



The Korean Economy : One Year after the COVID-19 Outbreak

An Interim Review of the Pandemic's Economic Impact

| Summary |

- The COVID-19 pandemic is estimated to have caused a decline of 3%p in Korea's GDP growth and 7%p in private consumption growth, as well as the loss of 460,000 jobs.
 - Compared to previous crises, the pandemic-induced economic slowdown was the nation's second largest, following that suffered in the wake of the 1997-98 Asian financial crisis, with severe shocks to private consumption and employment.
- After bottoming out in the second quarter of 2020, however, the Korean economy has recovered, albeit at varying rates by sector, amid lingering weakness in the job market.
 - While manufacturing's output and exports have returned to pre-pandemic levels, employment, private consumption, and service output in 2021's first quarter lagged behind.
- Considering consumer price trends and GDP breakdown by sector, the slowdown was caused by sluggish domestic demand, especially private spending, rather than the supply side or overseas demand.
 - Early in the outbreak, supply disruptions in certain industries pounded the economy, but weak consumption was the main culprit for the slowdown.
- The pandemic has had a discriminatory, almost polarizing, impact on industries. Sectors have shown an extremely wide variance in growth rates during COVID-19 than in other major economic crises.
 - While face-to-face service sectors such as the arts, sports, and hospitality were hit hard, ICT segments like biotech, semiconductors and e-commerce thrived.
- Top priority on public health protection is recommended, as is offsetting economic damage with fiscal compensation rather than weighing the pros and cons of such protection against economic losses to induce cooperation from the private sector and cushion the shock to the economy.
- A year's worth of time-series data has been collected since the pandemic's outbreak, so this study assesses the coronavirus's impact on the Korean economy and industries, the development of the ensuing effects over time, the impact's pathways and distribution across sectors, and policy implications.

1. Scale of Pandemic's Economic Impact

■ **The pandemic caused Korea's GDP growth rate to fall 3.7%p and a loss of 460,000 jobs.**

- Since COVID-19 began in early 2020, this study compared changes in the rates of GDP growth and unemployment that year with their historic trends to assess the pandemic's economic impact.¹⁾ Coronavirus-induced damage caused Korea's GDP growth rate to fall more than 3%p and a loss of approximately 460,000 jobs.

〈Table 1〉 Impact of COVID-19 on Korean Economy

	Historical trend (A)	2020 (B)	Decline (=B-A)
GDP growth (% , %p)	2.8	-1.0	-3.7
Employment (1,000 persons)	238	-219	-457

Source: Bank of Korea's National Account, Statistics Korea data on economically active population.

Note: GDP trend based on five-year annual average growth rate, employment trend based on three-year annual average increase in number of employed.

■ **Pandemic hits private consumption and service sector hardest**

- By spending category, the pandemic hit private consumption the hardest, causing a drop of more than 7%p in the growth rate.
 - Private consumption fell nearly 5% in 2020. Given historical trends, the coronavirus is estimated to have caused a decline of 7.4%p in this category's growth rate.
 - Following private consumption, imports, exports, and construction investment were the next most affected by the pandemic in that order, while facility investment fared relatively well.
 - Robust facility investment suggested that businesses viewed COVID-19 as a temporary setback.
- Hurt by the drastic slowdown in private consumption, the service sector suffered a fall of more than 4 %p in its growth rate.
 - Private consumption growth declined more sharply than that of exports, meaning the pandemic dealt a heavier blow to the service sector than manufacturing.

1) This method is limited as it cannot control the impact of variables other than COVID-19. Nevertheless, this method has been used to assess the impact due to a relatively high availability of data and ease of estimation.

〈Table 2〉 Pandemic's Impact on GDP Components

Category		Historic trend (%)	2020 (%)	Rate of decline (%p)
Spending	Private consumption	2.5	-4.9	-7.4
	Facility investment	2.6	6.8	4.2
	Construction investment	3.2	-0.1	-3.4
	Exports	2.1	-2.5	-4.6
	Imports	3.4	-3.8	-7.2
Industry	Manufacturing	2.4	-1.0	-3.4
	Service	3.1	-1.2	-4.3

Source: Bank of Korea's National Account

Note: GDP trend based on five-year annual average growth rate; employment trend based on three-year annual average increase in no. of employed

- **The pandemic-induced economic slowdown was Korea's second worst in history, following that after the 1997-98 Asian foreign currency crisis based on shocks to private consumption and employment.**
- Compared with past crises, the economic downturn from the pandemic was the second largest to that after the 1997-98 Asian financial crisis in shocks to private consumption and employment.
 - The decline in GDP growth was on par with that seen during the 2008 global financial crisis.
- Consumption and employment took a bigger hit than GDP growth due to the unique characteristics of the pandemic.
 - Given the nature of an outbreak of an infectious disease, the hardest hit sector was face-to-face services, which are traditionally strong drivers of job creation, and thus employment suffered huge losses.

〈Table 3〉 Comparison of Economic Shocks by Major Crisis

	Decline in real GDP growth (%p)	Decline in private consumption growth(%p)	Loss of jobs (1,000 persons)
1st oil shock (1975)	-2.6	-2.7	-222
2nd oil shock (1980)	-12.3	-7.39	-316
1997-98 Asian foreign currency crisis (1998)	-13.1	-19.7	-1,512
2008 global financial crisis(2009)	-3.9	-3.2	-311
COVID-19 pandemic(2020)	-3.7	-7.41	-457

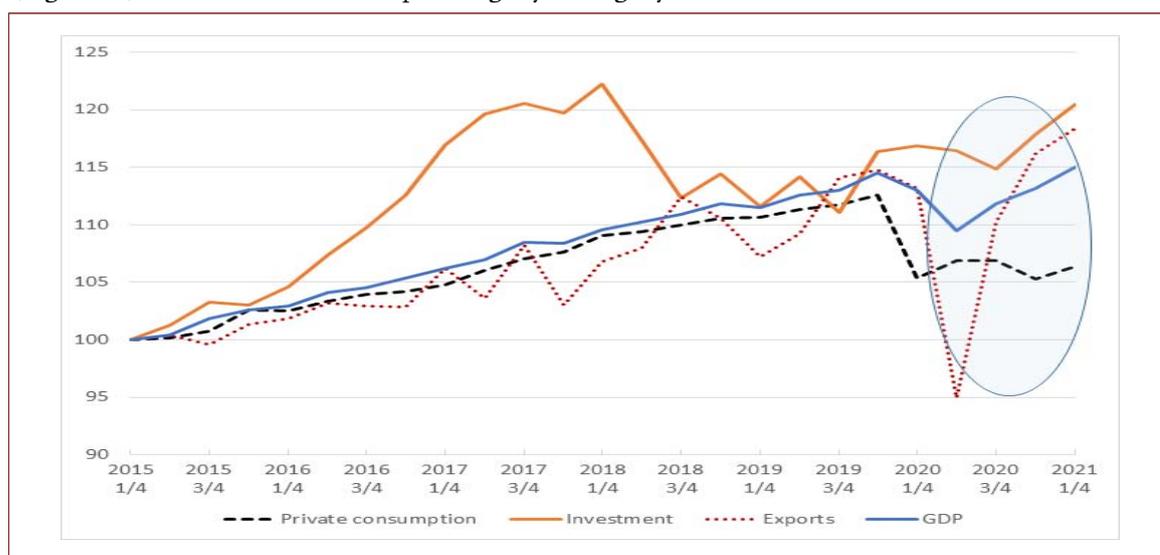
Source: Bank of Korea's National Account, Statistics Korea data on economically active population.

Note: The scale of the shock is measured by the difference between the lowest levels of a given economic indicator in the crisis year and historical trends (based on the preceding five years for GDP and private consumption growth and three years for employment).

2. Impact over Time

- **Since bottoming out in the second quarter of 2020, the Korean economy has displayed steady recovery.**
 - After passing its lowest point in the second quarter of 2020, Korea has enjoyed steady recovery in GDP growth, albeit at a slow pace due to COVID-19.
 - A resurgence of COVID-19 infections that started in early winter in 2020 caused the GDP growth rate to soften slightly in the fourth quarter that year.
 - [GDP growth rate, % YoY] 1.4% in 2020's first quarter → -2.7% in second → -1.1% in third → -1.2% in fourth
 - The pace of economic recovery is also expected to hinge on the nation's capability to control and overcome the coronavirus.

〈Figure 1〉 Korea's GDP and Spending by Category



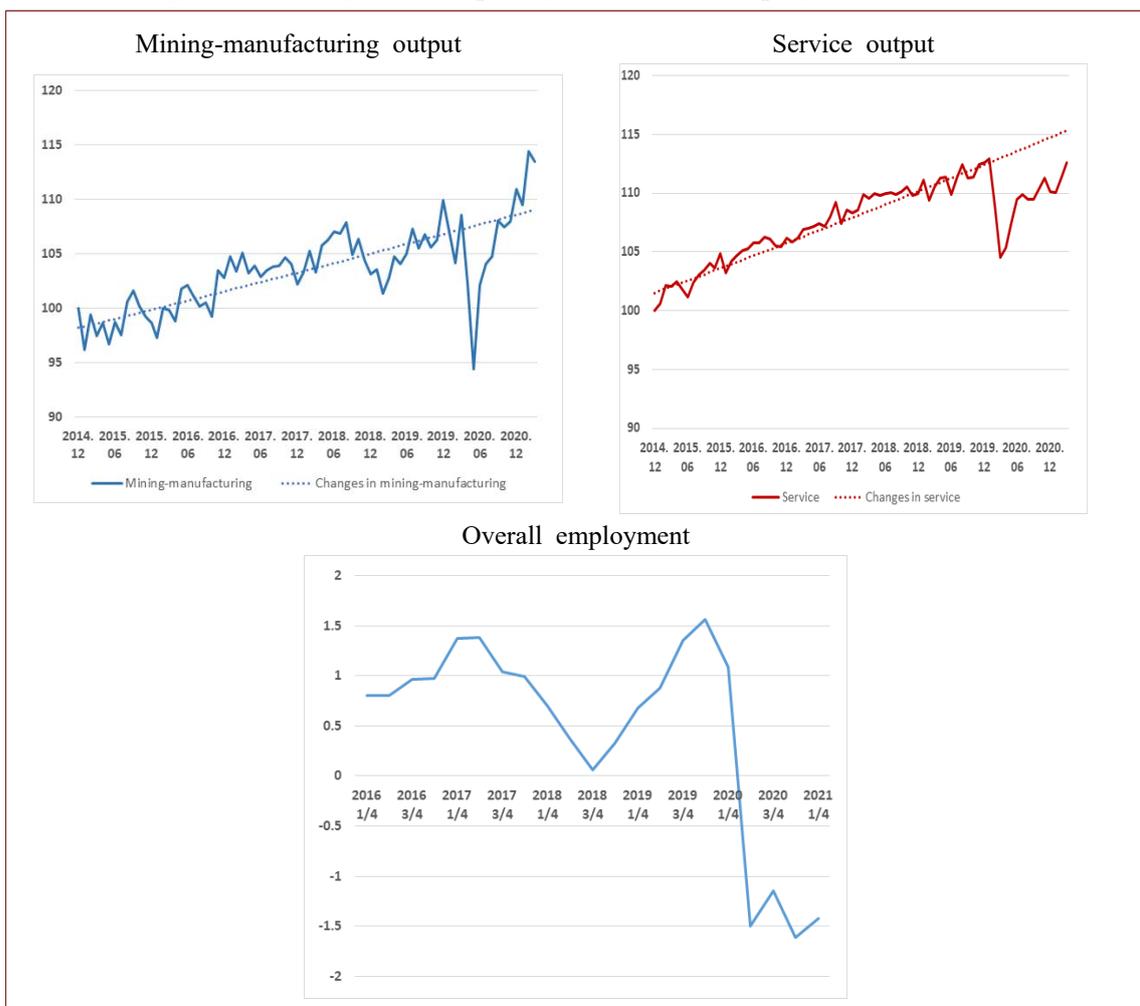
Source: Bank of Korea's ECOS

Note: First quarter of 2015 = 100 (seasonal adjustment); first quarter of 2021 based on preliminary data

- **Performance saw big swings among sectors, with manufacturing and export growth returning to pre-pandemic levels but employment, consumption, and the service sector remaining weak.**
 - Since bottoming out in the second quarter of 2020, manufacturing output and export growth have rapidly recovered to pre-pandemic levels.
 - Manufacturing output and exports bottomed out in the second quarter of 2020,

- slumping 6.6% and 13% year on year, respectively, but saw sharp recovery to pre-pandemic levels in the first quarter of 2021.
- After entering positive territory in November 2020, export growth on a customs-cleared basis accelerated and recovered to the double-digit level in the first quarter of 2021.
 - In contrast, growth in private consumption, service output, and employment further slowed in the fourth quarter of 2020 and remained below pre-pandemic levels.
 - [Growth rate (%YoY) 2Q20 vs. 4Q20] Private consumption: -4.0% → -6.5%, service output: -1.5% → -1.8%, employment: -1.49% → -1.61%
 - Private consumption, service output, and employment remained well below pre-pandemic levels in the first quarter of 2021.

〈Figure 2〉 Changes in Output by Sector and Employment over Time



Source: Statistics Korea.

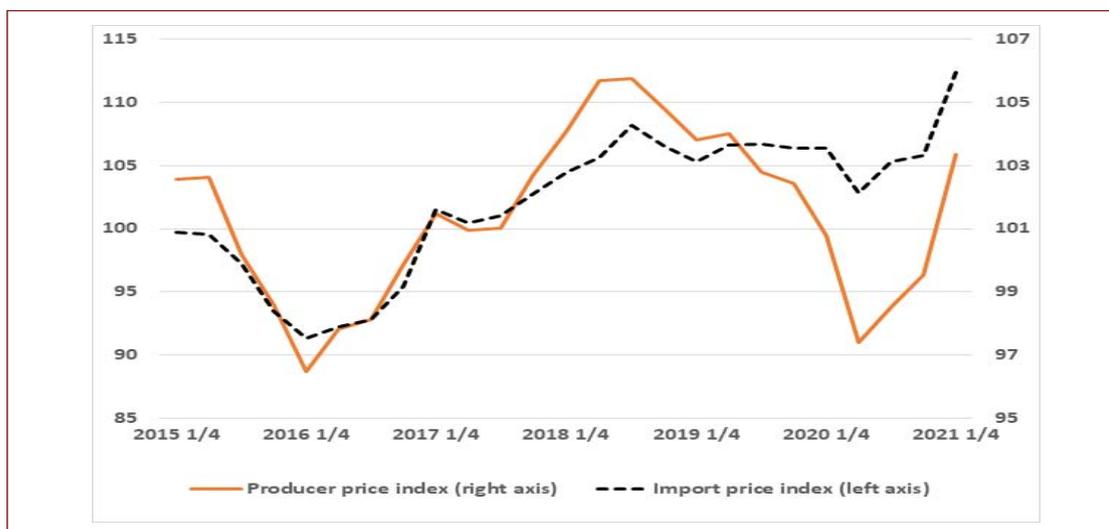
Note: Industrial output (January 2015=100), seasonal adjustment; % YoY change in employment

3. Pathways of Impact

■ **The pathways of economic impact were mostly on the demand side, more specifically weak demand.**

- The coronavirus's economic impact was transmitted through weakness on the demand side rather than disruptions on the supply side.
 - The producer price index (PPI) and the import price index (IPI) sharply declined in the wake of the outbreak, showing how weak demand rather than supply disruptions caused the shock. (See Figure 3.)
 - Supply disruptions affected select industries early in the outbreak, but the overall impact of such disruptions was believed to be marginal.
 - Recently, a semiconductor shortage has caused cutbacks in automotive production, but the problem surfaced in the recovery phase with a limited impact on the economy.

〈Figure 3〉 Producer Price Index (PPI) and Import Price Indexes (IPI) (2015 = 100)



Source: Bank of Korea ECOS

- By demand category, private consumption was the main culprit behind COVID-19's damage to the economy.
 - Weak private consumption accounted for more than 90% of the decline in the GDP growth rate, whereas investment had little impact.
 - Exports were responsible for around half of the decline in GDP growth, but imports fell more sharply to alleviate the lower figure.

〈Table 4〉 Factors behind Decline in GDP Growth by Spending Category

Spending category		Contribution to GDP growth (%p)	% of GDP growth
Domestic demand	Private consumption	-3.6	95.7
	Gov't expenditures	0.0	-1.1
	Construction investment	-0.5	12.8
	Facility investment	0.4	-10.1
Trade	Exports	-1.9	50.0
	Imports	2.6	-69.1
	Subtotal	0.8	-21.3
GDP		-3.7	100.0

Source: writer's own calculation using Bank of Korea's ECOS

Note: Based on difference between rate of decline in 2020 and five-year averages

4. Distribution of Economic Impact by Sector

- **The economic impact across industries of the pandemic varied more sharply than in previous crises.**
- The key characteristic of the pandemic is the wide variability of its impact across sectors.
 - The divergence is due to the nature of an economic crisis caused by an infectious disease. A similar pattern was observed when Hong Kong and Taiwan were hit hard by the SARS outbreak.
- The coronavirus caused a higher variance of growth across sectors of 2.1 times higher than previous economic downturns.

〈Table 5〉 Growth Distribution by Sector: Comparison of Major Economic Crises

	Previous economic downturn						COVID-19 pandemic
	Corporate collapse	1st oil shock	2nd oil shock	1998 Asian foreign currency crisis	2008 global financial crisis	Avg.	
Period	4Q71-2Q72	4Q74-2Q75	4Q79-4Q80	1Q98-4Q98	4Q08-2Q09		2Q20-4Q20
Distribution	37.1	10.1	48.8	31.2	14.6	28.4	58.7

Source: writer's own calculation using Bank of Korea's ECOS

Note: 1) See the main text below for the definition of a major economic crisis.

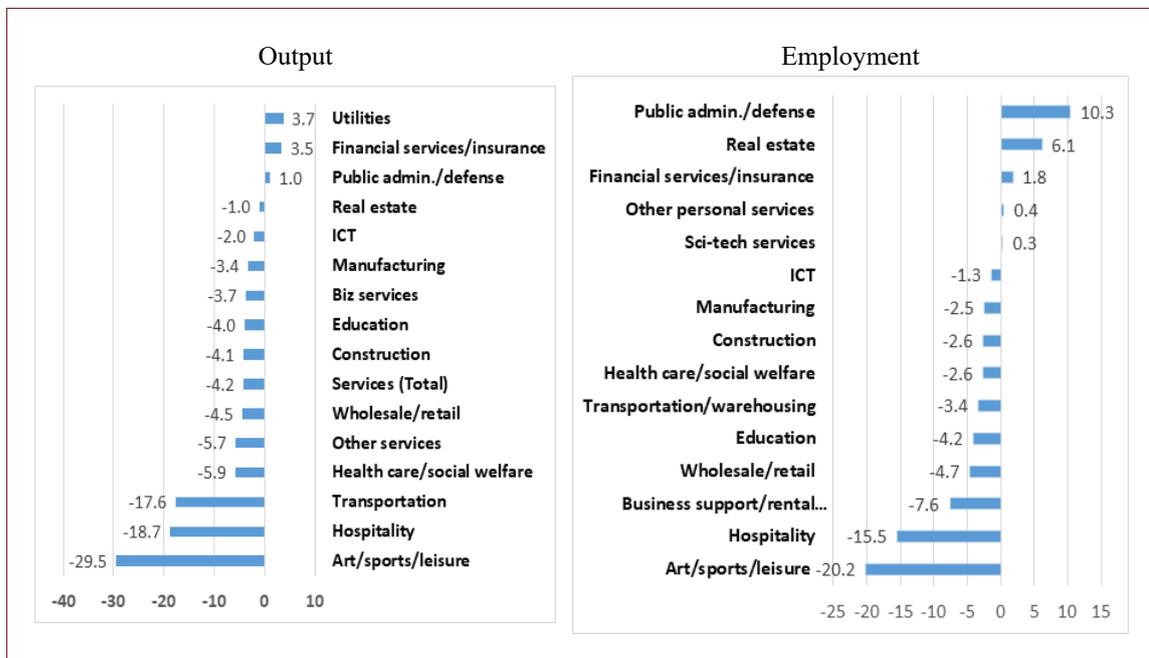
2) Based on industries other than agriculture and fisheries as defined by GDP through economic activity

- This study defines a major economic downturn as a phenomenon of the economy suffering at least two consecutive quarters of GDP growth lower than that of the prior year by more than a standard deviation. Since starting its industrialization, the nation has experienced six major economic crises including the pandemic.²⁾ (See Table 5.)

▣ **Wide divergence in performance by sector: slump in face-to-face services vs. boom in biotech and ICT**

- Face-to-face service sectors such as the arts, sports, hospitality, and transportation took an unprecedented hit from the pandemic while other industries greatly benefited, displaying a performance gap across industries.
- The hardest-hit sectors—the arts and sports—suffered a drop of 30%p in growth, followed by hospitality with 19 and transportation 18.
- Job growth slowed sharply in 2020, declining by 12.2% in arts and sports and 10.8% in hospitality.

〈Figure 4〉 Impact on Output and Employment by Industry



Source: Bank of Korea ECOS, Ministry of Employment and Labor’s Business Workforce Survey

2) For details, see Kang Duyong (2020), “The Peculiarity of the COVID-19 Economic Crisis and its Policy Implications,” *i-KIET Issues & Analysis*, No. 90, KIET.

〈Table 6〉 Changes in Growth Rate by Hard-Hit Industries

	2015-19 CAGR (A)	2020 growth rate (B)	B-A (%p)
Transportation	1.9	-15.7	-17.6
Hospitality	2.1	-16.6	-18.7
Arts/sports	1.8	-27.7	-29.5

Source: Bank of Korea ECOS

〈Table 7〉 Change in Job Growth for Hard-Hit Industries

	2017-19 CAGR in jobs (A)	Job growth rate in 2020 (B)	B-A(%p)
Hospitality	4.7	-10.8	-15.5
Arts/sports	8.0	-12.2	-20.2

Source: Ministry of Employment and Labor, ministry's Business Workforce Survey

〈Table 8〉 Change in Job Growth among Booming Sectors

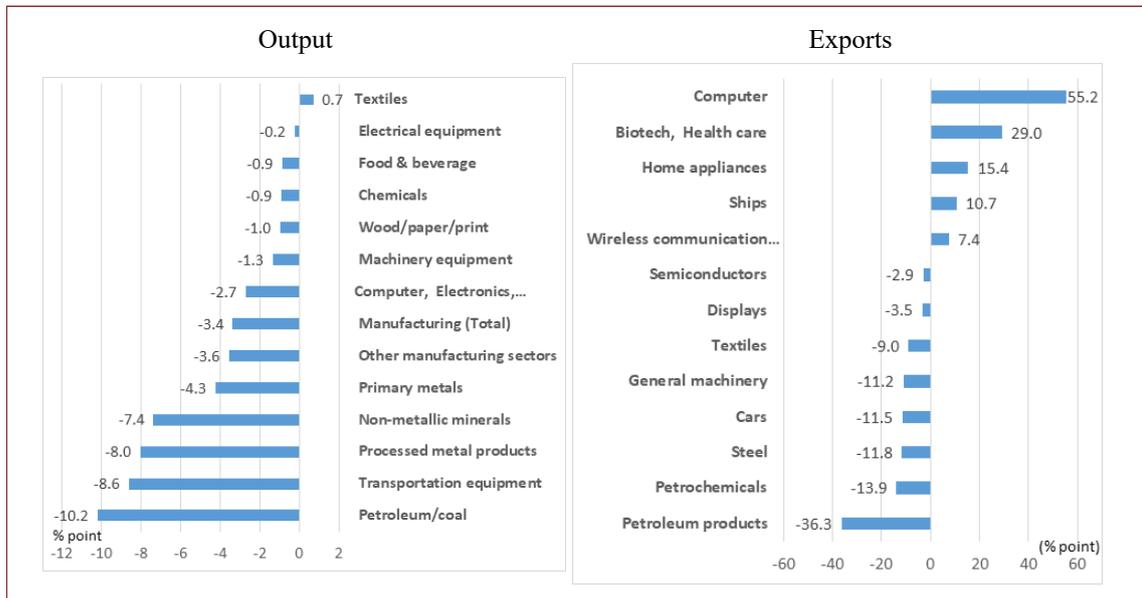
	2015-19 CAGR (A)	2020 growth rate(B)	B-A(%p)
Biotech	6.1	8.5	2.5
Semiconductors	17.7	22.6	4.9
Online shopping	19.3	31.0	11.7

Source: Statistics Korea data on mining, manufacturing and service sector

Note: Internet shopping based on constant sales

- In contrast, employment growth accelerated in sectors that greatly benefited from the coronavirus like biotech (pharmaceuticals), semiconductors, and e-commerce.
 - In 2020, jobs in online shopping saw 31% growth and those in semiconductors rose 23%, marking a stronger rise than in previous years.
- Within the manufacturing sector, petroleum products saw a decline in output and export growth while computer, pharmaceuticals, and home appliances enjoyed robust overseas shipments.
 - Output slowed the most in petroleum refining (-10.2%p) and transportation equipment (-8.6%p). Overall, manufacturing output contracted 3.4%p.
 - Exports declined sharply in petroleum products, petrochemicals, and steel but saw substantial rises in computers and pharmaceuticals.
 - Computers and pharmaceuticals in 2020 posted record-high export growth of 57% and 42%, respectively.

〈Figure 5〉 Impact on Manufacturing Output and Export Growth by Sector



Source: Bank of Korea ECOS, KITA trade statistics

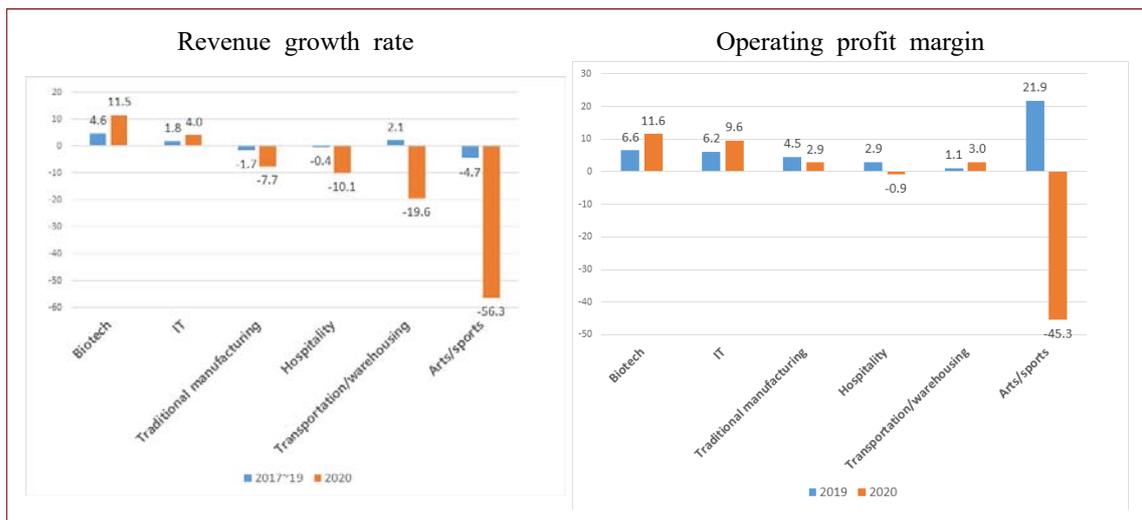
Note: 1) Decline in growth pace (%p) relative to changes over past five years

2) Exports based on current dollar value

■ Unequal corporate earnings across industries

- The decline in corporate earnings was most evident in hard-hit industries. The arts and sports, transportation and warehousing, and hospitality suffered a sharp decline in revenue, with the arts and sports and hospitality incurring operating losses.

〈Figure 6〉 Corporate Earnings by Key Industries



Source: NICE, KISVALUE.

- In 2020, the arts and sports saw revenue decline 56% year on year, and transportation and hospitality suffered falls of 20% and 10%, respectively.
- The arts and sports and hospitality saw operating margin decline 45% and 0.9%, respectively.
- In contrast, biotech and ICT saw revenue grow and post healthy operating margins.
 - In 2020, biotech and ICT grew 12% and 4% in revenue, respectively, and growth of 11.6% and 9.6% in operating margin.

5. Determinants of Economic Impact

- **The scale of economic impact hinges on mortality rates and the shares of face-to-face services and ICT in GDP.**
 - Based on statistics from major economies, this study analyzed key variables of the decline in Korea's GDP growth rate during the COVID-19 crisis. The rates are believed to have been affected by the mortality rate relative to population size and the shares of face-to-face services and ICT in GDP.
 - Based on 35 countries (OECD + BRICs) including Korea, this study calculated the correlation between a change in GDP growth in 2020 versus the three-year average, the number of COVID-19 cases and mortality relative to population size, and the shares of face-to-face services and ICT in GDP valued at current prices.
 - The mortality rates were found to have greater explanatory power than those of infection. The higher the percentage of face-to-face services in GDP, the greater impact it had on GDP growth, and the higher the percentage of ICT in GDP, the more mitigating impact it had on GDP growth, albeit marginally.
 - The estimates indicate the importance of reducing the mortality rate and containing the disease to minimize the pandemic's impact on the economy.
 - Meanwhile, ICT, especially digitalization, played a pivotal role in overcoming the crisis and cushioning its economic impact.
 - Digitalization supported the government's anti-pandemic measures (e.g., contact tracing) through real-time transmission of information and offset the economic shock by stimulating the use of contactless services.

〈Table 9〉 Estimation of determinants of pandemic’s economic impact

	Estimation 1				Estimation 2			
	Coefficient	Standard error	t-value	P-value	Coefficient	Standard error	t-value	P-value
Constant term	6.19748	1.43074	4.3317	0.000	5.17205	1.35416	3.8194	0.001
Incidence rate	0.00371	0.00246	1.5043	0.143				
Mortality					0.28920	0.09399	3.0769	0.004
ICT’s share of GDP (%)	-0.3225	0.18843	-1.712	0.097	-0.2163	0.17129	-1.263	0.216
Face-to-face services’ share of GDP (%)	0.44520	0.24312	1.8312	0.077	0.39567	0.21934	1.8039	0.081
R^2	0.235				0.371			
Adjusted	0.161				0.310			
Standard deviation	2.54471				2.307097			
Count (N)	35				35			

Note: 1) The dependent variable is the pace of decline in GDP growth in 2020 vs. the three-year average.

2) Incidence and mortality rates as of end 2020

3) ICT and face-to-face services as percentage of 2019 GDP in current value

4) Face-to-face services are based on hospitality and cultural services.

6. Policy Implications

■ Need for adequate support and flexible responses

- While recovery was seen in select segments such as exports, private consumption, the service sector, and employment showed signs of further weakness in the fourth quarter of 2020. This showed the need for continued policy support.
 - Expansionary fiscal policy is required until the threat of the pandemic is fully contained through vaccine rollouts and economic recovery is well on track.
 - The pandemic caused a sharper slowdown in major industries than previous crises in reducing private consumption and employment, pointing to the need for policy support corresponding to the scale of the economic fallout.
 - For reference, the US has implemented the largest economic stimulus in its history, or triple the amount of funds it used during the 2008 global financial crisis.
- Meanwhile, given the pandemic’s characteristics, once the threat of the coronavirus subsides with vaccine rollouts, pent-up demand is expected to drive rapid economic

recovery. Accordingly, flexible policy responses are critical when the consumer rebound occurs.

- Past experience with SARS shows that when an epidemic is contained, the economy recovers rapidly.
- While monitoring developments in the economy, the government should adjust flexibly adjust policy after recovery gains momentum.

■ Policy must consider gap in impact across industries.

- The almost polarizing gap among industries in economic impact, one of the pandemic's unique characteristics, is a key consideration in policymaking.
- Given the huge difference in impact on industries and the unprecedented shocks on select sectors, policy support should prioritize the hardest-hit industries and groups.
 - This selective approach is needed to align policy support with the extent of the pandemic's damage.
- Theoretically, compensation for damage caused by the pandemic is advised through compensation for economic losses.
 - The economic shocks are mainly attributable to government actions to contain the coronavirus, and private sector cooperation is essential to protect public health. Thus partial compensation for economic losses caused by public health measures is appropriate.
- Given the wide performance gap across industries, a temporary tax on excess profit on industries benefiting from the pandemic is an option to share the economic pain and build social solidarity.
 - Also called the windfall profit tax, this levy was imposed in the US during the Korean War or when oil price shocks hit.
 - Considering the skepticism over this approach, implementation of the proposed tax should fully consider practical challenges such as setting the criteria for what is excess profit and expected effects such as related tax revenue.
- For job creation, the government needs a two-pronged approach by providing wage subsidies to deter layoffs in hard-hit industries and inducing job creation in booming sectors.
- The wide performance gap across industries and the pandemic's characteristics indicate a high likelihood of growing inequality among economic classes, a problem

that requires a policy response.

- The industries hit hardest by the pandemic have a high share of small merchants, and asset price inflation has surfaced due to aggressive monetary policy to tackle the pandemic. Accordingly, social inequality is likely to grow in the post-pandemic period.
- Policy support is needed not just for hard-hit industries but the socially marginalized.

■ **Organic alignment of public health measures with economic policy**

- Overall, the most important factor in containing the pandemic is organic alignment of public health measures with economic policy.
- Priority must go to public health measures and the ensuing economic damage should be offset with compensation to an extent, rather than weighing the pros and cons of such measures versus economic recovery, to make anti-pandemic measures more effective and cushion the economic shock.
 - The trade-off approach to balance anti-pandemic measures and economic damage (by adjusting the level of public health measures to account for their economic impact) has proven unsuccessful.
 - The spread of the coronavirus determines the scale of economic shock, so putting disease control first is essential.
 - If so, economic damage due to public health measures should be compensated through timely policy actions to induce the private sector's support and collaboration to make such measures more efficient and mitigate the resulting impact on the economy.

■ **Mid- to long-term responses to propel digitalization, raise ecological awareness, and enhance resilience**

- The pandemic has highlighted the benefits of digitalization and accelerated the digital transition, showing the need to support the development of digital technologies and raise interest in risk management amid the economy's digital transformation.
 - The rise of the digital economy requires enhancement of responses to cybersecurity threats, which could create a crisis as big as the pandemic.

- COVID-19 put the spotlight on the ecological costs and risks of economic activities such as frequent epidemics, climate change, and threats to biodiversity, underlining the need to raise related awareness and responses.
 - Another key task is to publicize how economic actors such as economic policy, business operations, and personal consumption affect the ecosystem through their actions, and the need for policy responses to be accordingly enhanced.
- From the mid to long-term perspective, resilience of the socioeconomic system overall is needed to respond to a crisis.
 - Also essential is improving the resilience of supply chains, securing the know-how to produce or supply essential products and personnel, and building a corresponding reward system.

Kang Duyong, senior research fellow at Economic Outlook and Analysis Division

dykang@kiet.re.kr | 044-287-3205

Min Sunghwan, senior research fellow at Economic Outlook and Analysis Division

shmin@kiet.re.kr | 044-287-3127

Park Sungkeun, research fellow at Center for Economic Outlook and Statistical Analysis

sungpark@kiet.re.kr | 044-287-3172



A PUBLICATION OF THE KOREA INSTITUTE FOR INDUSTRIAL ECONOMICS AND TRADE

PUBLISHER **Chang, Jisang**

EDITOR-IN-CHIEF **Kim, Youngsoo**

ASSISTANT EDITORS | **Jeong, Gyeonghee & Jo, Gyeohan**

COPY EDITOR **Aaron Crossen**

370 Sicheong-daero, Sejong City, 30147, Republic of Korea

Tel. 044-287-3114 Fax. 044-287-3333 www.kiet.re.kr

This article from *I-KIET* is available for viewing and download at eng.kiet.re.kr/kiet_eng/main.