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ECONOMIC GROWTH IN MUSLIM AND NON-MUSLIM COUNTRIES DURING THE COVID-19 PANDEMIC: A COMPARATIVE ANALYSIS

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ABSTRACT – The COVID-19 pandemic has led to an economic downturn, compelling numerous businesses to curtail their production and consumption. In response, countries worldwide have initiated various incentive policies to promote economic recovery. This research delves into the ramifications of the COVID-19 pandemic on the economic growth of selected Muslim and non-Muslim nations. The study employs panel data from 15 member nations of the Organization of Islamic Cooperation (OIC) and 15 members of the Group of Twenty (G20) spanning from 2019 to 2021. Utilizing the Least Square Panel Method approach, it was found that the pandemic has significantly and negatively impacted economic growth across all sampled countries during the testing period, with a confidence level of 95%. Interestingly, non-Muslim countries experienced a more profound impact compared to their Muslim counterparts. Moreover, mobility restriction policies implemented during 2020-2021 negatively affected economic growth, while the COVID-19 mortality rate showed no significant impact. Specifically, these mobility restrictions significantly impeded economic growth in non-Muslim countries at a 99% confidence level but did not significantly affect Muslim countries. The study also revealed that imports had a negative impact on economic growth in Muslim countries at a 95% confidence level. Conversely, inflation positively influenced economic growth in non-Muslim countries with a similar confidence level.
Keywords: Economic Growth, COVID-19 Pandemic, Stringency Index, Mobility Policy, COVID-19 Death

ABSTRAK – Pertumbuhan Ekonomi di Negara Muslim dan non-Muslim pada Masa Pandemi COVID-19: Suatu Analisis Komparatif. *COVID-19 telah menyebabkan penurunan ekonomi yang memaksa banyak bisnis mengurangi proses produksi dan tingkat konsumsinya. Sebagai respons, negara-negara yang terdampak kemudian melakukan inisiasi kebijakan insentif untuk mendorong perbaikan ekonomi. Penelitian ini bertujuan untuk mengkaji dampak pandemi COVID-19 terhadap pertumbuhan ekonomi di sejumlah negara-negara Muslim dan Non-Muslim. Studi ini menggunakan data panel dari 15 negara anggota OKI dan 15 negara anggota G20 dari tahun 2019 hingga 2021. Dengan menggunakan pendekatan* Least Square Panel Method*, kajian ini menunjukkan bahwa secara umum pandemi COVID-19 berdampak negatif dan signifikan terhadap pertumbuhan ekonomi pada tingkat kepercayaan 95% di seluruh negara sampel selama periode pengujian. Ketika diuji secara terpisah, pandemi berdampak lebih besar terhadap negara-negara non-Muslim berbanding dengan negara-negara Muslim. Selanjutnya, kebijakan pembatasan mobilitas berpengaruh negatif dan signifikan terhadap pertumbuhan ekonomi dalam periode 2020-2021, sedangkan tingkat kematian akibat COVID-19 tidak berpengaruh secara signifikan. Secara khusus, kebijakan pembatasan mobilitas mempengaruhi pertumbuhan ekonomi di negara-negara non-Muslim secara signifikan pada tingkat kepercayaan 99% tetapi tidak berpengaruh signifikan di negara-negara Muslim. Selain itu, ditemukan pula bahwa impor secara khusus berpengaruh negatif dan signifikan terhadap pertumbuhan ekonomi di negara-negara muslim sebesar 95%. Selain itu, ditemukan juga bahwa impor secara khusus berpengaruh negatif dan signifikan terhadap pertumbuhan ekonomi di negara-negara muslim pada tingkat kepercayaan 95%, sedangkan inflasi berpengaruh positif dan signifikan terhadap pertumbuhan ekonomi di negara-negara non-muslim pada tingkat kepercayaan 95%.*
Kata Kunci: *Pertumbuhan Ekonomi, Pandemi COVID-19, Indeks Pengetatan, Kebijakan Mobilitas, Kematian COVID-19*

INTRODUCTION

The COVID-19 pandemic has exerted a profound and enduring influence on the economies of nations worldwide. Its consequences leave a lasting imprint, diminishing the capabilities and developmental prospects of countries, with repercussions that are not easily reversible (Chowdhury & Jomo, 2020). In particular, the persistent nature of this health crisis extends beyond traditional measures, potentially resulting in long-term and far-reaching consequences for the global economy. Many nations continue to grapple with the relentless waves of infection, exacting a toll on both lives and livelihoods over an extended period.

The Congressional Research Service Report of 2021 underscores that the pandemic has disrupted communities and economies across most countries, adversely affecting international economic growth (Weiss et al., 2020). Various measures have been implemented to curtail the virus's spread and mitigate its impact on society and the economy. However, by mid-August 2020, the global tally of COVID-19 cases had surpassed 20 million, with confirmed deaths exceeding 700,000 and showing no signs of abating. As of March 2021, over one hundred million people worldwide had been infected by the virus, and the death toll had surpassed 2.2 million.

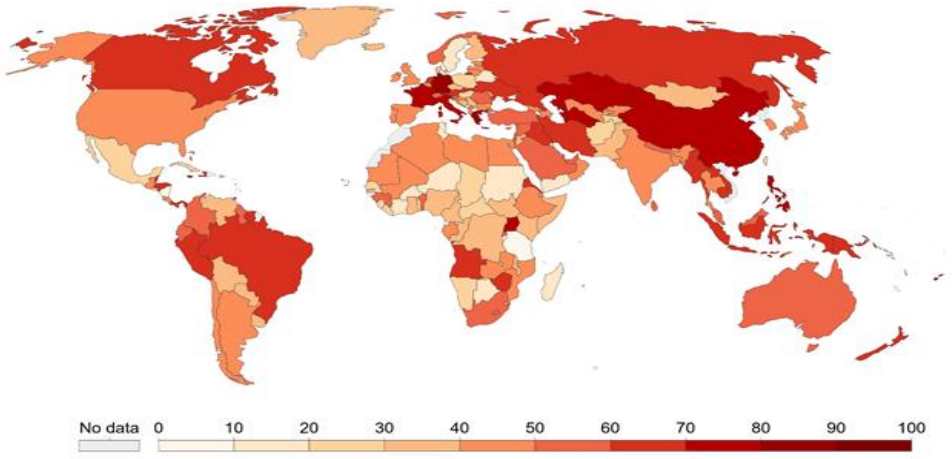

Figure 1. COVID-19 Stringency Index, December 29, 2021
Source: ourworldindata.org/coronavirus

Most countries have implemented mobility restrictions to curb the spread of COVID-19, a fact substantiated by Oh et al. (2021) who reported a significant decrease in the range of new COVID-19 cases by at least 20-40% due to mobility reduction. However, the effectiveness of these mobility restrictions

has been most pronounced during the early stages of the epidemic and less impactful in its later phases. Figure 1 presents the COVID-19 durability indicator, a composite measure primarily based on nine response indicators, including school closures, workplace shutdowns, and travel restrictions, with values ranging from zero (least strict) to one hundred (strictest).

The correlation between human mobility and economic activity intensity is well-established, as highlighted by Li et al. (2020) and Putra and Arini (2020), who have identified a strong relationship between mobility and economic performance indicators such as GDP. Restrictions on mobility can lead to economic recession, with the strictest and prolonged limitations more likely to result in a decline in GDP, as noted by Canals et al. (2020). According to the International Monetary Fund (IMF), the global economy contracted by 3.5% in 2020, accompanied by a 5.3% decline in world trade, marking the most severe economic downturn since World War II (IMF, 2020). The global health crisis has forced temporary closures of businesses and disrupted economic operations and financial market dynamics. In light of these circumstances, Figure 2 illustrates the impending and devastating economic repercussions of the epidemic.

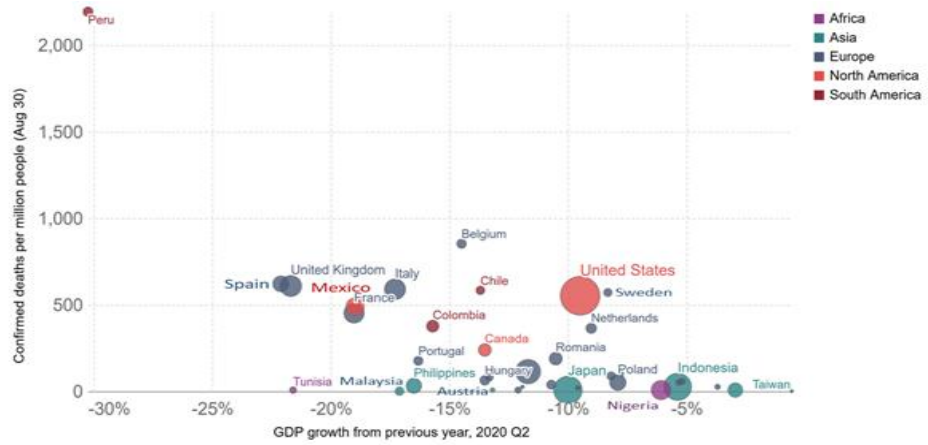

Figure 2. Economic Decline and the Death Confirmed Rate (Quarter II, 2020)
Source: ourworldindata.org

Mahayosnand et al. (2021) underscored a striking divergence: non-Muslim nations have documented thrice as many COVID-19 cases and 1.86 times more fatalities related to the virus than most Muslim nations. As of August 2020, 44 Islamic nations had reported a total of 2,435,647 COVID-19 cases and 60,397 deaths related to the virus. Nonetheless, it is crucial to recognize that testing

rates in countries with a Muslim majority remain generally low. Moreover, there are significant variations in the onset and progression of the disease, with many Muslim nations in sub-Saharan Africa still in the early stages of the COVID-19 outbreak in comparison to other Islamic nations (Jardine et al., 2020).

Given the lethal and infectious nature of COVID-19, the primary preventive measure to shield the entire populace is vaccination. In December 2020, official Islamic religious institutions in Egypt and the United Arab Emirates issued fatwas sanctioning the COVID-19 vaccination policy, deeming it a "legal" obligation for every citizen, even if the vaccine contains non-halal ingredients. This approach is endorsed when no other viable alternative exists, with consensus among most Muslim legal scholars from the Hanafi, Maliki, and Hanbali Schools of Islamic *fiqh* (jurisprudential thought) (‘Arafa, 2021).

Eighteen months post the advent of the COVID-19 pandemic, the global economy is on the brink of recovery, albeit with uneven progress anticipated across nations. Advanced economies are expected to rebound robustly, while many developing economies may lag. Despite this economic resurgence, global GDP in 2021 is projected to remain 3.2% below pre-pandemic forecasts, with GDP per capita in numerous emerging and developing countries likely to linger below pre-pandemic COVID-19 levels for a prolonged period. These economies also face the risk of enduring long-term pandemic-induced effects, including employment and education losses, substantial reductions in investment, heightened debt burdens, and increased financial vulnerabilities. Moreover, global inflation is predicted to rise as the economy rebounds (WorldBank, 2021).

There has been limited prior research on the impact of the COVID-19 pandemic on economic growth. According to Sánchez (2021) in the Federal Reserve Bank’s website, middle-income nations have experienced the most significant decline in their gross domestic product (GDP) growth, followed by high-income nations. Therefore, the objective of this study is to assess the effects of COVID-19 on the economic growth rates of both Muslim and non-Muslim nations. This paper also offers a comprehensive comparison of how macroeconomic variables and COVID-19-related factors have influenced the economic growth of Muslim and non-Muslim nations. This research makes a substantial contribution, particularly in illuminating the economic challenges encountered by both Muslim and non-Muslim nations during the pandemic.

While there has been an abundance of studies examining the pandemic's economic impact, there remains a gap due to the limited number of studies that directly compare the experiences of developing Muslim nations with predominantly developed non-Muslim nations.

The structure of this paper is as follows: the initial section presents a succinct summary of key facts and background information. The subsequent section outlines the research methodology, incorporating economic models. The third section elucidates the principal findings and discusses their implications, followed by the conclusions.

LITERATURE REVIEW

The COVID-19 Pandemic and Macroeconomic Performance

The World Health Organization (WHO) proclaimed a global emergency in light of the COVID-19 outbreak, which escalated into a global pandemic in March 2020. COVID-19, the novel infectious malady, was initially identified in Wuhan, China, in December 2019 (Cucinotta & Vanelli, 2020). Throughout the year 2020, COVID-19 claimed numerous lives, afflicted millions, and profoundly reshaped the global economy, casting a looming shadow over our collective socioeconomic prospects (UN, 2020). Forecasts from the United Nations Secretary-General indicate that approximately 170 nations will experience a per capita decline in GDP growth compared to their 2019 projections, signifying a burgeoning global economic loss surpassing $12 billion over a two-year period (2020–21) (IMF, 2020).

COVID-19's rapid global spread has prompted governments worldwide to grapple with containment strategies. This pandemic represents an unprecedented challenge to the world economy, with escalating case numbers triggering a severe recession. The surge in COVID-19 cases has reverberated across the global economy, especially impacting sectors like transportation, tourism, trade, and healthcare. Various countries have resorted to lockdown policies to curb the virus's spread, disrupting economic activities and exerting pressure on future global economic growth. Susilawati et al. (2020) have conducted a statistical analysis, employing a descriptive approach to examine the sectors affected during the COVID-19 pandemic in Indonesia. Their graphical representations encompass GDP trends, causes of export and import declines, import percentages in Indonesia, and economic losses involving variables such as labor, inflation, and imports.

Oeliestina (2021) has discerned the far-reaching implications of the COVID-19 pandemic on the social, political, and economic realms, significantly impacting countries like the United States, Singapore, Germany, France, and Italy, primarily due to population restrictions. The study investigates the impact of the pandemic on Indonesia's national economy, revealing that the COVID-19 pandemic has affected 17 distinct sectors, with transportation, lodging, food and beverages, tourism, and services experiencing the greatest declines. In order to prevent negative public health consequences, it is increasingly likely that strict social isolation measures will need to be maintained for a year or even 18 months (until the production of a vaccine becomes a reality). Simultaneously, the economic repercussions of this lengthy pause loom large (Atkeson, 2020).

McKibbin and Fernando (2021) contend that the emergence and subsequent economic impacts of this scourge pose considerable uncertainty for policymakers in implementing effective macroeconomic policies. Their research deploys a hybrid DSGE/CGE Global Model across 20 (G20) nations to assess the effects of continually shifting shocks related to labor supply, consumer demand, production costs, and government expenditures. The COVID-19 pandemic has exacted an immense toll on global public health, endangering tens of millions and placing businesses at existential risk, imperiling livelihoods. Lockdowns, while necessary to curb the virus, have exacerbated economic hardships. The pandemic has introduced health-related risks, affecting healthcare systems, workforce productivity, and economic and social activities through measures such as social distancing (Bloom et al., 2018).

The global spread of COVID-19 has had profound economic repercussions, akin to previous global crises. Business activities have dwindled, closures have surged, labor forces have contracted, and unemployment has soared. The International Labor Organization's (ILO) 2020 report underscores the perilous impact of COVID-19 on unemployment, with a global reduction of operating hours by 14% in Q2 of 2020 compared to 2019, equating to nearly 500 million full-time job losses. Lower-middle-income countries are predicted to bear the brunt of this downturn, with an anticipated decline of 16.1%. As per the World Bank's June 2020 report, 59% of Organization of Islamic Cooperation (OIC) nations are categorized as low to lower-middle income, including 30% in the low-income bracket and 29% in the lower middle-income category, while the remaining 41% are considered high-income countries (WorldBank, 2020). The

COVID-19 outbreak has precipitated an unprecedented global economic contraction, adversely affecting global financial markets and the Islamic economy and finance sector.

The World Economic Outlook 2020 underscores the worldwide endeavor to mitigate the pandemic's impact by allocating increased budgetary resources for health, education, social protection, and international trade activities. Furthermore, the economic impact of COVID-19 on Indonesia is anticipated to be severe (IMF, 2020). Various studies estimate that COVID-19 could curtail Indonesia's economic growth by 1% to 4%, compared to the projected 5% growth in 2020. The poverty rate has increased from 9.2% in September 2019 to 9.7% by the end of 2020, necessitating the implementation of social protection programs to support both the newly impoverished and those previously in need (Suharyadi et al., 2020). Eichenbaum et al. (2021) demonstrate that disease containment measures, while saving lives, exacerbate economic recessionary pressures. Long-term consequences may include unemployment hysteresis effects and the disruption of supply-side chains. An economic recession threatens to push millions into poverty as infected workers diminish production capacity. The study explores the intricate interplay between economic decision-making and pandemics, introducing a pragmatic policy to amplify recession severity while preserving countless lives in the United States.

Neidhöfer et al. (2021) highlight the role of social mobilization in driving economic development, using international educational travel data across Latin America to assess mobility's impact on economic indicators like per capita income, poverty, child mortality, and luminosity. Their findings underscore the profound influence of increased public mobility on Latin American regional development. Fadly (2020) delves into the impact of mobility restrictions on Indonesia's economic growth during the 2020 pandemic. Mobility shifts related to workplace, transit, and residence have a more pronounced effect on economic development than shifts in purchasing and leisure mobility. Oh et al. (2021) conclude that mobility restrictions have a significant correlation with COVID-19 incidence in 34 OECD countries, Singapore, and Taiwan. These findings emphasize the importance of anticipatory planning and decision-making during epidemics. Notably, they reveal minimal association between travel rates and travel adjustments in most countries, except for Ireland, Australia, Italy, Spain, Estonia, and Hungary, where average travel limits have decreased.

An economic shock represents an unforeseen external disturbance with profound ramifications for the economic system, affecting aggregate economic outcomes. For instance, a global economic downturn may curtail demand for international trade. Within neoclassical literature, demand and supply shocks may negatively impact production and, consequently, temporary economic growth, while exerting different effects on prices and inflation rates. Financial development augments economic growth by facilitating capital mobilization and elevating total factor productivity (TFP). Banks play a pivotal role during the initial stages of economic development, fostering growth. Financial development closely intertwines with economic growth, with a 1% increase in financial development translating to a 0.04% boost in GDP in Pakistan (Komal & Abbas, 2015). Gunay et al. (2021) scrutinize the impact of the COVID-19 pandemic relative to the global financial crisis (GFC), underscoring the pronounced economic toll on China due to its closed financial system, exacerbated by pandemic-related factors, including nationwide lockdowns and social segregation measures.

Numerous studies have demonstrated the detrimental effects of high and volatile inflation on economies, contrasting it with the stimulating impact of low and stable inflation. Wollie (2018) attributes Ethiopia's inflation to escalating demand within the economy. Establishing or adjusting precise inflation thresholds in Ethiopia and operating below these rates positively influences growth (Teshome, 2011). In Indonesia, inflation during the pandemic has surged to 3% due to robust food security and inflation rates. This is expected to be partially alleviated by reductions in unfunded subsidies for electricity and food, despite estimated declines in tourism revenue and exports, leading to a current deficit of 2.9% of GDP by 2020 (Indonesia Ministry of Finance, 2020) (Indrawati, 2020).

Drawing upon prior literature, this paper probes the following hypotheses:

Hypothesis 1: The COVID-19 pandemic exerts a negative and significant impact on economic growth in both Muslim and non-Muslim countries.

Hypothesis 2: The COVID-19 mortality rate exerts a negative and significant influence on economic growth in both Muslim and non-Muslim countries.

Hypothesis 3: Mobility restriction policies exert a negative and significant influence on economic growth in both Muslim and non-Muslim countries.

Hypothesis 4: Imports exert a negative and significant impact on economic growth in both Muslim and non-Muslim countries.

Hypothesis 5: Inflation exerts a positive and significant influence on economic growth in both Muslim and non-Muslim countries.

METHODOLOGY

This study employed two models: 1) a panel model to evaluate the impact of the COVID-19 pandemic on economic growth; and 2) another panel model to analyze the influence of the COVID-19 mortality rate and mobility restriction policies on economic growth. The analysis encompassed 30 countries, including 15 Muslim OIC member countries: Indonesia, Turkey, Saudi Arabia, Nigeria, Egypt, Iran, Malaysia, Pakistan, Bangladesh, Kazakhstan, Bahrain, Brunei Darussalam, Qatar, the United Arab Emirates, and Afghanistan. Additionally, the study encompassed non-Muslim nations: the United States, Japan, Germany, the United Kingdom, India, France, Brazil, Italy, South Korea, Canada, Australia, Spain, Mexico, the Netherlands, and China.

The proxy for economic growth, serving as the dependent variable in both models, is the growth of Real GDP. For the first panel model, secondary data from 2019 to 2021 were utilized, with independent variables including the COVID-19 Pandemic Dummy, import, and inflation. Meanwhile, the second panel model analyzed secondary data from 2020 to 2021, with independent variables comprising the COVID-19 mortality rate, mobility restriction index, import, and inflation.

The formulation of the first-panel model to assess the impact of the COVID-19 pandemic on economic growth is as follows:

$$\mathbf{RGDPit = \alpha 0 + \alpha 1\ Importit + \alpha 2\ Inflationit + \alpha 3\ DCovidit + eit}$$

Description:

RGDP : Annual growth of Real GDP (percentage)
Import : Import value relative to GDP (percentage)
Inflation : Inflation rate (percentage)
DCovid : Dummy variables on COVID-19 pandemic (0: period prior COVID-19 outbreak. 1: period after the outbreak of COVID-19, started in 2020)

Meanwhile, the second panel model, aimed at analyzing the impact of the COVID-19 mortality rate and mobility restriction policies on economic growth, is as follows:

$$\mathbf{RGDPit = \beta o + \beta 1\ Importit + \beta 2\ Inflationit + \beta 3\ Covid\_Mortalityit + \beta 4\ Stringencyit + eit}$$

Description:

RGDP	:	Annual growth of real GDP (percentage)
Import	:	Import value relative to GDP (percentage)
Inflation	:	Inflation rate (percentage)
Covid_Mortality	:	Total death due to COVID-19 per 1,000 people (percentage)
Stringency	:	Stringency Index (the mobility restriction policy applied by the government in dealing with COVID-19 pandemic)

Before proceeding with estimation, a correlation test among independent variables was conducted to ascertain the strength of their relationships, utilizing Pearson's test to assess linear correlations (Ibrahim, 2023). The selection of the appropriate estimation method was determined in the initial testing phase. A comparison of Ordinary Least Squares (OLS) and fixed effect estimation techniques was carried out using the Chow test. If the produced probability (prob > F) exceeded 5%, OLS was considered the preferred method, while if it was less than 5%, fixed effect estimation was favored. If fixed effect estimation was chosen as the superior approach, the Hausman test was employed to compare fixed effect and random effect methods. A random effect estimation was adopted if the probability (Prob > Chi2) exceeded 5%, whereas fixed effect estimation was selected if Prob > Chi2 was less than 5%. In cases where the Hausman test indicated a preference for random effects, a Lagrange multiplier test was performed to decide between random effects and OLS. If the Hausman test confirmed fixed effect estimation as the optimal technique, no additional tests were required. The best estimation method was determined as the random effect if Prob > Chi2 was less than 5%, while if Prob > Chi2 exceeded 0.05, common effect estimation was favored. After the completion of all testing stages, the final step involved regression using the chosen best model.

RESULT AND DISCUSSION

Figure 1 illustrates the dataset employed in the study, encompassing economic growth, import value relative to GDP, inflation rate, stringency index, and COVID-19 death rate.

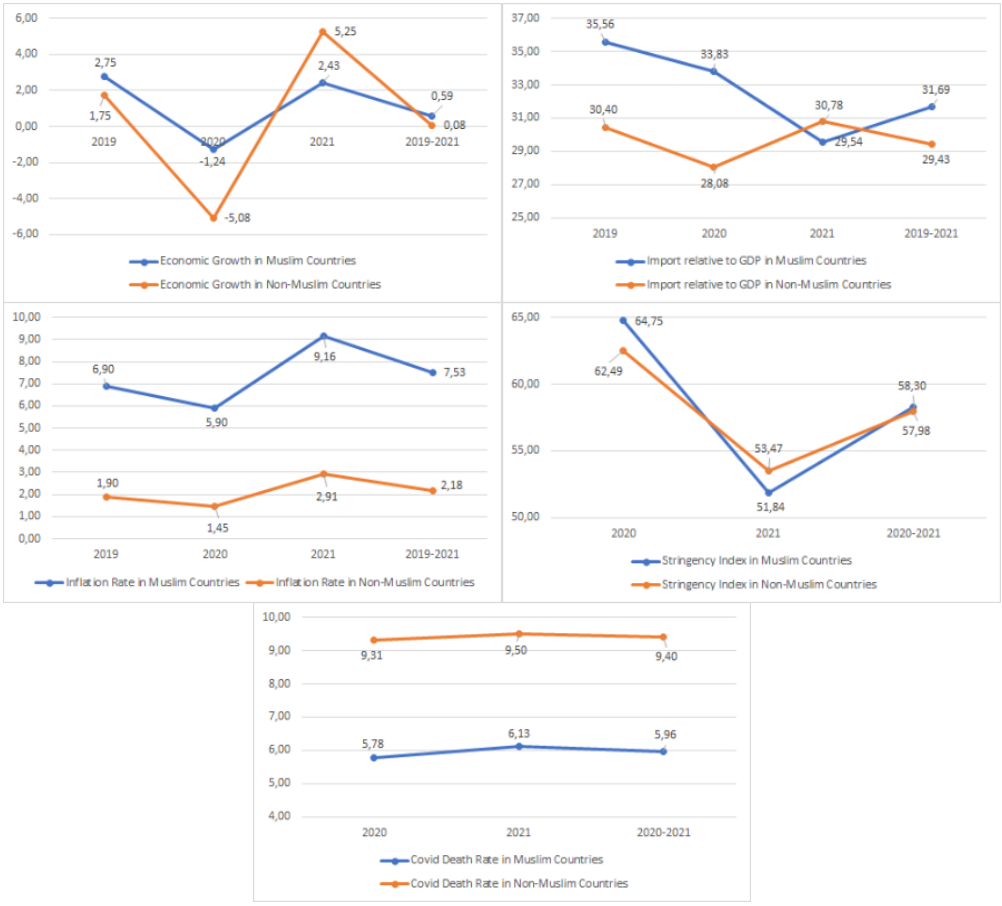

Figure 1. Economic Growth, Import Value Relative to GDP, Inflation, Stringency Index, and Covid Death Rate in Muslim and non-Muslim Countries

The data reveals several intriguing findings. Generally, between 2019 and 2021, Muslim countries experienced higher economic growth rates than non-Muslim countries, which is contrary to the trend observed in 2019 and 2020. In 2021, economic growth in Muslim countries reached 5.25%, surpassing that of non-Muslim countries, which only attained 2.43%. Furthermore, the average ratio of import value relative to GDP in Muslim countries during 2019–2021 was lower than that of non-Muslim countries, although the difference was not significant. This trend was also observed in 2019 and 2020. However, in 2021,

non-Muslim countries recorded a lower ratio of imports to GDP at 29.54%, compared to Muslim countries at 30.78%.

Moreover, the average inflation rate in Muslim countries between 2019 and 2021 was 7.53%, significantly higher than the inflation rate of 2.18% in non-Muslim nations. The movement of inflation rates in Muslim and non-Muslim nations followed a similar pattern; as inflation increased in Muslim nations, inflation also rose in non-Muslim nations. The stringency index, which measures the extent to which a government restricts citizen mobility, revealed that Muslim countries had a slightly higher average index value of 58.3 compared to non-Muslim countries at 57.98. In contrast to non-Muslim countries, Muslim countries implemented strict mobility policies in 2020 when the COVID-19 pandemic started. However, the situation was reversed in 2021. In terms of COVID-19 mortality rates, Muslim countries recorded a relatively low average death rate of 5.96% in 2020–2021 compared to non–Muslim countries at 9.40%. Although the mortality rate in Muslim countries was only 5.78% in 2020, it rose to 6.13% in 2021. In non-Muslim countries, the death rate increased from 9.31% in 2020 to 9.50% in 2021.

To choose the best model, this study conducted the Chow test, Hausman test, and Lagrange multiplier test. Based on the Chow test results (Appendix 1.1), the fixed effect model is the best model for Muslim countries since Prob > F is less than 5%. Therefore, the Hausman test (Appendix 1.2) and Lagrange multiplier test (Appendix 1.3) were conducted. Since the Chow test results are OLS and the Hausman test results are fixed effects, there is no need to conduct the Lagrange multiplier test (Appendix 1.3). The panel 1 model for Muslim countries and mixed countries have heteroscedasticity problems based on the heteroscedasticity test (Appendix 1.4) since Prob > Chi2 is less than 5%. Therefore, robustness is used in OLS regression to eliminate this problem. The first panel model was used to examine the impact of macroeconomic variables and the COVID-19 epidemic on economic development based on pooled data from all Muslim and non-Muslim countries (Appendix E.1).

RGDPit = 3.458 - 0,0477 Importit + 0.0786 Inflationit - 2.0501 DCovidit

Prob	(0.005)	(0.122)	(0.327)	(0.027)

Moreover, the estimation results for Muslim countries using the initial panel model are as follows.

RGDPit = 6.0687 - 0.0948 Importit + 0.0075 Inflationit - 2.5274 DCovidit

Prob	(0.002)	(0.024)	(0.929)	(0.074)

In the meantime, the estimation results for non-Muslim countries using the initial panel model are as follows.

RGDPit = -0.4153 + 0.0069 Importit + 1.0292 Inflationit - 1.9479 DCovidit

Prob	(0.853)	(0.896)	(0.018)	(0.214)

Note: The figures in parentheses denote the significance level of each independent variable.

According to the estimation results obtained from the initial panel model, the COVID-19 pandemic had a significant and profound impact on real GDP growth in the overall country sample, with a 95% confidence level. In the face of the pandemic, real GDP growth experienced a decline of 2.05%, holding all other factors constant. However, it was observed that imports and inflation did not exert a significant influence on economic growth between 2019 and 2021. For Muslim countries, the impact of the COVID-19 pandemic was relatively less significant, leading to a decrease in economic growth at a 90% confidence level. This finding aligns with previous research indicating that the COVID-19 outbreak has negatively affected the economic growth of countries like Malaysia, reducing consumer spending and impacting the business environment (Hasanat et al., 2020).

The recession continues to escalate, and the long-term repercussions of COVID-19 are still permeating societies and economies. The pandemic has had a devastating effect on individuals and communities, revealing the extent of global economic interdependence resulting from economic globalization (Delardas et al., 2022). This study also confirmed that the COVID-19 pandemic did not have a significant impact on economic growth in non-Muslim countries. From a financial perspective, Sharif et al. (2020) investigated the relationship between the COVID-19 outbreak, oil prices, stock markets, economic uncertainty, and geopolitical risk in the US economy (non-Muslim countries) using a wavelet-based approach. The findings emphasized the importance for US policymakers to address economic uncertainty and geopolitical risk.

Meanwhile, at a 95% confidence level, it was found that higher import values significantly hindered economic development in Muslim countries, while they had no significant effect in non-Muslim countries. A 1% increase in the value of imports relative to GDP resulted in a 0.095% decrease in economic growth for Muslim countries. This finding aligns with Hayakawa (2023), who highlighted that a larger number of confirmed COVID-19 cases or deaths in both importing and exporting countries significantly reduced international trade. Xu et al. (2021) examined the extent to which the decline in international trade was attributed to the COVID-19 outbreak and found that international trade during the pandemic exhibited an unequal distribution between export and import volumes (Abdul Rani et al., 2020).

Furthermore, at a 95% confidence level, inflation was found to significantly influence economic growth only in non-Muslim nations, while it had no significant impact in Muslim countries. In non-Muslim countries, the inflation rate exhibited a favorable effect on economic growth, with a 1% decrease in inflation leading to a 1.03% decrease in real GDP growth. According to Erdogan et al. (2020), COVID-19 has exacerbated economic challenges across various sectors in both developed and developing countries. Recessionary conditions and declining growth rates have intensified issues such as rising unemployment and falling incomes. Supply chain disruptions have resulted in output declines, while inflation arises from supply reductions due to decreased demand. The estimation output is as follows: utilizing pooled data from both Muslim and non-Muslim nations and employing the second-panel model, this study assesses the impact of macroeconomic variables, COVID-19 mortality rates, and mobility restriction policies on economic growth (see Appendix E.2).

RGDPit = 11.62 - 0.077 Importit + 0.172 Inflationit - 0.243 Covid_Mortalityit - 0.137 Stringencyit

Prob (0.041) (0.157) (0.102) (0.390) (0.021)

The outcome of the estimation for Muslim countries using the second-panel model is presented below.

RGDPit = 11.67 - 0.142 Importit + 0.109 Inflationit - 0.364 Covid_Mortalityit - 0.087 Stringencyit

Prob (0.130) (0.074) (0.370) (0.416) (0.290)

The estimation results for non-Muslim countries using the second-panel model are presented below.

RGDPit = 12.52 - 0.003 Importit + 1.459 Inflationit - 0.346 Covid_Mortalityit - 0.219 Stringencyit

Prob	(0.163)	(0.969)	(0.009)	(0.548)	(0.010)

Following the COVID-19 outbreak in 2020-2021, the policy of mobility restriction had a significant impact on total economic growth. However, imports, inflation, and COVID-19 mortality were found to have minimal effects. At the 90% confidence level, it was demonstrated that the only variable that significantly affected economic growth in Muslim countries was import value. Economic growth decreased by 0.142% when the value of imports relative to GDP rose by 1%. The movement restriction policy, COVID mortality, and inflation rate had no substantial effect on economic growth over the period. In particular, both mobility restriction rules and inflation rates have proven to have a substantial impact on economic growth in non-Muslim countries. The favorable effect of the mobility restriction policy on economic growth would result in a 0.219% drop in economic growth. When the government restricts people's mobility by 1% during the COVID-19 pandemic, economic growth falls by 0.22%. Additionally, inflation has been shown to have a beneficial and considerable impact on economic growth in non-Muslim countries. In 2020-2021, a 1% increase in inflation resulted in a 1.46% increase in economic growth, assuming all else is equal.

Kok (2020) identified this in his research and discovered that stringency and economic growth are more advantageous for politicians in most countries throughout the world in the short term. These data reinforce his contention that the stringency policy had no effect on long-term economic performance. Eichenbaum et al. (2021) discovered that government policy has been to ensure social distancing since the beginning of the outbreak in order to slow the transmission of the illness virus. The economic growth was harmed as a result of this strict regulation. Reduced mobility causes a slump in the economy by reducing labor supply and individual consumption. According to Vitenu-Sackey and Barfi (2021) research, stringency lockdowns hinder economic growth by government restrictive measures, resulting in lower human development through jobs, education, health, and money from employable enterprises. Furthermore, the loss of revenue for the government as a result of company and job failures can halt efforts to promote human development

through investment in education and health, as well as create conditions conducive to job creation for poverty alleviation.

Varona and Gonzales (2021) found that the COVID-19 shock had a negative and statistically significant impact on the level of economic activity, as well as a long-term cointegration relationship with an error correction model (ECM), with the predicted signal being statistically significant at 1%. Economic activity, as assessed by the energy demand index, and mobility are the dependent variables. The index of the basic propagation number of COVID-19 per day, the current public expenditure, the real exchange rate, the real interest rate, the stock price index, the average temperature index per day, and a dummy of the behavior of the government's strategy of suppression and opening of economic activity are used as independent variables (Ibrahim, 2018). The research found that the public spending variable has a negative sign and is statistically significant at 5%; the real interest rate, real exchange rate, stock price index, and temperature all have an expected negative sign but are not statistically significant. McKibbin and Fernando (2021) discovered that mortality rates in developed countries such as France, Germany, and the United Kingdom are significantly lower than in advanced economies such as China, India, and other Asian countries. The pandemic's shocks induce a substantial decline in consumption and investment, as well as a depreciation of the currency. Gunay et al. (2021) confirmed that the exchange rate has a negative skewness value and is detrimental to economic growth.

CONCLUSION

The COVID-19 pandemic has negatively impacted economic growth worldwide. While each country focuses on improving its economic situation, many still struggle to control the spread of the disease. This study analyzed economic growth in Muslim and non-Muslim countries during the COVID-19 pandemic using panel data.

The results show that COVID-19 has impacted economic growth differently in Muslim and non-Muslim countries. In non-Muslim countries, COVID-19 had no substantial influence on economic growth. However, mobility restrictions imposed by governments to control the spread of the virus have negatively affected economic growth, particularly in non-Muslim countries. Surprisingly, the COVID-19 pandemic and increased death rates were not found to significantly impact economic conditions in either Muslim or non-Muslim

countries. Only some macroeconomic variables showed effects on certain countries. Imports significantly impacted economic growth in Muslim countries, while inflation only affected economic growth in non-Muslim countries.

This research provides an overview of economic changes in 30 countries during the COVID-19 pandemic. Government policies limiting people's mobility to control the spread and death rate from COVID-19 have had unintended consequences for economic stability. The findings offer insights into how different countries have been impacted.

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