Financial Support Measures of Major Countries

And their Effects Amid COVID-19

Dec, 2022

Financial Services Commission

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국외훈련 개요

1. 훈련국 : 미국

2. 훈련기관 : 콜로라도 대학교 덴버
University of Colorado Denver

3. 훈련분야 : 경제금융정책

4. 훈련기간 : 2022.1.4 ~ 2022.12.26

훈련기관 개요

1. 기관개요

- 훈련기관명 : 콜로라도 대학교 덴버(Colorado University Denver) 행정대학원(School of Public Affairs, SPA)
- 주소 : 1201 Larimer Street, Denver, CO 80204
- 전화번호 : 303-315-5969

2. 기관소개

- 1912 년 개교 이래 1973 년 Denver 캠퍼스(CU Denver) 설립
- 이어서 행정대학, 경영대학, 상경대학, 예술 및 미디어 대학 등이 설립되어 종합대학으로 성장
- 행정대학원은 주로 공공기관 직장인들을 대상으로 하고 있으며 정부 기관 등과 연계한 연구 활동 활발

훈련결과보고서 요약서

훈련국	미국	훈련기간	2021.1.4~2022.12.26
훈련기관	콜로라도 덴버 대학교	보고서 매수	103
훈련과제	코로나 19 에 대응한 주요국의 금융부문 대응현황 분석		
보고서 제목	코로나 19 에 대응한 주요국의 금융지원 정책과 효과		
내용 요약	**각국의 코로나 19 대응 정책의 특징** 2020 년 세계 각국을 강타한 코로나 19 위기는 과거의 경제 위기와는 그 성격이 매우 달랐다. 과거의 경제위기가 과도한 외채, 정부부채 또는 가계부채와 같은 금융 부문에서의 부실에서 비롯된 반면에 이번 코로나 19 로 인한 경제 위기는 전파력이 강한 전염병을 막기 위한 여러 가지 조처, 즉 사회적 거리 두기나 물류상의 통제 등으로 인해 실물 경제가 크게 위축되어 경제 각 부문에서의 성장이 둔화되는 특징이 있었다. 하지만, 과거 수 차례의 경제 위기, 1997 년 IMF 나 2008 년 글로벌 금융위기 등을 겪은 경험을 바탕으로, 한국을 포함한 각 국 정부는 신속하게 위기 대응 프로그램을 가동시켰다. 그것은 당장의 유동성 위기에 처한 기업과 가계를 긴급히 지원하는 대책에서부터 금융시장 안정을 위해 전통적인 통화정책과 비전통적인 정책을 모두 적극적으로 시행하는 것이었다. 각 국 정부의 위기 대응 정책은 가계, 기업 등 각 경제		

	부문으로의 자금 지원과 시장의 안정이라는 유사한 목표를 공유하고 있어 그 정책 방향도 전반적으로 같은 경향성을 띄었다. 이 연구에서는 코로나 19 위기에 대응하여, 한국을 포함한 미국, EU, 영국 등 주요 국가의 금융 지원 정책과 그 효과에 대해 살펴보고 시사점을 도출해 보았다. 이것에는 국가 그룹별로, 즉 선진국과 신흥국의 팬데믹에 대응한 재정정책과 통화정책의 공통점과 차이점에 대한 분석이 포함된다. 코로나 19 에 대응한 각국의 정책은 가계와 기업 등 경제의 각 부문이 유동성 위기를 맞이하지 않도록 하기 위해 신용을 공급한다는 측면에서 다양한 정책 수단을 동원하여 실행되었다. 미국, 영국 등 주요국은 기업에 대해 생계 지원과 고용유지 유도를 위해 자영업자와 소상공인을 중심으로 현금을 지급하고, 중소기업뿐만 아니라 대기업에 대해서도 대출과 보증을 확대하였으며, 각종 세금을 유예하거나 감면하였다. 또한 각국은 중앙은행을 통해 유동성 공급을 확대하고 금융시장 안정을 위한 다양한 조치를 시행하였다. 보조금, 지급 연기 등과 같은 예산적 수단과 신용 보증, 대출 지원 등과 같은 비예산적 수단을 포함하는 재정 정책은 이를 원활하게 실행할 수 있도록 보조해 주는 통화 정책을 바탕으로 매우 신속하게 이루어졌다. 이러한 정책 수단 이외에도 기업에 대한 법인세 감면을 포함하여 각종 영업 규제의 일시적인 완화가 적용되었다.

	미국, 유로지역과 영국 등은 재정 정책 수단의 GDP 대비 비중에 있어 정책 별로 차이가 있었다. 미국은 보조금, 세금 감면 등 예산적 수단의 비중이 높았던 반면, 유로지역은 비예산적 수단 중 신용 보증(credit guarantee) 의 비중이 높았다. 한국, 일본 등 아시아권은 비예산적 수단 중 자금 지원(funding)의 비중이 높아 정책 구성의 차이를 보였다. 각국의 통화정책은 적극적 금리 인하를 기본 정책으로 하였으며 시장 안정을 위해 대체로 양적 완화 정책을 병행하였다. 다만, 신흥국의 경우 선진국에 비해 자산 매입 프로그램과 같은 시장 안정 정책을 적극적으로 추진하지는 않았다. 이것은 금융 제도의 성숙도와 관련이 있어 보인다. **코로나 19 대응 정책의 효과** 경제 부문에 대한 금융 지원 정책들의 효과는 복합적이기에 그것을 단정하기는 어렵다. 하지만 그러한 정책들은 당장의 위기를 극복하기 위한 처방이 많았던 만큼 각 정책들이 의도했던 단기적인 효과에 대해서 논의할 수 있을 것이다. 경제 위기 시에는 상황의 악화를 방어한다는 측면에서 단기적인 효과도 충분히 의미가 있다. 코로나 19 초기 각국의 기업지원 정책은 자금 지원, 신용 보증, 보조금 등 여러 유형으로 대규모로 실행되어 유효 수요의 유지 및 확대를 가능하게끔 했다. 이러한 지원 정책은 유동성 위기에 처한 많은 기업들의 자금 수요를 충족시키고 채무 부담을 완화시키는 데 크게

	기여했으며 이를 통해 경기 둔화의 정도를 방어할 수 있었다. 또한, 대출 규모의 큰 스케일에도 불구하고, 낮은 대출금리와 더불어 대출만기를 연장해주고 원리금 상환을 유예해주는 제도적 지원이 병행되었기 때문에 초기에는 대출과 관련한 부작용이 적었다. 확장적 재정정책으로 경기 침체를 방어하는 것이 의미하는 또 다른 중요한 효과는 고용을 유지하거나 진작시켜 사회적 안정을 유도하는 것이다. 이를 위해, 각국 정부는 기업에 유동성을 지원하면서 고용을 일정 수준으로 유지하는 것을 조건으로 부여하기도 하고, 별도로 실업을 방지하기 위해 직접적인 고용 지원금을 마련하기도 했다. 하지만, 일부 연구는 정부의 고용 지원금 정책이 단기적으로 효과가 있으나 중장기적으로는 거시경제적 효과가 약화될 수 있다는 점을 지적하고 있어 중장기적 관점에서의 정책 변화의 필요성을 시사한다. **코로나 대응 정책의 리스크 요인** 이번 코로나 19 로 인한 경기 침체를 막기 위한 전례 없는 대규모의 신용을 공급한 대책은 산업 전반적으로 부채의 급증을 야기했다. 정부 부문에서는 재정건전성이 악화되고 추가적인 정책 여력이 감소되었으며, 가계와 기업 부문에서는 부실 위험 등이 확대되어 향후 경제회복의 제약 요인으로 작용할 가능성이 높아졌다. 또한, 기업의 생산성이 개선되지 않은 채 상대적인 경쟁력을 상실한 한계기업이 존속되는 문제도 지적되고

	있다. 부채 리스크 관리를 위해서는 먼저 부채와 관련한 투명성이 제고되어야 한다. 이것에는 차입 절차와 차입 자금 지출의 투명성을 강화시키는 것이 포함된다. 아울러, 향후 가계와 기업에 대한 지원은 유동성 공급보다는 solvency 를 해소하는 방향으로 이루어지는 것이 바람직하다. 가계 부채와 기업 부채 모두 부채에 대한 만기 연장과 상환 유예 조치를 단계적으로 종료해야 할 것이다. 또한, 각 부문의 부채 증가는 금융기관의 건전성에 부정적 영향을 미치므로, 금융 감독기관은 은행, 증권, 저축은행 등 각종 금융기관의 건전성을 정기적으로 평가하고 모니터링 해야 한다. 경영이 어려운 중소기업에 대해서는 정책적 지원을 계속할 필요성이 있다. 하지만 계속 사업이 어려운 한계기업에 대해서는 구조조정을 단계적으로 과감하게 진행해야 한다. 회생가능성이 희박한 자영업자와 기업에게는 비금융적 지원, 곧, 채무재조정이나 사업전환 프로그램 같은 지원을 실행하는 것이 효과적일 수 있다. **중소기업에 대한 금융지원 정책의 효과** 추가적으로, 이 연구의 심화 주제로서 코로나 19 위기에 대응한 중소기업에 대한 금융지원 정책이 중장기적 관점에서 효과가 있었는지에 대해서 분석해 보았다[1]. 이 효과성은 중소기업에 대한 정부의 신용

[1] 이 부분은 본인의 University of Denver at Colorado 행정대학원의 졸업 논문에 해당함

	공급이 기업의 생산성과 수익성에 긍정적인 방향으로 작용했는지 여부에 대한 것이다. 코로나 19 가 장기화 되면서, 초기에 정부가 시행했던 전방위적인 지원 정책은 예산 제약 하에 있는 정부가 지속적으로 시행하기는 어렵다. 중장기적 관점에서 정부의 지원은 자원 배분의 효율성을 지향하는 방향으로 시행되어야 할 필요성이 높다. 그렇기에, 특히 한국에서 기업 수 측면에서 높은 비중을 차지하고 있는 중소기업에 대한 지원이 해당 기업의 생산성을 향상시키는 방향으로 이루어지고 있는지에 대한 검토는 향후 정책 방향의 마련을 위해 필요하다. 특히, 한국의 경우 기존 연구가 주로 기업의 크기를 고려하지 않고 기업 전체를 대상으로 하고 있어, 본 연구는 기업 신용이 특히 중소 기업의 경쟁력에 미치는 효과에 대해 중점을 두고 있다는 점에서 의미가 있다. 기업 또는 산업의 경쟁력은 단기간에 형성되거나 측정되는 것이 아니므로 이 연구는 신용의 중장기적 효과를 검토하여 정책의 시야를 넓혀 보고자 했다. **연구방법론** 이 연구는 정부 지원 곧 외부의 신용 제공과 중소 기업의 성과와의 상관성에 대해 기존의 연구를 참고하여 패널회귀방법을 적용하여 분석하였다. 해당 분석의 독립변수로는 기업의 차입금의존도와 부채비율을 사용하였다. 이것은 정부의 금융지원과 관련된 대리

	변수로서 그 효과를 추측해볼 수 있는 변수라는 의미가 있다. 또한, 신용과 관련한 두 개의 지표를 각각 적용함으로써 교차 검증을 하고자 했다. 설명변수로는 대표적인 수익성 지표인 매출액영업이익률과 생산성 지표인 총자본투자효율 자료를 사용하였다. 이 지표는 기업의 총자본으로 1 년간 어느 정도로 부가가치를 산출하였는지를 측정하는 지표이다. 기업의 외부 신용의 효과를 측정하는 것이므로 자본에 대한 생산성 지표를 선택하는 것이 적절하다. 한국에서 일반인이 접근 가능한, 잘 집계되어 있는 생산성 관련 지표이기도 하다. 제조업과 서비스업으로 분류되는 전체 산업을 대상으로 네 차례의 회귀분석을 시행하고, 추가적으로 개별 산업을 대상으로 각각 회귀분석을 시행하여 기업신용의 효과를 산업별로 점검해 보았다. 분석 대상 기간은 글로벌 금융위기를 겪은 시기인 2008 년부터 자료 구득이 가능한 2020 년까지로 하였다. 자료의 특성으로는, 기업의 생산성이 단기간에 향상되기 어려운 점을 감안하여 기업 신용의 중장기적 효과를 분석한다는 측면에서, 유사한 과거의 분석 방법을 참고하여, 변수 별로 3 년치 평균 자료를 사용한 점이다. 올해의 생산성이 작년에 비해 향상되었다면 신용측면에서의 원인이 3 년전, 2 년전, 1 년전 차입금으로 인한 투자 등의 효과일 수 있다고 보고 차입금의 과거 평균치를 변수로 설정하였다. 실제로 회귀분석을 여러 차례 시행해보니 통계 모형의 설명력을 의미하는 R^2 가

	과거와 미래의 평균치를 적용할 때 향상됨을 확인할 수 있었다. 추가적으로, 과거 연구진에 의하면 시계열 자료의 평균치를 사용함으로써 자료의 내생성 곧 독립변수와 오차항의 상관관계가 제거되는 효과가 있어 모형의 적합성을 개선할 수 있다고 하였다 (Borenzstein & Lee, 2005). **결과 분석** 통계 분석 결과, 기업 외부 신용은 해당기간 동안 제조업과 서비스업에 있어서 중소기업의 중장기적 생산성에 전반적으로 유의한 긍정적인 상관성을 보여주었다고 볼 수 있다. 하지만, 유사한 두 개의 독립변수 곧, 차입금의존도와 부채비율에 있어서 모두 유의하게 나타났던 것은 아니므로 결론을 단정지을 수는 없다. 또한, 두 독립변수와 수익성과의 상관성에서는 부정적인 유의성이 나타났다. 이러한 결과를 보면, 정부의 기업에 대한 지원금은 중소기업의 중장기적 재무안정성(생산성과 수익성)을 고려하여 시행할 필요가 있어 보인다. 다음으로, SME 의 개별 산업의 생산성 및 수익성에 외부 지원금이 미치는 영향을 제조업 22 개 업종에 대해 회귀분석을 해 보았다. 서비스업의 개별 산업은 회귀분석을 시행할 수 있는 과거 자료가 부족했다. 그 결과, 제조업 개별산업의 시계열에 대해서 시행한 통계 분석 결과는 전체산업의 그것과 일부 일치하지 않았다.

	산업마다 계수 P 값의 유의성은 다르게 나타났다. 구체적으로는, 두 독립변수 중 적어도 하나의 변수에 대해 생산성과 긍정적인 상관성을 보인 산업은 식료품, 음료, 화학물질, 고무 및 플라스틱, 기계 장비, 기타 영역의 여섯 개 부문이었다. 그리고 수익성과 유의미한 상관성을 보인 산업은 식료품, 가죽 가방 신발, 화학물질, 고무 및 플라스틱, 기계 장비, 운송 장비, 기타 영역의 일곱 개 부문이었다. 수익성과 관련해서 제지 종이 제품, 의약품 등 4 개 산업은 외부 신용과 부의 상관성을 보이기도 했다. **주요 논의** 이렇듯, 제조업 22 개 업종 중 6~7 개의 산업만이 긍정적인 상관성을 보인 것은 제조업 전체에 대한 분석 결과를 개별 산업에 그대로 적용하는 데에 무리가 있을 수 있음을 보여준다. 단기적으로는 유동성 위기에 처한 중소기업을 구제하기 위해 지원을 하되, 중장기적인 관점에서 금융 지원이 기업 재무에 효율적인 효과를 창출하기 위해서는 정부 지원이 개별 산업에 대해 선별적으로 이루어지는 것이 바람직함을 시사한다. 아울러, 이를 위해서는 신용과 기업 및 산업의 경쟁력 간의 관계에 대한 철저한 분석과 모니터링이 전제되어야 할 것이다. 덧붙이자면, 선별적 지원방안이 마련되더라도 정부가 이를 이행하는 데 실질적인 어려움을 겪을 수밖에 없다는

	점도 고민해야 할 부분이다. 선택적 지원방안이 공정한지에 대한 사회적 합의를 도출하는 데 정치적 어려움이 있을 수 있다. 또 관련 기업들이 정부에 로비를 해 객관적인 분석 결과를 반영한 정책 결정에 혼선이 빚어질 가능성도 있다. 아울러, 정부 및 공공부문은 중소기업에 대한 금융적 지원뿐 아니라 비금융적 지원을 촉진하는 방안도 마련하는 것이 바람직하다. 예를 들어 중장기적으로 생산성이 향상되지 않는 중소기업을 선정한 후 원인분석을 위한 컨설팅을 제공하거나 생산성을 높일 수 있는 기술교육 프로그램을 마련할 수 있다. 이러한 비금융적 지원 정책이 재정지원과 결합되기 위해서는 관련 정부 부처 간 긴밀한 협조가 필요할 것이다. **결론** 이렇듯, 기업 지원이 보다 생산적인 방향으로 이루어질 수 있도록 기존의 보편적인 지원에서 선별적인 지원으로 정책 방향의 전환이 고려되어야 한다는 점은 코로나 19 가 발생한지 3 년이 되어가고 있는 시점에서 정부의 지원 정책이 단계적으로 출구 전략을 도모해야 한다는 것을 의미한다. 이 때, 제한적인 자원이 효율적으로 배분되어 사회 전체적으로 손실을 줄일 수 있도록, 본 연구에서와 같이 기업에 대한 신용 공급이 해당 기업과 산업의 중장기적 관점에서의 생산성에 긍정적인 영향을 미치는지에 대해 고려해 보는 것이

	필요하다. 이를 위해서는 정부가 기업 데이터를 수집하고 모니터링하고 분석하는 역량도 제고해야 할 것이다. 아울러, 정부의 지원 정책에 대한 결정은 사회의 정치적 결정이기도 하다. 사회경제적 이익을 최대화하는 방향이 무엇인지에 대한 사회적 합의 과정이 원활히 이루어질 수 있도록, 성숙한 정치적 환경을 구축하기 위해서 노력해야 한다.

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Introduction

The COVID-19 crisis, which hit countries around the world in early 2020, was very different from the past economic crisis. While the past economic crisis resulted from vulnerable financial sectors such as excessive foreign debt, government debt or household debt, the economic crisis caused by COVID-19 was characterized by the slowdown in growth as the real economy shrank in all sectors due to various measures to prevent contagious disease such as social distancing and logistic control, etc.

However, based on their experience in several economic crises in the past, governments, including South Korea's, quickly launched crisis response programs. It was to actively implement both conventional and non-conventional monetary policies to stabilize the financial market, starting with measures to urgently support companies and households facing the immediate liquidity crisis. Since governments share similar goals of supporting each economic sector and stabilizing the market, their policy directions generally tended to be the same.

In response to the COVID-19 crisis, this study aims to examine the financial support policies of major countries such as the United States, the EU, and the United Kingdom, including South Korea, and

then derive policy implications. This includes the study of the commonalities and differences between fiscal and monetary policies by country group, that is, in response to the pandemic of advanced and emerging countries.

The effects of these policies are complex, so it is difficult to make a conclusion for them. However, the policies could prove the short-term effects each of them intended, as there were many prescriptions for overcoming the immediate problems such as liquidity risks. Facing crisis, short-term effects are meaningful in terms of defending the deterioration of the situation. If stability continues due to emergency measures the effectiveness of the policy can be explained from a mid-to long-term perspective as well.

However, countermeasures to supply credit in all quarters have caused side effects such as a surge in debt and issues with marginal companies. Three years after the pandemic, the study will also discuss these side effects and management strategies.

In addition, as an in-depth topic of this research, the study will analyze whether the financial support policies for small and medium-sized companies amid COVID-19 were effective from a mid- to long-term perspective. The effectiveness concerns whether the government's credit supply to SMEs has played a positive role in the

productivity and profitability of the company. With the prolonged COVID-19 pandemic, the government's initial indiscriminate support policy cannot be sustained under budget constraints. From a mid- to long-term perspective, financial support measures need to be implemented considering efficient resource allocation. Therefore, it is necessary to examine whether support for SMEs, which account for a high proportion of the number of companies in South Korea, over 90%, is being made to improve the productivity of the company.

Financial Support Measures of South Korea

South Korea has proactively made efforts to stabilize the financial market to address financial market instability and difficulties in raising funds in vulnerable industries and companies such as small business owners and self-employed people due to COVID-19. In particular, the Financial Services Commission focused on providing sufficient liquidity to companies by preparing the "Financial Stability Program Package" at a scale of 175 trillion won + @. In addition, market stabilization measures were quickly implemented in various ways to alleviate financial market shocks such as corporate bonds and stocks markets.

Corporate Funding Measures

As soon as the COVID-19 shock broke out, the Korean financial authorities quickly operated the emergency economic conference system to prepare support policies for companies and small business owners who are vulnerable to COVID-19. At the first meeting, 29.2 trillion won worth of programs targeting them continued to increase afterwards. It expanded the supply of loans and guarantees to small and medium-sized companies, supplied emergency management funds to small business owners, and allowed KAMCO, an asset management public company, to purchase overdue bonds worth up to KRW 2 trillion. Policy funds were actively provided to ease the corporate funding crunch through Korea's policy financing, such as low-interest loans from the Industrial Bank of Korea and the expansion of guarantee supply through the Korea Credit Guarantee Fund. In particular, in the early days of the outbreak of COVID-19, a "key industry stabilization fund" worth about 40 trillion won was created to promote funding for industries that have a significant impact on the national economy, employment stability, and national security. In addition, commercial banks implemented policies to extend the maturity of existing loans and suspend interest repayment for companies that are feared to be damaged by COVID-19.

Market Stabilization Policy

The government has come up with measures to stabilize the financial market to resolve the financial market's tightening without spreading the crisis in the financial sector, such as corporate bonds and the short-term fund market, to the real sector.

Representatively, the Bond Market Stabilization Fund was created to resolve the credit crunch in the bond market, such as corporate bonds and CPs, and the Securities Market Stabilization Fund was prepared to stabilize the stock market to KRW 760 billion. In addition, programs to purchase corporate bonds first through Korean policy financing such as the Korea Development Bank were also operated.

In particular, in order to support the repayment of low-credit corporate bonds, the Low-credit Corporate Bond and CP Purchase Organization was also established to reduce the burden of repaying low-credit companies' corporate bonds at maturity and to prevent them from suffering a shortage of funds even in COVID-19.

Other policies

Since April 20, the government has implemented various measures

to strengthen the ability of the financial sector to support the real economy by pushing for flexible applications on financial regulations to respond to COVID-19. In principle, these measures were applied temporarily. These measures can be largely classified into capital-based regulations, liquidity-based regulations, and business-based regulations.

Regulating capital adequacy includes reducing the capital burden of financial companies investing in securities market stabilization funds in common in each industry, such as banks and insurance. In addition, in the banking sector, most banks implemented a revision of the credit risk calculation method among the Basel 3 final draft, an international standard for expanding capital capacity, starting in the second quarter, allowing the BIS equity capital ratio to increase which was implemented early. In the securities sector, NCR (Net capital ratio) regulations on corporate loan bonds have been eased, which means easing the criteria for calculating the risk amount of corporate loan bonds. There was an effect of expanding the supply of corporate funds by reducing the capital burden on securities firms. In particular, the government tried to create conditions for expanding financing through the capital market in the case of small and medium-sized enterprises or venture companies among corporate loan bonds (FSC, 2020).

In the case of liquidity regulation, the LCR, the liquidity coverage ratio, was temporarily eased and the application of the loan-to-deposit ratio (deposit/loan>1 or more) was suspended to expand the liquidity buffer so that the supply of funds to the real sector could be expanded. In the case of insurance companies, the laws and regulations were interpreted to allow RP sales to raise investment funds for bonds and securities market stabilization funds.

In addition, executives and employees of financial companies were exempted from handling loans related to COVID-19, and non-action opinions were issued to exempt sanctions from submitting management disclosures or business reports within the deadline due to COVID-19. In addition, in the case of policy financial institutions, the supply performance was given priority to the annual management evaluation, contributing to the active supply of funds to public institutions.

Financial Support Policies in Major Countries

Countries around the world, including the United States and the United Kingdom, have implemented financial market stabilization measures and corporate support measures to overcome the COVID-19 crisis. Major countries supply liquidity such as cash mainly to self-

employed and small business owners to support their livelihoods and induce employment maintenance, expanded loans and guarantees to large companies as well as small and medium-sized enterprises, and suspended or reduced various taxes. In addition, countries have implemented various measures to expand liquidity supply and stabilize financial markets through central banks. In-depth study of the program details such as the targets, objectives, supply plans, and support contents of various financial policies in various countries will help improve understanding of the conditions and circumstances of policy enforcement and draw appropriate policies in the future.

The United States

Corporate Support Measure

The U.S. government's direct support policy for companies was to provide loans, guarantees, or subsidies to companies in certain industries that were damaged or at risk of being damaged by COVID-19, such as passenger and cargo airlines. However, there were conditions for companies to receive such support, such as maintaining the employment level at 90%, banning treasury stock purchases and dividends, and freezing or reducing remuneration (U.S. Department of

Treasure, 2020).

Financial support from the Ministry of Finance was not unconditional, but was achieved by simultaneously managing credit risks. For example, the government obtained shares, stock-linked securities, or senior bonds as much as a certain percentage of loans through negotiations. In addition, it charged a level of interest that reflected sufficient collateral or credit risk (U.S. Department of Treasure, 2020), but also introduced cash support that was temporarily without repayment obligations. The Small and Medium Business Administration's Economic Loss Disaster Loans exempted repayment of up to $10,000 for small businesses and agricultural companies suffering from a temporary decrease in income (Park, 2020).

The U.S also prepared the Coronavirus Aid, Relief, and Economic Security (CARES) Act (2020) and the Coronavirus Response and Consolidated Appropriations Act (2021) and applied the fast and direct economic assistance for American workers, families, small businesses, and industries (U.S. Department of Treasury, 2021). The Cares Act was a relief bill for the overall society affected by COVID-19 and contained very comprehensive contents. Among them, the Paycheck Protection Program, a salary protection program, was one of

the programs that supported companies. This included a full guarantee of SME loans from commercial banks by the Small and Medium Business Administration (SBA). At this time, interest rates were low at around 1%, and under certain conditions, for example, if the employment of all employees was maintained for eight weeks and the wage share of subsidies met more than 75%, the principal could be written off.

In addition to this direct support, the U.S. also implemented indirect support associated with the Fed. It was to provide overall support for the industry through the SPV operated by the Fed. Specifically, the amount that the Treasury invested in SPV, about 10% of the liquidity support amount became a subordinated investment that paid losses in preference to Fed loans. The Fed has lent SPV about nine times its Treasury contribution. And SPV was a structure that purchased corporate bonds or lent loans to companies. This meant significantly expanding the amount of credit support through the Fed's liquidity support. These kinds of programs include MSLP(Main Street Lending Program), TALF(Term Asset-Backed Securities Loan Facility), PMCCF(Primary Market Corporate Credit Facility), SMCCF(Secondary Market Corporate Credit Facility), CPFF(Commercial Paper Funding Facility), etc. This is a kind of emergency loan program, and it can be said that the government, the

central bank, and the Congress cooperate with each other to share public risks. The U.S. financial authorities introduced nine emergency loan programs in a short period of time in March and April, quickly supplying liquidity to financial institutions, bond markets, and loan markets.

In addition, the United States temporarily eased tax-related regulations on companies by reducing corporate tax and delaying employer's salary tax, etc.

Monetary Policy

In May 2020, the Fed quickly lowered its key interest rate to the zero level several months after the outbreak of COVID-19. In addition, it presented a forward guidance that "the current interest rate level will be maintained until the economy is confident that it will overcome the risk situation and achieve full employment and price stability" (Federal Reserve, 2020). In addition, the Fed resumed quantitative easing, which greatly expanded its asset purchase program. Accordingly, despite the expansion of the fiscal deficit due to the COVID-19 response, it was possible to prevent the rise in government bond rates early (Park, 2020). In addition to government bonds and MBS, the Fed expanded the target of purchase to CMBS and

implemented unlimited quantitative easing without setting a purchase limit (The Federal Reserve, 2020).

The Euro Area

The EU's main program was firstly, with an unemployment fund called SURE(Support to mitigate Unemployment Risks in an Emergency). This was to lend money to Member States' employment security programs. It is a way in which member states provide guarantees worth 25 billion euros, respectively, and provide loans to member states with funds raised by the EU issuing bonds based on member state guarantees. Those States used the loans as financial resources for various employment security support projects.

Another major business was the loan guarantee program for SMEs. This is for the European Investment Bank (EIB) to provide guarantees for commercial banks' loans to SMEs. Member States have established the European Guarantee Fund, which is worth 25 billion euros, to support loans to small and medium-sized companies affected by COVID-19. The EIB provided guarantees to commercial banks' loans to small and medium-sized enterprises with funds raised by issuing bonds based on this European Guarantee Fund's financial resources.

These loans had the effect of reducing financing costs through EIBs with excellent credit ratings.

Market Stabilization Policy

The ECB actively implemented expansionary monetary policies even in situations where policy capacity has decreased due to existing low interest rates. It was a credit supply policy, means with collateral, an asset purchase program, etc. The ECB lowered interest rates on its Targeted Long-Term Refinancing Operations (TLTROs) 3 program for non-financial firms in mid-March 2020 to 25bp, which would force money to flow to the private sector by lending long-term loans at lower interest rates, a more relaxed condition for commercial banks, then drastically lowered them to 50bp at the end of April.

In addition, the authority applied unprecedentedly relaxed collateral measures to the euro area. In March and April 2020, the scope of eligible assets was expanded by adjusting the collateral evaluation criteria. For example, if marketable assets are rated BB or higher, the conditions have been eased by satisfying the collateral qualifications. In addition, the PEP (Pandemic Emergency Purchase Program) was operated as a representative asset purchase program, and the program was extended from about 750bn euros in March to about

600bn euros in December, extending the program to 2021 (Aguilar, 2020).

Other Policies

In order to expand the credit supply capacity, the soundness regulations for financial companies were eased. For example, the Pillar 2 supervisory criteria (the obligation of regulators to check the minimum equity capital regulation of financial institutions) and the new International Accounting Standards (IFRS) were eased.

The United Kingdom

Corporate Funding Measures

The COVID-19 support guarantee program for British companies provided government guarantees through the British Business Bank owned by the Department for Business, Energy & Industrial Strategy of UK government. And the guarantee review was a form of consignment guarantees conducted by financial companies. British Business Bank is a development bank 100% owned by the U.K

government that raises operating funds only through investment returns and government investment without receiving or self-financing functions through the capital market. Programs such as the Coronavirus Business Interruption Loan Scheme (CBILS) and the Coronavirus Large Business Interruption Loan Scheme (CLBILS) in the UK were guaranteed by the government through the British Business Bank. The company applied for a loan from a BBB-approved lender, which conducted a loan review, and BBB provided 80% government guarantee for the loan.

In addition, a system was introduced to compensate for the decrease in operating income of self-employed, small business owners, and business in vulnerable industries.

Market Stabilization Policy

The CP of the company was purchased through Covid-19 Corporation Financing Facility (CCFF) jointly operated with the Bank of England and the UK Treasury. The scale was set unlimited and operated for one year. This was operated as a reserve fund for the Bank of England, and the Treasury compensated for losses and expenses.

Other Policies

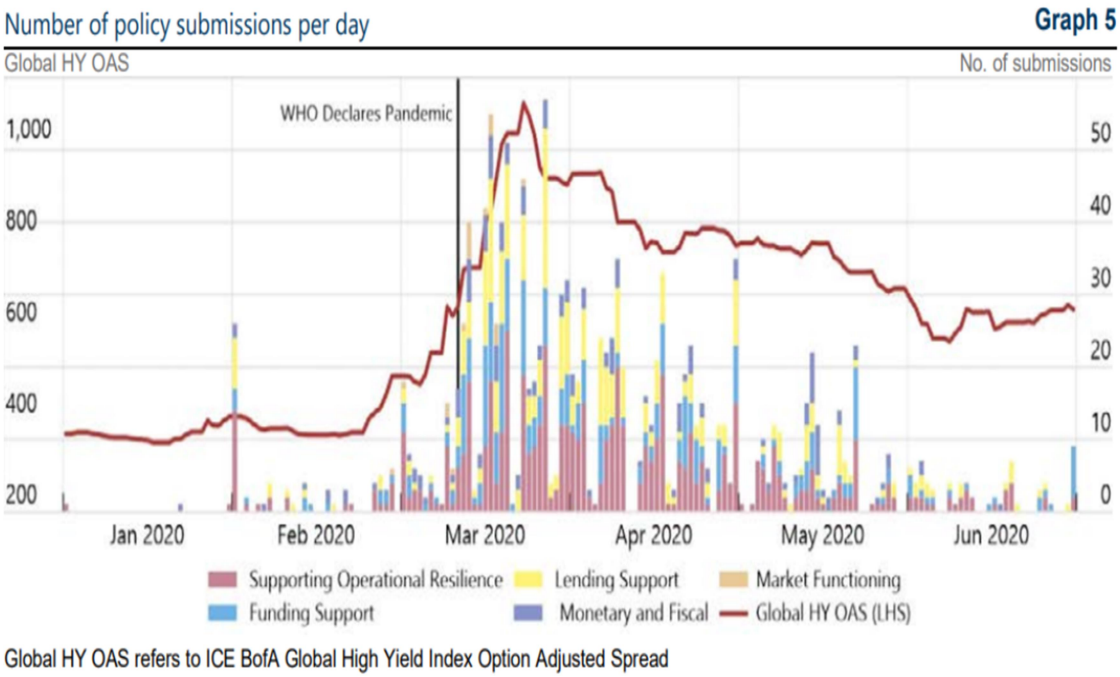
By extending the deadline for financial companies to submit financial reports and canceling stress tests, it also provided administrative support to reduce the compliance burden of financial companies to focus more on responding to the COVID-19 crisis. In addition, the credit supply capacity to the market was indirectly expanded by changing the supervisory criteria related to economic response buffer capital and IFRS standards to ease the capital burden on financial institutions (Park, 2020).

Characteristics of COVID-19 response policies around the world

Each country's policy response to fight COVID-19 was made extensively and quickly to ensure that credit flows were not blocked in the real economy. One graph of the FSB report well expresses the frequency of each response policy tool in major countries at the beginning of the COVID-19 outbreak, around March to May 2020.

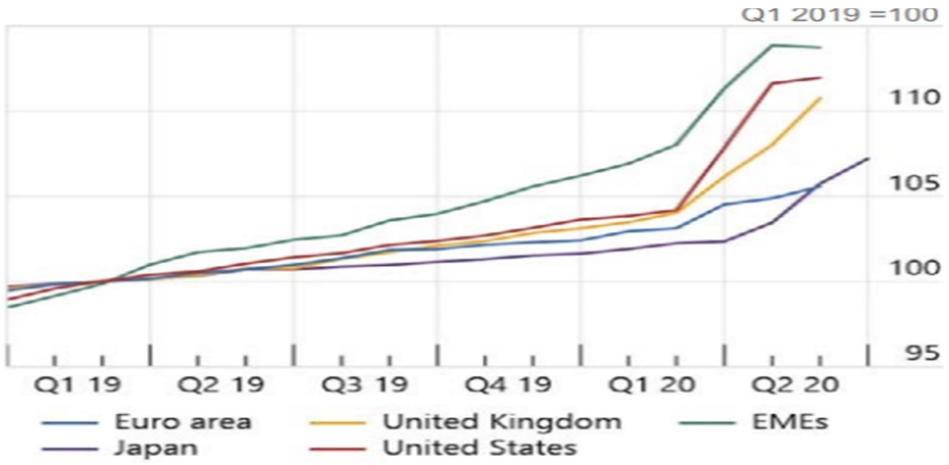
Figure 1. Policy measures taken in response to pandemic

(Extracted from FSB, 2020, p10)



As the graph shows, policy measures in the early stages of COVID-19 focused on supporting corporate continuity and operational risk (FSB, 2020), which means funding and lending measures were more frequent.

Figure 2. Bank lending to the non-financial sector (Extracted from FSB, 2020, p7)



The second graph shows that banks' loans to the non-financial sector increased sharply in major countries compared to the past in the first half of 2020. The increase was noticeable in the United States, the United Kingdom, and emerging economies. The COVID-19 shock had a common impact on all sectors of the manufacturing and service industries, resulting in a surge in funding and lending across the industry.

many of them at an unprecedented scale, consisted of monetary and fiscal stimulus to support the real economy; the provision of liquidity to banks and markets through central bank interventions in the form of funding facilities and asset purchases; and a range of measures to support credit supply, including credit guarantees, direct

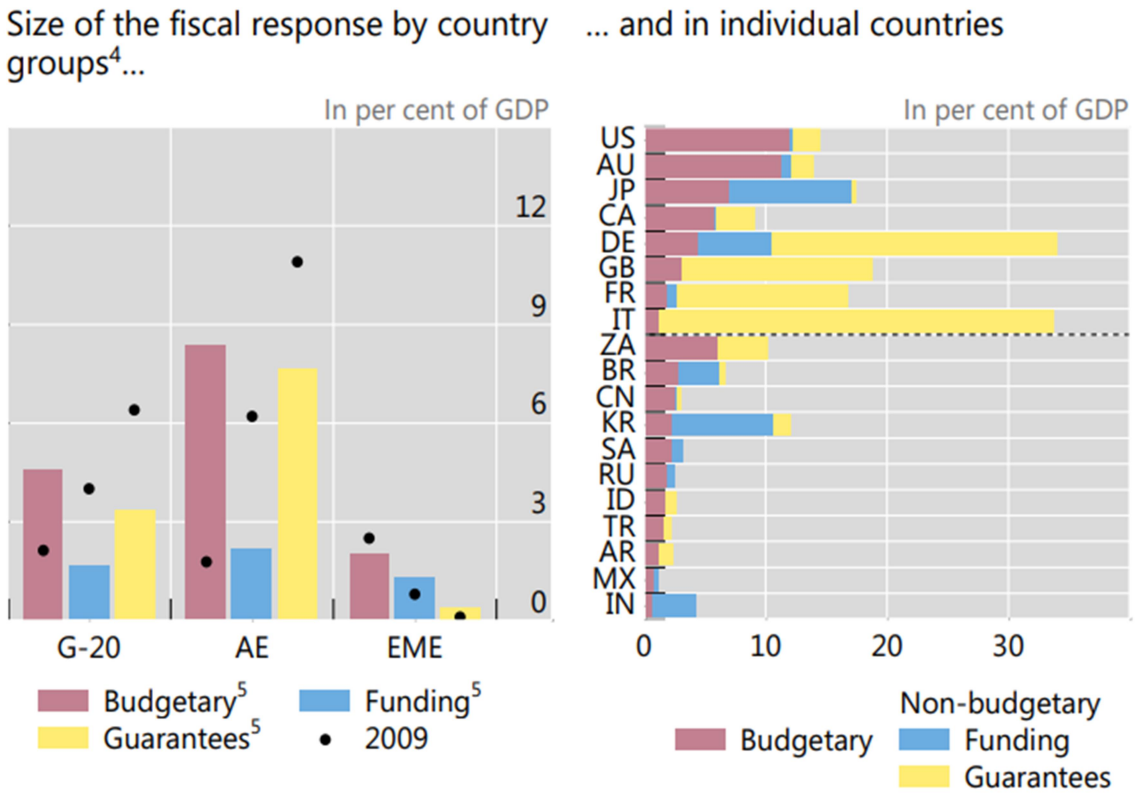
capital injections, debt moratoria, and regulatory and supervisory measures to facilitate the restructuring of loans or to provide corporate relief (FSB, 2020, p 10).

Each country focused on policies to provide credit to the real economy, while at the same time increasing operational and functional elasticity of financial markets (FSB, 2020).

Fiscal Policy and Monetary Policy by National Group

Each country's fiscal policies in response to COVID-19 were quickly implemented based on monetary policies that helped it to be implemented smoothly. The preparation and implementation of policies peaked in developed countries around the end of March 2020, and the response was slower in the emergency market economies (EMEs) (BIS, 2020). Among the response policies, budget policies include subsidies, tax breaks, and payment delays, and non-budget policies include government credit guarantees and loan support. The governmental guarantee policy aims to maintain the flow of credit in uncertain economic conditions. Among budget or non-budget policies, the size and proportion between funding and guarantee means showed differences according to national groups and countries.

Figure 3. Size of the response to the pandemic (Extracted from BIS, 2020, p2)



As can be seen from the figure above, the difference in the size of budget policies between developed and emerging countries was very large, and BIS pointed out that the fiscal policy of emerging countries has a leading characteristic of the economy, so the policy contraction was simultaneously caused by COVID-19 (BIS, 2020, p4). Another characteristic is that the proportion of guarantee policies among non-budget methods is much higher in developed countries than in emerging countries. According to major country-specific data (BIS, 2020), in the case of the US, budget policy accounted for the highest

proportion of GDP at about 12%, and guarantee policy at about 2.5%, accounting for a relatively small proportion. On the other hand, EU countries such as Germany, France, and Italy, and the UK had the highest proportion of overall support policies to GDP of more than 10% to 20%, and the proportion of credit guarantees was overwhelmingly higher than that of other policies. In addition, Korea and Japan, which are Asian economies, have a high proportion of funding policies. As such, it can be inferred that the government's policy environment in response to the economic crisis is different due to the relative difference between the proportion and type of support policies.

In the case of monetary policy, emerging countries, where existing policy rates were higher at an average of 4.9% in early 2020, had more room to use interest rate cuts than developed countries with 0.4%. However, the function of supporting fiscal policy, that is, the role of lowering the cost of financing for the government's household and corporate support, was mainly played by developed countries. Typically, policies such as asset purchase programs tended not to be used much in emerging countries (BIS, 2020).

Monetary Policy in Response to COVID-19

As a way to overcome the economic downturn caused by the

influence of COVID-19, central banks of each country implemented expansionary monetary policies. In this case, the role of The Foremost goal of central banks was to alleviate the contraction of economic activity while supporting the liquidity flow of households and companies not to be blocked. The initial response focused primarily on easing financial stress and ensuring a smooth flow of credit to the private non-financial sector (BIS, 2020). Fiscal backstops and loan guarantees supported central bank actions (BIS, 2020).

Across the five largest advanced economies, balance sheets are projected to grow on average by 15-23% of GDP before end 2020 (BIS, 2020).

Major developed countries, including the United States, the European Union, and Japan, have offered new lending activities. They cut interest rates. The Federal Reserve, for example, cut it to -1.5%. And the Federal Reserve and the ECB have increased the overseas availability of their currencies through swap deals. Reflecting past experiences with the 2007 financial crisis, it has led central banks to act faster than before. Although there was a short-term loan policy, long-term loan measures to prevent a liquidity crisis were a key feature of the Bank of Korea's response.

In addition to loans, it was a common measure to expand or launch

the central bank's asset purchase program under the COVID-19 situation. Not only have these programs made it work smoothly in the financial market, but policies restore trust amid COVID-19 and contribute to a rapid rebound in aggregate demand (BIS, 2020, p. 2). Central banks increased the size of non-financial bonds, expanded bond eligibility, and even purchased downgrade bonds to support credit flows (BIS, 2020). For example, the Fed purchased investment-grade bonds.

In addition, this study takes a closer look at the case of the United States, which plays an important role in determining global monetary policy. The Fed has expanded its easing monetary policy as mentioned above to overcome the economic downturn caused by COVID-19 and support the economy and financial markets. The Fed has cut federal funds rates. First, it cut interest rates that banks pay to borrow money from each other overnight. As a result, the fund rate has been lowered to 0% to 0.25% (Milstein & Bessel, 2021). As mentioned, it affects other short- and long-term interest rates that support spending by lowering the borrowing costs of an entity. The Fed also provided a 'forward guidance' on future interest rate paths, which means keeping interest rates close to zero, and reinforced them in the 'New Monetary Policy Framework' in September 2020 (Milstein & Wessel, 2021). This will serve as a signal for setting labor market conditions up to 2%

of maximum employment and inflation. By the end of 2021, these conditions reached the Fed's target, and the Federal Open Market Committee (FOMC) was expected to raise interest rates. The last policy related to monetary policy easing was quantitative easing, so-called quantitative easing. That meant the Fed had bought a huge amount of debt securities to restore the functioning of the Treasury and the Mortgage-backed Securities (MBS) market. By November 2021, QE's goal was continuously expanded to tapering the purchasing speed.

To support the financial market, the Fed focused on lending to securities firms, supporting mutual funds in the money market, and expanding redemption. First, through a program to support low-interest loans to 24 large financial institutions known as primary dealer credit facilities (PDCF) for up to 90 days (Milstein & Wessel, 2021). It helps them keep the financial market functioning amid COVID-19. The Fed had to obtain approval from the finance ministry for the first time since the 2007-2009 crisis to obtain emergency loans (Milstein & Bessel, 2021). Second, the Fed re-launched Money Market Mutual Fund Liquidity Facility (MMLF).

Effectiveness of Financial Support Measures(Fiscal Policy)

Effectiveness of Corporate Credit

In theory, expecting the effect of expansionary fiscal policy is expecting a crowding-in effect that motivates private consumption and investment growth through government fiscal expansion (FIS, Korea Fiscal Information Service, 2020). Fiscal policy induces the improvement of the income level of the people through an increase in effective demand. The same is true of government intervention in the recent COVID-19 situation.

In the case of Korea, it was analyzed that substantial government investment in the early stages of COVID-19 was effective in driving private investment (FIS, 2020). This means that government investment is acting as a priming water to promote private investment. However, in terms of consumption, the traction effect was unclear (FIS, 2020).

In the early stages of COVID-19, each country's corporate support policies were implemented on a large scale in various types such as funding, guarantee, and subsidy, enabling the maintenance and expansion of effective demand. These support policies have greatly contributed to meeting the demand for funds from many companies in

liquidity crisis and easing the debt burden.

In addition, despite the large scale of the loan, there were few side effects related to loans in the beginning because institutional support was combined with low loan interest rates to extend the maturity of the loan and suspend the repayment of principal and interest. In the case of Korea, the delinquency rate of corporate loans rather fell. In June 2020, the delinquency rate of corporate loans was 0.39%, down 0.13%p from the same month last year. In particular, due to active support for small and medium-sized enterprises and small business owners, their delinquency rate reduction rate was greater at 0.15%p (Lee, 2020). According to the December 2021 corporate credit rating results released by the Financial Supervisory Service, the number of insolvent companies averaged 158 in the two years after COVID-19, down 21% from the average of 200 in the previous three years (2017-2019) (FSS, 2021). This is mainly due to a 37.7% decrease in the number of companies in the lowest grade due to liquidity support measures such as extension of maturity and deferment of repayment, and improvement of corporate performance (FSS, 2021).

Effects on Employment Stabilization

Another important effect of defending the recession with

expansionary fiscal policy is to induce social stability by maintaining or boosting employment. Employment stability is a prerequisite for economic vitality, and employment insecurity becomes a factor of social instability. Therefore, governments in the face of an unprecedented economic crisis have given companies conditions to maintain employment at a certain level while providing liquidity, and have separately provided direct employment subsidies to prevent unemployment. In addition, providing unemployment subsidies directly to those who lost their jobs due to COVID-19 was one of the important policies.

Due to the COVID-19 shock, countries around the world suffered a common phenomenon of worsening employment. Countries with many cumulative confirmed cases tended to see their employment indicators fall (OECD, 2020). The fluctuations in employment indicators in the U.S. and Canada were very large in the second quarter of 2020 compared to the fourth quarter of 2019, with 9.5%p and 7.3%p, respectively, and most countries in Europe fluctuated to the 2%p level. Korea is low at 0.6%p (OECD, 2020). In countries where employment indicators deteriorate more severely, a weaker tendency for government spending to increase was analyzed (Lee, 2020). In addition, countries with better social safety nets had lower proportions of separate policies and expenditures related to employment in the

event of an economic crisis (OECD, 2020). As the employment rate showed signs of a sharp decline or decline due to the COVID-19 shock, governments of each country prepared and executed short-term prescriptions to improve employment by various means.

However, if the government's policy of subsidizing employment continues, the positive effects must be recognized. A study in Korea analyzed that direct support for small business owners and self-employed people in the early stages of COVID-19 has an empirical causal relationship with the employment rate of the lodging and restaurant industry, a representative face-to-face industry (Lim, 2020). The government's intervention to support their overcoming the crisis partially alleviated the deterioration of employment in the lodging and restaurant industry, one of the most hit industries by COVID-19, but the effect has gradually weakened since May 20 (Lim, 2020). Another empirical study that analyzed the effect of employment support funds on employment has shown that it reduces corporate employment volatility but hardly improves overall employment in the economy (Gang, 2022). These findings suggest that the government's employment subsidy policy is effective in the short term, but the macroeconomic effect may weaken in the mid- to long-term.

Effectiveness of monetary policy

As such, the monetary policies of major countries are similar, and the evaluation of the effects of each country's monetary policies during the Covid-19 period seems to be similar. The expansionary monetary policy of cutting interest rates during the economic downturn has had the intended effect of expanding liquidity.

However, more specifically, the pandemic has weakened the effect of delivering monetary policy to the financial market (Wei, 2021). A study of 37 countries that experienced severe pandemics concluded that neither traditional monetary policy nor non-traditional monetary policy had a significant impact on financial markets such as government bonds, stocks, exchange rates, and CDS markets during the COVID-19 pandemic (Wei, 2021). According to this study, regardless of the level of industrialization and financial development, the pandemic weakens the financial market delivery function of monetary policy in common, but the higher the degree of trade opening, the more it can alleviate its impact (Wei, 2021). From these research results, it can be seen that in order for monetary policy to be effective during the pandemic, more active scalability and changes in monetary policy are needed. In fact, during the COVID-19 period,

central banks and financial authorities around the world advocated an unprecedented low interest rate and implemented various credit supply policies, calming the panic in the financial market to some extent at the end of 2020. This showed that the effectiveness of monetary policy is more effective when non-traditional monetary policy instruments, such as quantitative easing or direct or indirect credit support policies, are combined in addition to policies using traditional central bank reserves.

On the other hand, in order to discuss the effectiveness of monetary policy, discussions on the effectiveness of the US Federal Reserve's monetary policy, in which central banks of each country refer to the policy direction, should take precedence. The direction of the U.S. monetary policy is something that countries around the world are always paying attention to, and its influence on the COVID-19 crisis was enormous. A study on how the U.S. expansionary monetary policy affected economic stimulus evaluates the policy as successful. Feldkircher et al (2021) evaluated monetary policy using statistical models that estimate industrial production, inflation, and unemployment using monthly and weekly data. As a result, the US Fed was successful in stimulating economic growth. The US expansionary monetary policy has triggered the dollar's devaluation in support of US external competitiveness, but no evidence has been confirmed that it

has significantly affected unemployment and inflation (Feldkircher et al, 2021). These two variables are usually slow to respond to economic stimulus, so analysis from a longer-term perspective is required.

In this note, researchers gave a first empirical investigation of the effects of US monetary policy to stimulate growth in response to COVID-19. For that purpose, they have estimated a MF-VAR on monthly and weekly data. This model allows the researchers to estimate weekly measures of industrial production, inflation, and the unemployment rate. Then simulate the effects of expansionary monetary policy and assess its effects on the endogenous variables in the model.

The results suggest that the US Fed was successful in stimulating growth on the back of higher equity prices and more favorable long-term financing conditions. Also, monetary policy triggered a depreciation of the US dollar supporting external competitiveness of the US economy. By contrast, we do not find significant effects on unemployment and inflation, both variables that typically react more sluggishly to economic stimulus.

In addition, in order to gauge the effectiveness of the U.S. monetary policy, it is necessary to examine the effect of the program

to stabilize the financial market by purchasing corporate bonds, which was typically implemented by the U.S. financial authorities to cope with COVID-19. The Federal Reserve Bank and the Treasury bought several individual corporate bonds at the time. They purchased bonds with high information sensitivity due to the program crisis, bonds used by primary bond dealers as collateral in the repurchase market, and bonds held by corporate bond funds (Flanagan & Furnanandam, 2020). The U.S. bond purchase program did not target bonds issued by companies that may have large employment-related issues due to the large number of companies or employees hit harder by COVID-19. Flanagnan & Furnanandam conducted a statistical analysis on the repo effects, evaluation effects, and equality return of bonds in relation to this program. According to his study, the credit spread for all corporate bonds fell significantly, but the more likely bonds to be purchased, the more effective it was (Flanagan & Furnanandam, 2020). This does not reflect specific factors of the company related to Corona, but is related to the characteristics of bonds. Primary dealers who purchased large amounts of bonds experienced significantly higher stock returns around the program-related policy release date (Flanagan & Furnanandam, 2020). These results show that the program eased the financing constraints of brokers and supported the liquidity of financial markets.

Risk Factors of COVID-19 Policy

The urgency of the COVID-19 shock focused on defending the crisis in the health sector from spreading to the real economy by all possible policy measures. This inevitably temporarily turned a blind eye to the accumulated debt problem in the existing low interest rate situation, and the longer the Corona response policy, which supplies credit in all directions, the deeper the debt risk. Therefore, the response policy following the prolonged COVID-19 crisis has shifted to a consensus on the need to determine the deteriorated quality of credit when supporting the real economy (FSB, 2020).

Another risk is that despite the continued credit supply to companies due to COVID-19, marginal companies that have lost their relative competitiveness without improving their productivity may increase. Rather than continuing funding to marginal companies, appropriate restructuring is the direction of achieving the efficiency of resource allocation. Special credit supply to these companies delays restructuring, resulting in inefficiency in the allocation of resources to society as a whole.

Debt Overhung Issue

As market liquidity rapidly increased due to fiscal and monetary

policies to boost the economy, risks related to the asset price bubble phenomenon and speculative trading behavior using it have expanded. Soon, liquidity was concentrated on specific products, deepening the surge in asset prices and deepening the gap between actual values.

The debt growth pattern began in 2010 and the level of debt in the private and public sectors surged internationally due to the pandemic and the global economic downturn in 2020, which the World Bank called the "fourth wave of debt" (World Bank, 2021). In particular, the increase in debt in the emerging market and developing economies is large, fast, and wide, and global total debt in 2020 reached 263% of GDP, up 30%p from the previous year (WB, 2021). In developed countries, the share of debt held by central banks has increased by 14%p on average over the past decade due to the purchase of assets by central banks, recording about 18% of national debt (WB, 2021).

The debt increase caused by COVID-19 is likely to cause more dangerous situations than in the past due to problems such as global low interest rates, multiple policy interventions, and a short-term debt surge (WB, 2021). Although the market has been stabilized by various policy interventions such as expansionary fiscal policy and easing monetary policy, it has significant risks in that it is difficult to respond in the same way to other future economic shocks (Kim,

2022). In addition, the level of soundness regulation of banks and the level of soundness of financial institutions may be threatened by the easing of various reporting standards of financial companies. The scale and speed of large-scale financial borrowing raised to cope with COVID-19 may also be highly likely to be diverted and misused (WB, 2021). Pandemics can not only intensify but extend the slowdown in productivity and investment growth that has continued from the past.

The surge in debt due to increased policy support and demand for funds under COVID-19 meant increased risks in each sector of the economy.

In the government sector, fiscal soundness has deteriorated and additional policy capacity has been reduced, and insolvency risks have increased in the household and corporate sectors, raising the possibility of acting as a constraint on future economic recovery.

The problems of companies with reduced debt and debt repayment capabilities are leads to funding losses, higher credit costs and a decline in the value of the render's assets (FSB, 2022). This can lead to financial stability risks for banks, which are major creditors. In fact, if the debt is overdue, there is a possibility that the bank's profitability will decrease. In addition, if poor companies or self-employed people are maintained by government support even though they are not

competitive, the negative cycle of falling investment in them, the overall economy, and the resulting decline in profitability may be repeated. If this situation persists, it may become increasingly difficult for banks to recognize these losses and start restructuring (FSB, 2022).

Household Debt Risk

In particular, in the case of Korea, there is a problem that loans to self-employed people, including household debt and private business loans, have soared due to the pandemic at a time when existing household debt has accumulated. Korea's household debt is such a serious issue that it ranks first in the world with 104.3% of GDP as of the first quarter of 2022 (IIF, International Financial Association, 2022).

During the COVID-19 period, low-income families increased loans mainly to secure living funds, but high-income families expanded loans to invest in business and real estate (BOK, 2022). During the COVID-19 period, the expansion of loans to self-employed people and financial support measures contributed to resolving financial difficulties for self-employed people and easing the burden of debt repayment. However, the expansion of self-employed loans has a

problem of delaying the restructuring of self-employed people who cannot be revived from a long-term perspective. For example, despite the increase in the proportion of deficit business operators without business income after COVID-19, the closure rate rather increased (BOK, 2022).

In addition, the increase in loans in the real estate industry during the pandemic showed that the financial imbalance worsened along with the increase in housing-related loans for households. If the interest rate hike accelerates in 2022 and the impact of the end of support measures increases, the insolvency of self-employed loans could proceed at a rapid pace.

Marginal Companies Issue

Financial support for companies in each government in response to COVID-19 was unprecedented, and many of the targets received the support were so-called zombie companies or soon to become zombie companies. Uncertainty about economic recovery, structural changes caused by the pandemic, and government measures were combined to make it difficult to diagnose a company's future financial position (FSB, 2022). The COVID-19 incident caused major changes in the existing economic environment, such as an increase in non-face-to-face

transactions by consumers and an increase in workers' telecommuting.

In the case of South Korea, 185 companies were selected as insolvent companies in 2022 according to the "regular credit risk assessment results and future plans" released by the Financial Supervisory Service, and all of them are small and medium-sized companies except for two. Since COVID-19, the number of insolvent companies of SMEs has been on the decline, but this year, the number of insolvent companies of SMEs has increased compared to last year (Lim, 2022). This seems to have worsened the management of these small and medium-sized companies due to the deterioration of complex economic conditions such as interest rate hikes and exchange rate drops, although insolvent companies were able to withstand the COVID-19 period.

As South Korea experienced the global economic crisis in 1997 and 2008, policy finance to support companies under the leadership of the government developed. In the case of major industries, this includes policies that support corporate restructuring by the government. However, government-level support for companies has side effects that prevent companies from making desperate efforts to improve their competitiveness. Researchers at the Bank of Korea conducted a correlation analysis between credit and future financial management

performance for companies classified according to insolvency risk (BOK, 2022). As a result, it was suggested that credit support for insolvent companies may not contribute significantly to improving the future financial soundness of these companies. In light of the results of this study, it is worth noting that corporate credit injected during the COVID-19 period was effective in lowering the risk of insolvency in the short term, but in the long run, the effect may vary depending on the level of insolvency risk for each company (BOK, 2022).

Risk Management Strategies

Debt Issue

The expansionary fiscal policy in response to COVID-19 has limitations in sustainability. Temporary fiscal intervention should gradually fade out according to the recovery of the economy. The central bank's asset purchase program which sought to stabilize the financial market had risks undermining the central bank's credibility, lowering investors' confidence, and modifying inflation expectations (Kim, 2022). Therefore, it is necessary to change the direction of monetary policy. Suitable measures are required for debt that has soared since the pandemic and deteriorated vulnerabilities.

In the past, excessive debt has been resolved in a number of ways, including growth, austerity, privatization, financial regulation, and debt relief, which should be carefully chosen depending on the conditions each country face (WB, 2021). It is also necessary to strengthen the transparency of borrowing procedures and borrowing capital expenditures because improving debt-related transparency facilitates debt relief and reduces borrowing costs (Kim, 2022).

In the case of household debt, it is necessary to shift the policy direction of financial support for self-employed people from liquidity support to solvency support (BOK, 2022). Both household and corporate debt will have to phase out the extension of maturity and moratorium on repayment of debts. To this end, the debt repayment burden can be eased only when the measures are selectively terminated through data analysis and monitoring of the liquidity crisis of companies and self-employed.

Of course, it is desirable to provide support for self-employed people and companies with significantly weakened debt repayment ability and no possibility of rehabilitation by providing an outlet such as debt restructuring or introducing business conversion inducement programs. Since such support requires selecting targets based on overview data, the ability to secure and analyze accurate data such as

related management performance data, loan data, and repayment ability data should be premised.

In addition, since increasing debt in each sector negatively affects the soundness of financial institutions, financial regulators should regularly evaluate and monitor the soundness of various financial institutions such as banks, securities, and savings banks. This means that financial authorities must play an important role in ensuring that the risk state of systematic debt does not shift to systematic debt insolvency (FSB, 2022). In addition, there is a high need for financial companies themselves to frequently perform diagnostics on their soundness, and it is desirable to transparently share the results. This is because the financial sector is linked to each other due to multiple debtors, etc., so problems in one sector can be transferred to another.

In particular, credit-specialized companies and savings banks among non-bank financial institutions have a relatively high proportion of vulnerable borrowers, so it is desirable to strengthen screening when handling loans and preemptively accumulate additional loan-loss provisions (BOK, 2020).

Marginal Companies Issue

In this case, it is necessary to examine the effect of government

support and determine which companies have the effect of supporting the project. However, since the impact of economic conditions is spreading unevenly by sector within the company depending on the size of the company, it is necessary to continue policy support for small and medium-sized enterprises that are difficult to manage. However, restructuring should be carried out step by step for marginal companies that continue to have difficulty in business. In addition, when implementing financial support for companies whose management is deteriorating, it is desirable to simultaneously consider non-financial support such as business restructuring and career consulting. The specific implementation will require close cooperation between relevant government departments.

There is an opinion that the key factors in the evaluation of whether it is a marginal company and the competitiveness of the company are business response ability, adaptability, and quality (FSB, 2022). This cannot be easily measured by a company's financial indicators or related financial indicators.

Conclusion

Each country's policies in response to COVID-19 were implemented using various policy measures in terms of supplying

credit to each sector of the economy, such as households and companies, to prevent a liquidity crisis. Fiscal policy, including budgetary and non-budget measures, was quickly implemented on the basis of monetary policy, which helped to implement them smoothly.

The United States, the Euro area, and the United Kingdom differed by policy in terms of the proportion of fiscal policy instruments to GDP. In the United States, the proportion of budgetary means such as subsidies and tax cuts was high, while in the Euro area, the proportion of credit guarantees was high among non-budget means. Asian countries such as Korea and Japan showed differences in policy composition due to the high proportion of funding among non-budget means. Each country's monetary policy was based on active interest rate cuts, and quantitative easing policies were generally conducted in parallel to stabilize the market. However, in the case of emerging countries, they did not actively promote market stability policies such as asset purchase programs compared to developed countries. This seems to be related to the maturity of the financial system.

This credit support policy seems to have contributed to maintaining employment and defending the extent of the economic slowdown by helping companies avoid a liquidity crisis in the short term. It contributed greatly to the stability of the country's economy and

society. However, since unprecedented large-scale credit supply policies have caused side effects such as soaring households and companies' debt and the survival of marginal companies, it is necessary to consider management measures.

Transparency related to debt should be improved and future support for households and companies should be made in the direction of resolving solvency rather than liquidity supply. In addition, it is desirable to implement non-financial support, such as debt restructuring or business conversion programs, for self-employed people and companies with a slim chance of recovery.

On the other hand, as it has been three years since the outbreak of COVID-19, the policy that the government intervenes and supports should be fade-out step by step. In addition, a shift in policy direction from existing universal support to selective support should be considered so that corporate support can be made in a more productive direction. In order to efficiently allocate limited resources, it is necessary to consider whether the credit supply to the company has a positive effect on the productivity of the company and industry from a mid- to long-term perspective. To this end, the government should also improve its ability to collect, monitor, and analyze corporate data.

In addition, the decision on the government's support policy is also a political decision of society. A society must strive to establish a mature political environment so that the process of social consensus on what the direction is to maximize socioeconomic interests can be well achieved.

The effectiveness of the financial support measures for SMEs amid Covid-19

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This client-based project is submitted in partial fulfillment of the requirements

for the degree of Master of Public Administration

in the School of Public Affairs

at the University of Colorado Denver

Denver, Colorado

Fall

2022

Executive Summary

At almost three years since the South Korean government quickly implemented the financial funding measures for companies to overcome the economic crisis caused by Covid-19, this research aims to evaluate the existing support policy from the perspective of corporate competitiveness and study whether to continue or change the policy direction in the future. While existing research in Korea mainly targets companies without considering the size of them, this study is differentiated in that it focuses on the effect of credit on the mid-to-long-term competitiveness of SMEs.

This study analyzed the correlation between external credit and SME performance by panel regression method. As independent variables, the dependence on borrowing and debt ratio of companies were used, and a profitability indicator and a productivity indicator were used as explanatory ones. Regression analysis was conducted for all industries, then additionally performed for individual industries to review the effectiveness of corporate credit by industry.

As a result of the analysis, corporate credit showed a significant positive correlation in the mid-to-long-term productivity of all industries' SMEs during the period by the large, but it could not be certainly concluded because both independent variables were not

simultaneously significant. On the other hand, the correlation with profitability showed negative significance. Therefore, government funding needs to be reviewed in consideration of the mid-to-long-term financial stability of SMEs. Meanwhile, the results for individual industries were partially inconsistent with those of the entire industry. Only six to seven industries out of 22 industries in the manufacturing sector showed positive correlation, suggesting that it is desirable to select individual industries in order for government financial support to lead to mid-to-long-term positive effects on corporate finance and competitiveness.

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Introduction

The COVID-19 breakout in 2020 shrunk economies and industries of countries around the world, including South Korea, and most of them implemented emergent funding measures to prevent small and medium-sized companies (SMEs) from experiencing a liquidity crisis. As the situation was urgent, the countermeasure, which accounted for the highest proportion of each government's measures, was lending and funding supports such as loans by low interest rates and government special guaranteed funding (Financial Stability Board, 2020, p.10). In the case of South Korea, these support measures have continued until now, and the efforts so far seem to have contributed to economic stability. However, as the government's financial resources are limited, and the standards of policies do change as the policy circumstances changes, it is necessary to review the direction of future measures by examining whether existing universal funding measures were effective in terms of efficient allocation of resources.

Client Background

In South Korea, Financial Services Commission (FSC) which is a government agency with the statutory authority over financial policy

and regulatory supervision is responsible for formulating financial policies and supervising financial markets. FSC took the lead in resolving financial difficulties in the real economy, especially by supporting small and medium-sized businesses (SMEs) which would face draining liquidity and have difficulties maintaining their businesses amid COVID-19. In particular, the government announced KRW175 trillion-plus financial support programs intended to help businesses, focusing on the need to preemptively defend the exhaustion of corporate liquidity (FSC, 2020, p.1).

Project Purpose

The massive support measures are difficult to be sustained and some modifications are inevitable. Then what kind of modifications should be applied? Should a government gradually reduce support? What criteria would public sector uses to do so? If there is a similar economic crisis coming in the future, will the government implement policies in the same way? The basic question to answer these questions would be in what ways the government's external funding is effective, not the endogenous efforts of companies. Of course, those effects will include avoiding the situation in which employees' salaries are overdue due to a lack of cash or they cannot pay back loans that

have expired. In the face of the unprecedented crisis of pandemic, financial support measures for small and medium-sized enterprises were implemented quickly in the form of extensive loan and guarantee support without restrictions on industries. It is evaluated to have contributed to raising funds without much difficulty despite the worsening sales caused by COVID-19 (Lee, 2022, p.10). However, if such an active financial support measures do not lead to strengthening corporate competitiveness, it can lead to a vicious cycle in which only debt increases in a situation where the company's repayment ability does not improve (Lee, 2022, p.11). The government can also have a burden with continuously increasing budget spending without improving overall economic productivity. Therefore, from a mid-to-long-term perspective, it is essential to consider financial supporting policies to improve the overall competitiveness of the economy by reducing dead loss and increasing corporate productivity.

This study examines the correlation between the government's financial support for SMEs and the improvement of corporate productivity. Prior to this, the research plans to thoroughly analyze previous literatures, especially reports and discussion papers from Financial Stability Board (FSB), an international organization for financial stability, the Korea Financial Research Institute (KRI), and the Korea Central Bank (BOK). Since the existing studies do not

consider the size of the company, this study focuses on SMEs to extract related data, conduct significance analysis, and interpret the results to derive policy implications. The study would refer to the statistical analysis methodology of the past literature.

Literature Review

There are some researches from Korean and international organizations that analyzed the types and effects of the government's significant liquidity support measures in response to COVID-19. Major international organizations related to financial stability policies are the FSB and the BIS (Bank for International Settlements), which have collected and analyzed countermeasures from each country since the beginning of the pandemic. While Korean research institutes have conducted policy analysis occasionally, international organizations, especially FSB, has continuously produced papers so that each nation could check the overall policy direction and trend of research. Korean domestic reports include relatively early studies written about a year or so since February 2020, when COVID-19 financial support began, and several papers written around the first half of 2022, two years after support policies began. Recent research conducted an in-depth study of the relationship between support measures and corporate

productivity, further from an early, short-term analysis focusing on the financial soundness of policy-supported industries. It is necessary to look into which economic and business management indexes are applied for analysis and how those indicators are defined in each research.

International organization report

In the early days of the pandemic, international organizations related to financial stability, such as FSB and BIS, collected and classified the types of countermeasures of each country and commented the necessity of the most implemented policies through kind of frequency analysis of policy measures. In that period, the proportion of direct and immediate financial lending support measures such as providing low-interest rates, subsidies and extending debt repayment was high (FSB, 2020, p.10). The BIS (2020) showed the necessity of such countermeasures. For instance, it analyzed that around 60% of companies in median countries lack funds necessary for debt repayment and operation, assuming that there is no extension of debt repayment and profits decrease by 25% in 2020 (BIS, 2020, p.5).

On the other hand, as the pandemic is prolonged, the FSB (2022)

analyzed the need for a phasing-out and targeted approach of government support policies in consideration of corporate competitiveness in the recent paper (p.9). Meanwhile, from an economic point of view, the International Monetary Fund (April, 2021) commented that a rapid increase in corporate credit through policy support during the COVID-19 period has the effect of alleviating the risk of an economic slowdown in the short term, but there may be a trade-off between the time the risk is increased in the medium term (p.44). This is consistent with the addressment of Popov (2017) that there is a nonlinear relationship between finance and economic growth, and if credit exceeds a certain threshold level, the positive effect of finance contributing to economic growth disappears (p.43).

An overall assessment of the countermeasures against COVID-19 in South Korea

Most papers of Korean research institutes gave a positive evaluation of the government's emergency support measures for COVID-19. In order to prevent the spread of the crisis caused by pandemic and overcome the economic damage, the Korean government has operated an emergency system since February 2020. In particular, the establishment and operation of a crisis-management

program that quickly supported SMEs and large companies can be evaluated as an effort to minimize the risk of weak financial system caused by corporate insolvency due to reduced corporate sales, lack of liquidity, and worsened financial structure of companies.

Financial soundness analysis by industry

The researcher of the Korea Financial Research Institute (KRI) conducted a study to analyze the current status of financing of companies and check their financial soundness by industry around the end of 2020. The researcher analyzed financial indicators such as growth rate of sales, growth rate of operating profit, and debt ratio by industry, and found a sharp decrease in operating profit and sales in the first half of 2020 in "Hotel Restaurant Leisure", "Energy", and "Transport" related industries. According to the analysis, financial soundness could deteriorate in those industries, which could be accounted for an increase in the proportion of “low-cash liquidity companies” and “firms which interest compensation ratios is under 1” after COVID-19 (Lee, 2020, p.2).

Lee (2020) selected industries whose financial soundness deteriorated in the short term due to COVID-19 and so showed that policy support was needed for these industries in the short term

(p.43). However, this study is limited in using the results in continuous policy in that it did not derive the results of the analysis on the premise of worsened business conditions or financial structures in the mid- to long-term.

A relatively recent study by Seo, Hwang et Lee (2022) expanded the time series of the target indicators such as sales change rates, operating cost from 2008 to 2020. The researchers also diagnosed that despite concerns caused by COVID-19, the financing conditions of companies were good, and noted that this seemed to be due to the government's active corporate support (Seo et al, 2022, p.3). The report evaluated that the overall business performance exceeded the level just before COVID-19 in all industries in July 2021, but still did not recover to the pre-COVID-19 level in the "transportation, accommodation, art, sports, and leisure" industry (Seo et al, 2022, p.40).

In particular, Seo et al. (2022) analyzed the effectiveness of the government's funding as a countermeasure for COVID-19. Similar to previous research direction, the researchers extracted industries – "construction, transportation, accommodation, and restaurant" – that had concerns on a risk of cash exhaustion and concluded that these industries need government liquidity support. According to the

study, the effect of reducing the probability of cash exhaustion risk when providing liquidity support in the industry was larger than the overall industry average of 1.52%p, indicating that the support effect was relatively high (Seo et al, 2022, p.61).

It is difficult to directly match and measure certain specific effects from government support in a specific industry. The approach of Lee or Seo et al and the results are policy-based in that those results can provide information on industries where the need for funding is urgent

The correlation between credit and corporate competitiveness

Seo et al. (2022) conducted a regression analysis on the effect of vulnerability in financial stability of companies on productivity by industry (p.72-83). At this time, the study used productivity for labor productivity which defined as sales per employee[2]. Researchers extracted an industry with "low inefficiency in resource allocation"[3]. As a result, the figure was the lowest in "transportation", "lodging and restaurant business", and "automobile and trailer manufacturing", suggesting that these industries could be considered

[2] Generally used when value-added data per employee is limited.

[3] It is said that inefficiency of resource allocation is lower when the productivity coefficient is lower when the productivity coefficient is lower than the average of the coefficient estimates of the marginal company.

as preferred targets if there were liquidity support constraints (Seo et al, 2022, p.80). The results could be used when intensive investment in high-productivity companies is considered to enhance the effect of capital input under the constraints of the size of policy finance.

In previous studies, the efficiency of credit allocation was evaluated as high when credit increased mainly in sectors with high productivity or high growth potential (Bank of Korea, 2022, p.142). On the premise of this, the Bank of Korea's Financial Stability Report for the first half of 2022 introduced the concept of "loan concentration" and analyzed whether corporate loans flowed into productive industries through the correlation between industry concentration and productivity. At this time, researchers defined productivity as capital productivity which were generally used as "total capital investment efficiency" [4]. As a result of the analysis, after the global financial crisis in 2008, corporate loans were found to have flowed more into "real estate" and "lodging and restaurants", which were industries with relatively low capital productivity. Also, the negative correlation between productivity and loan concentration has intensified since 2017. There have been few cases in which productivity has improved significantly in industries where loan concentration has

[4] value-added/total capital

increased (BOK, 2022, p.141).

In addition, the report analyzed whether corporate credit growth is significantly related to future changes in financial soundness. The model which variable was the whole industry showed that corporate credit has a positive relationship in terms of productivity, profitability, and insolvency risk, but it is estimated that credit support for "real estate" and "lodging and restaurant" businesses is relatively less effective than other industries when dummy variables by specific industries were added in the model (BOK, 2022, p.145).

The correlation between Credit and Corporate Insolvency Risk

Pyun and Jeong (2022) evaluated that the financial support policy for companies implemented during the COVID-19 period contributed to lowering the risk of insolvency of beneficiaries through interest burden reduction and liquidity support (p.38). However, according to the BOK's analysis of the current status of corporate credit in terms of insolvency risk and debt repayment ability, high-risk companies accounted for a rise in total credit, while vulnerable companies[5] that could not afford interest costs with operating profit were gradually

[5] companies with interest compensation ratio of less than 1

increasing (BOK, 2022, p.143). This means that corporate credit distribution was not somewhat efficient in the mid-to-long-term.

Additionally, the higher the productivity or the lower the risk of insolvency, the greater the positive correlation between corporate credit and future financial soundness (BOK, 2022), suggesting that credit support for insolvent companies may not contribute significantly to improving their future financial soundness.

Side Effects of Universal Support Policy

With the widely implemented financial support to companies and financial deregulation policies after COVID-19 breakout, there is a possibility that the policies might have been accompanied by side effects such as funding to sectors that were not intended. In particular, Lim et al (2022) analyzed the status of beneficiary companies by identifying beneficiary companies by support measures such as interest rate cuts, interest repayment extension, principal repayment extension, and easing borrowing conditions (p.35). As a result, the proportion of conglomerates was higher than that of SMEs in universal policies such as interest rate cuts and easing borrowing conditions, and that funds were also provided to industries such as "electricity" and "real estate", which showed favorable business conditions

despite the COVID-19 shock. Moreover, many of the marginal companies before COVID-19 received financial easing policy support, and majority of them continues the state of chronic marginal company despite two years of policy support (Lim et al, 2022, p.36). This suggests that if the government's financial support policy is prolonged, the side effects of continuing excessive liquidity supply to unnecessary sectors and delaying restructuring of insolvent companies may increase.

Summary

In the early COVID-19 study, Korean researchers analyzed the direction of resource allocation, focusing on which industries urgently need liquidity. As the economic crisis was urgent, the government focused on drawing up universal support measures and implementing them quickly, and the primary assessment was whether funds flowed properly into the necessary sectors, namely those at high risk of cash exhaustion. This seems to have evaluated the effectiveness of the policy in terms of controlling short-term insolvency risk rather than corporate productivity and profitability.

Over two years after the COVID-19 shock, the reports analyzed whether the efficient implementation of policy funds has a positive

relationship with productivity and profitability of individual industry or company from a mid-to-long-term perspective by applying advanced statistical techniques. Taken together, the results of the studies show the efficiency of funding in the "transportation", "automobile and trailer" industries. On the other hand, the increase in the proportion of corporate loans in low-productivity sectors such as "real estate" is contrary to the efficiency of resource allocation. In connection with early research, the "transportation" industry is evaluated as an industry that urgently needs liquidity in the short-term and at the same time has the effect of improving the productivity of capital injection. This shows that supporting or maintaining policy funds for these industries not only improves corporate competitiveness but also reduces the overall loss of the economy.

However, some differences were found in the results by industry depending on how the researcher defined productivity. Seo et al (2022) used labor productivity indicators, and the Bank of Korea (2022) applied capital productivity indicators, which produced conflicting results on the credit efficiency of the "lodging and restaurant" industries, so it is worth noting if the results are used as a basis for the government's support policy.

In addition, research shows that over the past decade, corporate

credit has been concentrated on companies with a high risk of insolvency and low debt repayment ability, which seems to require more efficiency in Korea's financial support policy.

Methodology

Research Design

Taking a quantitative methodology, this study conducts the panel regression analysis to estimate the mid-to-long-term impact of external borrowings using time series data from the SME industry. Regression would be conducted for all industries, then additionally performed for individual industries to review the effectiveness of corporate credit by industry. As independent variables, the dependence on borrowing and debt ratio of companies are used. The explanatory variables are total capital investment efficiency, which is a productivity indicator, and sales operating profit ratio, which is a profitability indicator.

The focus of this study is on whether funding for SMEs in Korea improves the mid-to-long-term productivity and profitability of companies and how government funding should be done in terms of the efficient allocation of resources.

RQ 1 : How does funding for SMEs improve the productivity and profitability of the company?

RQ 2 : In which type of SMEs do they have a funding effect in terms of productivity and profitability?

RQ 3: What direction of support should the government consider for efficient resource allocation?

Previous literature emphasized the necessity for selective support rather than universal support in terms of the efficiency of resource allocation, but did not conduct research by dividing data by company size. This study has a difference in that it aims to analyze the correlation between credit and productivity by extracting indexes of SMEs separately and performing statistical analysis by industries and deriving policy implications. SMEs have a high proportion of the South Korean economy accounting for 99% by number of companies. Without a proper plan, their decline could be a major factor of the contraction of the real economy. In addition, supporting SMEs is important in terms of providing a long-term growth foundation through social solidarity as well (Song, 2021).

Data Collection

As the subject of this study is related to the efficiency of economic

and financial policies, this study mainly concentrates on data analysis of economic and corporate management indicators. Among the statistical data of the Ministry of SMEs and Startups, data on management indicators of SMEs were used. As for the data of SMEs, data from 22 industries in the manufacturing industry and 29 industries in the service industry (non-manufacturing industry) were used.

In order to analyze the effect of funding for SMEs, the research uses indirect financing loan data and total investment capital efficiency as indicators for capital input efficiency. Since looking into the financial structure of SMEs, the proportion of loans was higher than that of direct finance. The proportion of COVID-19 funding in the form of loans was higher among other measures as well. A total investment capital efficiency is rolled out as productivity indicators from BOK. It was also taken into account that it is difficult to obtain such indicator, although a more accurate measure of productivity should be combined with labor productivity and capital productivity.

The subjects of the study include not only listed companies but also external audit companies by expanding the subject of previous studies. And time series are data from 2008 to 2020 after the global financial crisis.

Data Analysis

From 2008 to 2020, a regression analysis is conducted to estimate the mid-to-long-term impact of external borrowings using time series data from the SME industry. As a panel regression analysis, the research refers to Borensztein's study on the significance between corporate credit and corporate performance (Borensztein & Lee, 2005), and also refers to the statistical analysis method of the relationship between corporate credit and productivity conducted by the Bank of Korea using Borensztein's research method (Bank of Korea, 2022). The method is suitable for this study to analyze the effect of external funding on the productivity and profitability of SMEs.

In order to estimate the mid-to-long-term impact of external borrowing on productivity and profitability, these researchers estimated the impact of the average of the past three-year data of the independent variable on the average of the future two-year figures including the present of the dependent variable. This is a way to eliminate the endogenous generation of data. (Borensztein & Lee, 2005). In fact, after conducting regression analysis several times, R^2, which means the explanatory power of the statistical model, improved when applying the past and future average values. This study

processed and used data of variables in the same way as in these researches.

Limitations

There are restrictions on obtaining and processing detailed data for SMEs for a general public because it takes one to two years for economic indicators to be calculated and published, which is reason for limitation on recent data analysis. Most of the data from the National Statistical Office, the Bank of Korea, and the Ministry of SMEs and Startups, which publishes related economic indicators, are currently data until the end of 2020. The KISVALUE website, where the most recent data on corporate management data are updated, is difficult for the general public to access.

Another limitation was the assumption of the regression model. As a proxy variable for government funding, the model was set the variable to the dependence on borrowing as the other researches did. But in the case of SMEs funding, there used to be a condition with special or low interest rates, so the suitability of the model would have been improved if the loan rate differences could be reflected in it.

Results

A panel data regression analysis[6] was conducted using the STATA program as data such as dependence on borrowing by industry and total capital investment efficiency in the manufacturing and service industries from 2008 to 2020 was panel data.

The results of panel regression analysis of all 22 manufacturing industries data of SMEs and 30 service industries data are summarized in the following table.

[6] The panel regression model for estimating the total investment capital efficiency was fixed effect model, and for estimating the sales operating profit ratio was applied with random effect model by reflecting the results of the Hausman Test, etc.

Table 1: Manufacturing Industry

Independent variable	Productivity (avg.t to t+2)	Profit rate (avg.t to t+2)
dependence on borrowing (avg.t−1 to t−3)	+0.026 (0.35)	−0.064 (−3.61)*
R^2	0.53	0.39
Debt/capital (avg.t−1 to t−3)	+0.069 (5.35)*	−0.014 (−4.73)*
R^2	0.32	0.43
Prob(F−Value/Chi2)	0.00	0.00
No. of observations	253	253

Notes: Productivity is total capital investment efficiency. Profit rate is sales operating profit ratio. All independent variables are one period lagged. T−Statistics are reported in parentheses.

* Significance level 1%

Table 2: Service Industry

Independent variable	Productivity of Capital (avg.t to t+2)	Profit rate (avg.t to t+2)
Dependence on borrowing (avg.t−1 to t−3)	0.273 (1.89) ***	−0.018 (−0.58)
R^2	0.90	0.43
Debt/capital (avg.t−1 to t−3)	−0.007 (−0.79)	−0.004 (−1.60)
R^2	0.92	0.43
Prob (F−Value/Chi2)	0.00	0.00
No. of observations[7]	150	150

Notes: Productivity is total capital investment efficiency. Profit rate is sales operating profit ratio. All independent variables are one period lagged. T−Statistics are reported in parentheses.

*** Significance level 10%

In addition, the results of regression analysis for individual industries in the manufacturing industry are summarized as follows.

[7] Manufacturing data have been processed since 2008, but the service industry has a smaller number of samples using data from 2016 due to the absence of historical data

Table 3: Regression results of individual industries in the Manufacturing industry

Type of Industry	Independent variable	Dependent variable Productivity	Dependent variable Profit rate
B. Grocery	Dependence on borrowing	+	+
B. Grocery	Debt/capital		+
C. Beverage	Dependence on borrowing	+	
F. Leather Bag Shoes	Debt/capital		+
H. Pulp Paper Products	Debt/capital		(−)
J. Chemicals	Dependence on borrowing		+
J. Chemicals	Debt/capital	+	+
K. Pharmaceuticals	Debt/capital		(−)
L. Rubber and Plastic	Debt/capital	+	+
P. Electronic Computer Sound Equipment	Debt/capital		(−)
S. Other Machines and Equipment	Debt/capital	+	+
T. Automobiles and trailers	Dependence on borrowing	(−)	(−)
U. Other transportation equipment	Debt/capital		+
W. Other Products	Debt/capital	+	+

Note : (+/−) Direction of significant correlation between explanatory and dependent variables, F−Value<0.05, P−Value<0.05, R−Squared 0.30~0.80

For data from individual industries related to the service industry, the time series that researcher can obtain has been from 2016, and a model suitable for regression analysis has not been created due to the limited number of data.

Discussion and Recommendations

Analysis of all industries in the manufacturing industry of SMEs

As a result of panel regression analysis on the entire manufacturing data of SMEs, it was estimated that the dependence on borrowings had no positive correlation with the total capital investment efficiency, which is a productivity indicator, but the debt ratio showed a significant positive correlation with the total capital investment efficiency. In addition, it was estimated that the dependence on borrowings had a negative correlation with the profitability index, that is, the sales operating profit ratio. The debt ratio was also found to be significant for the negative correlation with the sales operating profit ratio.

On the other hand, in the service industry, the dependence on borrowing correlates with the total capital investment efficiency,

which is a productivity indicator, but the debt ratio was estimated to have no significant correlation with the total capital investment efficiency, which is a productivity indicator. Additionally, it was found that both the dependence on borrowings and the debt ratio did not correlate significantly with the sales operating profit ratio, which is a profitability indicator.

These results show that government financial support indirectly represented as external borrowing or debt ratios in the SME manufacturing industry may improve the overall mid-to-long-term productivity of SMEs, but it is not certain. If external loans are adequately invested in research or facilities of products, productivity could be improved in the mid-to-long-term. On the other hand, the results show that the external dependence on capital negatively affects or has no relationship with mid-to-long-term profitability. This seems to be related to the fact that increasing external dependence on capital can negatively affect profitability due to an increase in interest payments. In the short term, financial support from outside the company can prevent a drop in profits, but in the mid-to-long-term, it suggests that they have a negative impact on corporate finance or have nothing to do with corporate financial stability.

To compare, Borensztein & Lee (2005) estimated that both the debt ratio coefficients were statistically insignificant in the panel regression model, which analyzes the effect of an increase in credit on future productivity and profitability, and that the increase in Korea's loans before the 1997 financial crisis did not contribute to future improvement on productivity and profitability (p.64-66). On the other hand, the study by the Bank of Korea (2022), based on data from 2014 to 2019, derived that the borrowing dependence coefficient has a positive relationship with future productivity and profitability, suggesting that the credit efficiency of the Korean industry has improved compared to the past before 1996 (p.147). However, past researches on the all-industries differ from the results of this study on SMEs.

Analysis of individual industries in the manufacturing industry of SMEs

As a result of regression analysis for individual industries in the manufacturing industry, the relationship between independent variables with productivity and profitability indicators in individual industries was different for each industry, which is partially not consistent with the regression analysis results for all industries. And

there was no case in which the borrowing dependence and debt ratio, which are similar indicators, affected the dependent variable in different directions.

One of the two explanatory variables showed a significant positive correlation with total investment capital efficiency, a productivity indicator, with six sectors: grocery, beverages, chemicals, rubber and plastic, machinery and equipment, and other products. One of the two explanatory variables and the profitability index which was the sales operating profit ratio were significantly correlated with seven industries: grocery, chemicals, leather bag and shoes, rubber plastic, other transportation equipment, other mechanical equipment, and other products. On the other hand, in the pulp paper products, pharmaceuticals, electronic computer sound equipment, and automobiles and trailer industries, a negative correlation was found meaning that the higher the external borrowing, the lower the profitability.

In the productivity/profitability model for individual industries, the cases of 15 to 16 industries with statistically insignificant coefficients of borrowing dependence or debt ratio suggest that credit supply for these industries may not contribute much to improving future financial soundness. Especially, in the case of the automobile and trailer

industries that have a negative correlation between external funds and productivity/profitability, considering the mid-to-long-term impact of financial input, policy funding should be reconsidered. This is contrary to the results of a study by Seo et al that analyzed (Seo et al, 2022) the industry as the sector where government support is prioritized.

Limitations

This study has a limitation of data acquisition. Since data classification of all-industries and SMEs were different, and industrial data other than manufacturing were limited in SMEs, there was a limit to comparing data analyses of all-industries with those of SMEs. Another limitation is that the time series of data that the general public can access was not enough to analyze the effectiveness of the COVID-19 countermeasures. Moreover, regression analysis for individual industries could have been more appropriately conducted if detailed corporate data were accessible.

Policy implications and recommendations

According to the study, the positive relationship between the

government's credit support policy and core management performance, such as mid- to long-term productivity and profitability of SMEs, cannot be determined. And continuous inflow of funds without productivity improvement may lead to a decline in profitability. It is also worth noting that the effect of policy funding may differ between all-industries and small and medium-sized industries. In the event of an unpredictable external shock such as the global financial crisis in 2008 or the COVID-19 breakout in 2020, the government indiscriminately injected emergency funds to stabilize the economy preventing a liquidity crisis in the industry in the short term. This was effective in that it greatly contributed to meeting the urgent demand for funds from companies and easing the debt burden. But continued support for large companies with financing capabilities or even for industries that don't really need funding means that budget-constrained government is moving away from efficient allocation of resources and weakening competitiveness across the national economy.

For the efficient allocation of government funding, the following actions are recommended:

1. When the government provides credit support, it is important to distinguish between short-term and medium-term, and between large

companies and small and medium-sized enterprises. In the short term, it is necessary to select industries with deteriorated financial soundness and provide policy support to these industries.

2. From a mid-to-long-term perspective, credit should be supplied selectively in consideration of productivity and profitability by individual industries within SMEs to prevent excessive liquidity from being supplied to unnecessary sectors.

3. To this end, the competitiveness of the industry should be reviewed through continuous monitoring and analysis of the relationship between management performance and management indicators by individual industries.

Challenges to the study

In order to examine the inefficient allocation of government support to SMEs, an analysis of the relationship between credit support for specific enterprises and marginal enterprises at risk of insolvency due to their reduced ability to repay debts should be added. As corporate credit positively affects future financial soundness when the risk of corporate insolvency is lower (BOK, 2022), it is necessary to select companies with a high risk of insolvency that is marginal companies. The efficiency of corporate support policies should be reviewed by thoroughly analyzing the trends in the management performance of

supported companies so that the proportion of high-risk companies does not increase and the restructuring of insolvent companies is not delayed.

Another challenge is that even if selective support measures are prepared, the government would face practical difficulties in implementing them. There may be political difficulties in achieving social consensus on whether selective support measures are fair. In addition, there is a possibility that related companies lobby the government, causing confusion in policy decisions that reflect the results of objective analysis.

Last challenge is that public sector should consider ways to promote non-financial support for SMEs as well, not just financial one. For example, after selecting small and medium-sized enterprises that do not improve productivity in the mid- to long-term, consulting to analyze the cause could be provided or technical education programs that can increase productivity could be prepared. In order for these non-financial support measures to be combined with financial support, cooperation between related governmental ministries is required. Of course, this also requires a thorough analysis of the capacities of SMEs.

Conclusion

This study contributes to think about how the government's general financial support measures for corporates in the face of an economic crisis can work from a mid-to-long-term perspective, especially for SMEs that might be vulnerable to self-funding. It is desirable for the government, which is under budget constraints, to establish policies in the direction of increasing economic utility across all society through efficient allocation of resources. This means that, as many researchers and this study suggest, the policy direction should be made to selective support rather than universal one, especially when governmental financial support is prolonged.

However, it is not easy for government who is exposed to the political environment and information asymmetry with corporates to decide and enforce selective support for SMEs or specific industries. In order to implement this well, persuasive policy measures must be derived based on sufficient and objective data analysis. This study shows that the government should continuously monitor the competitiveness of industries and companies to prevent credit from being supplied to unnecessary sectors through statistical analysis on whether corporate credit has a significant correlation with the productivity and efficiency of all SMEs or SMEs under individual

industries. Through this, it will be possible to reduce the dead loss of society as a whole by selectively providing financial support to appropriate sectors. However, since the government should consider values other than economic values such as equity, for example, the priority of values according to political and economic conditions should also be fiercely considered.

Since the competitiveness of a country's corporates and industries changes organically in conjunction with the rapidly changing economic environment analysis of certain times cannot be directly applied at other times, so continuous data accumulation and research on companies and industries is needed. This would include researches that reflect the difference in effects in consideration of the various forms of financial support by the government.

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