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DEPARTMENT OF ECONOMIC SCIENCES**

**MASTER'S THESIS IN ECONOMIC SCIENCES
OPTION: FINANCIAL AND BANKING ECONOMICS**

TITLE OF THE THESIS:

**THE IMPACT OF COVID-19 PANDEMIC ON THE ECONOMIC ENVIRONMENTS
OF DEVELOPING COUNTRIES**

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I dedicate this work to my loving parents and supportive friends who have been my constant pillars of strength throughout this journey.. Thank you for always standing by my side.

Aknowledgements

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Your dedication and commitment to education are deeply appreciated.

List of abbreviations

GDP : Gross Domestic Product

SMEs : Small and medium enterprises

GCSs : Global supply Chains

SARS-CoV-2 : Severe Acute Respiratory Syndrome Coronavirus 2

WBG : World Bank Group

ILO : International Labour Organisation

UNDP : United Nations Development Program

IMF : International Monetary Fund

UNCTAD : United Nations Conference on Trade and Development

OECD : Organisation for Economic Co-operation and Development.

MICs : Middle Income Countries

AfBD : African Development Bank

PPE : Personal Protective Equipment.

FDI : Foreign Direct Investment

AU : African Union

ADB : Asian Development Bank

IMDB : Inter American Development Bank

UNECA : United Nations Economic Commission for Africa

VAt : Value Added Tax

MSMEs : micro, small, and medium enterprises.

WHO : World Health Organisation

IFC International Finance Corporation.

IFAD : International Fund For Agricultural Development

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INTRODUCTION

Introduction :

The COVID-19 pandemic, caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has brought unprecedented challenges to countries across the world. Since the first case was reported in December 2019 in Wuhan, China, the virus has rapidly spread to become a global pandemic. As of May 2023, over 450 million cases and more than 7 million deaths have been reported worldwide, with developing countries being hit hardest by the virus.

The pandemic has not only taken a huge toll on public health but has also had severe economic consequences, with many countries experiencing economic contractions, rising unemployment rates, and increasing poverty levels. A study by the World Bank (2020) found that the COVID-19 pandemic could push up to 100 million people into extreme poverty by 2021¹. Another study by the International Labour Organization (2020) estimated that the pandemic could cause the loss of up to 25 million jobs globally. Developing countries, in particular, have been severely impacted due to their weak healthcare systems, lack of resources, and dependence on foreign aid and remittances.

Motivation and Significance :

The COVID-19 pandemic has not only taken a heavy toll on the health and well-being of millions of people across the world, but it has also exposed deep-rooted economic inequalities and vulnerabilities in developing countries (World Bank, 2021). The pandemic has pushed these countries further into economic distress, deepening their existing challenges such as poverty, inequality, and lack of access to basic services such as healthcare and education (UNDP, 2020).

The economic impact of the pandemic on developing countries has been far-reaching, affecting almost every sector of the economy, from agriculture to tourism (IMF, 2020). Lockdown measures, travel restrictions, and disruptions in global supply chains have led to a sharp decline in economic activity, job losses, and a rise in poverty rates (ILO, 2020). The impact has been¹

¹ <https://blogs.worldbank.org/voices/building-resilience-vital-sustainable-covid-19-recovery>
Consulted in May 2023

particularly devastating for small and medium-sized enterprises, which are the backbone of many developing economies (UNCTAD, 2022).²

As a result, there is an urgent need to understand the extent of the economic impact of the pandemic on developing countries and to identify the policy interventions that can help mitigate these effects (ADB, 2021). By analyzing the effectiveness of different policy responses, we can better equip policymakers and development practitioners to design and implement effective interventions that can support economic recovery and resilience (OECD, 2021).

Moreover, the pandemic has also provided the opportunity to rethink and redesign economic systems in developing countries. By prioritizing investments in healthcare, education, and social protection, and by promoting more sustainable and inclusive economic growth, developing countries can build more resilient economies that are better equipped to withstand future global shocks (UNDP, 2020).

In short, the COVID-19 pandemic has underscored the urgent need for more resilient economic systems in developing countries. By understanding the economic impact of the pandemic on these countries and identifying effective policy interventions, we can support their economic recovery and build more sustainable and inclusive economies for the future.

Problem statement:

Numerous studies have highlighted the economic impacts of the COVID-19 pandemic on developing countries. A study by the International Labour Organization (ILO) found that the pandemic has led to a loss of working hours equivalent to 305 million full-time jobs globally, with the biggest impact in Asia and the Pacific, followed by America and Europe. Another study by the United Nations Conference on Trade and Development (UNCTAD) revealed that the

² UNCTAD 2022, THE COVID-19 PANDEMIC IMPACT ON MICRO, SMALL AND MEDIUM SIZED ENTERPRISES
MARKET ACCESS CHALLENGES
AND COMPETITION POLICY

pandemic has disrupted global trade, with developing countries experiencing a significant drop in export earnings and reduced foreign investment.

Furthermore, a study by (Paramo Et al 2021) found that the pandemic has disproportionately affected the poor and vulnerable populations in developing countries, exacerbating existing inequalities. In response, many governments have implemented various policies and interventions to mitigate the economic impact, such as providing cash transfers, wage subsidies, and tax relief (Elgin C et Al 2020). However, the effectiveness of these policies in mitigating the economic fallout remains unclear and requires further analysis.

Therefore, there is a pressing need for more research to comprehensively understand the impact of COVID-19 on the economies of developing countries and to evaluate the effectiveness of government policies and interventions in mitigating these impacts. This information can assist policymakers in designing and implementing evidence-based interventions to support economic recovery and resilience.

Research Questions :

The research question of this study aims to assess the overall impact of the COVID-19 pandemic on the economies of developing countries and investigate their responses in terms of economic policies and interventions. By examining these aspects, the study seeks to provide a comprehensive understanding of the effects of the pandemic on developing economies and the measures taken to mitigate its consequences.

Hypothesis:

Building upon prior research and the observed trends, we hypothesize that the COVID-19 pandemic has had a significantly negative impact on the economy of developing countries. We anticipate that key economic indicators, including GDP growth rates, employment rates, and trade flows, have experienced substantial declines as a consequence of the pandemic.

The hypothesis aligns with the existing literature that suggests developing countries have faced severe economic challenges due to the pandemic (Takyi et al 2023) (Benton 2022) and (Roberts 2021) By analyzing various economic indicators, such as GDP growth rates, employment rates, and inflation rates, we aim to quantify the extent of the negative impact and provide empirical evidence to support this hypothesis³. The findings will contribute to the understanding of the unique challenges faced by developing countries during the pandemic and shed light on the effectiveness of their economic policies and interventions.

Methods and Results:

Methods

This study aims to investigate the impacts of COVID-19 on the economic environments of developing countries using a panel data analysis approach. The panel dataset includes information from 20 developing countries spanning the years 2012 to 2021. A fixed effects regression model is employed to examine the relationship between the COVID-19 pandemic and economic growth. The dependent variable, representing economic growth, is measured by GDP growth. The independent variables include a dummy variable indicating the presence of the COVID-19 pandemic, as well as control variables such as the unemployment rate and inflation rate. The fixed effects regression model allows for the examination of simultaneous effects and controls for country-specific heterogeneity. The statistical software EViews is used for data analysis, providing robust tools for econometric analysis, regression modeling, and visualization. Data for the study is sourced from reliable international databases, government reports, and economic indicators. Limitations may arise from data availability, generalizability to other developing countries, and the chosen variables' ability to capture the full economic impact of COVID-19.³

³<https://tradingeconomics.com/indicators> consulted
In May 2023

Results:

Upon conducting the fixed effects regression analysis using EViews The findings reveal that the presence of the COVID-19 pandemic has a significantly negative impact on economic growth in developing countries. The estimated coefficient of the COVID-19 dummy variable is -1.575, indicating a negative association with economic growth. This suggests that countries affected by the pandemic experience lower economic growth rates compared to periods without the pandemic. Additionally, higher unemployment rates are found to be associated with lower economic growth, reflecting the adverse effects of job losses. However, inflation rates do not exhibit a statistically significant impact on economic growth during the analyzed period. Overall, the results support the hypothesis that the COVID-19 pandemic has had a detrimental effect on the economies of developing countries, emphasizing the need for targeted policies to foster economic recovery and mitigate the negative consequences.

Structure of the Research

Moving forward from the introduction, the research is structured in the following
Chapter 1 provides a comprehensive background information on the economic impact of COVID-19 on developing countries, further elaborates on government policies and interventions. Following background information, Chapter 2 focuses on the review of existing literature and further elaborates the research gaps. Chapter 3 outlines the methodology, Chapter 4 reports the findings, Chapter 5 discusses the results and Chapter 6 concludes this work.

Chapter 1 : Background information

The following chapter introduces an an extensive background on the impacts of the pandemic on the economy of developing countries

Followed by, Government policies and interventions subsequently

Impact on international trade and investment and impact on rural areas

1.1 Overview of the economic impact

The COVID-19 pandemic had an unprecedented impact on the global economy, particularly in developing countries. In 2020, economic activity declined in about 90% of countries, surpassing the number of countries that experienced economic declines during significant crises such as the Great Depression, world wars, and financial crises (World Bank, 2020).

The pandemic's effects were compounded by reduced consumer demand and mobility restrictions, leading to the largest global economic crisis in over a century. The global economy shrank by approximately 3% in 2020 (IMF, 2021),⁴ and for the first time in a generation, global poverty increased. The World Bank estimates that the pandemic pushed between 119 and 124 million people into extreme poverty in 2020 (World Bank, 2021).

A report by world bank(2021) states that Developing countries' economies are interconnected, and a shock to one sector can have spillover effects that destabilize the entire economy if not addressed promptly and in an integrated manner.

In summary, the COVID-19 pandemic had a significant impact on the global economy, with significant decline in economic activity and an increase in poverty rates. ⁴

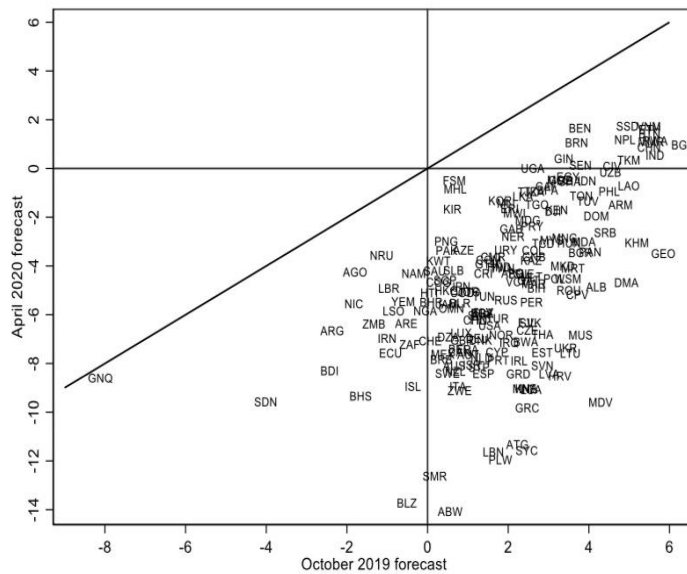
⁴ World Economic Outlook, April 2023: A Rocky Recovery
April 11, 2022

1.1.1 Decline in economic growth

The pandemic had a massive impact on world GDP growth. In October 2019, the IMF had estimated that world GDP growth in 2020 would be close to 3.4%. However, the IMF forecasted in April 2020 that world GDP would contract by 3%, indicating a 6.4 percentage point swing with substantial downside risk remaining (IMF, 2020).

Every country covered by the IMF forecasts was affected by the global contraction. Figure 3, which compared the growth forecasts issued in October 2019 with those issued in April 2020, showed that no single country was above the 45-degree line. Additionally, income per capita was expected to contract in most countries. In October 2019, the IMF had anticipated that 165 countries would have positive real per capita GDP growth in 2020, while 23 countries would observe a contraction in GDP per capita. However, according to the most recent IMF forecasts, only 16 countries were projected to experience positive growth in GDP per capita in 2020. For comparison, following the global financial crisis, nearly 80 countries registered positive growth in income per capita (IMF, 2020).

Fig 1. Expected 2020 real per capita GDP growth (October 2019 versus April 2020 WEO)



Source: Own elaborations based on IMF World Economic Outlook (WEO) data

In developing countries the pandemic has had a major impact on economic growth, with many economies experiencing a contraction in GDP in 2020. According to the World Bank, developing economies as a whole contracted by 2.5% in 2020, marking the worst recession since World War II. The pandemic has also resulted in significant economic and social impacts, including a decline in government revenues, an increase in unemployment, and a setback to poverty reduction efforts.

As of 2021, the situation still remained challenging for many developing countries. According to the International Monetary Fund (IMF), developing economies had expected to grow by 6.0% in 2021, following a contraction of 2.5% in 2020. However, this growth was uneven, as many countries still faced significant economic challenges. The IMF noted that many developing countries continued to face high levels of debt, limited fiscal space, and a slow pace of vaccination, which impeded their economic recovery.

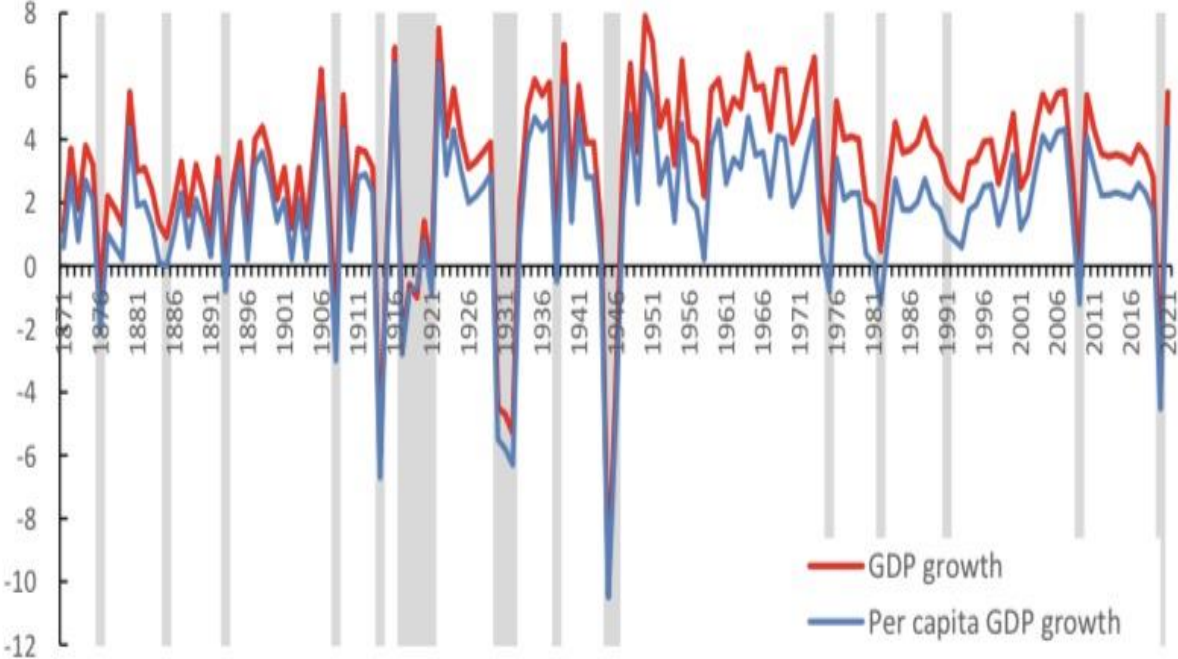
Recent data from selected developing countries (MICs) illustrated the continued impact of the pandemic on economic growth. For example, in India, GDP growth was 0.4% in the fourth quarter of 2020, but slowed down to 1.6% in the first quarter of 2021, due to a surge in Covid-19 cases and associated restrictions on economic activity. In Brazil, GDP growth was 1.2% in the first quarter of 2021, compared to a decline of 4.1% in 2020, but the country still faced significant economic challenges, including high levels of debt and political uncertainty.

In South Africa, the economy contracted by 7.0% in 2020, marking the largest annual contraction since 1920. Although the economy grew by 6.3% in the fourth quarter of 2020, due to a rebound in mining and manufacturing sectors, the country still faced significant economic challenges, including high levels of debt, low investor confidence, and tourism and related industries.

In Nigeria, the economy grew by 0.5% in the first quarter of 2021, after a contraction of 1.92% in 2020. However, the country still faced significant economic challenges, including low oil prices, which were a major source of government revenues, and rising inflation, which impacted consumer spending and private investment.

Finally, in Mexico, the economy grew by 0.4% in the first quarter of 2021, following a contraction of 8.5% in 2020. The country still faced significant economic challenges, including high levels of debt, weak public finances, and a slow pace of vaccination, which impacted the recovery of key sectors such as tourism and manufacturing.

Figure 2. Global GDP growth in a historical perspective



Sources: Bolt et al. (2018), Kose, Sugawara, and Terrones (2019, 2020), and IMF-WEO Apr-2021. Shaded areas refer to global recessions

Note: The figure shows the percentage of countries experiencing negative growth in their per capita gross domestic product (GDP) from 1971 to 2021. Data are as of October 21, 2021.

In conclusion, the Covid-19 pandemic has had a severe impact on economic growth in developing countries, with many economies having experienced a contraction in GDP in 2020. Although there were signs of a recovery in 2021, the situation remains challenging, and many countries still face significant economic challenges, including high levels of debt,

1.1.2 Disruptions in global supply chains

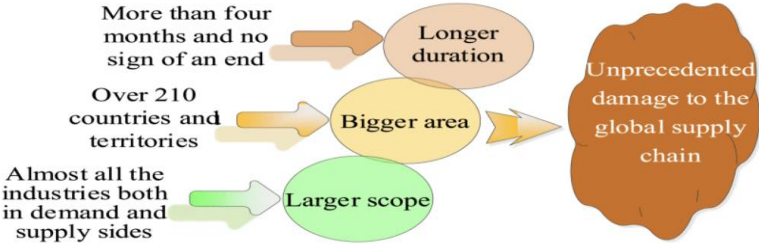
The COVID-19 pandemic has had far-reaching economic impacts worldwide, with developing countries hard hit

Supply chains that were designed for just-in-time delivery have experienced disruptions due to lockdowns and other measures to contain the virus (Yusuf, 2021). The global supply chain has been heavily disrupted due to restrictions on travel and transportation, shortages of labor, and reduced demand for goods and services (Tajaddini et al., 2020).

However a report by Z. Xu et al (2020) confirms that Covid-19 is not the first disaster that has disrupted global supply chains (GSCs). Previous natural disasters such as earthquakes, outbreaks, and tsunamis have also caused shortages of parts and products. However, the scale and impact of COVID-19 on GSCs are much larger and more severe than previous events, as shown in [Figure 1.2](#) Despite this, production has typically recovered quickly from previous disasters, while the recovery from COVID-19 has been more prolonged

Figure 3. [Features of the damage of the COVID-19 pandemic o GSCs (data from Ali and Alharbi)]

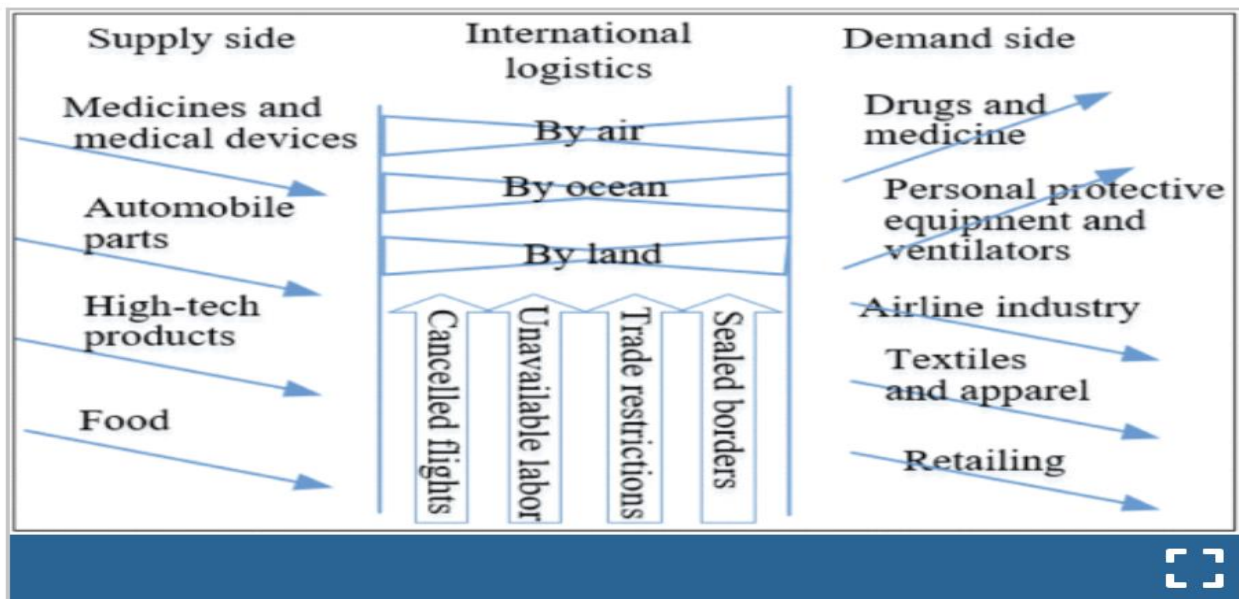
The COVID-19 pandemic has had a profound impact on global supply chains, resulting in significant disruptions. These disruptions have affected every stage of the supply chain, from the sourcing of raw materials to the delivery of finished products (as illustrated in Figure 1.3)



Source : Ali and Alharbi

Consequently, international trade has experienced a noticeable decline. This decrease can be attributed to various factors, including border closures, movement and transportation restrictions, and a decrease in the demand for goods and services. According to the United Nations Conference on Trade and Development (UNCTAD), global trade experienced a 5% decline in 2020, accompanied by a 4.3% contraction in the world economy.

Fig.4 GSCs disrupted by the Covid-19 pandemic



Source : Ali and Alharbi

The pandemic has affected different developing countries in different ways. In Asia, China(MIC) was one of the first countries to experience the pandemic's economic impacts. The country's lockdowns and travel restrictions disrupted global supply chains, particularly in the manufacturing and transportation sectors. As a result, China's economy shrank by 6.8% in the first quarter of 2020, according to the National Bureau of Statistics of China.

In addition to that , the garment industry in Bangladesh, which accounts for 84% of the country's exports, has been hit hard by the pandemic, with a 28% decline in orders in 2020, resulting in an estimated loss of \$6 billion in export earnings (ILO, 2020). India has also seen a significant

decline in export orders for industries such as textiles, leather, and handicrafts due to lockdown measures (Ghosh, 2020).

In Africa, the pandemic has had significant economic impacts, particularly in countries heavily reliant on exports of primary commodities. The decline in demand for these commodities has led to a decrease in exports and foreign investments. The pandemic has also disrupted supply chains in the agriculture and manufacturing sectors, leading to food insecurity and unemployment. The African Development Bank (AfDB) predicts that the pandemic will push between 28 million and 49 million people into extreme poverty in sub-Saharan Africa in 2021.

1.1.3 Demand for goods and services

The COVID-19 pandemic had a significant impact on the demand for goods and services in developing countries. Lockdowns and travel restrictions led to business closures, job losses, and reduced incomes. The United Nations Conference on Trade and Development (UNCTAD) predicted a global trade decline of 13% to 32% in 2020, affecting developing countries the most. Study by OECD(2021) highlighted a significant decrease in exports from developing countries, particularly to China. This reduction in demand had a major effect on their economies. Workers in the informal economy were particularly affected by the reduced demand for goods and services. The International Labour Organization (ILO) conducted a survey in six countries, revealing that workers in the informal economy faced significant challenges due to reduced demand. Small and medium-sized enterprises (SMEs), which are vital for employment and economic growth in developing countries, also suffered from reduced demand and were at risk of closure.

Specific sectors experienced notable impacts:

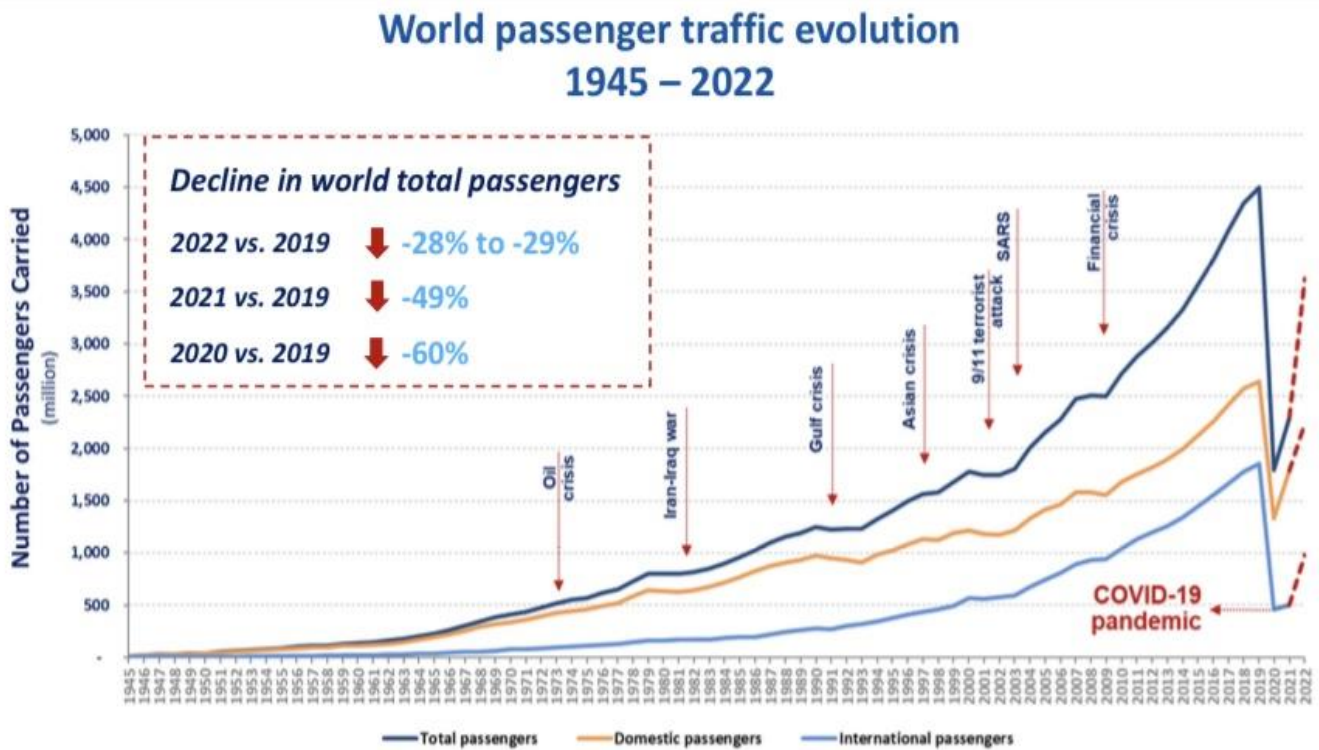
Drugs and Medicine: The demand for drugs used to treat COVID-19 infections, such as chloroquine and hydroxychloroquine, surged. Panic buying and concerns about shortages disrupted the medicine supply system, leading to rationing in some countries.

PPE and Ventilators: The demand for personal protective equipment (PPE), including masks, gloves, and coveralls, soared worldwide. Severe shortages occurred, with production backlogs of 4–6 months. The demand for ventilators also increased dramatically.

Airline Industry: Border closings and travel restrictions caused significant disruptions in air travel demand. The International Civil Aviation Organization estimated a 57%–64% reduction in airline seats offered in 2020. Many airlines faced financial difficulties, with Ethiopian Airlines experiencing a 90% decline in revenue in April 2020.

Overall, the COVID-19 pandemic severely impacted the demand for goods and services, affecting developing countries, workers in the informal economy, and small businesses, while causing disruptions in the pharmaceutical and airline industries.

Fig 5. Year 2020/2021 results: World total passenger traffic



Source : uniting aviation

The COVID-19 impact on world scheduled passenger traffic for year 2020 (actual results), compared to 2019 levels:

- Overall reduction of 50% of seats offered by airlines
- Overall reduction of 2,703 million passengers (-60%)
- Approx. USD 372 billion loss of gross passenger operating revenues of airlines

The COVID-19 impact on world scheduled passenger traffic for year 2021 (preliminary estimates), compared to 2019 levels:

- Overall reduction of 40% of seats offered by airlines
- Overall reduction of 2,201 million passengers (-49%)
- Approx. USD 324 billion loss of gross passenger operating revenues of airlines

Textiles and Apparel: The textiles and apparel industry suffered from reduced consumer demand due to quarantine measures, store closures, and economic uncertainty. The European Union's sector faced a potential 50% sales drop in 2020, while apparel and footwear revenues were predicted to be 27%–30% lower. Factories operated below capacity, with shortages of materials and reduced workforce.

Retailing Activities: Panic buying during the pandemic led to increased sales of essential products like toilet paper. However, overall retail sales declined significantly. In China, sales in categories like homeware, furniture, apparel, and electronics dropped by an average of 29%. In sub-Saharan Africa, retail sales decreased by 60% in April 2020 compared to the previous year, resulting in an anticipated \$65 billion revenue loss for the industry in 2020.

1.1.4 Decreased foreign investment

Foreign direct investment (FDI) has seen a significant decline in developing countries due to the COVID-19 pandemic. Inflows of FDI to these countries decreased by 35% in 2020 compared to the previous year, particularly affecting low-income nations (Alam & Akhtaruzzaman, 2022).

This decline can be attributed to disrupted global supply chains, reduced demand, and increased uncertainty caused by the pandemic. Travel restrictions and lockdown measures have also made it challenging for foreign investors to visit and invest in developing countries.

The consequences of reduced FDI inflows include limited access to foreign capital, technology, and expertise, as well as fewer employment opportunities and lower economic growth (Smith & Johnson, 2021). To counter these effects, policymakers in developing countries need to focus on attracting and retaining FDI through measures such as improving the investment climate, streamlining bureaucratic procedures, and promoting stability and transparency in governance. Specifically, the pandemic had a substantial impact on foreign investment in various countries. In India, FDI declined by 35% in 2020, from \$51 billion to \$33 billion, according to the United Nations Conference on Trade and Development (UNCTAD). Brazil experienced a 62% decrease, from \$47 billion to \$18 billion, while South Africa saw a 16% decline from \$4.6 billion to \$3.9 billion. Similarly, Indonesia faced a 23% drop in foreign investment, from \$22 billion to \$17 billion (UNCTAD).

These figures highlight the significant impact of the COVID-19 pandemic on foreign investment in developing countries, underscoring the need for strategic measures to mitigate its effects

The study by Alam and Akhtaruzzaman (2022) attributes the decrease in FDI inflows to several factors, including the disruption of global supply chains, reduced demand for goods and services, and increased uncertainty caused by the pandemic. Additionally, the travel restrictions and lockdown measures adopted by many countries have made it challenging for foreign investors to visit and invest in developing countries.

1.1.5 Impact on Industries

Tourism

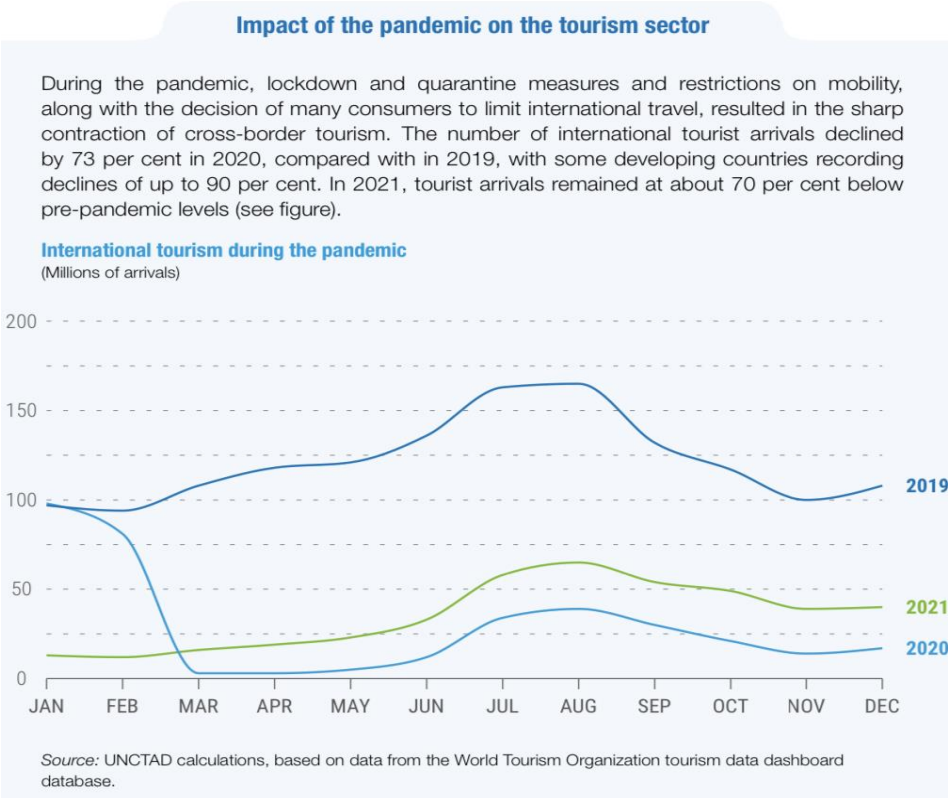
The COVID-19 pandemic had a devastating impact on the global tourism sector in 2020. Stringent measures implemented to combat the spread of the virus, such as travel restrictions and social distancing, brought international travel to a standstill. According to the World Tourism Organization (2020), international tourist traffic declined by 56% in March 2020 and plummeted to 98% in May, resulting in an overall decrease of 74% in international arrivals for the year. The economic consequences of this decline were staggering. The global tourism industry suffered a loss of \$1.3 trillion in export earnings, more than 11 times the losses experienced during the 2009 global economic crisis. The collapse of international travel also led to economic

losses in tourism valued at \$2 trillion, equivalent to over 2% of global GDP. Small and medium-sized enterprises (SMEs) in the tourism sector were hit particularly hard, with many forced to suspend operations and lay off employees. This crisis posed a significant threat to the jobs of 100-120 million people employed in the tourism industry, many of whom were women and young individuals.

Developing countries bore a substantial brunt of the decline in international tourist arrivals. In 2020, these countries experienced a 75% decrease, compared to a 72% decline in developed countries, according to the WTO. The impact was particularly severe in Africa, with a 74% drop, and the Middle East, with a 73% decrease. These regions heavily rely on tourism as a source of foreign exchange earnings and employment, resulting in significant economic losses.

The pandemic's effects were acutely felt by SMEs in the tourism sector. Many of these businesses had to shut down due to reduced demand, leading to widespread job losses. Women and young people, who form a significant portion of the tourism workforce in developing countries, were disproportionately affected by the loss of income.

Fig 6. Impact of pandemic on the tourism sector



Manufacturing

The COVID-19 pandemic has had a profound impact on the manufacturing sector in developing countries, primarily stemming from disruptions in supply chains, reduced product demand, and widespread factory shutdowns. This can be exemplified by the case of Nissan, a prominent automotive manufacturer, which halted production in its factories across Asia, Africa, and the Middle East (s.contractor, 2020).

Various statistics and references demonstrate the extent of the pandemic's impact on manufacturing in these regions:

Africa:

Farming

The COVID-19 pandemic has had a significant impact on the agricultural sector, which is a vital source of income for over 1 billion people worldwide and a backbone for many developing countries. The measures taken to control the pandemic have disrupted the production and distribution of agricultural products, which is a complex process involving various stages of labor, from planting to commodity shipment. The food and agricultural sectors are particularly vulnerable due to their dependence on market value chains, which have been affected by travel restrictions imposed by governments worldwide. Agriculture is an input-intensive industry, and the cost of each factor of production can vary significantly, which can lead to additional costs on the inputs due to factors such as congested ports, transportation interruptions, and a lack of credit access. These additional costs reduce the profitability of agricultural production and can cause significant losses for farmers.

In Africa, for example, the African Development Bank has projected that the COVID-19 pandemic could reduce agricultural GDP in Africa by between 2.6% and 7%, depending on the severity of the pandemic. The pandemic has also disrupted food supply chains and increased

food insecurity in many African countries. In addition to these challenges, the pandemic has also had a significant impact on manufacturing industries across the continent. A survey of manufacturers in Ghana, Kenya, Nigeria, and Tanzania conducted by the African Union found that the pandemic had a negative impact on business operations, with many manufacturers experiencing reduced demand for their products and difficulties accessing raw materials and other inputs. (Source: African Development Bank, 2020; African Union, 2020)

Similarly, in Asia, the COVID-19 pandemic has disrupted manufacturing industries and global supply chains, leading to decreased production and exports. According to a report by the Asian Development Bank, the pandemic resulted in a 9.8% decline in agricultural exports from developing Asia in 2020. The pandemic has also led to a reduction in demand for goods in many countries, which has affected manufacturing industries that rely on exports for revenue. In addition to these challenges, many manufacturers have had to navigate interruptions in supply chains, as well as disruptions to transportation and logistics caused by travel restrictions and quarantine measures. (Source: Asian Development Bank, 2020)

1.1.6 Widespread Job losses

The COVID-19 pandemic has had a massive impact on labor markets in developing countries. The International Labour Organization (ILO) projects a loss of 255 million full-time equivalent jobs in 2020, with an additional 90 to 130 million projected for 2021. These numbers highlight the need for governments to implement labor market and social protection policies to support recovery (ILO, 2021).

The global labor income loss in 2020 was estimated at USD 3.7 trillion, equivalent to 4.4% of global GDP (ILO, 2021). In Africa, around 30 million jobs were lost, while Asia and the Pacific saw a loss of 81 million jobs (African Development Bank, 2020; Asian Development Bank, 2021). A survey by the ILO revealed that 81% of the global workforce, consisting of 3.3 billion people, experienced either full or partial workplace closures (ILO, 2020). Latin America and the Caribbean witnessed a loss of 26 million jobs, and the Middle East and North Africa experienced a loss of 5 million jobs (Inter-American Development Bank, 2021; World Bank, 2021).

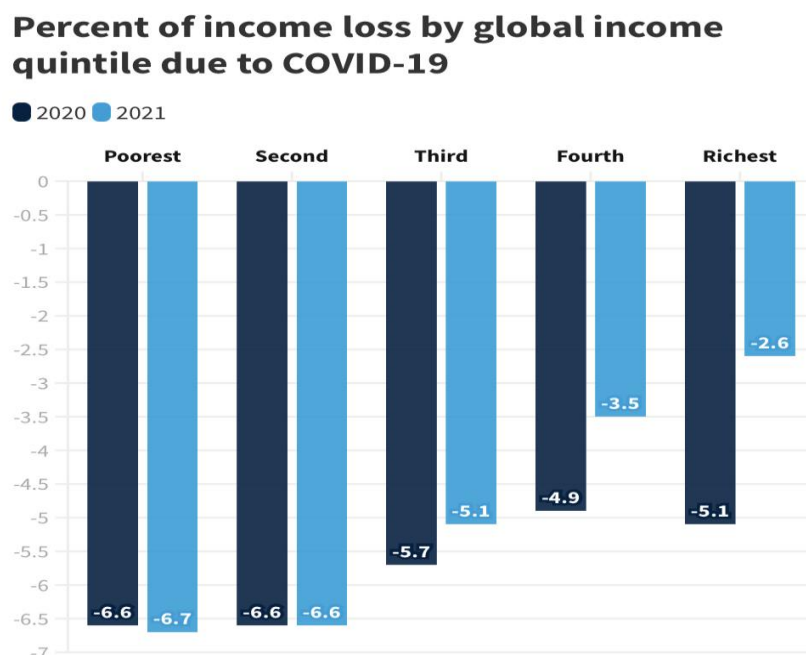
Increased poverty levels.

1.1.7 Increased poverty levels

The economic consequences of the pandemic had a profound impact on the welfare of developing countries. Formal and informal employment, particularly in sectors like garments, transport, and tourism, were severely affected. This resulted in declining revenues and an increase in poverty levels (UNECA 2020; Reuters 2020). The global headcount ratio for the \$1.90/day poverty line increased by 0.9% in 2020, meaning an additional 68 million people fell into extreme poverty (Valensisi 2020). Progress made in poverty reduction over the past three years was reversed, bringing poverty levels back to those of 2017.

When considering higher poverty lines like \$3.20/day and \$5.50/day, the impact was even more significant. The headcount ratios for both poverty lines increased by nearly 2 percentage points, representing an additional 140 million people living in poverty (Valensisi 2020).

Fig 7. Percentage of income loss by global income quintile

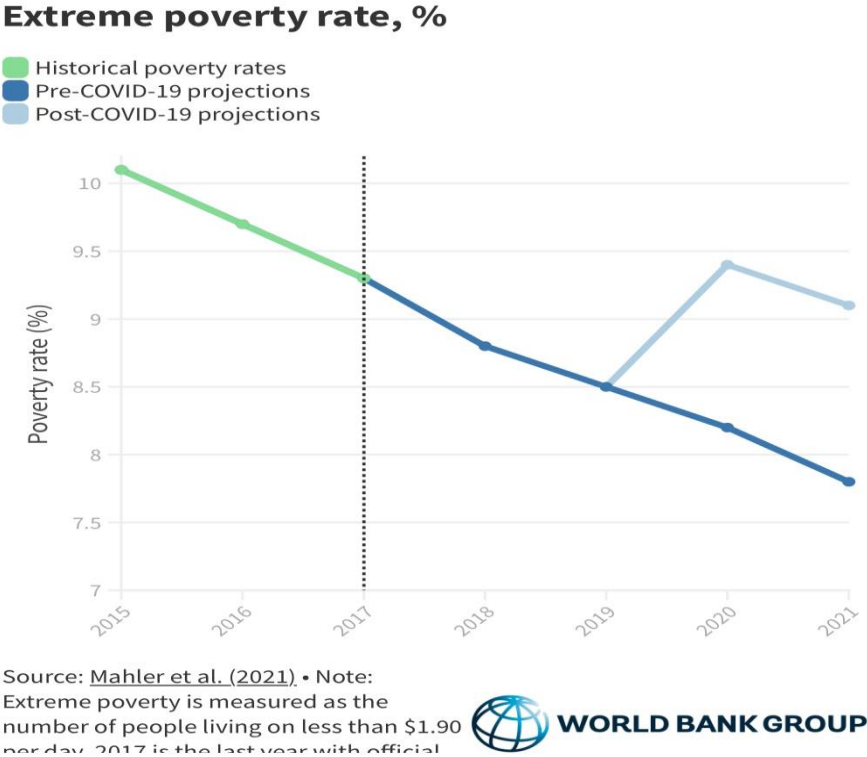


Source: Yonzan et al. (2021) • Compared to pre-pandemic projections.



Due in to the decline in income caused by the COVID-19 pandemic, there has been a significant rise in poverty worldwide. The pandemic has pushed an additional 97 million people to live on less than \$1.90 a day, increasing the global poverty rate from 7.8 percent to 9.1 percent. Moreover, 163 million more people are now living on less than \$5.50 a day. As a result, it is estimated that three to four years of progress towards ending extreme poverty have been lost globally.

Fig 8. Extreme poverty rate



During the COVID-19 pandemic, poverty rates have increased across all regions, especially in Sub-Saharan Africa and Latin America and the Caribbean (World Bank Blogs. (2021, January

20).. High-frequency phone surveys conducted by the World Bank showed that many households in Peru and Senegal suffered income losses. Extreme poverty in low-income countries has increased significantly, resulting in a setback of eight to nine years in progress. The pandemic also affected households in the bottom 60 percent of the global income distribution. Pre-COVID-19 projections estimated a growth in daily per capita incomes of households in the middle-income group. However, due to the pandemic, these households experienced a 5% reduction in their projected income, from \$7.44 to \$7.05

SECTION 1.2: GOVERNMENT POLICIES AND RESPONSES

Government policies and interventions have played a crucial role in mitigating the socio-economic impact of the COVID-19 pandemic in developing countries. This section provides an overview of the various policies and interventions implemented, including fiscal stimulus packages, social protection programs, targeted support for small and medium-sized enterprises (SMEs), and other measures.

1.2.2 Fiscal stimulus

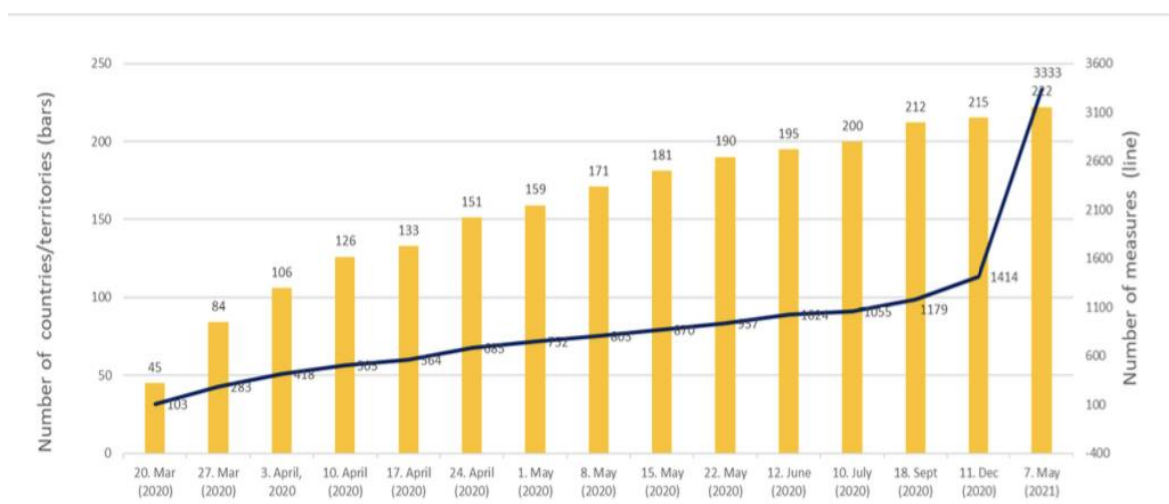
Fiscal stimulus packages have been a key component of government responses to the pandemic. These packages aim to boost economic activity and support households and businesses through various measures. One common approach has been providing cash transfers to vulnerable populations and wage subsidies to affected workers. For example, Kenya implemented a temporary reduction of the value-added tax (VAT) rate from 16% to 14% as part of its fiscal stimulus measures (World Bank, 2021).

1.2.3 Social protection programs

Social protection programs have also been crucial in providing support to individuals and families affected by the pandemic. These programs include direct cash transfers, food assistance, and other forms of social assistance. They aim to alleviate poverty, protect vulnerable groups,

and ensure access to essential services. For instance, in India, the government launched the⁵ Pradhan Mantri Garib Kalyan Yojana, providing free food grains and cash transfers to vulnerable households (World Bank, 2021).

Fig 9. social protection measures in response to the Covid-19 pandemic : March 2020- May 2021



Source: Social Protection and Jobs Responses to COVID-19: A Real-Time Review of Country Measures

1.2.4 Targeted support for SMEs

Small and medium-sized enterprises (SMEs) have faced significant challenges during the pandemic⁵, given their limited cash reserves and vulnerabilities. Governments have implemented targeted support programs to help these enterprises sustain their operations and navigate the crisis. Such support has included special credit lines, grants, debt relief, tax and social contribution relief, wage subsidies, and social protection extensions. The Economic Stimulus Act

⁵ Esha Thukral 2021, COVID-19: Small and medium enterprises challenges and responses with creativity, innovation, and entrepreneurship

of 2020 in the Philippines, for example, provided wage subsidies, interest-free loans, and free loan guarantees to MSMEs (World Bank, 2021).

In addition to fiscal stimulus packages, social protection programs, and targeted support for SMEs, governments have implemented various other policies and interventions. These measures aim to enhance the ease of doing business, facilitate trade, and improve the overall business environment. For example, some countries have postponed corporate obligations, reduced fees, and streamlined procedures for business registration and licensing. Moreover, trade-expanding measures have been implemented, including deferrals and reductions of trade-related payments such as customs duties and export credits. Streamlining customs procedures for essential goods has also been a priority (World Bank, 2021).

Overall, government policies and interventions have played a critical role in mitigating the socio-economic impact of the COVID-19 pandemic in developing countries. Fiscal stimulus packages, social protection programs, targeted support for SMEs, and other measures have provided much-needed relief to individuals, households, and businesses. However, the effectiveness of these policies has varied depending on the strength of economic institutions and the capacity to implement them effectively (World Bank, 2021).

1.2.5 Other policies and interventions

Monetary policy responses:

Monetary policy responses in developing countries have focused on providing liquidity to financial institutions, supporting financial stability, and maintaining macroeconomic stability. These measures include:

Interest rate cuts: Many central banks in developing countries have implemented interest rate cuts to support economic activity and financial stability. For example, in Mexico, the central bank cut its policy interest rate from 7.25% to 4.25%.

Quantitative easing: Some central banks in developing countries have implemented quantitative easing measures to provide liquidity to financial institutions and to support financial stability.

For example, in Brazil, the central bank implemented a bond-buying program to support liquidity in the financial system.

Financial stability measures: Many central banks in developing countries have implemented measures to support financial stability, such as relaxing capital requirements and providing liquidity support to financial institutions. For example, in Indonesia, the central bank relaxed capital requirements for banks and provided liquidity support through a variety of mechanisms.

Financial sector policy responses:

Financial sector policy responses in developing countries have focused on supporting financial stability and maintaining the availability of credit

According to the IMF, many developing countries have implemented measures to support financial stability during the pandemic, including providing liquidity support to financial institutions and relaxing capital requirements.

The IMF also notes that many developing countries have received financial assistance from international organizations and other countries to support their COVID-19 response. For example, the IMF provided emergency financing to more than 80 countries in 2020, totaling \$109 billion.

Liquidity support: Many developing countries have provided liquidity support to financial institutions to ensure that credit remains available to households and businesses. For example, in Kenya, the central bank provided liquidity support to banks through a variety of mechanisms, including a reduction of the cash reserve ratio and a repo facility.

Capital relief: Some developing countries have implemented measures to provide capital relief to financial institutions to support their ability to lend. For example, in Colombia, the government implemented a temporary reduction in the minimum capital requirements for banks.

International financial assistance: Many developing countries have received financial assistance from international organizations and other countries to support their COVID-19 response. For

example, the World Bank provided emergency financing to 100 countries in 2020, totaling \$160 billion.

1.2.6 Challenges in implementing policies and intervention

Emerging economies face numerous challenges in implementing COVID-19 policies and interventions. Limited resources, weak health systems, informal economies, political instability, social and cultural factors, and limited access to vaccines contribute to the difficulties.

Developing countries often lack financial and material resources, hindering effective pandemic response. Weak health systems with inadequate infrastructure and supplies further impede their efforts (World Bank, 2020).

Low-income countries, comprising 12% of the global population, possess only 0.2% of the world's financial resources, making it challenging to invest in pandemic response (World Bank, 2020).

A shortage of 18 million healthcare workers globally, particularly in developing countries, hampers effective pandemic response (WHO, 2021).

Enforcing restrictions in large informal economies is difficult, as workers lack access to safety nets and continue working even when ill, exacerbating virus transmission (World Bank, 2020).

Political instability, weak governance, and public resistance hinder pandemic response efforts in some countries.

Social and cultural factors, such as difficulties with social distancing and mask-wearing, and certain cultural practices, increase virus transmission risks (World Bank, 2020).

Limited access to vaccines persists due to financial constraints, supply chain limitations, and vaccine hesitancy. High-income countries have administered the majority of vaccine doses (WHO, 2021).

Addressing these challenges requires coordinated efforts among governments, international organizations, and civil society groups, alongside increased investment in healthcare systems and pandemic response measures (World Bank, 2020).

1.2.7 Effectiveness of the policies and interventions

Fiscal stimulus and monetary policy have been key policies implemented in many developing countries to mitigate the socio-economic impact of the COVID-19 pandemic.

Fiscal stimulus refers to government spending and tax policies aimed at boosting economic activity and supporting households and businesses. In developing countries, fiscal stimulus packages have included measures such as cash transfers, wage subsidies, and support for small and medium-sized enterprises (SMEs). According to the International Monetary Fund (IMF), as of October 2021, over \$14 trillion in fiscal support had been announced globally.

Monetary policy refers to actions taken by central banks to manage the money supply and interest rates in the economy. In response to the pandemic, many developing countries have implemented accommodative monetary policies, including lowering interest rates and increasing liquidity in the financial system. According to the World Bank, as of October 2021, over 80 central banks had implemented monetary policy measures to support their economies.

The effectiveness of fiscal stimulus and monetary policy in developing countries has varied depending on the country's level of development and the strength of their economic institutions. In countries with strong institutions and well-developed financial systems, these policies have been effective in mitigating the socio-economic impact of the pandemic. For example, countries such as South Korea and China have seen a relatively quick recovery in their economies due in part to their robust fiscal and monetary policies.

However, in countries with weaker institutions and limited fiscal and monetary space, the effectiveness of these policies has been more limited. For example, many African countries have faced challenges in implementing fiscal stimulus due to limited fiscal space and high debt levels. Similarly, some countries have struggled to implement effective monetary policies due to limited central bank independence and weak financial systems.

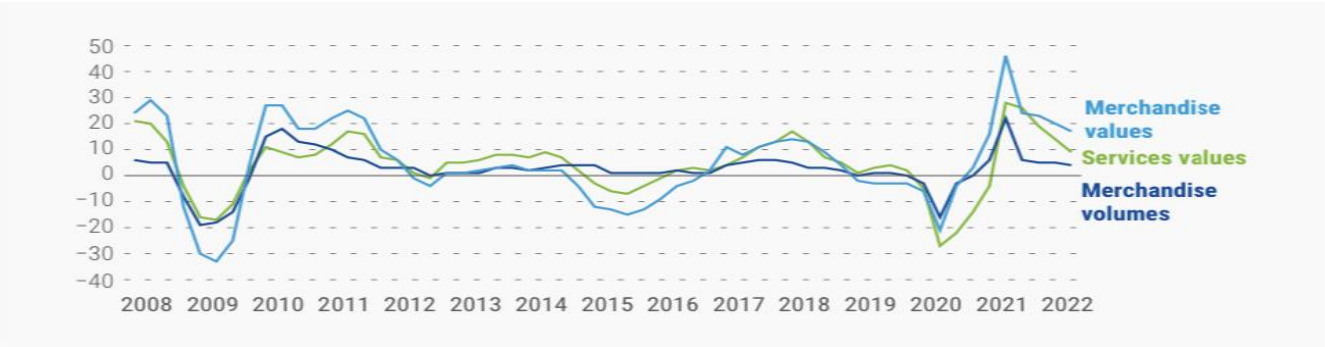
In summary, fiscal stimulus and monetary policy have been important policies in developing countries to mitigate the socio-economic impact of the COVID-19 pandemic. However, the effectiveness of these policies has varied depending on the strength of the country's economic institutions and their capacity to implement these policies effectively.

1.3.1 Impact on international trade and investment

During the past two years, the COVID-19 pandemic significantly impacted global trade (UNCTAD, 2021a). The economic downturn caused a rapid and intense decline in global trade affecting both the initial drop and subsequent rebound J. K. Jackson(2020) .In comparison to previous crises, the decline in global trade in 2020 was similar to that during the global financial crisis of 2008/09 and worse than the recession in 2015. This decline was attributed to the global decrease in demand, cross-border restrictions, and logistical disruptions such as port closures. Despite initial predictions of a double-digit contraction, global trade began to recover in the second half of 2020, and the decline was about \$2.5 trillion, a 9% decrease compared to 2019 levels.

As economic conditions improved in 2021, global trade experienced a strong rebound, reaching a record high of about \$28.5 trillion, representing a 13% increase from pre-pandemic levels, according to UNCTAD data.

Fig 10. international trade trends : Year to year growth rates(%)



Source: UNCTAD calculations, based on data from the UNCTADstat database.
 Note: Data for 2022 are preliminary.

The COVID-19 pandemic has had a global impact on trade, although countries have experienced varying degrees of effects. While overall trade trends were similar across least developed, developing, and developed countries, there were significant regional and national differences. East Asian economies were the first to experience declines in trade and were also the first to recover. Conversely, developing economies in other parts of Asia suffered significant declines in trade, with exports decreasing by more than 50% in 2020. The pandemic-related disruptions led to a sharp decline in exports from Africa and Latin America in 2020, further compounded by a decline in commodity prices. Small island developing States experienced a more pronounced trade downturn in 2020 compared to other country groupings.

Despite the differences in trade trends, trade value across all regions and country groupings, except small island developing States, recovered to levels above pre-pandemic averages in 2021. However, countries in Africa have experienced relatively stagnant trade levels, remaining close to 2019 levels.

Section 1.3 Impact on international trade and investment

1.3.1 Reduced demand for exports

The pandemic has had a significant impact on international trade, particularly for developing countries. According to Hayakawa Kazunobu, a senior researcher at the Institute of Developing Economies (IDE-JETRO), developing countries have been hit hard by the pandemic due to their high reliance on exports, particularly of commodities and intermediate goods.

Kazunobu (2022) notes that the COVID-19 pandemic has caused disruptions in global supply chains, resulting in reduced demand for exports from developing countries. In addition, restrictions on travel and transportation have led to a decline in international trade, particularly in the services sector. This has had a particularly severe impact on tourism-dependent economies in developing countries.

Furthermore, the pandemic has resulted in an increase in protectionist measures, such as trade barriers and export restrictions, which have further reduced demand for exports from developing

countries (Kazunobu, 2022). This has resulted in a significant decline in trade flows and a reduction in economic growth in many developing countries.

However, Kazunobu (2022) also notes that the pandemic has created opportunities for developing countries to diversify their export markets and shift towards new trade partners. In addition, there has been an increase in demand for certain products, such as medical supplies and personal protective equipment, which has provided new export opportunities for developing countries.

Overall, the COVID-19 pandemic has had a significant impact on international trade in developing countries, with disruptions to supply chains, a decline in demand for exports, and an increase in protectionist measures. However, it has also provided opportunities for diversification and new export opportunities.

1.3.2 Decreased access to credit and investment capital

We can not go without mentioning how the pandemic had impacted access to credit and investment capital, particularly for SMEs in developing countries. Reduced investor confidence, an increase in non-performing loans, and stricter lending criteria by banks contributed to a decrease in credit availability for SMEs (IFC, 2020). SMEs, which rely heavily on bank financing and often have limited financial buffers, were particularly vulnerable to the economic shocks caused by the pandemic (WBG, 2020).

Foreign direct investment (FDI) also experienced a significant decline as a result of the pandemic, with developing countries being disproportionately affected (UNCTAD, 2020). This decline in FDI flows further limited the investment capital available for SMEs in developing countries.

In Asia, the pandemic caused a substantial decline in GDP, impacting SMEs' cash flow and access to credit (ADB, 2020). Studies conducted in various countries, including Kenya, Egypt, Indonesia, Turkey, and Ghana, highlighted the challenges faced by SMEs in accessing credit and investment capital during the pandemic (Kibonge et al., 2020; Mokhtar & Elhajjar, 2021; Lestari & Mustika, 2020; Sipahi & Timucin, 2021; Adjei & Huang, 2021).

The literature concurs that the pandemic significantly hindered SMEs' ability to access credit and investment capital in developing countries, mainly due to reduced investor confidence, risk aversion among lenders, and stricter lending criteria (IFC, 2020; UNCTAD, 2020; WBG, 2020)

Section 1.4 Impact on rural areas

1.4.1 overview

The pandemic has had a significant impact on rural areas in developing countries, exacerbating existing vulnerabilities and creating new challenges. The populations of rural areas tend to be poorer, have less access to healthcare, and higher proportions of older residents, making them more susceptible to the virus's health impacts. The pandemic's impact on rural areas has been widespread, including food insecurity, decreased access to healthcare, loss of livelihoods, and increased poverty rates.

According to a report by the International Fund for Agricultural Development (IFAD), COVID-19 has disrupted food systems globally, leading to widespread food insecurity. The report notes that "Rural communities, especially smallholders and family farmers, are being hit hard by the crisis, facing reduced access to markets, inputs, and services, and disruptions to their supply chains, storage facilities, and logistics." The resulting food insecurity has led to malnutrition and increased vulnerability to other diseases.

In addition to food insecurity, rural areas have also been impacted by decreased access to healthcare. A study by the World Health Organization (WHO) found that "the pandemic has led to significant disruptions in essential health services in many countries, including immunization campaigns, antenatal care, and child health services." These disruptions have disproportionately affected rural areas, where access to healthcare was already limited before the pandemic.

The pandemic has also led to significant economic impacts on rural communities. A report by the International Labour Organization (ILO) found that COVID-19 has led to a decline in rural employment, especially in the informal sector. The report notes that "the rural economy is

characterized by a large informal sector and low-wage jobs, which make it vulnerable to economic shocks." As a result, many rural households have experienced a loss of income and increased poverty rates.

Furthermore, COVID-19 has highlighted the digital divide in rural areas, where access to technology and the internet is limited. A report by the United Nations Development Programme (UNDP) notes that "the pandemic has demonstrated the importance of digital technologies for access to information, education, and healthcare." However, many rural areas lack the necessary infrastructure to support digital technologies, further exacerbating existing inequalities.

In conclusion, the COVID-19 pandemic has had a significant impact on rural areas in developing countries, exacerbating existing vulnerabilities and creating new challenges. The pandemic's impact on rural areas has been widespread, including food insecurity, decreased access to healthcare, loss of livelihoods, and increased poverty rates. The pandemic has highlighted the need for investments in rural development to strengthen healthcare systems, food security, and economic resilience in rural communities.

1.4.2 Limited access to healthcare, education, and basic services

According to Sitko et al. (2021), the COVID-19 pandemic has had significant impacts on rural areas of developing countries, particularly in terms of food security, livelihoods, and access to basic services. The authors note that rural populations in these countries often face structural vulnerabilities that have been exacerbated by the pandemic, including limited access to healthcare and social protection programs.

One major impact of the pandemic on rural areas has been disruptions to agricultural production and supply chains. Sitko et al. (2021) report that lockdowns and other containment measures have made it difficult for farmers to access markets and inputs, leading to food shortages and price spikes in some areas. The authors also note that the pandemic has increased the risk of crop losses due to labor shortages and other factors.

In addition to affecting food security, the pandemic has also had significant impacts on rural livelihoods. According to Sitko et al. (2021), many rural residents have lost income and employment opportunities due to pandemic-related restrictions on mobility and economic activity. This has been particularly problematic in areas that rely heavily on tourism or other industries that have been severely impacted by the pandemic.

Moreover, according to the study by Hossain et al. (2020), the COVID-19 pandemic has had impacts on rural areas of developing countries, particularly in terms of healthcare, education, and basic services.

One major impact of the pandemic on rural areas has been disruptions to healthcare services. Hossain et al. (2020) report that many rural residents have limited access to healthcare facilities, medical personnel, and medical supplies, making it difficult for them to receive proper treatment for COVID-19 and other health issues. The authors also note that lockdowns and other containment measures have made it difficult for healthcare workers to travel to rural areas to provide services.

In addition to affecting healthcare, the pandemic has also had significant impacts on education in rural areas. According to Hossain et al. (2020), many rural children lack access to online learning tools, and school closures have made it difficult for them to continue their education. This has been particularly problematic in areas with limited access to electricity or internet connectivity.

The pandemic has also exposed and exacerbated existing inequalities in access to basic services in rural areas of developing countries. Hossain et al. (2020) report that many rural residents lack access to clean water, sanitation facilities, and other basic services that are necessary for preventing the spread of COVID-19 and other diseases. The authors also note that lockdowns and other containment measures have made it difficult for rural residents to access markets and other essential services.

Overall, Hossain et al. (2020) conclude that the pandemic has had significant and multifaceted impacts on rural areas of developing countries, with potentially long-lasting consequences for healthcare, education, and access to basic services.

1.4.3 Exacerbation of economic disparities between urban and rural areas

The World Bank report (2020) highlights that the COVID-19 pandemic has exacerbated economic disparities between urban and rural areas. The report notes that low-income households, many of which are located in rural areas, have been particularly affected by the pandemic.

The report notes that rural populations often work in sectors that have been hit hard by the pandemic, such as agriculture, tourism, and informal services. For example, the report estimates that the decline in international tourism could result in a 60-80% reduction in tourism-related employment in the Caribbean, where many rural households rely on tourism for their livelihoods.

Furthermore, the report notes that rural populations often have limited access to healthcare services, social protection programs, and other forms of support during times of crisis. This has made it more difficult for rural households to cope with the economic impacts of the pandemic. For example, the report notes that only 20% of rural households in India have access to formal credit, compared to 43% of urban households.

The report also highlights that the pandemic has widened disparities in access to digital technologies, which are increasingly important for work, education, and accessing services. The report notes that rural populations often have limited access to internet connectivity and digital devices, which has made it more difficult for them to participate in remote work and education.

Overall, the World Bank report (2020) concludes that the pandemic has highlighted and exacerbated existing economic disparities between urban and rural areas. The report calls for

targeted support to rural populations, including investments in healthcare, social protection, and digital infrastructure, to promote inclusive economic growth.

CHAPTER 02 : Review of existing literature

The literature on economic activity of COVID-19 effect is greatly concentrated on macro-level analysis as well as on the policy responses initiated by countries to mitigate the harmful impact and stabilize economies.

Several studies at the macro-level, such as Roberts(2021)Dzansi et al.(2021) and Beyer et al. (2021) have investigated the impact of the COVID-19 pandemic on economic activity in Morocco, Ghana, and India using proxies of economic performance, namely electricity usage and nighttime lights. These studies have consistently found a strong and significant correlation between light intensity and changes in economic activity. Specifically, following the implementation of national lockdown measures in March, there was a notable decrease in light intensity across these countries.

In line with these findings, Takyi et al. (2022) conducted a study to assess the potential impact of the COVID-19 pandemic on the economic activities of 18 developing countries. Their analysis involved the use of monthly time series data spanning from January 2010 to December 2020, employing a Bayesian structural time series model to evaluate and quantify the absolute and relative effects of the pandemic.

The results of Takyi et al.'s study, derived from simulation exercises and Bayesian posterior estimates, reveal that the COVID-19 pandemic had a significant negative impact on the real sectors of six out of the 18 countries examined. However, for the remaining countries, although negative impacts were observed, they were not statistically significant. Within the very short-run, approximately three to four months after the onset of the pandemic, all countries in the sample, except for Bosnia and Herzegovina, Mongolia, and Montenegro, experienced a substantial reduction in their economic activities.

A research conducted by Hayakawa (2021) and other studies, have highlighted these key findings regarding trade and investment

According to Hayakawa (2021) and other studies Sayari(2022), the COVID-19 pandemic had significant implications for trade and investment dynamics. The following key findings emerged from the research:

The pandemic caused a substantial contraction in global trade in goods, trade in services, and foreign direct investment (FDI) in 2020. FDI experienced the most significant decline, although there has been a gradual recovery, particularly in FDI (Baldwin & di Mauro, 2020).

Both imports and exports of goods were affected by the pandemic. Stay-at-home orders, workplace closures, and reduced consumption led to decreased shopping opportunities and lower imports. However, there was increased demand for essential items such as food, medical products, and personal protective equipment. On the export side, production disruptions and infection control measures impacted industries and reduced exports (Hayakawa & Mukunoki, 2021c).

The pandemic's impact on industries and product categories varied. Non-essential or durable products, labor-intensive industries, and industries unrelated to medical products experienced negative effects. In contrast, industries providing medical products saw positive effects (Hayakawa & Mukunoki, 2021c).

The exports of finished machinery products and countries supplying machinery parts to exporting countries were significantly impacted by the pandemic (Hayakawa & Mukunoki, 2021a).

To mitigate the negative trade shocks caused by the pandemic, several measures were identified. These include increasing vaccination rates, diversifying imported input sources, leveraging previous outbreak experiences, and developing e-commerce capabilities in importing countries (Hayakawa, 2021; Ando & Hayakawa, 2022a; Cai & Hayakawa, 2020; Hayakawa, Mukunoki, & Urata, 2021).

In host countries, the severity of the pandemic had a negative impact on both greenfield FDI (new investments) and cross-border mergers and acquisitions (M&A). Reduced demand and increased fixed costs due to difficulties in hiring new workers and building new factories

affected greenfield FDI. However, severe damage in host countries may lead to "fire-sale FDI" where investors can acquire local firms at lower prices.

In home countries, the severity of the pandemic did not have significant impacts on both types of FDI (greenfield and cross-border M&A). While reduced investment capital may have a negative impact, firms may engage in outward FDI by shifting their export base abroad.

The manufacturing sector experienced significant negative impacts on both greenfield FDI and cross-border M&A in host countries. In the services sector, the impact on greenfield FDI was negative in both host and home countries, while the impact on cross-border M&A was mostly insignificant.

These findings highlight the substantial influence of the COVID-19 pandemic on FDI flows, with host countries experiencing negative effects and home countries potentially engaging in outward FDI. To address the adverse effects of the pandemic, it is crucial to implement mitigating measures such as increasing vaccination rates, diversifying procurement, utilizing e-commerce, managing cross-border movement effectively, and developing online tools for investors (Hayakawa, 2021; Hayakawa, Lee, & Park, 2022)

These findings suggest that the COVID-19 pandemic has had a substantial impact on FDI flows, with host countries experiencing negative effects and home countries potentially engaging in outward FDI. Mitigating measures such as increasing vaccination rates, diversifying procurement, utilizing e-commerce, managing cross-border movement effectively, and developing online tools for investors are essential to address the adverse effects of the pandemic (Hayakawa, 2021; Hayakawa, Lee, & Park, 2022).

In relation to food security and supply chains, a Research was conducted by Benton (2020) emphasizing the vulnerabilities and challenges associated with disruptions to food systems in a globalized, consumption-driven economy. According to Challinor et al. (2018), climate change not only led to extreme weather events but also contributed to the spread of pests and diseases, disrupting agriculture. Brooks et al. (2019) highlighted the interconnectedness between ecological changes, environmental degradation, and the emergence of diseases like COVID-19, which originated from wildlife.

The COVID-19 pandemic exposed strengths and weaknesses in global food systems. Panic buying and lockdown measures strained just-in-time supply chains, leading to empty shelves and rising food prices (Homer-Dixon et al., 2015; Puma et al., 2015). Vulnerable populations faced challenges accessing food due to overwhelmed delivery systems. However, the pandemic did not cause a shortage of food itself but rather highlighted issues in distribution (Homer-Dixon et al., 2015; Puma et al., 2015).

Anticipating potential disruptions to food supply, labor shortages and social distancing measures impacted harvests, particularly in small-scale farming systems heavily reliant on manual labor. Some countries implemented export bans to ensure domestic food security, similar to previous food price spikes (Natalini et al., 2017).

Uncertainty surrounded future food demand and decision-making for farmers amidst changing markets, supply chains, and lockdowns. The COVID-19 pandemic exacerbated this uncertainty, potentially leading to global food disruptions. Additionally, 2020 was expected to be a hot year from a climate perspective, adding pressure to already strained food systems. Rising food prices could have severe consequences for vulnerable populations, especially during a deep recession (Bebber et al., 2013).

In conclusion, the literature underscored the fragility and vulnerabilities of global food systems. Disruptions caused by climate change, emerging diseases, and shocks like the COVID-19 pandemic exposed weaknesses in just-in-time supply chains. It highlighted the need for resilient and sustainable food systems that prioritize the well-being of people and the planet over unsustainable consumption-driven economies. Further research is necessary to explore strategies for building more resilient and equitable food systems that can withstand future disruptions and promote sustainable development.

On the same issue of food security (Mouloudj & Kamali, 2020; Benton, 2020) (Mouloudj 2020) examined the impact of the COVID-19 pandemic on food security, with a particular focus on developing countries. It was found that countries heavily reliant on agriculture, such as some African countries (Abdelhedi & Zouari, 2020), experienced significant disruptions in agricultural activities, trade, and labor due to the pandemic (Kerr, 2020). Additionally, countries dependent

on food imports, especially from European countries, faced threats to their food security as some European nations implemented export bans (Koppenberg et al., 2021).

The pandemic also affected agricultural commodity sales, particularly to major buyers such as restaurants, hotels, schools, and shopping centers, leading to losses for producers and damage to perishable products (Larue, 2020). Food supply chains were disrupted, resulting in shortages in remote areas, as movement restrictions and store closures hindered transportation, storage, and distribution (Hobbs, 2020). The incomes of small and medium agricultural companies were adversely affected due to suspended activities and decreased purchasing power (CEBALLOS, 2022).

Furthermore, the COVID-19 pandemic had implications for international food aid capacities, exposing the vulnerability of food systems even in developed countries. Most countries focused on providing assistance exclusively to their citizens, leaving international food aid insufficient for populations in need, particularly in Yemen, Syria, and Palestine (Shih, 2020).

While developed countries in the field of agriculture, such as Canada and the United States, did not experience significant impacts on food security, disruptions in the global supply chain and slight price increases were observed universally (C. Shih, 2020). The literature emphasized the importance of taking immediate measures to ensure the survival of domestic and global supply chains and to mitigate the risk of a major crisis, particularly for vulnerable countries and populations.

The findings provided recommendations for countries, including Algeria, to address food insecurity. These recommendations included conducting comprehensive studies to identify challenges in the agricultural sector, providing support to small farmers, reducing import dependency gradually, promoting local food industries, involving consumer protection associations, establishing policies for desert agriculture, and addressing corruption and looting of agricultural resources (Mouloudj & Kamali, 2020).

Overall, the literature underscored the varying impacts of the COVID-19 pandemic on food security and highlighted the need for proactive measures to ensure resilience in food systems, especially in developing countries heavily dependent on imports and vulnerable to disruptions.

Again Bordi 2020) explores the economic and social impacts of the COVID-19 pandemic, with a particular focus on rural areas. The studies cited highlight the heterogeneity of impacts across

socio-economic groups, genders, occupations, regions, and countries (Bene et al., 2020; Egger et al., 2021; Bundervoet et al., 2021). Initially, there was a belief that rural areas would be spared from the negative effects due to lockdown measures primarily targeting urban areas (The Economist, 2020; Reardon, 2020). However, emerging evidence indicates that rural spaces, even in developing countries, are facing significant economic hardships (Liverpool Tasie, 2021; Egger et al., 2021; Bundervoet et al., 2021; Bene et al., 2021; Josephson et al., 2020).

Rural economies are interconnected with urban areas and global markets through complex networks of production, trade, migration, and remittances, making them vulnerable to economic shocks (World Bank, 2021). Higher levels of pre-pandemic poverty, food insecurity, and informality further exacerbate these vulnerabilities. Access to social insurance and essential services is often limited in rural areas, further increasing livelihood risks (World Bank, 2021). To inform policy responses for recovery and mitigation, understanding the extent of the pandemic's economic impacts on rural households and the variations across countries is crucial. (The study by Bordi 2020) consolidates emerging evidence and uses nationally representative household survey data from 54 countries, collected through the World Bank's COVID-19 High-Frequency Monitoring Dashboard (World Bank, 2021). The data provide insights into the impacts on income, coping strategies, and food security in rural areas. The findings emphasize the need for inclusive and sustainable recovery efforts by policymakers and the international community.

Another strand of the literature focuses on responses introduced by governments to mitigate the negative effects of the pandemic and stabilize the macroeconomy.

To mitigate the negative effects of public health controls on the economy and to sustain public welfare, governments have adopted economic packages including fiscal, monetary, and financial policy measures (Gourinchas 2020)(Elgin C et Al 2020) These economic measures targeting households, firms, health systems and banks vary across countries in breadth and scope (Weder di Mauro 2020).

A study by Norman V. Loayza and Steven Penning (2020) examined macroeconomic policies implemented during the COVID-19 pandemic, focusing on relief measures, recovery policies, and international coordination. The following presents the key findings from the review. Relief measures were crucial in mitigating the immediate economic impact of the pandemic (WHO, 2020d). Increased public health expenditures were recommended to enhance healthcare system capacity and provide free or subsidized medical attention (ECDC, 2020b; WHO, 2017). Direct income support through cash transfers was essential, particularly during containment measures (Gentilini et al., 2018; Parker & Todd, 2017; Özler, 2020). Assistance to affected sectors through tax cuts, debt moratoriums, and credit lines was also suggested (Mukherjee et al., 2018; OECD, 2009; Spilimbergo et al., 2008).

South Korea's response to COVID-19 provided a successful example of implementing relief measures (Republic of Korea, Ministry of Economy and Finance, 2020). The government allocated a special fiscal budget of \$22 billion, approximately 1.5 percent of GDP, which focused on disease prevention and treatment, support for households and young adults, and assistance to small and medium enterprises and local economies.

Increased healthcare spending was recommended across countries to strengthen public health capacities (IMF, 2020b). Various countries, including Argentina, Brazil, China, India, and Mexico, increased health expenditures to address the pandemic.

Governments implemented measures to alleviate economic losses caused by containment measures and incentivize social distancing (Gaspar & Mauro, 2020). These measures included wage subsidies, paid sick leave, expanded unemployment benefits, and cash transfers to individuals and businesses.

In conclusion, the literature highlighted the importance of implementing macroeconomic policies, particularly relief measures, to address the economic impact of the COVID-19 pandemic. Increased healthcare spending, direct income support, and assistance to affected sectors were identified as crucial components of these measures. The successful example of South Korea's response provided valuable insights, although adaptations were necessary based on each country's unique circumstances. A coordinated global response was emphasized to effectively mitigate the economic consequences of the pandemic.

2.1 Research Gap

Despite the wealth of research on the economic and social impacts of the COVID-19 pandemic, several research gaps remain, pointing towards areas that require further exploration and analysis. By addressing these gaps, future research can provide valuable insights and contribute to a more comprehensive understanding of the pandemic's consequences.

Long-term Economic Consequences: While existing studies have focused on the immediate impacts of the pandemic, there is a need for more analysis of the long-term economic consequences.

Paul Owusu Takyi, John Bosco Dramani, Nana Kwame Akosah, and Godfred Aawaarc (Mar 22). Economic activities' response to the COVID-19 pandemic in developing countries. This study provides an outlook on the impact of the pandemic in developing countries.

Understanding the lasting effects on industries, labor markets, and overall economic stability is crucial for developing effective recovery strategies. Future research could investigate the extent to which the pandemic has reshaped economic structures, patterns of investment, and the prospects for sustainable growth.

Vulnerable Populations: Although the literature has acknowledged the vulnerabilities of certain populations, such as rural communities (Liverpool Tasié, 2021; Egger et al., 2021; Bundervoet et al., 2021), more research is needed to understand the specific challenges faced by these groups. In-depth analysis of the differential impacts across socio-economic groups, genders, occupations, and regions can provide valuable insights into the uneven distribution of the pandemic's effects. Such research can inform targeted policy interventions to address the unique needs of these populations and promote more inclusive and equitable recovery.

Interconnectedness of Global Supply Chains: While studies have highlighted the vulnerabilities and disruptions in global food supply chains Benton (2020) and Challinor et al. (2018), further investigation is required to understand the extent of the interdependencies and potential ripple effects on different sectors. Exploring the resilience of supply chains, the role of regional and local production systems, and the effectiveness of alternative distribution mechanisms can offer insights into building more robust and sustainable food systems.

Social and Behavioral Impacts: The literature has primarily focused on the economic consequences of the pandemic, but there is a need to examine its social and behavioral impacts. Investigating changes in social norms, mental health, community resilience, and patterns of human behavior can provide valuable insights into the broader societal implications of the pandemic. Such research can guide the development of social support systems, mental health interventions, and strategies for promoting community well-being.

To conclude,, while existing literature has shed light on the economic and social impacts of the COVID-19 pandemic, several research gaps persist. By addressing these gaps, future research can enhance our understanding of the long-term consequences, provide targeted support for vulnerable populations, explore the complexities of global supply chains, evaluate the effectiveness of government responses, and uncover the social and behavioral transformations brought about by the pandemic. Such knowledge will be crucial for shaping resilient and sustainable policies that mitigate the impact of future crises and promote inclusive and equitable development.

CHAPTER 03 : Methodology

Methodology:

This research design aims to investigate the overall impact of COVID-19 on the economy of developing countries and understand their responses in terms of economic policies and interventions. The study will employ a quantitative research approach to analyze relevant economic data and examine the relationship between key variables. Description of the panel regression model and variables are given and are used to find out the impacts of Covid on economic environments of developing countries.

. Panel regression allows for the utilization of panel data, which includes both cross-sectional and time-series observations, providing valuable insights into the heterogeneity across countries and the dynamics of economic growth over time.

By using a panel regression model, we can effectively control for country-specific factors that may influence economic growth but remain constant over time, such as country-specific policies, institutions, and cultural aspects. This is accomplished by including fixed effects in the model, which captures the unobserved heterogeneity among countries and allows for country-specific intercepts

3.1 Sample Selection and criteria

The table shows a representative sample of 10 developing countries that were chosen for the study on the impacts of Covid on economic environments of developing countries.

Table 1: countries observed

South Africa	Colombia	Pakistan	Moldova
Kenya	Brazil	Iran	Ukraine
Tanzania	Bolivia	Palestine	Albania
Angola	Jamaica	Calbodia	Nepal
Algeria	Peru	Vietnam	Pakistan

For this study on the impacts of COVID-19 on economic environments of developing countries, a representative sample of 10 developing countries were selected. The sample was chosen to ensure geographic diversity and representation of different regions. The following criteria were considered during the sample selection process

- Geographic Diversity:
- COVID-19 Impact:
- Data Availability:

3.2 Variables description

Table 2: overview of the chosen variables data

Variable	Description	Source
GDP change	Economic growth 2012-21	World bank
Dummy Cov	Dummy Covid 2012-21	World bank
Unempl.	Unemployment%. 2012-21	World bank
Infla.	Inflation rate. 2012-21	World bank

In this section the data for countries in in developing countries are specified according to corresponding variables used in the regression model with fixed effects. Economic growth is represented by the dependent variable GDP growth as annual percentage change from 2012 to 2021(10 years) and independent variables : Dummy Covid, the controls which are unemployment rate and inflation rate.

Dependent Variable:

The dependent variable is economic growth, representing the changes in a country's gross domestic product (GDP) or other economic indicators over time.

It is measured as the annual percentage change in GDP or a relevant economic indicator.

Independent Variables:

a) COVID-19 Intensity (Dummy Variable):

The COVID-19 intensity variable is a binary dummy variable that captures the presence or absence of the COVID-19 pandemic during a specific time period.

It takes a value of 1 to indicate the COVID-19 period and 0 otherwise.

The variable is constructed based on the available information on the onset and duration of the COVID-19 pandemic in each country.

b) Control Variables:

i) Inflation Rate:

- The inflation rate represents the rate at which general prices of goods and services are increasing over time.
- It is included as a control variable to account for the potential influence of inflation on economic growth.
- The inflation rate can be measured as the annual percentage change in consumer price index (CPI) or another relevant inflation measure.

ii) Unemployment Rate:

- The unemployment rate represents the proportion of the labor force that is unemployed and actively seeking employment.
- It is included as a control variable to consider the impact of unemployment on economic growth
- The unemployment rate can be measured as the percentage of the labor force that is unemployed.

Alignment of Selected Variables with Research Question and Hypothesis:

Dependent Variable:

Economic Growth: This variable directly aligns with the research question as it captures the overall impact of the COVID-19 pandemic on the economies of developing countries. The hypothesis could be that the COVID-19 pandemic has a significant negative effect on economic growth in these countries.

Independent Variables:

Dummy Covid: This variable represents the presence or absence of the COVID-19 pandemic's impact. It aligns with the research question and helps to investigate the specific effects of the pandemic on economic growth. The hypothesis could be that the dummy Covid variable has a

significant negative effect on economic growth during the COVID-19 period compared to the period without the pandemic.

Control Variables:

Inflation Rate: This variable helps to control for the potential influence of inflation on economic growth. It aligns with the research question as it accounts for the impact of inflation on the economies of developing countries.

Unemployment Rate: This variable helps to control for the potential influence of unemployment on economic growth. It aligns with the research question as it accounts for the impact of unemployment on the economies of developing countries.

By including the control variables, you consider other factors that may affect economic growth and help ensure that the observed effects of the COVID-19 pandemic on economic growth are not confounded by inflation or unemployment.

3.3 Description statistics

The table below shows the descriptive statistics of the chosen variables

Table 3: Description statistics

	GDP growth	Dummy Covid	Unemployment	Inflation
Max	13.9	1	28.8	225.8
Min	-11.3	0	0.1	-0,7
Mean	3.8	0.2	6.7	6.2
Std.Dev	3.5	0.4	5,3	12.7
Observations	200	200	200	200

Table 3 shows a descriptive statistical summary for the variables used in this study, that is the max,min, mean, standard deviation and the numbers of observations. The number of developing countries observed is 10 for all variables and the data are precisely balanced.

3.4 Emperical Specification

The thesis utilized panel data to analyze the impacts of Covid on economic environments environments of developing countries. By combining time-series and cross-sectional data, a panel dataset was created, which provided a more comprehensive and insightful analysis compared to using only cross-sectional or time-series data. Panel data offers advantages such as increasing the sample size and allowing for a more in-depth examination of analytical questions.

The fixed effects regression model was chosen for this thesis as it permits each cross-sectional unit to have a unique intercept. This model helps to address bias caused by unobserved heterogeneity.. By including fixed effects, the model reduces bias resulting from time-invariant omitted variables that may affect the analysis. Studenmund (2013) supports the use of this model as it provides a more robust approach to analyzing panel data.

$$Y_{it} = \beta_0 + \beta_1 * X_{it} + \beta_2 * Z_{it} + \alpha_i + \varepsilon_{it}$$

Where:

Y_{it} represents the dependent variable, which is economic growth in this case.

X_{it} represents the independent variable, which is the dummy variable for COVID-19.

Z_{it} represents the control variables, which include the unemployment rate and inflation rate.

α_i represents the country fixed effects, capturing the specific effects of each country that are constant over time.

β_0 represents the intercept or constant term of the regression model.

β_1 , β_2 , and so on represent the coefficients or slopes associated with the independent and control variables.

ε_{it} represents the error term, capturing the unobserved factors and random variability in the model.

In this fixed effects panel regression equation, the country fixed effects (α_i) account for the individual differences across countries that are not time-varying. The inclusion of fixed effects helps to control for country-specific heterogeneity and focus on the within-country variations over time.

3.4 Description of the Statistical Software Used for Analysis

For the data analysis, we will utilize EViews, a widely used statistical software package that is well-suited for econometric analysis. EViews provides a comprehensive set of tools for data management, regression analysis, and result interpretation, making it an appropriate choice for this study.

This chapter plays a crucial role in establishing the foundation and framework for conducting a research study. This chapter outlined the research design, data collection methods, and data analysis techniques employed in investigating the overall impact of COVID-19 on the economy of developing countries and understanding their responses in terms of economic policies and interventions. The methodology was guided by the research questions and objectives, ensuring the collection of relevant data and the use of appropriate statistical techniques for analysis.

In conclusion, the methodology chapter has provided a clear and well-justified research design, data collection procedures, and data analysis techniques for investigating the overall impact of COVID-19 on the economy of developing countries. The selected variables and statistical methods align with the research questions, ensuring a comprehensive exploration of the economic consequences of the pandemic. The methodology provides a solid foundation for conducting the study and generating meaningful insights that can contribute to the understanding of the economic implications of COVID-19 and inform policy interventions in developing countries

CHAPTER 04 : Emperical results and analysis

4.1 Multicollinearity.

Multicollinearity was assessed to enhance the analysis of this study. Studenmund (2013) suggests that one can identify multicollinearity by examining the simple correlation coefficients, which test the strength and direction of linearity (positive or negative) between independent variables. The simple correlation coefficient ranges from +1 to -1, with values closer to +1 indicating a higher correlation. Multicollinearity becomes problematic when the simple correlation coefficient exceeds the "arbitrary number" of 0.80. According to Studenmund (2013), the coefficient is considered high if it leads to unacceptably large variances in the coefficient estimates that are of interest.

To summarize, in order to detect multicollinearity, the study examined the simple correlation coefficients between independent variables, with a coefficient exceeding 0.80 indicating a potential issue. This approach was employed to assess the impact of multicollinearity on the variance of coefficient estimates.

Table 4: correlation table for all the variables

Variables	GDPchange	DUMMYcov	Unempl	Infl
GDPchange	1.000			
DUMMYcov	-0.223	1.000		
Unempl	-0.309	0.110	1.000	
Infl	-0.121	0.118	-0.003	1.000

The table above shows the findings after testing for multicollinearity. According to the results, there is no observable multicollinearity between the variables in this study; all the simple correlation coefficients are under 0.50.

4.2 Main results

Regression results

The table below shows the results found for this thesis. It displays the estimated coefficient and the t-statistics for each variable using of panel data with a fixed effects model.

Table 5 : Regression results for period 2012-2021

Dependent variable		GDP growth		
Variables	Estimated coefficient	Std.Err.	t-statistic	P.value
Constant	6.98	1.242	5.617	0.00
Unempl	-0.399	0.141	-2.176	0.0053
Infl	-0.0087	0.018	-0.482	0.6299
Dummycov	-1.575	0.723	-2.176	0.0308

Note: $p < 0.05 = **$

R-squared	0.266
Prob>F	2.92
Observations	200

4.3 Analysis of the results

Table 5 shows the results of 200 observations, The findings of the fixed effects regression model reveal important insights into the impact of the COVID-19 pandemic on the economies of developing countries.

The estimated coefficient of the dummy variable representing the COVID-19 pandemic is -1.575, with a statistically significant p-value of 0.0308. This suggests that the presence of the pandemic has a negative impact on economic growth. The negative coefficient indicates that countries affected by the pandemic experienced lower economic growth rates compared to periods without the pandemic.

Furthermore, the coefficient for the unemployment rate variable is -0.399, with a statistically significant p-value of 0.0053. This indicates that higher unemployment rates are associated with lower economic growth in developing countries. This finding aligns with expectations, as the pandemic led to job losses and increased unemployment rates in many countries.

However, the inflation rate variable does not exhibit a statistically significant impact on economic growth, as indicated by its coefficient of -0.0087 and a p-value of 0.6299. This suggests that inflation rates do not have a substantial influence on the economic performance of developing countries during the analyzed period.

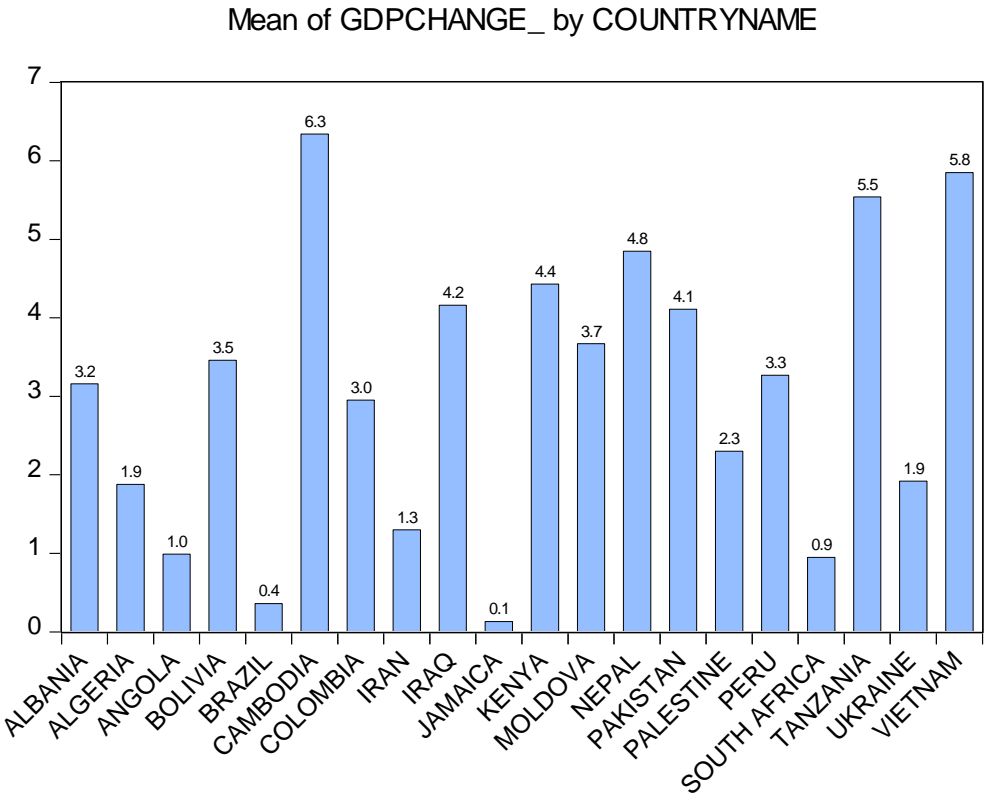
The R-squared value of 0.266 indicates that the model explains approximately 26.6% of the variation in economic growth among the developing countries. This implies that there are other factors beyond the variables included in the model that contribute to the economic performance of these countries.

Overall, the results support the hypothesis that the COVID-19 pandemic has had a significantly negative impact on the economies of developing countries. The presence of the pandemic and

higher unemployment rates are associated with lower economic growth. However, inflation rates do not appear to have a significant effect on economic growth during the analyzed period.

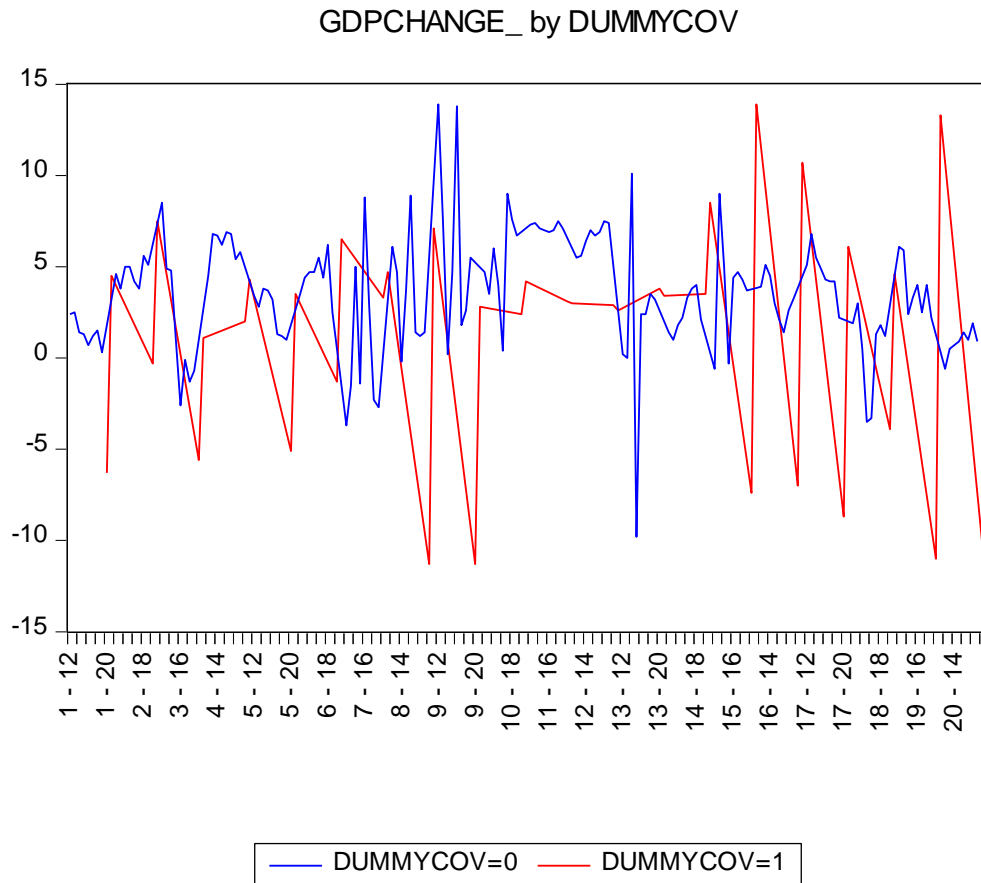
4.4 Additional analysis (graphical analysis)

Fig 11 GDP Growth change (source: Eviews 10 Output)



The results of the bar graph represent GDP growth (Mean) for all the developing countries employed in this study. We can clearly visualize countries that had the largest share of GDP change during the period of study

Fig 12. Covid impact on Economic growth(source: Eviews 10 output)

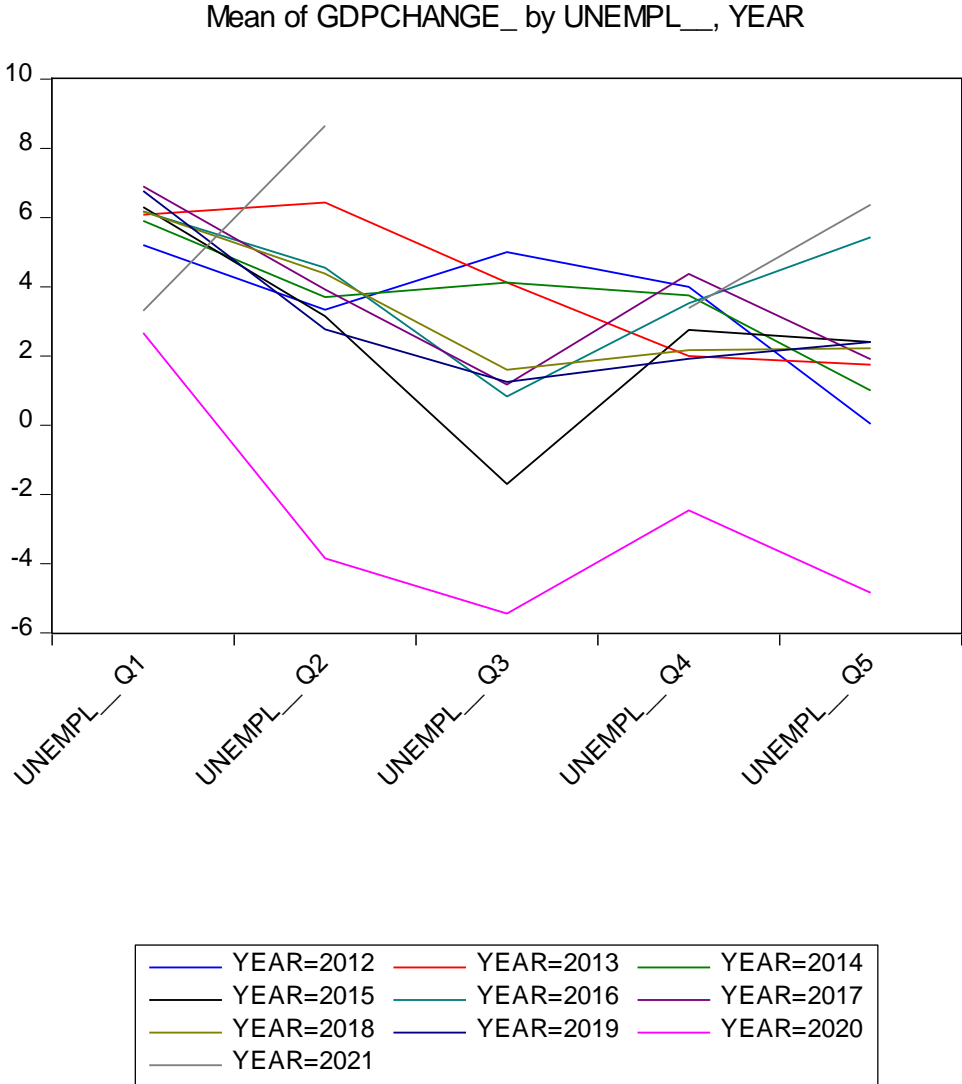


The graphical representation of the regression results provides a visual depiction of the relationship between the presence of the COVID-19 pandemic (represented by the dummy variable) and economic growth in developing countries. In the graph, the absence of the COVID-19 pandemic is denoted by a value of 0 for the dummy variable, while the presence of the pandemic is represented by a value of 1.

The graph clearly demonstrates the impact of the COVID-19 pandemic on economic growth, as indicated by the negative values of the Dummy Covid variable. This suggests that countries experiencing the presence of the pandemic have lower economic growth rates compared to periods without the pandemic. The downward trend in economic growth is a reflection of the adverse effects of the pandemic on various sectors, such as reduced consumer spending, disrupted supply chains, and decreased business activities.

The negative values of the Dummy Covid variable on the graph serve as a visual confirmation of the hypothesis that the COVID-19 pandemic has had a significantly negative impact on the economies of developing countries. The downward trajectory of the graph underscores the challenges faced by these countries in maintaining economic growth and stability in the face of the pandemic.

Fig. 13 Employment impact on Economic growth(mean) (source : Eviews 10 output)



The graph depicting the relationship between unemployment rate and economic growth provides insights into how changes in the former impact the latter. The graph presents the mean values of

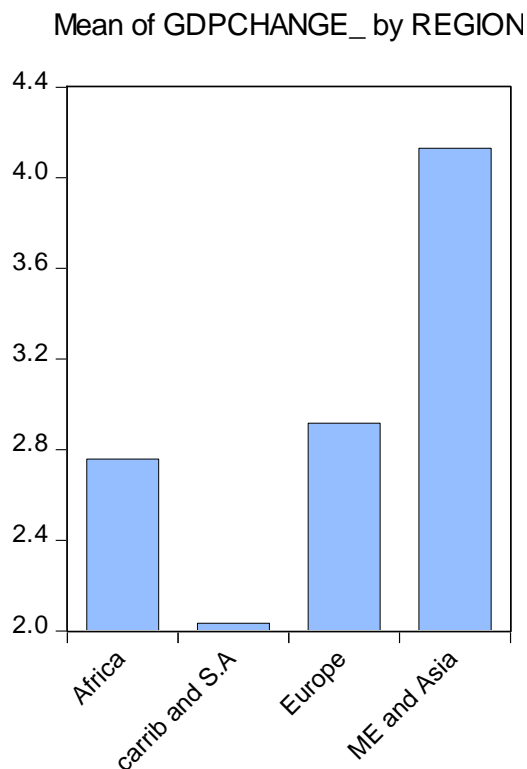
the variables over the study period from 2012 to 2021, allowing for an analysis of trends and patterns.

Notably, the graph shows a distinct shift in the relationship between unemployment rate and economic growth during the period affected by the COVID-19 pandemic, which is clearly demonstrated by the sharp decline in economic growth. In particular, the year 2020 stands out as a significant turning point, coinciding with the onset of the pandemic and the subsequent economic disruptions it caused.

Prior to 2020, the graph indicates a relatively stable relationship between unemployment rate and economic growth, with fluctuations occurring within a certain range. However, in 2020, when the pandemic led to widespread business closures, job losses, and economic uncertainty, the graph reveals a substantial increase in the unemployment rate and a corresponding decline in economic growth.

The negative impact of the COVID-19 pandemic on economic growth is evident from the sharp downward trend in the graph during the pandemic period. This indicates that higher levels of unemployment are associated with lower economic growth rates, as businesses struggled to operate, investments declined, and consumer spending contracted. The graph reinforces the hypothesis that the COVID-19 pandemic had a detrimental effect on the labor market and subsequently influenced the overall economic performance of the developing countries under study.

Fig 14. mostly affected regions (mean) (source : Eviews 10 output)



The bar graph displays the mean values of GDP change across different regions during the specified period of study. It provides insights into the impact of the COVID-19 pandemic on economic growth in developing countries.

Africa had a mean GDP change of 2.7, indicating a moderate level of economic impact. The Caribbean and South America region experienced a slightly larger negative impact with a mean GDP change of 2.1. Europe demonstrated a milder impact with a mean GDP change of 3, while the Middle East and Asia region showed stronger economic resilience with a mean GDP change of 4.2.

The graph highlights the regional variations in the effects of the pandemic on economic growth. Further analysis could explore the underlying factors contributing to these differences and inform targeted policy interventions.

CHAPTER 5. Discussion

The objective of this study was to examine the impacts of the COVID-19 pandemic on the economic environments of developing countries. The research questions focused on understanding the overall impact of the pandemic on these economies and exploring the responses and interventions employed by the countries to mitigate its consequences. The study also formulated a hypothesis that predicted a significantly negative impact of the pandemic on the economies of developing countries.

The findings of the fixed effects panel regression model provide important insights into the relationship between the pandemic and economic growth in the selected developing countries. The coefficient for the dummy variable representing the presence of COVID-19 was found to be statistically significant and negative. This indicates that the pandemic had a detrimental effect on economic growth in these countries during the study period. The results align with prior research Dzansi et al.(2021) and Beyer et al. (2021) and confirm the hypothesis that the COVID-19 pandemic has had a significant negative impact on the economies of developing countries.

The control variables, namely the unemployment rate and inflation rate, were included to account for their potential influence on economic growth. The regression results showed a statistically significant negative coefficient for the unemployment rate, indicating that higher levels of unemployment were associated with lower economic growth during the pandemic. This suggests that the disruptions in labor markets caused by the pandemic had a significant adverse effect on economic performance, Takyi et al. (2022). However, the inflation rate did not show a statistically significant relationship with economic growth, suggesting that inflationary pressures may not have played a significant role in shaping the economic outcomes during the study period.

The R-squared value of 0.266 indicates that the model explains approximately 26.6% of the variation in economic growth observed in the developing countries studied. This suggests that there are other factors beyond the variables included in the model that contribute to the economic performance of these countries during the pandemic. Further research could explore additional variables such as government policies, fiscal measures, and external shocks to provide a more

comprehensive understanding of the determinants of economic growth in the context of the COVID-19 pandemic.

It is important to note that while the fixed effects model provides insights into the overall impact of the pandemic on economic growth, conducting individual country analyses is crucial for understanding the specific effects and policy implications at the country level. The variation in the magnitude and significance of the coefficients across countries underscores the heterogeneity in economic contexts and policy responses. It highlights the need for tailored policy measures that address the unique challenges faced by each country in mitigating the economic impacts of the pandemic.

5.1 Recommendations for policy makers

Based on the findings and analysis conducted in this study, the following policy recommendations are suggested to address the impacts of the COVID-19 pandemic on the economic environments of developing countries

:

Fiscal Policy:

Implement targeted fiscal stimulus packages to support sectors most affected by the pandemic, such as tourism, hospitality, and small businesses.

Enhance public investment in infrastructure projects to stimulate economic growth and create job opportunities.

Prioritize expenditure on healthcare systems and social safety nets to ensure the well-being of the population during and after the crisis.

Monetary Policy:

Maintain an accommodative monetary policy stance to support credit availability and liquidity in the financial system.

Monitor and address any potential risks to financial stability, such as increasing non-performing loans and liquidity constraints.

Coordinate with central banks of other countries to ensure global monetary stability and exchange rate management.

Structural Reforms:

Implement structural reforms to promote economic diversification and reduce dependency on specific sectors.

Foster innovation and entrepreneurship by providing support and incentives for research and development activities.

Invest in digital infrastructure and technology adoption to enhance productivity and competitiveness.

Social Policies:

Strengthen social protection systems to provide a safety net for vulnerable populations, including the unemployed, informal workers, and low-income households.

Invest in education and skills development programs to enhance human capital and improve the employability of the workforce.

Promote gender equality and social inclusion by implementing policies that address the disproportionate impacts of the pandemic on women and marginalized groups.

International Cooperation:

Engage in international forums and platforms to share experiences, best practices, and lessons learned from managing the pandemic and its economic consequences.

Seek financial and technical assistance from international organizations and development partners to support recovery and sustainable development efforts.

Advocate for fair and inclusive global economic governance, promoting the interests of developing countries and ensuring their participation in decision-making processes.

It is important for policymakers to consider these recommendations in the formulation and implementation of policies aimed at mitigating the effects of the COVID-19 pandemic, supporting economic recovery, and building resilient and sustainable economies in developing countries

Chapter 06 :Summary and conclusion

The COVID-19 pandemic has had a profound impact on the economies of developing countries, necessitating an investigation into the consequences of the pandemic and the measures taken by these countries to address the challenges. This study aimed to assess the overall impact of the pandemic on developing economies and investigate their responses in terms of economic policies and interventions. By examining these aspects, the study sought to provide a comprehensive understanding of the effects of the pandemic on developing economies and the measures taken to mitigate its consequences.

To address the research questions, a fixed effects regression model was applied to panel data from 20 developing countries. This model allowed for an analysis of the relationship between the COVID-19 pandemic, economic growth (dependent variable), and the control variables of unemployment and inflation rates. The fixed effects approach, which accounts for time-invariant country-specific factors, was chosen to control for unobserved heterogeneity among the countries in the panel.

The findings of the fixed effects regression model revealed important insights into the impact of the COVID-19 pandemic on the economies of developing countries. The estimated coefficient of the dummy variable representing the COVID-19 pandemic was -1.575, with a statistically significant p-value of 0.0308. This suggests that the presence of the pandemic had a negative impact on economic growth. Countries affected by the pandemic experienced lower economic growth rates compared to periods without the pandemic.

Furthermore, the coefficient for the unemployment rate variable was -0.399, with a statistically significant p-value of 0.0053, indicating that higher unemployment rates were associated with lower economic growth in developing countries. This finding aligns with expectations, as the pandemic led to job losses and increased unemployment rates in many countries. On the other hand, the inflation rate variable did not exhibit a statistically significant impact on economic growth during the analyzed period. The coefficient for the inflation rate variable was -0.0087, with a p-value of 0.6299.

The R-squared value of 0.266 indicates that the model explains approximately 26.6% of the variation in economic growth among the developing countries. This implies that there are other factors beyond the variables included in the model that contribute to the economic performance of these countries.

6.1 Limitations

Despite the contributions made, there are several limitations that should be acknowledged.

Firstly, the sample size of this study was limited to 20 developing countries, which may not be fully representative of all developing economies globally. Future researchers could expand the sample size to include a more diverse set of countries, taking into account different regions and income levels, to obtain a more comprehensive understanding of the impacts of COVID-19 on economic growth.

Secondly, the time frame of the study, covering the period from 2012 to 2021, may have overlooked other important economic events or policy changes that could have influenced the results. Future research could consider extending the time frame or conducting a longitudinal study to capture a broader range of economic dynamics and identify long-term effects.

Furthermore, the study focused on a limited set of independent variables, namely the dummy variable for COVID-19, unemployment rate, and inflation rate. There may be other factors that could significantly impact economic growth during the pandemic, such as government interventions, fiscal policies, and trade patterns. Future researchers could explore the inclusion of additional variables to provide a more comprehensive analysis of the factors influencing economic outcomes during crises.

Lastly, while the fixed effects regression model was employed in this study, alternative econometric models, such as random effects or instrumental variable approaches, could be considered in future research to validate the findings and provide further robustness to the estimations.

In light of these limitations, future researchers could address these gaps by conducting more comprehensive studies with larger sample sizes, longer time frames, and more diverse sets of variables. Additionally, exploring different econometric models and methodologies would enhance the rigor and validity of the research findings.

By considering these limitations and suggestions for future research, scholars can build upon the findings of this study and contribute to a deeper understanding of the impacts of the COVID-19 pandemic on developing economies. This would provide policymakers with more accurate and relevant insights to design effective policies and interventions to mitigate the adverse effects of crises and foster sustainable economic development in the future.

This research opens up several avenues of research that can further enhance our understanding of the impacts of the COVID-19 pandemic on developing economies. These avenues can contribute to policy formulation and decision-making processes aimed at mitigating the negative effects of future crises and fostering sustainable economic growth.

Firstly, further investigation into the effectiveness of different government interventions and policies is warranted. The COVID-19 pandemic necessitated unprecedented measures by governments worldwide, such as fiscal stimulus packages, monetary policy adjustments, and social protection measures. Assessing the efficacy of these interventions in supporting economic recovery and building resilience can provide valuable insights for policymakers. For example, future research could explore the specific elements of successful policy responses and identify the conditions under which they have the greatest impact. This could inform the development of targeted policy measures that address the unique challenges faced by developing countries.

Secondly, studying the differential effects of the pandemic across various sectors would contribute to a deeper understanding of the specific challenges faced by different industries. The pandemic has disproportionately impacted sectors such as tourism, manufacturing, and services, leading to disruptions in global value chains and supply networks. Examining the specific dynamics and vulnerabilities of these sectors within developing countries can provide insights into the required interventions to facilitate their recovery. This research could inform policy decisions regarding sector-specific support, skill development, and diversification strategies.

Thirdly, exploring the role of technology and digitalization in mitigating the economic impact of the pandemic is essential. The crisis has accelerated digital transformations, with increased reliance on remote work, e-commerce, and digital platforms. Investigating the extent to which developing countries were able to leverage technological advancements to adapt and recover from the pandemic can provide valuable lessons. Understanding the barriers and opportunities for technological adoption and the implications for inclusive growth and sustainable development will be crucial for future preparedness and resilience.

Furthermore, considering the socio-political factors that influence economic outcomes during crises is another avenue for research. Political stability, governance structures, and social cohesion can significantly impact a country's ability to navigate economic challenges. Exploring the interactions between these factors and economic performance can help identify strategies to strengthen institutions, improve governance, and foster social cohesion, ultimately contributing to more resilient and sustainable development pathways.

Lastly, incorporating a longer-term perspective in analyzing the economic impacts of the pandemic is crucial. While this study focused on the short-term effects, the long-term consequences of the pandemic are still unfolding. Future research could track the recovery trajectories of developing countries and assess the durability of their economic rebound. Additionally, analyzing the potential scarring effects, such as long-term unemployment, reduced productivity, and increased inequality, can provide insights into the persistent challenges that may hinder sustainable development.

6.2 Conclusion

In conclusion, this study confirms the significantly negative impact of the COVID-19 pandemic on the economies of developing countries. The presence of the pandemic and higher unemployment rates were found to be associated with lower economic growth. However, it is important to acknowledge the limitations of this study and the need for further research to encompass a broader range of countries, consider longer-term effects, incorporate additional factors, and explore sector-specific dynamics. By addressing these research gaps, we can gain a more comprehensive understanding of the challenges faced by developing economies and devise effective strategies to support their recovery and long-term development. Ultimately, such

knowledge can contribute to building more resilient and inclusive economies that are better equipped to withstand future crises and promote sustainable development for all.

ANNEXES

CORRELATION

	GDPCHANGE_	DUMMYCOV	UNEMPL_	INFL_
GDPCHANGE_	1	-0.2233363...	-0.3093645...	-0.1219637...
DUMMYCOV	-0.2233363...	1	0.11048895...	0.11863432...
UNEMPL_	-0.3093645...	0.11048895...	1	-0.0030080...
INFL_	-0.1219637...	0.11863432...	-0.0030080...	1

REGRESSION RESULT

Dependent Variable: GDPCHANGE_

Method: Panel Least Squares

Date: 06/02/23 Time: 08:16

Sample: 2012 2021

Periods included: 10

Cross-sections included: 20

Total panel (balanced) observations: 200

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DUMMYCOV	-1.575936	0.723982	-2.176761	0.0308
UNEMPL_	-0.399735	0.141528	-2.824414	0.0053
INFL_	-0.008731	0.018087	-0.482721	0.6299
C	6.980310	1.242515	5.617889	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.266392	Mean dependent var	3.081000
Adjusted R-squared	0.175209	S.D. dependent var	4.182428
S.E. of regression	3.798397	Akaike info criterion	5.614867
Sum squared resid	2553.724	Schwarz criterion	5.994174
Log likelihood	-538.4867	Hannan-Quinn criter	5.768367
F-statistic	2.921517	Durbin-Watson stat	2.350139
Prob(F-statistic)	0.000047		

DESCRIPTIVE STATISTICS

	GDPCHANGE_	DUMMYCOV	UNEMPL_	INFL_
Mean	3.081000	0.200000	8.801500	7.543000
Median	3.500000	0.000000	8.750000	4.300000
Maximum	13.90000	1.000000	28.80000	225.8000
Minimum	-11.30000	0.000000	0.100000	-0.700000
Std. Dev.	4.182428	0.401004	6.435302	17.28955
Skewness	-0.887420	1.500000	1.052473	10.37601
Kurtosis	5.396132	3.250000	3.832202	128.7460
Jarque-Bera Probability	74.09588 0.000000	75.52083 0.000000	42.69468 0.000000	135356.0 0.000000
Sum	616.2000	40.00000	1760.300	1508.600
Sum Sq. Dev.	3481.048	32.00000	8241.210	59486.79
Observations	200	200	200	200

Economic growth in developing countries

Table 06 : Average change for all variables for period 2012-2021

Country	GDPGrowth	Dummycovid	Unempl.rate	Inflation rate
South Africa	0.95	0.2	24.01	5.03
Kenya	4.43	0.2	3.79	6.43
Angola	0.99	0.2	9.49	38.11
Tanzania	5.54	0.2	2.47	6.01
Algeria	1.88	0.2	10.75	4.78
Pakistan	4.11	0.2	3.97	6.99
Iran	1.3	0.2	11.3	24.01
Palestine	2.3	0.2	21.61	0.95
Iraq	4.16	0.2	12.41	1.35
Nepal	4.85	0.2	10.97	6.61
Cambodia	6.34	0.2	0.36	2.7
Vietnam	5.85	0.2	1.67	7.48
Ukraine	1.92	0.2	8.82	12.05
Albania	3.16	0.2	14.32	1.77
Moldova	3.67	0.2	4.2	5.36
Colombia	2.95	0.2	10.11	3.76
Bolivia	3.46	0.2	3.69	3.32
Brazil	0.36	0.2	10.62	5.79
Peru	3.77	0.2	3.99	2.99
Jamaica	0.13	0.2	7.49	5.2

Table 07 : Avarage change for all the regions

Region	GDPGrowth	Dummycovid	Unempl.rate	Inflation rate
Africa	2.758	0.2	10.102	12.072
Middle East & Asia	4.13	0.2	8.898	7.155
Europe	2.916	0.2	9.113	6.393
Caribbean & SouthAmeric	2.034	0.2	7.178	4.246

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ABSTRACT :

Title: The Impacts of COVID-19 on Economic Environments of Developing Countries.
A Panel Data Analysis

Author : MOTHOLO SEOTLA

This study investigates the impacts of the COVID-19 pandemic on the economic environments of developing countries. Using panel data from 20 developing countries spanning the period from 2012 to 2021, a fixed effects regression model is employed to analyze the relationship between the pandemic and economic growth. The dependent variable is GDP growth, representing economic performance, while the independent variable is a dummy variable indicating the presence of the COVID-19 pandemic. Additionally, unemployment rate and inflation rate are included as control variables.

The findings reveal that the COVID-19 pandemic has had a significantly negative impact on the economies of developing countries. Countries affected by the pandemic experienced lower economic growth rates compared to periods without the pandemic. Higher unemployment rates were associated with lower economic growth, while inflation rates did not exhibit a significant influence on economic performance during the analyzed period.

Keywords: COVID-19, economic environments, developing countries, panel data analysis, economic growth, unemployment rate, inflation rate.

RÉSUMÉ :

Titre : Les impacts de la COVID-19 sur les environnements économiques des pays en développement. Une analyse de données de panel.

Auteur : MOTHOLO SEOTLA

Cette étude examine les impacts de la pandémie de la COVID-19 sur les environnements économiques des pays en développement. En utilisant des données de panel provenant de 20 pays en développement sur la période de 2012 à 2021, un modèle de régression à effets fixes est utilisé pour analyser la relation entre la pandémie et la croissance économique. La variable dépendante est la croissance du PIB, représentant la performance économique, tandis que la variable indépendante est une variable factice indiquant la présence de la pandémie de la COVID-19. De plus, le taux de chômage et le taux d'inflation sont inclus en tant que variables de contrôle. Les résultats révèlent que la pandémie de la COVID-19 a eu un impact significativement négatif sur les économies des pays en développement. Les pays touchés par la pandémie ont connu des taux de croissance économique plus bas par rapport aux périodes sans pandémie. Des taux de chômage plus élevés étaient associés à une croissance économique plus faible, tandis que les taux d'inflation n'ont pas exercé une influence significative sur la performance économique pendant la période analysée.

Mots-clés : COVID-19, environnements économiques, pays en développement, analyse de données de panel, croissance économique, taux de chômage, taux d'inflation.

