Korean Economic and Industrial Outlook for the Second Half of 2020[1]

Economic Outlook and Analysis Division

1. Summary

In 2020, the Korean economy is expected to grow 0.1 percent from the previous year amid the COVID-19 pandemic, due to continued sluggish exports, the transition of consumption to a negative trend, and limited recovery in investment demand. The future trajectory of the pandemic is the most significant factor for the domestic and international economies. In addition, the trends of policy effects in major economies, U.S.-China trade tensions, consumer sentiment, and effects of the Korean government's policies will affect the economy as well.

1 This article summarizes two papers from the Korea Institute for Industrial Economics & Trade: "Outlook for major industries in the second half of 2020" (Center for Growth Engine Industries, 2020) and "Economic Outlook for the second half of 2020" (Center for Economic Outlook and Statistical Analysis, 2020).

Consumption is expected to drop off from the last year, due to falling real income, deteriorating employment, and growing uncertainty in the global economy. Facilities investment will increase moderately, given investments in the semiconductor industry underway in preparation for post-COVID-19 business expansion, but overall sluggishness caused by the depressed global economy will rein in expansionary spending. Construction investment will likely decline, owing to a slump in the private sector caused by government regulations on real estate and the effects of COVID-19. Exports will depend on whether the pandemic persists, but in the second half of the year, slumping exports will gradually pick up if countries such as China enter a recovery phase. Yet against this backdrop, total exports in 2020 are expected to drop by 9.1 percent.

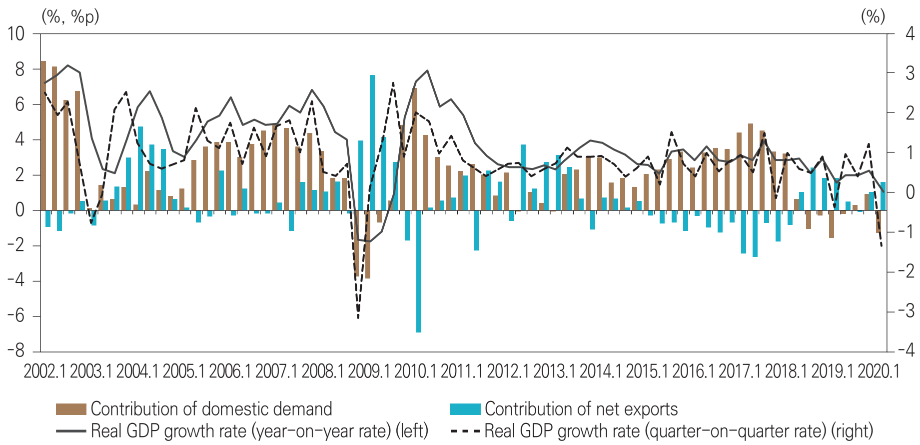
In the second half of 2020, exports in 12 major industries are expected to fall, owing to the economic recession associated with COVID-19, although the decline is expected to be less than that recorded in the first half of the year. Notably, exports will continue falling in the second half among various industries including automobiles and home appliances, as durables are sensitive to the business cycle. Exports of textiles, steel, refined oil, and petrochemicals, which are affected by the movement of unit prices and finally displays, which are being hit hard by declining competitiveness, will also drop off. On the other hand, ICT devices and semiconductors, which are crucial to the conversion toward a non-contact economy, will see their exports grow in the second half of 2020. Meanwhile, going into the second half of the year, the production of ICT devices and semiconductors is expected to continue its growth from the first half, and the production of rechargeable batteries will likely transition to a positive trend. Slack in production in other industries, excluding displays, are likely to be alleviated as export declines in materials industries remain modest and exports in other industries are expected to fare better than in the first six months of 2020.

2. Macroeconomic Outlook

(1) Overview of Domestic Economic Conditions

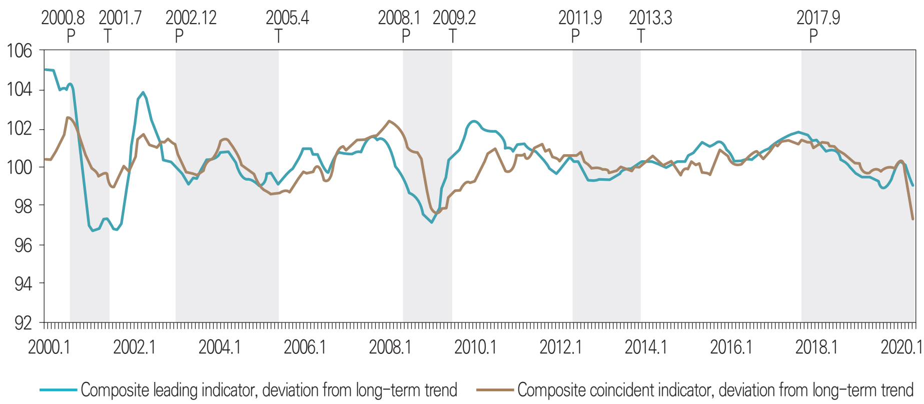
The growth of the Korean real economy slowed due to the sluggishness of the global economy last year. This year, despite the easing slump in exports, the COVID-19 pandemic has negatively affected real economic indicators, such as production, investment, and consumption. Private consumption has fallen significantly since shifting to a year-on-year decrease in the first quarter even as facilities investment has transitioned to an increase and construction investment maintained its growth. Exports (measured on a custom clearance basis) had recovered moderately earlier this year, but began to decline in April due to the sudden drop of unit prices amid the

Figure 1. Real GDP Growth and Contribution to Growth by Sectors



Source: Bank of Korea.
Note: Domestic demand is the sum of private consumption and gross fixed capital formation.

Figure 2. Trends of the Composite Index



Source: Statistics Korea.

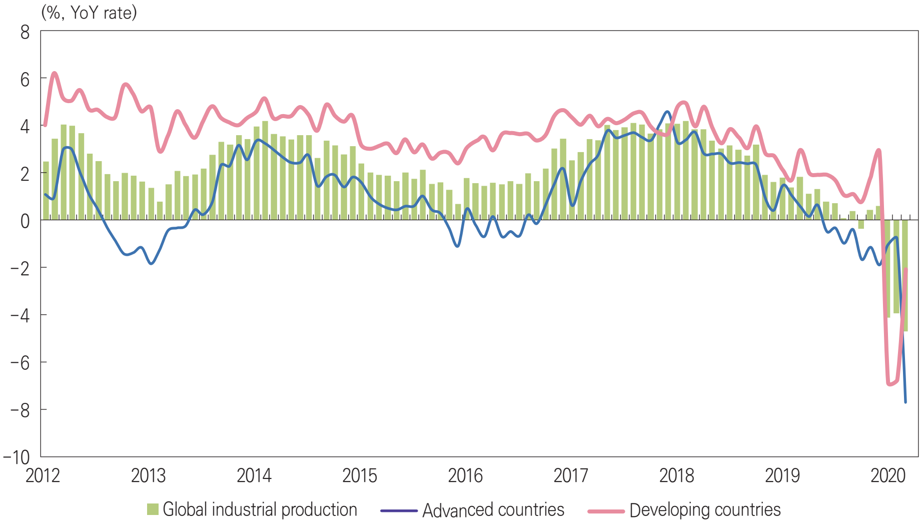
sharp reduction of global trade and falling international oil prices following lockdowns imposed to contain the spread of COVID-19.

As for industrial production, the services industry, which had been growing steadily, dropped sharply as the COVID-19 pandemic struck. The growth rate of mining and industrial production, which had been rising since the end of last year, transitioned to a downward in April. The leading indicators and coincident indicators began to decline in the wake of the coronavirus outbreak, reflecting growing economic uncertainty.

(2) Outook for External Conditions

As for the real economic conditions of the world, growth in both advanced and emerging market economies had been sluggish until the end of last year and in 2020 the global economy shifted to an abrupt decline phase, beginning with emerging market economies. Among advanced economies, the United States saw zero growth year on year, with a sharp fall in consumption and investment at the beginning of the year. Meanwhile, the Japanese economy has posted negative growth for two consecutive quarters, and the Eurozone is registering its lowest growth rate since the global financial cri-

Figure 3. Global Industrial Production



Source: CPB Netherlands Bureau for Economic Policy Analysis.

sis. Among emerging economies, the Chinese economy fell to six percent growth in the second half of last year, and in the first quarter of 2020, it recorded negative growth for the first time. In the first quarter, Brazil and Russia remained in a slump, with their economic growth having declined to around one percent last year. Global industrial production has fallen to negative four percent, after hitting zero growth year on year in the second half of 2019.

The global economy may regain stability gradually in the second half of 2020 if COVID-19 does not spread further, but will inevitably record negative aggregate growth on this year. The U.S. economy is likely to recover slowly, thanks to the government's massive economic support measures and aggressive monetary easing of the Federal Reserve, although the high unemployment rate and slashed incomes will make recovery difficult. In Japan and the Eurozone, which rely heavily on the services industry, it will be quite a while before economic activity returns to normal. Although the Chinese economy is rapidly rebounding, weak demand overseas is a risk factor. Major factors that will determine the direction of the global economy going forward include how the COVID-19 pandemic unfolds, how economic agents' insecurity is resolved and the persistence of major econo-

Table 1. Overview of the World Economic Outlook

Unit: %, YoY rate

	2018	2019			2020	2020 (f)			
	Year	First half	Second half	Year	Q1	IMF	World Bank	OECD[2]	
								Standard	Pessimistic
Global economy	3.6			2.9		-3.0	-4.1	-6.0	-7.6
Advanced economies[1]	2.2	1.7	1.7	1.7	–	-6.1	-7.0	-7.5	-9.3
United states	2.9	2.5	2.2	2.3	0.2 (-5.0)	-5.9	-6.1	-7.3	-8.5
Eurozone	1.9	1.3	1.2	1.2	-3.1	-7.5	-9.1	-9.1	-11.5
Japan	0.3	0.9	0.5	0.7	-1.7	-5.2	-6.1	-6.0	-7.3
Developing economies	4.5			3.7		-1.0	-2.5	-4.6	-6.1
China	6.6	6.3	6.0	6.1	-6.8	1.2	1.0	-2.6	-3.7
Trade	3.8			0.9		-11.0	-13.4	-9.5	-11.4

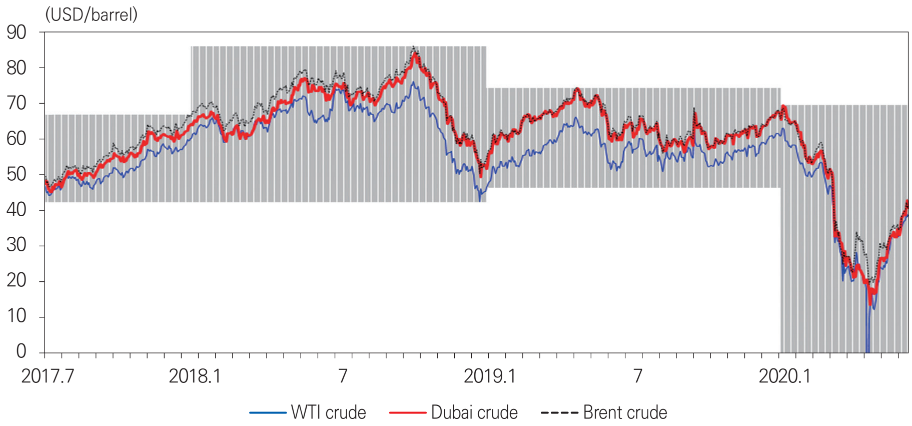
Source: IMF World Economic Outlook (April 2020); World Bank (May 2020); OECD (June 2020).
Note: 1) Figures for advanced economies refer to the growth rates of OECD member countries.
2) "Standard" refers to a single-wave scenario, and "pessimistic" refers to a double-wave scenario.

mies' policy effects.

International oil prices were rising at the beginning of the year amid uncertainty in the Middle East and the U.S.-China Phase 1 trade deal. But by the end of January the oil prices began to plummet with the outbreak of COVID-19. With the failure to reach an agreement on further production cuts by OPEC (March 5), Saudi Arabia's decision to increase production, and the WHO declaring a global pandemic (March 11), the per barrel price of Dubai sweet sharply dropped in April, to 13 USD. Going forward, international crude oil prices are likely to rebound slowly as supply-demand balance is gradually restored, but overall oil will likely record a two-digit decline for 2020. The decision of major oil-producing countries (including Saudi Arabia and Russia) to further cut production on the supply side while increasing oil imports in China and economic support measures and the resumption of business activities in major economies on the demand side are expected to support a recovery in international oil prices. Nevertheless, the uncertainty of the U.S.-China trade conflict and the possibility of the global economy falling back into recession would likely hinder any growth in oil prices.

The international oil price (Dubai) in 2020 is expected to reach 40.8 USD per barrel in the first half of this year (-37.7 percent YoY rate) and USD 43.5 (-29.4 percent YoY rate) in the second half, recording an annual average of USD 42.2 (-33.7 percent YoY rate).

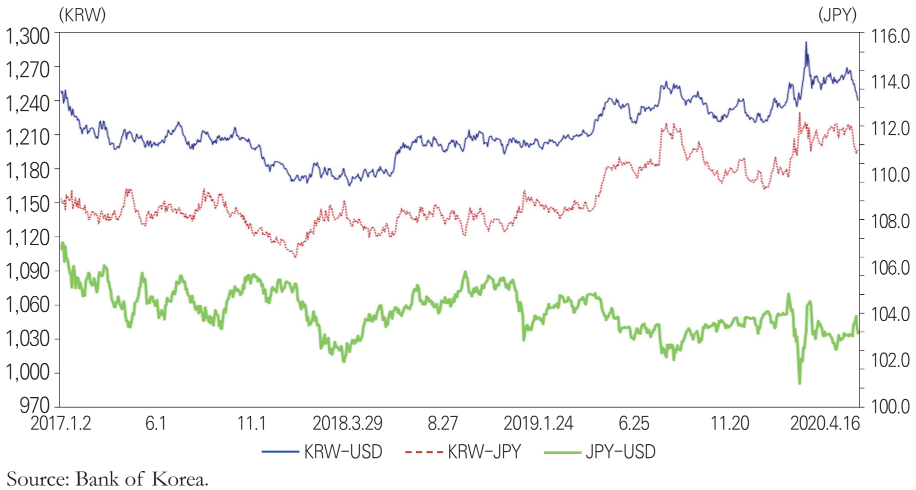
Figure 4. Trends in International Crude Oil Prices



Source: Korea National Oil Corporation.
Note: The shaded area represents annual price fluctuation ranges (minimum to maximum values).

Amid heightened instability caused by the spread of COVID-19, the KRW/USD exchange rate has exhibited great volatility and an increasing pattern. Although the exchange rate had been rising steadily due to concern over a global economic recession amid the COVID-19 outbreak, two interest rate cuts made by the U.S. Federal Reserve have moderated it somewhat, as well as the introduction of unlimited monetary easing measures and the signing of a Korea-U.S. currency swap agreement on March 19. In the second quarter, a slowdown in the spread of COVID-19 and expectation that major economies will introduce massive economic stimulus measures are putting downward pressure on the exchange rate, but the rate has maintained an overall upward trend due to oil price uncertainties and concern over the global economic outlook. In the second half of 2020, the KRW/USD exchange rate is likely to fall, due to increasing stability in international financial markets and weakening risk aversion. On the year however it will likely record a slightly higher value than previous year. Although a reduction in COVID-19 cases domestically and a possible recovery of the Korean economy as a result of economic support and monetary easing measures of major economies (including the United States) may support an appreciation of the Korean won (that is, a decline in KRW/USD exchange rate), a second wave of the coronavirus and the intensification of U.S.-China trade tensions are likely to limit declines in the exchange rate.

Figure 5. Foreign Exchange Rates of Major Currencies



Source: Bank of Korea.

The average KRW/USD exchange rate in 2020 is expected to reach KRW 1,210 for the first six months (5.5 percent YoY rate) and KRW 1,192 in the second half (1.9 percent YoY rate), with the average rate for the entire year being KRW 1,201 (3.7 percent YoY rate).

(3) Korean Economic Outlook for 2020

The Korean economy in 2020 is expected to grow 0.1 percent over the preceding year, due to continued declines in exports, falling consumption and a limited recovery in investment demand due to the continued COVID-19 pandemic. Exports are likely to decline for the second consecutive year in 2020. Consumption is also likely to drop year over year after plunging over the first six months. As for investment, facilities investment may rebound moderately, but construction investment will likely fall again, for the third consecutive year.

While the impact of the coronavirus pandemic is the most important factor, external economic trends and policy impacts of major economies and changes in the U.S.-China trade conflict as well as the pace of recovery in domestic consumer sentiment and the effects of government policy will be additional factors influencing the Korean economy.

By sector, private consumption is expected to decrease from last year with the reduction of real income, worsening employment conditions,

Table 2. Overview of the Korean Macroeconomic Outlook

Unit: %, YoY rate, USD 100 million

	2018	2019			2020		
	Year	First half	Second half	Year	First half	Second half	Year
Real GDP	2.7	1.9	2.2	2.0	-0.7	0.8	0.1
Private consumption	2.8	2.0	1.9	1.9	-3.8	-0.0	-1.9
Facility investment	-2.2	-12.2	-2.2	-7.5	1.2	2.4	1.8
Construction investment	-3.9	-5.2	0.0	-2.5	-0.2	-1.4	-0.8
Custom-cleared exports (USD 100 million, %)	6,049 (5.4)	2,711 (-8.6)	2,711 (-12.0)	5,422 (-10.4)	2,421 (-10.7)	2,509 (-7.5)	4,930 (-9.1)
Custom-cleared imports (USD 100 million, %)	5,352 (11.9)	2,526 (-4.9)	2,508 (-7.0)	5,033 (-6.0)	2,350 (-6.9)	2,361 (-5.8)	4,711 (-6.4)
Trade balance	697	186	203	389	71	148	219

Source: Korea Institute for Industrial Economics and Trade (KIET).

and depressed consumer sentiment, coupled with the growing uncertainty of the global economy. However, thanks to the government's expansionary monetary and fiscal policies, such as the Bank of Korea's cuts to the benchmark interest rate (relieving the burden of loan repayments), income subsidies for families issued by both the central and local governments and expansion of loans to small businesses, private consumption is expected to recover gradually in the second half of the year.

Facilities investment is likely to grow by 1.8 percent from a year earlier, due to the base effect (facilities investment has declined since 2018) and despite the gloomy outlook for the global economy as the semiconductor industry prepares a post-COVID-19 business recovery. The semiconductor industry is instituting a massive investment plan to meet the expectations for market recovery, a "Super Gap Strategy" for manufacturers. Moreover, production facilities for displays will be expanded to accommodate the transition of production from LCD to OLED panels. Although the COVID-19 pandemic is still ongoing, the global economy will likely recover gradually in the second half of the year. Therefore, facilities investment will likely rise by 1.2 percent in the first six months and by 2.4 percent in the second half of the year.

Regarding construction investment, the construction industry is also unlikely to recover in the second half of the year. Construction orders, a leading indicator of construction investment, have been decreasing trend since March, when the impacts of COVID-19 began to be felt. In 2020, construction investment is expected to decline 0.8 percent YoY rate, as private sector construction remains depressed owing to both government regulations on real estate and the coronavirus. With the government planning to spend its social infrastructure construction budget earlier than scheduled this year to support the economy, construction investment is likely decline by 0.2 percent in the first half of the year, lesser than the expected decline of the second half, that is, by 1.4 percent.

In the second half of 2020, even while the volatility of exports depends on whether the COVID-19 pandemic persists for the long term, the scale of export declines should shrink, with exports likely to ultimately contract by 9.1 percent for the year, as business begins to recover in trade partners like China where the number of coronavirus cases has dropped significantly. Exports to China, Korea's largest trading partner, may rebound slightly, thanks to the early containment of COVID-19 and business recovery as a result of the government's support measures. But uncertainty may persist given worries over the resumption of the U.S.-China trade conflict. Downward pressure on exports should lose steam in the second half of the year due to the base effect of sluggish exports in 2019 (-10.4 percent), the continued recovery of semiconductor unit prices and production volumes in tandem with the resumption of production by major economies, and growth in unit prices of petrochemical products based on the recovery of crude oil prices.

Imports will continue sliding due to reduced exports and gloomy domestic business conditions. However, due to the base effect sluggish imports in 2019 and the recovery of international oil prices, the decline should taper off in the second half of the year, with total imports for the year likely falling by 6.4 percent. With total trade volumes drastically lower in 2020 and exports falling by a larger margin than imports, the balance of trade surplus is likely to be 21.9 billion USD, a steep drop YoY.

3. Overview of Major Industries

(1) Major Changes in the Second half of 2020 and Their Impact on Industries

In the second half of 2020, because of the persistent impact of the COVID-19 pandemic, depressed global demand, growing competition and continuous declines in unit prices are likely to continue. Except for industries that thrive in the "non-contact economy," the sluggish global demand associated with the pandemic will affect nearly all industries. However, although demand falls in line with the decline of global economic growth rates, some industries such as general machinery, steel, and petrochemicals may see a surge in global demand emerging from countries' expansionary fiscal policies.

Regarding forecasts for the markets of major trading partners for the second half of the year, although some variation is expected by industry and

Table 3. Weather Chart of Industry Prospects for the Second Half of 2020

		Exports	Production	Domestic demand	Imports
Machinery	Automobiles	🌧	☁	☁	🌧🌧
	Shipbuilding	🌥	☁	☀☀	🌥
	General machinery	🌥	🌥	☁	🌥
Materials	Steel	🌧	☁	🌧	🌧🌧
	Refined oil	🌧🌧	☁	☁	🌧🌧
	Petrochemicals	🌧	☁	☁	☀
	Textiles	🌧🌧	🌧	☁	🌧
IT manufacturing	Appliances	🌧🌧	☁	☁	☁
	ICT devices	☀	🌥	🌥	🌥
	Semiconductors	☀	☀☀	🌥	☁
	Displays	🌧🌧	🌧🌧	🌧🌧	🌧🌧
	Rechargeable batteries	🌥	🌥	🌥	🌥

Note: 1) Prospects: Legends are based on projected rates of increase from the previous year.
🌧🌧: less than -10%, 🌧: -10 to -5%, ☁: -5 to 0%, 🌥: 0 to 5%, ☀: 5 to 10%, ☀☀: more than 10%.
2) The production and demand of the automobile industry is based on finished cars; for shipbuilding, on ships built; for steel, on steel materials; for refined oil, on oil products; and for petrochemicals, on the three types of derivatives. The production and demand of all other industries are based on monetary values.
3) Exports and imports of all industries are in U.S. dollars.

country, the markets for automobiles, textiles, and displays are expected to be unfavorable overall, while the ICT device and semiconductor markets will likely remain favorable. In particular, demand for automobiles will fall by 5 to 10 percent in the U.S. and EU markets, which account for 56 percent of Korea's automobile exports, and will also fall by over 10 percent in emerging markets such as Russia. Global demand for general machinery, refined oil, petrochemicals, home appliances, and rechargeable batteries is expected to remain flat.

Regarding changes in global competition, depressed demand due to the COVID-19 is likely to exacerbate problems associated with global oversupply stemming from surging production in competitors such as China well into the second half of the year. Although existing investment plans and plant operations will be adversely affected by the pandemic, the decrease in demand will be a more important factor. This situation will further intensify competition.

The unit prices of products in global markets is one of the critical determinants of exports, and steel, refined oil, petrochemicals, semiconductors, and displays are products that are sensitive to unit prices. Looking at steel, despite the anticipated increase in raw materials prices, oversupply and inventory buildup will lead unit prices to fall. With refined oil, which is directly impacted by oil prices, unit prices are likely to drop significantly due to expectations that oil prices will fall by a larger margin YoY in the second half.

While production at the overseas plants of domestic businesses are closely related to Korea's exports of materials components and capital goods, the likelihood of significant production growth in the second half of the year is low owing to slumping demand, even if the COVID-19 situation improves. Steel production overseas is expected to decline moderately due to sluggish demand from related industries and increasing competition. As for petrochemicals, although plants in China and Uzbekistan may return to normal production schedules, production at plants in the United States and India will fall off from last year. The semiconductor industry, however, is already operating at normal levels, and will likely continue to do so in the second half, while the display industry will likely see a significant contraction of production at Chinese factories.

As for domestic demand, business conditions will remain depressed in the second half of the year due to the coronavirus pandemic. As the effect of the consumption-boosting measures implemented in the first half of 2020 dissipates, automobiles, textiles, and home appliances will struggle to recover, and demand for related materials and components will likely contract somewhat, whereas domestic demand for ICT devices, semiconductors for solid-state drives (SSDs), and rechargeable batteries is likely to rise. Regarding the home appliance industry, sluggish economic growth and reduced consumption expenditures will negatively affect domestic demand. The prospects for the ICT device industry are slightly negative, owing to reduced subsidies for devices, despite the expansion of the 5G network and the launch of new smartphones in the second half of the year.

In terms of domestic production, some industries may reduce production capacity, offshoring production rather sourcing components. The production capacity of the automobile industry will decrease as foreign-invested automakers thin their model range, while the general machinery sector is likely to suffer from the implementation of new 52-hour workweek regulations, as many small and medium businesses operate in that sector. In the early phase of COVID-19, some industries experience supply disruptions, but most of those problems have now been fixed. The transport industry, however, is still facing some difficulties.

(2) Outlook for Major Industries in the Second half of 2020

In the second half of 2020, exports of the 12 major industries will be negatively impacted by the global recession caused by the COVID-19 pandemic, falling at a rate of 6.1 percent — a less severe drop than in the first six months of the year. Exports of automobiles and home appliances are likely to continue falling, if at a lower rate, as both are final consumer durables sensitive to economic conditions. Textile exports are also likely to drop, being consumer goods. Exports of steel, refined oil and petrochemicals will continue to suffer, being sensitive to unit prices. Displays, which suffer from weak competitiveness, will likely see exports continue to plunge in the second half of the year. On the other hand, ICT devices and semiconductors, which are central to the transition to a non-contact economy, will likely exports increase.

Exports in the machinery industries will likely fall by 2.4 percent for the second half and by 10.3 percent for the entire year, as improving conditions in shipbuilding and machinery in the second-half mitigate first-half freefalls. The downward trend in automobile exports is also expected to taper off somewhat. Exports of automobiles are expected to decrease by 6.5 percent in the second half, totaling a decline of 18.2 percent for the whole year, owing to depressed global demand and adjustments in export volumes by foreign-invested automakers. Meanwhile, exports in the shipbuilding industry may face delivery delays due to COVID-19, but thanks to the delivery of expensive ships for which orders were taken at a time when orders for ships were recovering, the industry will grow by 1.0 percent in the second half, ameliorating a first-off drop off resulting in an annual decline limited to 2.7 percent. Exports in the general machinery industry are expected to see sluggish demand from related businesses due to COVID-19, but, driven by facilities investment to boost economies (especially in China) exports will bounce back, growing by 1.4 percent in the second half, recovering from a first-half drop and ultimately posting a total decline of 3.5 percent for the entire year.

Exports in the materials industries will fall by 20.2 percent in the second half of the year, due to the impact of reduced unit prices, making the annual decline of 20.1 percent. Exports of steel are expected to decline by 9.8 percent in the second half, falling by 14.5 percent for the whole year. Unit prices may rise relative to the first half, while still remaining below YoY prices. Export volumes are expected to fall due to the persistent economic recession. Exports of the refined oil industry will plunge 42.5 percent in the second half, marking a decline of 36 percent annually, as pressure for reduced unit prices mounts amid falling crude oil prices and despites increases in export volume. Exports of petrochemicals are predicted to fall by 8.3 percent in the second half, marking a 10.1 percent drop on the year, owing to reduced export volumes associated with decreased demand coupled with declining unit prices. Exports in the textile industry will likely fall by 12 percent for the second half and by 16.7 percent for the entire year, as a result of a sharp decline in demand, leading to fiercer competition and falling unit prices.

IT exports will likely register a 2.2 percent increase in the second half, recovering from a first-half drop to post an overall decrease of 0.7 percent on the year, as exports of semiconductors and ICT devices grow amid changes in consumption patterns. Exports of home appliances and displays meanwhile will fall. Exports of home appliances are expected to decline by 10.3 percent in the second half and by 14.2 percent annually, owing to contracted global demand and increased overseas production. Meanwhile, the ICT device sector will grow by 5.5 percent in the second half and by 10.8 percent annually, thanks to growing demand for SSDs amid the transition toward a non-contact economy, while exports of displays are expected to drop by 14.2 percent in the second half and by 20.1 percent for the whole year, as a result of sluggish global demand and the expansion of production in China. In addition, rechargeable battery exports are predicted to increase by 0.8 percent in the second half, bouncing back from a first-half dropoff and ultimately registering a 3.4 percent annual decrease. The rebound owes to subsidies for electric vehicles overseas and comes in spite of negative factors such as sluggish business conditions and growing overseas production.

Production in the 12 major industries is expected to enter a recovery phase in the second half of 2020. ICT devices and semiconductors will likely continue growing and rechargeable batteries will return to positive growth. In addition, except for displays, decreasing production will ease up in other industries. This is because the rate of export declines in the materials industries (in terms of quantity) will not be significant, and exports in other industries will pick up.

As for production in machinery industries in the second half of the year, shipbuilding and general machinery will return to the level of production seen in the second half of last year, and the production cuts in the automobile industry should slow to a halt, leading to a significant upswing across the machinery industries. Despite this, automobile production should dip anyway, owing to production adjustments made by foreign-invested automakers and sluggish exports and domestic demand, amounting to an overall decline of 2.5 percent: much better than in the first half of the year. This comes to an annual drop of 12.6 percent. In addition, the production of the shipbuilding industry will fall by 0.7 percent in the second half and by 8.1 percent for the whole year. The improved outlook for the second half owes to planned delivery of orders received during a recovery period, and comes despite the postponement of some deliveries due to COVID-19. The production of general machinery is expected to remain unchanged in the second half of the year and ultimately record an annual decline of just 1.5 percent, a more precipitous drop prevented by a backlog of orders received and an increase in exports associated with the economic support measures of major economies and despite difficulties caused by a slump in domestic demand and exports in the manufacturing sector.

Production in the materials industries will likely fall owing to falling exports, but the decrease in the aggregate value of exports is mostly attributable to reduced unit prices; production volumes exhibit no serious volatilities. Meanwhile, production in the steel industry, owing to a drop in domestic sales and exports, is expected to fall by 4.1 percent in the second half and by 5.2 percent for the entire year, while production in the refined oil sector will likely decrease by 1.4 percent in the second half and by 2.5 percent for the entire year, as a result of a reduction in domestic demand for transportation. The production of petrochemicals is expected to shrink by 1.5 percent in the second half of the year and by 0.7 percent annually, due to persistently sluggish demand. The textiles industry, which produces consumer goods such as clothing and related materials that are more sensitive to economic conditions, will experience a 5.7 percent decrease, a steeper decline than seen in other materials industries, ultimately registering a 7.2 percent drop on the year.

As for the IT sectors, the production of home appliances as consumer goods and displays, which are currently sluggish due to weaker competitiveness, will likely fall in the second half of the year. On the other hand, the production of ICT devices, semiconductors, and rechargeable batteries will increase. Home appliance production will likely fall by 2.3 percent in the second half of the year and by 3.9 percent annually, thanks to the expansion of overseas production and a decrease in demand. The production of ICT devices is expected to grow by 4.3 percent in the second half and by 5.2 percent for the entire year, in line with demand growth for devices associated with the spread of 5G as well as for SSDs. Furthermore, semiconductor production is expected to grow by 11.1 percent in the second half of the year and by 10.5 percent annually, as a result of rising domestic demand for SSDs and a smooth transition to the EUV (extreme ultraviolet) lithography process and despite lower-than-expected demand. The production of displays will likely shrink by 18.5 percent in the second half and by 18.6 percent for the whole year, as a consequence of increased production overseas, growing competition and declining panel prices. Finally, rechargeable battery production is expected to rise by 3.6 percent in the second half, amounting to an annual dip of 0.4 percent for the year, buffeted by favorable demand overseas and expanded domestic production of electric vehicles.

Domestic demand for most of the 12 major industries in the second half of 2020 is expected to grow faster than in the first six months of the year. Domestic demand in the automobile, shipbuilding, and semiconductor industries, which grew in the first half of the year, will continue growing in the second half, but at a moderately slower rate. In most industries, however, the rate of decline of domestic demand will be slower.

As for domestic demand in the machinery industries, demand for automobile machinery will decline and domestic growth in demand for ships will also dip. The rate of decline in the machinery industries will, however, be somewhat moderated. Domestic demand for automobiles will likely transition to a negative trend, recording a decrease of 4.8 percent in the second half of the year and thus falling by one percent annually, as latent demand is exhausted, sluggish business conditions persist and domestic economic support measures are curtailed. On the other hand, shipbuilding will likely grow by an additional 38.1 percent in the second half on the heels of first half growth, amounting to a 53.3 percent jump on the year, as expected deliveries lift the domestic shipping industry. Domestic consumption of general machinery is expected to fall by 4.0 percent in the second half and by 6.5 percent on the year due to the continued contractions in domestic demand worldwide.

Domestic demand for materials is expected to decrease overall in the second half of the year, but at a lower rate than in the first six months. The skid in demand for steel products second slow eventually slow, but will still fall by 5.2 percent in the second half for a drop of 7.5 percent annually, due to the reduced production in demand industries. Domestic demand for refined oil will likely fall by 3.0 percent in the second half of the year and by 3.9 percent annually, owing to the depressed demand for petrochemical products for transportation. Meanwhile, domestic demand for petrochemicals in the second half of the year will likely decrease by 0.8 percent, unchanged YoY, and by 2.0 percent annually, thanks to demand recovery in the IT industry and the effects of government's business support measures and despite the slump across demand industries. Finally, domestic demand for textiles is expected to shrink by 4.8 percent in the second half of the year and by 5.4 percent annually, as a result of the contraction of private consumption and slumping activity in domestic demand industries.

Regarding domestic demand for IT products, although the growth rate of domestic demand for semiconductors has fallen significantly, home appliances, ICT devices, and rechargeable batteries will see improved demand conditions compared to the first half of 2020. Domestic demand for home appliances will likely end up recording a just a 0.5 percent decline, falling to the level seen in the same period of the preceding year, for a mild 1.3 percent yearly decline, owing to government policies aimed at propping up consumption and an increase in demand for new types of home appliances. Meanwhile, domestic demand for ICT devices will likely grow by 2.1 percent in the second half for annual growth of 0.4 percent, as demand for 5G services expands and online services continue to gain traction in the market despite weakened consumer sentiment. Domestic demand for semiconductors will grow by 4.5 percent in the second half and by 10.4 percent on the year as a consequence of increased exports of SSDs, expanding 5G services and new technology industries. Domestic demand for displays is expected to decrease by 21.3 percent in the second half, making for a 19.5 drop on the year, as demand for displays used for vehicles — already weak — slumps further yet. Finally, domestic demand for rechargeable batteries will likely grow by 4.2 percent in the second half of the year and by 3.3 percent annually, owing to increased domestic demand for and exports of electric vehicles.

Imports in major industries in the second half of 2020 are expected to decrease by 5.9 percent, due to sluggish domestic demand and falling unit prices. In particular, imports of automobiles, steel, refined oil, and displays are expected to decrease by large margins, while imports in the shipbuilding and petrochemical industries are likely to grow, owing to changes in domestic demand and/or unit prices.

Imports in the machinery industries will likely decrease 6.0 percent YoY due to slack automobile imports, which will likely decrease by 17 percent in the second half and by 5.9 percent overall on the year, due to supply chain disruptions, a boycott of Japanese products following a diplomatic row and weakened domestic demand for components despite growth in unit prices. Meanwhile, imports of ships will likely increase by two percent in the second half and by 17.9 percent annually due to an increase in purchases of used ships and ships built in China, while imports of general machinery are expected to grow by only 0.4 percent in the second quarter, ultimately posting an annual decrease by 3.2 percent as a result of the overall contraction of the domestic economy and despite resilient demand for core components of high-tech manufacturing equipment.

Imports in the materials industries will likely decrease by 12.8 percent in the second half of 2020 and by 12.9 percent annually, as imports of petrochemicals are likely to grow, and exports of steel, refined oil, and textiles are expected to decline. Imports of steel are expected to fall by 13.6 percent in the second half of the year and by 19.4 percent annually, due to high inventory levels and sluggish demand. Imports of refined oil will likely decrease by 30 percent in the second half and by 17.1 percent annually, driven by the sharp drop in the unit price of imports and despite growth in in the volume of refined oil imports. Imports of petrochemical products will likely grow by 8.1 percent in the second half but go on to register an annual drop of 1.8 percent. Second-half growth is buoyed by sharp increase in imports from China and comes despite falling unit prices of imports. Meanwhile, imports of textiles are expected to decrease by 8.1 percent in the second half of the year and by 8.6 percent annually, as imports of clothing and low- to mid-priced materials decline due to sluggish demand.

Imports in IT industries will likely dip by just 0.3 percent in the second half of the year and by 1.7 percent annually, owing to increasing in imports of ICT devices and rechargeable batteries and decreasing imports of home appliances and displays. Imports of home appliances are expected to drop by 4.5 percent in the second half of the year and by 5.8 percent annually, as a result of overseas supply chain disruptions and suspension of the operation of overseas factories amid the COVID-19 pandemic. On the other hand, imports of ICT devices are predicted to grow by 1.9 percent in the second half and by 1.8 percent on the year, driven by the establishment of the 5G network, the launch of new foreign products, and the re-importation of local products. Imports of semiconductors will dip slightly by 0.1 percent in the second half of the year and by 1.2 percent annually, as imports increase with demand for non-memory semiconductors for vehicles decreases. Meanwhile, imports of displays will likely decrease by 11.1 percent in the second half and by 21.5 percent annually, due to the contraction of domestic demand, while imports of rechargeable batteries are predicted to rise by 13 percent in the second half of the year and by 1.3 percent an-

Table 4. Forecast for Major Industries for the Second Half of 2020

Exports		Production		Domestic demand		Imports	
Industry	Change (%)	Industry	Change (%)	Industry	Change (%)	Industry	Change (%)
Semiconductors	6.2	Semiconductors	11.1	Shipbuilding	38.1	Petrochemicals	8.1
ICT devices	5.5	ICT devices	4.3	Semiconductors	4.5	Shipbuilding	2.0
General machinery	1.4	Rechargeable batteries	3.6	Rechargeable batteries	4.2	ICT devices	1.9
Shipbuilding	1.0	General machinery	0.0	ICT devices	2.1	Rechargeable batteries	1.3
Rechargeable batteries	0.8	Shipbuilding	-0.7	Appliances	-0.5	General machinery	0.4
Automobiles	-6.5	Refined oil	-1.4	Petrochemical	-0.8	Semiconductors	-0.1
Petrochemicals	-8.3	Petrochemicals	-1.5	Refined oil	-3.0	Appliances	-4.5
Steel	-9.8	Appliances	-2.3	General machinery	-4.0	Textiles	-8.1
Appliances	-10.3	Automobiles	-3.2	Textiles	-4.8	Displays	-11.1
Textiles	-12.0	Steel	-4.1	Steel	-5.2	Steel	-13.6
Displays	-14.2	Textiles	-5.7	Automobiles	-7.0	Automobiles	-17.0
Refined oil	-42.5	Displays	-18.5	Displays	-21.3	Refined oil	-30.0
Total	-6.1					Total	-5.9

nually, in line with the adoption of Chinese rechargeable batteries for cordless home appliances.

4. Policy Implications

To cope with the business cycle fluctuations associated with the COVID-19 pandemic, it is important for industries to maintain a resilient industrial foundation. To make this possible, existing support measures related to financing, tax, domestic consumption, and exports need to be maintained or expanded to ensure stable business management in the second half of 2020. Furthermore, to actively meet rapid surge in demand that is expected post-COVID-19, the government needs to implement extended measures and businesses need to retain their workforce to the greatest degree possible, while securing some labor flexibility necessary to promptly respond to contingencies.

One post-coronavirus response would be for governments to compete to make preemptive investments in digital infrastructure, which boils down to how to respond to China's "New Infrastructure" project that has emerged recently. Hence, there is a growing need for policies designed to facilitate the transition toward an industrial structure conducive to the Fourth Industrial Revolution and a non-contact economy through prompt investment. Under the "the Digital New Deal" unveiled by the Korean government, which aims to lay the foundations for a digital economy that will spur economic growth and innovation, businesses need to prepare project investment plans. Regarding investment in digital infrastructure, it is important to promote collaboration with large corporations. Moreover, through capacity building at SMEs with smart/digital innovation capabilities, we need to take advantage of growth in new markets such as smart homes and smart home appliances. At the same time, strong support is needed for innovation in manufacturing, such as support for smart manufacturing, to increase our resiliency in emergencies such as COVID-19.

With global value chains (GVCs) changing amid the coronavirus pandemic, we need a trade policy that ensures that Korean businesses are able to allocate their supply networks and production bases in various countries as well as Korea, according to demand and costs. On the domestic front, we need a policy that promotes high-value-added sectors such as technological development and fosters an environment conducive to efficient manufacturing by encouraging innovation in production methods.

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