 2005	From 2010
Total	628	81	0.07	0.01
Goods	2,428	338	0.26	0.04
Primary products	2	-17	0.00	0.00
Manufactured products	2,424	357	0.26	0.04
Raw material products	1,994	109	0.21	0.01
Processed and assembled products	500	254	0.05	0.03
Other products	-69	-6	-0.01	0.00
Construction	3	-2	0.00	0.00
Services	-1,801	-257	-0.19	-0.03
Commerce	-346	128	-0.04	0.01
Finance and real estate	-330	37	-0.03	0.00
Transport and information and communications	-1,416	-388	-0.15	-0.04
Public services	115	-15	0.01	0.00
Other services	177	-19	0.02	0.00

### 3) Changes in production technology structure

Dividing the changes in production technology structure (with a positive contribution to growth of 0.22%) into goods and services reveals that both goods and services recorded a positive contribution of 0.10% and 0.11%, respectively.

Among goods sectors, "primary products" made a negative contribution to growth of 0.09%, while "manufactured products" and "construction" made a positive contribution of 0.15% and 0.04%, respectively. Breaking down "manufactured products" shows that "raw material products" contributed to growth with a positive contribution of 0.37% but "processed and assembled products" and "other products" made a negative contribution to growth of 0.03% and 0.19%, respectively.

Among service sectors, "commerce" and "finance and real estate" made a negative contribution to growth of 0.10% and 0.15%, respectively but the rest of the sectors contributed to growth (Table 4-6).

Table 4-6. Changes in production technology structure

	Changes in production technology structure			
	2011		2011	
	Difference in value (billion yen)		Degree of contribution to growth rate (%)	
	From 2005	From 2010	From 2005	From 2010
Total	-24,513	1,920	-2.59	0.22
Goods	-14,513	925	-1.53	0.10
Primary products	-632	-786	-0.07	-0.09
Manufactured products	-13,297	1,331	-1.40	0.15
Raw material products	-5,681	3,289	-0.60	0.37
Processed and assembled products	-6,050	-265	-0.64	-0.03
Other products	-1,566	-1,693	-0.17	-0.19
Construction	-584	380	-0.06	0.04
Services	-10,000	995	-1.06	0.11
Commerce	-8,064	-857	-0.85	-0.10
Finance and real estate	-4,601	-1,313	-0.49	-0.15
Transport and information and communications	1,783	836	0.19	0.09
Public services	-267	1,179	-0.03	0.13
Other services	1,148	1,151	0.12	0.13

### (2) Comparisons with 2005

Looking at changes in production technology structure and changes in final demand, both of them made a negative contribution to growth of 2.59% and 3.94%, respectively.

Breaking down the changes in final demand reveals that the largest negative contribution to domestic production growth in 2011 was made by the changes in final demand scale, with a negative contribution of 3.29%, followed by the changes in final demand inter-item structure and the changes in final demand merchandise composition, with a negative contribution of 0.09% and 0.56%, respectively (Table 4-1).

Below, we examine the elements of the following factors: 1) changes in final demand inter-item structure and 2) changes in final demand merchandise composition—the two factors comprising the changes in final demand—and 3) changes in production technology structure.

### 1) Changes in final demand inter-item structure

Dividing the changes in final demand inter-item structure into consumption, investment and exports reveals that consumption and exports made a positive contribution to growth of 1.28% and 1.66%, respectively and investment made a negative contribution of 3.03% (Table 4-2).

### 2) Changes in final demand merchandise composition

Dividing the changes in final demand merchandise composition into consumption, investment and exports reveals that consumption and investment made a negative contribution to growth of 0.34% and 0.29%, respectively and exports made a positive contribution of 0.07% (Table 4-2).

Next, we look at consumption, investment and exports by sector.

#### i) Factors contributing to variations in consumption

Dividing consumption (with a negative contribution to growth of 0.34%) under "changes in final demand merchandise composition" into goods and services reveals that goods recorded a negative contribution of 0.55% and services recorded a positive contribution of 0.21%.

Among goods sectors, "primary products" and "manufactured products" made a negative contribution to growth of 0.00% and 0.55%, respectively, while "construction" made a positive contribution of 0.00%. Breaking down "manufactured products," all sectors made a negative contribution to growth.

Among service sectors, "transport and information and communications" and "public services" contributed to growth with a positive contribution of 0.25% and 0.48%, respectively but the rest of the sectors made a negative contribution to growth (Table 4-3).

#### ii) Factors contributing to variations in investment

Dividing investment (with a negative contribution to growth of 0.29%) under "changes in final demand merchandise composition" into goods and services reveals that goods recorded a negative contribution of 0.92% and services recorded a positive contribution of 0.62%.

Among goods sectors, "primary products," "manufactured products" and "construction" all made a negative contribution to growth of 0.02%, 0.30% and 0.60%, respectively. Breaking down "manufactured products" shows that "other products" contributed to growth with a positive contribution of 0.05% but the rest of the sectors made a negative contribution to growth.

Among service sectors, all sectors contributed to growth, with "commerce" providing the largest positive contribution of 0.41% (Table 4-4).

### iii) Factors contributing to variations in exports

Dividing exports (with a positive contribution to growth of 0.07%) under "changes in final demand merchandise composition" into goods and services reveals that goods recorded a positive contribution of 0.26% and services recorded a negative contribution of 0.19%.

Among goods sectors, "manufactured products" made a positive contribution to growth of 0.26%. Breaking down "manufactured products" shows that "other products" made a negative contribution to growth of 0.01% but the rest of the sectors contributed to growth.

Among service sectors, "public services" and "other services" contributed to growth with a positive contribution of 0.01% and 0.02%, respectively but the rest of the sectors made a negative contribution to growth (Table 4-5).

### 3) Changes in production technology structure

Dividing the changes in production technology structure (with a negative contribution to growth of 2.59%) into goods and services reveals that both goods and services recorded a negative contribution of 1.53% and 1.06%, respectively.

Among goods sectors, "primary products," "manufactured products" and "construction" all made a negative contribution to growth of 0.07%, 1.40% and 0.06%, respectively. Breaking down "manufactured products," all sectors made a negative contribution to growth.

Among service sectors, "transport and information and communications" and "other services" contributed to growth with a positive contribution of 0.19% and 0.12%, respectively but the rest of the sectors made a negative contribution to growth (Table 4-6).



## [Annotation 1] Model Equation to Analyze Factors Contributing to Variations in Production

### 1. Basic model to analyze factors contribution to variations

Equation (1) is the basic equation of the equation output model.

#### Explanation of symbols

$X$  : Domestic production,  $M$  : Imports,  $E$  : Exports,  $Y$  : Domestic final demand,  $A$  : Input coefficients,  $I$  : Identity matrix

$$X = [I - (I - \hat{M})A]^{-1}[(I - \hat{M})Y + E] \quad \dots \dots \dots (1)$$

For the sake of convenience in explanation, we here call the inverse matrix coefficients  $[I - (I - \hat{M})A]^{-1}$  in equation (1) "production technology structure" and express it as  $(B)$  and define final demand for domestic products  $[(I - \hat{M})Y + E]$  as  $(F)$ . Induced domestic production ( $X$ ) can be obtained by multiplying production technology structure ( $B$ ) by final demand for domestic products ( $F$ ) as shown in equation (2) below:

$$X = BF \quad \dots \dots \dots (2)$$

Thus, if we define the variations in domestic production between Year  $o$  (base year: 2005 for example) and Year  $t$  (year to be compared: 2010 for example) as  $\Delta X$ , the variations in final demand for domestic products as  $\Delta F$ , and the variations in the production technology structure of domestic products as  $\Delta B$ , equation (2) can be resolved as follows and equation (3) can be obtained by simplifying it.

#### Explanation of symbols

$o$  : Base year,  $t$  : Year to be compared,  $\Delta$  : Variations

Base year:  $X^o = B^o F^o$

Year to be compared:  $X^t = B^t F^t = (B^o + \Delta B)(F^o + \Delta F)$

Variations in domestic production:  $\Delta X = X^t - X^o$   
 $= B^t F^t - B^o F^o$   
 $= (B^o + \Delta B)(F^o + \Delta F) - B^o F^o$

$$\therefore \Delta X = B^o \Delta F + \Delta B F^o + \Delta B \Delta F \quad \dots \dots \dots (3)$$

The definitions in equation (3) are as follows:

The first term on the right-hand side  $B^o \Delta F$  : Variations caused by changes in final demand

The second term on the right-hand side  $\Delta B F^o$  : Variations caused by changes in production technology structure

The third term on the right-hand side  $\Delta B \Delta F$  : Variations caused by simultaneous changes in the two factors above (confounding item)

## 2. Decomposition of factors contributing to final demand

### Explanation of symbols

$c$  : Distribution matrix (commodity composition for each final demand item)

$e$  : Distribution coefficient row vector

(Composition ratio of the column total of each final demand item to the sum total of final demand)

$\hat{e}$  : Diagonal matrix that has elements of  $e$  as the diagonal elements

$\phi$  : Sum total of final demand (scalar)

Using the three factors  $c$ ,  $\hat{e}$  and  $\phi$ , final demand for domestic products  $F$  can be expressed as follows in equation (4) :

$$F = c\hat{e}\phi \quad \dots\dots\dots (4)$$

Thus, variations ( $\Delta F$ ) in final demand for domestic products  $F$  can be resolved as follows in equation (5):

Base year:  $F^o = c^o\hat{e}^o\phi^o$

Year to be compared:  $F^t = c^t\hat{e}^t\phi^t$

Variations:  $\Delta F = F^t - F^o$

$$= c^t\hat{e}^t\phi^t - c^o\hat{e}^o\phi^o$$

$$= (c^o + \Delta c)(\hat{e}^o + \Delta\hat{e})(\phi^o + \Delta\phi) - c^o\hat{e}^o\phi^o$$

$$\therefore \Delta F = c^o\hat{e}^o\Delta\phi + c^o\Delta\hat{e}\phi^o + \Delta c\hat{e}^o\phi^o + (c^o\Delta\hat{e}\Delta\phi + \Delta c\hat{e}^o\Delta\phi + \Delta c\Delta\hat{e}\phi^o + \Delta c\Delta\hat{e}\Delta\phi) \quad \dots\dots\dots (5)$$

Further details of the factors contributing to variations in domestic production can be obtained by substituting equation (5) into the first term on the right-hand side of equation (3) above.

(Same as (3) above)  $\Delta X = B^o\Delta F + \Delta BF^o + \Delta B\Delta F \quad \dots\dots\dots (3)$

$$\therefore \Delta X = B^oc^o\hat{e}^o\Delta\phi + B^oc^o\Delta\hat{e}\phi^o + B^o\Delta c\hat{e}^o\phi^o + \Delta BF^o$$

$$+ \left\{ \begin{array}{l} (B^oc^o\Delta\hat{e}\Delta\phi + B^o\Delta c\hat{e}^o\Delta\phi + B^o\Delta c\Delta\hat{e}\phi^o + \Delta Bc^o\hat{e}^o\Delta\phi + \Delta Bc^o\Delta\hat{e}\phi^o \\ + \Delta B\Delta c\hat{e}^o\phi^o) + (B^o\Delta c\Delta\hat{e}\Delta\phi + \Delta Bc^o\Delta\hat{e}\Delta\phi + \Delta B\Delta c\hat{e}^o\Delta\phi + \Delta B\Delta c\Delta\hat{e}\phi^o) \\ + (\Delta B\Delta c\Delta\hat{e}\Delta\phi) \end{array} \right\}$$

$$\dots\dots\dots (6)$$

The definitions in equation (6) are as follows:

The first term on the right-hand side  $B^oc^o\hat{e}^o\Delta\phi$  : Variations caused by changes in final demand scale

The second term on the right-hand side  $B^oc^o\Delta\hat{e}\phi^o$  : Variations caused by changes in final demand inter-item (column total) structure

The third term on the right-hand side  $B^o\Delta c\hat{e}^o\phi^o$  : Variations caused by changes in commodity (goods/services) composition for individual final demand items

The fourth term on the right-hand side  $\Delta BF^o$  : Variations caused by changes in production technology structure

{ } in the fifth term on the right-hand side: Variations caused by simultaneous changes in two or more of the four factors above (confounding item)