Potential Risks from COVID-19 Responses and Liquidity Expansion

Ⅰ. Overview of the Analysis

Since the outbreak of COVID-19, major economies, including Korea, have implemented expansionary fiscal measures with ultra-low interest rates and quantitative easing policies. Despite government efforts such as containment measures and vaccination campaigns, the emergence of new variants such as Delta and Omicron in 2021 prolonged economic uncertainty. Government expenditures rose sharply due to pre-existing welfare and employment-support commitments, as well as additional assistance extended to groups affected by the pandemic. Meanwhile, unconventional monetary policies—such as quantitative easing and long-term refinancing operations—were adopted to stabilize financial markets and alleviate liquidity strains.

This paper analyzes key economic and financial indicators, national COVID-19 policy responses, and relevant global issues to derive policy implications for Korea's future macroeconomic strategy.

- **Chapter II** examines the global economic environment, covering both real and financial sectors, and assesses the degree of recovery following large-scale stimulus programs.
- **Chapters III and IV** compare major indicators between advanced and emerging economies, identifying cross-country differences in post-pandemic recovery trajectories.
- **Chapter V** investigates liquidity expansion and its associated risks, providing thematic analyses and policy implications for Korea.
  - *(Risk from Unequal Policy Responses and Vaccine Disparities)*: Comparative analysis of pandemic resurgence, vaccination rates, and fiscal/monetary responses across countries.
  - *(Inflation Risk)*: Assessment of inflationary pressures arising from global liquidity expansion, based on short-term trend projections.
  - *(Emerging-Market Financial Instability)*: Examination of how monetary normalization in advanced economies affects financial stability in emerging markets.
  - *(Income Inequality Risk)*: Panel-data analysis of how liquidity surges during the pandemic may have influenced income inequality across countries.

Ⅱ. Global Economic Environment

Real Sector. According to the IMF, as vaccination rates rise and economic activity resumes, the world economy in 2021–2022 is expected to grow significantly faster than pre-pandemic averages.

- *(GDP Growth)* The global growth rate in 2021 is projected at **5.9%**, up 9.0 percentage points from –3.1% in 2020, and at **4.9%** in 2022. Advanced economies are expected to recover from **–4.5%** in 2020 to **5.2%** in 2021 and **4.5%** in 2022, while emerging economies rise from **–2.1%** to **6.4%** and **5.1%**, respectively.

- *(Consumer Prices)* Owing to supply-chain disruptions and extreme weather, energy, commodity, and grain prices surged. Inflation in advanced economies is forecast to climb from **0.7% (2020)** to **2.8% (2021)** and **2.3% (2022)**, while in emerging economies from **5.1%** to **5.5%** and **4.9%**.

Financial Sector. Global credit risk indicators have stabilized, but long-term bond yields have risen amid concerns over inflation and policy tightening.

- *(Credit Risk)* Following the rollout of vaccination campaigns, global credit spreads declined with improving consumption and lower unemployment. In the U.S., corporate bond spreads fell from **394.1bp** in 2020Q1 to **187.8bp** in 2021Q4. Emerging-market bond spreads declined from **577.0bp** in 2020Q1 to **312.5bp** in 2021Q2, but later widened to **324.4bp** in Q3 amid changing monetary stances and external uncertainty.
- *(Bond Market)* Expectations of economic recovery and inflationary pressure drove 10-year government bond yields upward in early 2021, though yields later fell in the U.S. and Japan. The U.S. 10-year Treasury yield rose from **0.68%** (2020Q3) to **1.74%** (2021Q1) before easing to **1.47%** in Q2 and **1.49%** in Q3 due to concerns about a slowing recovery and Delta-variant risks. In the euro area, the ECB long-term bond yield increased from **–0.57%** (2020Q4) to **–0.20%** (2021Q3).
- *(Equity Market)* Following the start of global vaccination programs, stock prices rose through Q2 2021 on recovery optimism but moderated thereafter. The MSCI advanced-economy index climbed from **1,853** (2020Q1) to **3,017** (2021Q2), before easing to **3,007** in Q3. The MSCI emerging-market index increased from **849** to **1,375**, then declined to **1,253** amid a stronger U.S. dollar.
- *(Foreign Exchange Market)* The U.S. dollar weakened on reduced risk aversion as vaccination progressed and recovery expectations strengthened. The U.S. dollar index declined from **98.3** (2020Q2) to **90.5** (2021Q1) following fiscal stimulus announcements and continued Fed accommodation, but rebounded to **91.9** (+1.4%) in Q3 due to faster U.S. recovery, inflation-driven yield increases, and safe-haven demand from U.S.–China tensions. The yen appreciated from **107.9** (2020Q2) to **103.3** (2020Q4) but depreciated again to **111.3** (2021Q3) as rate differentials widened.
- *(Commodity Market)* Driven by demand recovery, extreme weather, and supply-chain disruptions, prices of oil, base metals, and agricultural products surged. International crude prices rose from **$30.3 per barrel** (2020Q2) to **$71.6** (2021Q3). Base-metal prices climbed on low inventories, logistics bottlenecks, and ESG-related supply constraints. Corn, soybean, and wheat prices increased sharply through 2021Q2 due to surging Chinese demand and poor harvests, but moderated in Q3 as production recovered.

Potential Risk Factors. Global liquidity has expanded dramatically under large-scale stimulus policies. Combined with recovering consumption and supply bottlenecks, this has sustained upward pressure on prices. Concerns persist over premature monetary tightening and potential corrections in asset prices.

Ⅲ. Advanced Economies

1. United States

Macroeconomy. The U.S. economy contracted sharply in 2020 due to COVID-19 but entered a recovery phase in 2021. Real GDP growth registered −3.4% in 2020, while quarterly growth reached **0.6%** in 2021Q1 and **12.2%** in 2021Q2. The unemployment rate, which had risen during the early phase of the pandemic, declined on the back of economic recovery and quantitative easing, falling from **8.1%** in 2020 to **6.2%** in 2021Q1 and **5.9%** in 2021Q2. Consumer price inflation decreased from **2.3%** in 2019 to **1.4%** in 2020, then rose to **2.6%** in 2021Q1 and **5.4%** in 2021Q2.

Financial markets. Equity and real estate prices increased amid quantitative easing, while Treasury yields generally trended upward.

- The S&P 500 in 2021Q2 was up **33.0%** from end-2019 and **14.4%** from end-2020.
- Housing prices rose **7.8%** y/y in 2020 and further increased by **13.1%** y/y in 2021Q1 and **17.7%** y/y in 2021Q2.
- The 10-year U.S. Treasury yield was around **0.9%** at end-2020, rose to **1.7%** in 2021Q1, and then edged down to **1.5%** in 2021Q2.
- Broad money growth (M2) surged in 2020 but its pace has recently moderated.

Sectoral conditions and public finance. Household and corporate earnings deteriorated briefly in 2020 but have since exhibited gradual improvement, whereas fiscal metrics have improved only slowly amid continued policy responses. Household net worth rebounded after a temporary dip in early 2020, and corporate profits have risen since 2020Q3. Government debt-to-GDP has remained on an upward trajectory since 2020, while the fiscal deficit-to-GDP ratio widened from 2020Q2 onward.

2. Japan

Macroeconomy. Japan's economy contracted sharply in 2020 due to COVID-19 but returned to growth in 2021Q2. Real GDP growth was −4.6% in 2020; on a year-over-year basis, growth was −1.3% in 2021Q1 and **7.7%** in 2021Q2. Fixed investment, which had been rising since 2011, fell in 2020 due to the pandemic but turned upward in 2021Q2. Exports declined by **4.4%** y/y in 2019 and **14.1%** y/y in 2020, then rebounded in 2021. Consumer price inflation recorded −1.2% y/y in 2020 and −0.4% y/y in both 2021Q1 and 2021Q2.

Financial markets. Equity and real estate prices rose, while long-term interest rates fluctuated around **0%**.

- The TOPIX index increased **15.2%** in 2019 and **4.8%** in 2020; as of end-2021Q2, it was up **7.7%** from end-2020.
- Housing prices rose **6.7%** y/y in 2020.
- The 10-year JGB yield has hovered around **0.0%** since 2016, recording **0.04%** at end-2020 and **0.07%** in 2021Q2.
- Money supply growth remained elevated in 2021, at **9.6%** y/y in Q1 and **7.7%** y/y in Q2.

- Japan's gross external debt-to-GDP ratio rose from **84.2%** at end-2019 to **90.6%** in 2020 and **93.3%** in 2021Q2.

Sectoral conditions and public finance. Household and corporate conditions have generally improved relative to 2020, while government spending has increased. Household net worth has trended upward; nonfinancial corporate profits declined in 2019–2020 but have recently turned up. The ratio of government consumption to GDP was **21.1%** in 2020 and **21.2%** and **21.5%** in 2021Q1 and Q2, respectively.

3. Germany

Macroeconomy. Germany's economy contracted in 2020 due to the pandemic but returned to growth more recently. Real GDP growth was −4.9% in 2020 and −3.0% y/y in 2021Q1, before rebounding to **10.0%** y/y in 2021Q2. The unemployment rate rose to **6.3%** in 2020Q3, then declined to **6.0%** in 2021Q1 and **5.9%** in 2021Q2. Exports, which had increased steadily since 2010, fell markedly in 2020 but turned upward in 2021. Consumer prices, which had trended upward since the 2000s, fell in 2020 due to COVID-19 and then rose again in 2021.

Financial markets. Equity and housing prices increased, while long-term government bond yields have remained below **0%** since 2019.

- Equity prices fell **25.0%** from end-2019 in 2020Q1 due to COVID-19 but have since trended upward.
- Housing prices rose on the back of expansionary monetary policy, up **10.7%** y/y in 2021Q1 and **12.4%** y/y in 2021Q2.
- The 10-year Bund yield remained below zero, at −0.3% in 2021Q1 and −0.2% in 2021Q2.

Money supply has continued to grow since 2010, and the external debt-to-GDP ratio has increased since 2020 amid the pandemic.

Sectoral conditions and public finance. Household conditions improved, while corporate and government finances have recovered more slowly from the 2020 shock. Household net worth continued to increase in 2020 despite the pandemic. Corporate profits had trended up since 2013 but declined in 2020 with the spread of COVID-19. The fiscal balance-to-GDP ratio, which had been in surplus since 2012, turned to a deficit in 2020 and remained in deficit in 2021.

Ⅳ. Emerging Economies

1. China

Macroeconomy. Despite the pandemic, China recorded **2.3%** GDP growth in 2020 and was expected to achieve **7–9%** growth in 2021. Industrial production growth slowed to **3.4%** in 2020, then surged to **24.6%** y/y in 2021Q1 and **9.0%** y/y in 2021Q2. The unemployment rate rose in 2020 but improved thereafter, reaching **3.9%** from 2021Q1 onward. Housing prices have trended upward since 2015, albeit with a gradual deceleration (price increases of **5.7%** in 2018, **3.9%** in 2019, and **3.2%** in 2020).

Financial markets. Policy rates remained broadly stable; the 10-year government bond yield fluctuated around **3.2%**; equities rose; and the renminbi appreciated.

- The PBoC one-year lending rate, one-year deposit benchmark rate, and the Loan Prime Rate (LPR) remained stable.
- The 10-year CGB yield hovered around **3.2%** after 2020Q2.
- The Shanghai Composite fell during the initial COVID-19 shock in 2020 but rebounded and continued to rise, reaching about **3,551** points in 2021Q2.
- The renminbi turned stronger from 2020Q3 amid China's recovery, reaching around **CNY 6.5/USD** in 2021Q2.

Domestic and external balances. Inflation remained subdued (approximately **0%** in 2021Q1 and **1.1%** in 2021Q2). Government debt-to-GDP has trended upward since 2010, and the fiscal balance-to-GDP ratio was −7.5% in 2021. On the external side, the current account-to-GDP ratio (**1.8%**) and short-term external debt ratio (**36.8%**) remained sound. Exports rose strongly on global recovery and base effects, up **48.8%** y/y in 2021Q1 and **30.7%** y/y in 2021Q2.

2. India

Macroeconomy. India's economy began to recover in the second half of 2020, with real GDP growth of **20.1%** y/y in 2021Q2. Private consumption improved from 2020Q3 but fell **17.4%** y/y in 2021Q2 due to renewed outbreaks and lockdowns. Industrial production, which had contracted sharply in 2020, rose **6.0%** y/y in 2021Q1 and **44.4%** y/y in 2021Q2. The unemployment rate increased to **9.4%** in 2020, and stood at **8.4%** in 2021Q1 and **9.9%** in 2021Q2. While the resurgence in April 2021 slowed the recovery, a stronger rebound was expected in the second half; the IMF projected **9.5%** growth for 2021.

Financial markets. The policy rate remained stable, the 10-year government bond yield edged higher, equities were mixed, and the rupee trended weaker.

- The policy rate has been held at **4.0%** since 2020.
- The 10-year G-sec yield rose modestly to around **6.4%** in 2021Q2.
- Equity prices rose **24.6%** q/q in 2021Q1 but fell **4.7%** q/q in 2021Q2 amid renewed outbreaks.
- The INR/USD exchange rate generally exhibited a depreciation trend.

Domestic and external balances. Inflation was below **5%** in 2021Q1 but reached **5.6%** in 2021Q2. The fiscal balance-to-GDP ratio deteriorated to −12.8% in 2020. Government debt-to-GDP, which had been in the high-60% range, has risen since 2018 to about **89.6%** in 2020. The current account-to-GDP ratio stood at **0.9%**, and the short-term external debt ratio at **17.3%**. Merchandise exports fell in 2019 and 2020 but surged in 2021, rising **20.4%** y/y in 2021Q1 and **85.8%** y/y in 2021Q2.

3. Brazil

Macroeconomy. Brazil's economy contracted in 2020 due to COVID-19 but returned to positive growth in 2021. Real GDP grew **1.0%** y/y in 2021Q1 and **12.4%** y/y in 2021Q2. The industrial production index declined in 2020 but rebounded, rising **5.1%** y/y in

2021Q1 and **22.7%** y/y in 2021Q2. Despite recovery, the unemployment rate remained at record highs, at **14.4%** in 2021Q1 and **14.5%** in 2021Q2.

Financial markets. The policy rate and 10-year government yield increased; equities recovered; and the real remained weak.

- The central bank initiated policy normalization, raising the policy rate from **2.0%** to **2.75%** in March 2021 and implementing five additional hikes, bringing it to about **7.75%** by October 2021.
- The 10-year government bond yield, after declining, rose to around **9.1%** in 2021Q2.
- The Bovespa index fell **2.0%** q/q in 2021Q1 but rose **8.7%** q/q in 2021Q2.
- The BRL/USD exchange rate has generally remained on a depreciation trend since 2020.

Domestic and external balances. Inflation rose to **6.2%** in 2021Q1 and **8.6%** in 2021Q2. The fiscal balance-to-GDP ratio and government debt-to-GDP were −13.4% and **98.9%**, respectively, in 2020, but were projected to improve to about −6.2% and **90.6%** in 2021. The current account-to-GDP ratio was −1.8%, and the short-term external debt ratio **19.4%**. Exports rebounded strongly, up **15.7%** y/y in 2021Q1 and **53.1%** y/y in 2021Q2.

Ⅴ. Potential Risks from COVID-19 and Liquidity Expansion

1. Risks from Cross-Country Policy Gaps and Vaccine Inequality

Vaccine inequality. Some major emerging economies have relatively low vaccination rates, and in low-income countries—where vaccine distribution conditions are weak—coverage remains in the single digits, deepening global vaccine inequality.

- As of late October, an estimated **71.8%** of the population in high-income countries had received at least one COVID-19 vaccine dose, compared with **38.7%** in lower-middle-income countries and **3.6%** in low-income countries.
- Widening vaccine disparities may translate into differences in hours worked and contribute to broader growth divergences between advanced and developing economies.

Policy space and differing risk exposures. Because the capacity to pursue expansionary fiscal and monetary policies differs between advanced and emerging economies, the nature of potential risks also varies across countries.

- Advanced economies have generally deployed larger fiscal packages relative to GDP and continue to implement sustained stimulus through medium- to long-term spending plans.
- In 2020, the money supply relative to GDP in high-income countries increased by **21.2** percentage points from the previous year, whereas in lower-middle-income countries it rose by only **4.4** percentage points.

Policy implication. Given cross-country gaps in vaccine rollouts and policy responses, future macroeconomic planning should monitor not only the course of the pandemic, but also inflation pressures in advanced economies and heightened financial instability risks in emerging markets.

- Close monitoring of the pandemic and the pace of recovery is needed to secure fiscal space and design a path toward monetary normalization, with due consideration for the vulnerabilities of certain emerging and low-income countries.
- Reflecting these implications, the next subsection analyzes inflation risks from liquidity expansion in advanced economies and the potential for rising financial instability in emerging markets as monetary policy normalizes.

2. Inflation Risk

Liquidity surge and recovery. As economic activity improved amid a substantial increase in liquidity during the pandemic response, inflation risks have risen.

- As of end-2021Q3, year-over-year broad money (M2) growth was: **United States 12.9%**, **Korea 12.8%**, **China 8.3%**, **United Kingdom 7.4%**, **Germany 6.0%**, **Japan 4.1%**.
- The velocity of money in 2021Q3 was below end-2019 levels; the cumulative declines were **U.S. (–0.31)**, **U.K. (–0.19)**, **Germany (–0.14)**, **Korea (–0.10)**, **Japan (–0.07)**, **China (–0.04)**.
- Despite rising liquidity, subdued activity initially depressed velocity; as activity normalizes, inflation pressures could strengthen.

Time-varying trend analysis. A time-series analysis was conducted to assess the level of inflation in light of faster recovery in major advanced economies.

- Following Harvey (1985) and Watson (1986), we estimate a time-varying linear trend model in which the level and slope of the trend are specified as unobserved components.
- The dataset comprises year-over-year monthly CPI inflation for six economies (United States, China, Japan, Germany, United Kingdom, and Korea) over **1972.11–2021.10** (50 years).
- Current inflation levels are above their medium-term (last 5 years) averages, but remain *below* the estimated short-term trend in several cases; the United States, Germany, the United Kingdom, and Korea display short-term trend levels above their medium-term averages.

Normalization and persistence. Even after monetary policy shifts toward tightening, it may take a considerable period for policy effects to reduce inflation risk.

- If money velocity, which fell during the COVID-19 downturn, reverts to its end-2019 level, the result could be stronger inflationary pressures.
- In the United States, Germany, and the United Kingdom, observed inflation remains significantly below the short-term trend, implying scope for additional increases as inflation reverts toward that trend; scenarios with continued trend-driven increases merit consideration.

3. Financial Instability Risk in Emerging Markets

Tightening in the U.S. and spillovers. With the growing likelihood of the Federal Reserve shifting to a tighter stance, concerns over financial instability have risen in some emerging markets.

- Around the Fed's November 2021 taper announcement, the U.S. dollar strengthened and many EM currencies depreciated: between **Oct. 15** and **Nov. 24, 2021**, currencies weakened notably in **Turkey (29.1%)**, **South Africa (8.8%)**, **Russia (5.6%)**, and **Mexico (5.4%)**.
- Portfolio outflows were observed in several EMs: of nine surveyed countries, six (Turkey, Thailand, Taiwan, the Philippines, India, Brazil) recorded net equity outflows around the taper announcement window.
- With elevated inflation and resilient growth following two years of accommodation, tapering could accelerate and policy rate hikes could be brought forward.

External buffers and vulnerabilities. An assessment of current accounts and external debt-servicing capacity indicates fragilities in several economies.

- **Turkey, Latvia, and Lithuania** have short-term external debt exceeding **100%** of FX reserves (the IMF external vulnerability threshold), indicating weak external buffers.
- **Argentina** and **Malaysia**, both with prior default or stress episodes, have short-term external debt near **96%** and **90%** of reserves, respectively.
- **China** and **Russia** are assessed to have strong external positions; **India** and **Brazil** also appear unlikely to see financial stress escalate into systemic crisis under baseline conditions.

Policy implication. A range of risks stemming from U.S. monetary policy changes should be monitored, with contingency planning over both the short and medium terms.

- A shift toward U.S. monetary tightening could mark the end of the ultra-low interest rate era and materially alter global capital flows.
- Monitoring should be strengthened for potential spillovers from EM financial stress to the domestic economy.

4. Income Inequality Risk

Background. While expansionary policies have mitigated the economic shock from COVID-19, the surge in liquidity has raised concerns about worsening income inequality.

- In its June 2020 outlook, the IMF projected global growth of -4.9% for 2020; actual outcomes were -3.1%, reflecting the impact of accommodative policies across countries.

Empirical approach. A dynamic panel analysis using data for **36 OECD** economies over **1980–2019** examines the impact of liquidity on income inequality.

- The baseline dependent variable is the income share of the **top 1%**, a common inequality metric in the literature; as a robustness check, the ratio of the **top 10%** income level to the **bottom 50%** is also considered.

- Key explanatory variables proxy liquidity with the **policy rate** and the **money-to-GDP ratio**.
- Controls include the **export-to-GDP ratio**, a measure of **financial openness** (Chinn–Ito index), **R&D spending-to-GDP**, and public-sector **governance indicators** (World Bank *Rule of Law* and *Voice and Accountability*), as well as annual dummies for the Global Financial Crisis.

Findings and interpretation. For OECD members, increases in **money supply (M3)** and **financial openness** are associated with higher inequality metrics; however, based on statistical significance and effect sizes, the economic implications may be limited.

- Over the past four decades, periods of faster **M3** growth tended to coincide with relatively higher top 1% income shares on average.
- Changes in the **policy rate** and **broad money (M2)** were not statistically significant predictors of inequality in the baseline specifications.
- Greater **financial openness** is consistent with higher returns to capital and a larger top 1% income share, while stronger public-sector governance (higher *Rule of Law* and *Voice and Accountability*) is associated with relatively lower top-end income shares.