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Arif Budimanta[1]
The Ahmad Dahlan Institute of Technology and Business, Jakarta, Indonesia

Telisa Falianty[2]
University of Indonesia, Jakarta, Indonesia

Jerry Marmen[3]
University of Pembangunan Nasional "Veteran", Jakarta, Indonesia

Mulya Tarmizi[4]
Sigma Phi Research Institute, Jakarta, Indonesia

Arif Amin[5]
Sigma Phi Research Institute, Jakarta, Indonesia

Firdha Anisa Najiya[6]
Sigma Phi Research Institute, Jakarta, Indonesia

Covid-19 and G-Shaped Recovery: A New Form of Recovery Shape

Abstract. *The uneven recovery in the world economy since the start of Covid-19 wreaking havoc in 2020 has given us a new shape in economic development: the K-shape. As an alternative to the K-shape, we found the possibility of an even worse development: the G-shape. Indonesia, which experienced the deceleration of its economic growth in the pre-pandemic period, can struggle with a G-shaped recovery. This paper evaluates this possibility by comparing the country to other emerging economies. This study uses 10 economic performance indicators to determine the possibility of a G-shaped recovery in an economy, which represent the demand side, supply side, monetary policy, fiscal policy, health and institutional quality (credit, labor, Total Factor of Productivity, Human Development Index, regulatory quality, CA balance to GDP, current health expenditure, internet bandwidth, debt to GDP, and economic openness). The research sample covers 33 countries. Among them, 7 countries with the highest possibility of G-Shaped economic development were identified: Pakistan, Mexico, Egypt, South Africa, Nigeria, Indonesia, and Brazil. Several counties in samples, including Pakistan, Mexico, Egypt, South Africa, Nigeria, Indonesia, and Brazil, are trapped in long stagnation. The regression result shows a positive relationship between each dependent variable and the GDP, except for economic openness. From the results, the Human Development Index has the highest coefficient among the other independent variables. This paper also employed the Computable General Equilibrium simulation analysis model to project Indonesian economic growth, which shows Indonesia's possibility of being trapped in the G-shaped recovery.*

Keywords: *Covid-19, Economic Recovery, G-shape, Macroeconomic Indicator, Economic Growth Pattern.*

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[1] **Arif Budimanta**, The Ahmad Dahlan Institute of Technology and Business, Jakarta, Indonesia.

[2] **Telisa Falianty**, University of Indonesia, Jakarta, Indonesia.
ORCID 0000-0002-8794-3735
E-mail: telisa97fe@yahoo.com (*Corresponding author*)

[3] **Jerry Marmen**, University of Pembangunan Nasional "Veteran", Jakarta, Indonesia.

[4] **Mulya Tarmizi**, Sigma Phi Research Institute, Jakarta, Indonesia.

[5] **Arif Amin**, Sigma Phi Research Institute, Jakarta, Indonesia.

[6] **Firdha Anisa Najiya**, Sigma Phi Research Institute, Jakarta, Indonesia.

Аріф Будіманта
Інститут технологій і бізнесу Ахмада Дахлана, Джакарта, Індонезія

Теліса Фалянти
Університет Індонезії, Джакарта, Індонезія

Джеррі Мармен
Університет національного розвитку "Ветеран", Джакарта, Індонезія

Муля Тармізі
Дослідницький інститут Сігма Фі, Джакарта, Індонезія

Аріф Амін
Дослідницький інститут Сігма Фі, Джакарта, Індонезія

Фірда Аніса Наджія
Дослідницький інститут Сігма Фі, Джакарта, Індонезія

Covid-19 і G-подібне відновлення: нова форма відновлення економіки

Анотація. *Нерівномірне відновлення світової економіки після спустошення, завданого пандемією Covid-19 у 2020 році, породило нову форму економічного розвитку – K-подібну форму. Як альтернативу K-подібній формі автори цього дослідження знайшли можливість ще гіршого варіанту постпандемічного економічного розвитку – G-подібну форму. Індонезія, яка зазнала уповільнення економічного зростання в передпандемічний період, має можливість боротися з G-подібним економічним відновленням. У цій статті оцінюється така можливість шляхом порівняння країни з іншими економіками, що розвиваються. Для визначення можливості G-подібного відновлення економіки у цьому дослідженні використовуються 10 показників економічної ефективності, які представляють сторону попиту, сторону пропозиції, грошово-кредитну політику, фіскальну політику, стан сфери охорони здоров'я та інституційну якість (кредит, праця, сукупний фактор продуктивності, індекс людського розвитку, нормативна якість, залишок поточного рахунку до ВВП, поточні витрати на охорону здоров'я, пропускна здатність Інтернету, борг до ВВП та економічна відкритість). Вибірка дослідження охоплює 33 країни, серед них 7 країн з найвищою ймовірністю G-подібного економічного розвитку: Пакистан, Мексика, Єгипет, Південна Африка, Нігерія, Індонезія та Бразилія. Кілька країн у вибірці, включаючи Пакистан, Мексику, Єгипет, Південну Африку, Нігерію, Індонезію та Бразилію, потрапили в пастку тривалої стагнації. Результат регресії показує, що існує позитивний зв'язок між кожною залежною змінною та ВВП, за винятком економічної відкритості. Згідно з отриманими результатами, індекс людського розвитку має найвищий коефіцієнт серед інших незалежних змінних. У цій статті також використовувалася модель імітаційного аналізу (Computable General Equilibrium) для прогнозування економічного зростання Індонезії, яке показує можливість Індонезії потрапити в пастку G-подібного відновлення.*

Ключові слова: *Covid-19, відновлення економіки, G-подібна форма, макроекономічний індикатор, модель економічного зростання.*

1. INTRODUCTION

A K-shaped recession (or two-stage recession), introduced by JP Morgan, is where parts of society experience more of a V-shaped recession, while other parts of a society experience a slower, more protracted L-shaped recession (the shape of the K denoting the divergence in the recovery paths).

The K-shaped recovery curve paints a more realistic yet unpleasant picture. As per their analysis, the Covid-19 recovery path bifurcates in two directions: large firms and public-sector institutions with direct access to government and central bank stimulus packages will make some areas of the economy recover fast but leave others out. Those that get left out are the small and medium-sized enterprises (SMEs), blue-collar workers, and the middle class.

According to the World Economic Forum (2020), in K-shaped recovery, technology, and large capital firms are expected to recover much faster than small businesses and industries directly affected by Covid-19, such as hospitality. K-shaped recoveries could happen between countries, sectors, and different groups of the community.

Sharma et al. (2021) studied economy models that display V, U, W, and even an L-shaped output curve with permanent output loss. This is due to the economy getting trapped in a self-sustained "bad" state. They also discuss two policies that attempt to moderate the impact of the shock: giving easy credit to firms and the so-called helicopter money, i.e., injecting new money into the households' savings. Both policies are effective if they are strong enough. The potential danger of terminating these policies too early is highlighted, although inflation is substantially increased by lax access to credit.

1.1. Secular Stagnation Phenomenon

Secular stagnation is defined as the event in which monetary policy cannot leverage economic performance, as seen by slow economic growth, sluggish inflation, and an abnormally low natural interest rate (Summers, 2013). The efficacy of conventional monetary policy is also doubted by Krugman (2014) because, in today's environment, where inflation is almost non-existent, nominal rates cannot be set up below the zero lower bound (ZLB) when the natural rate yields a negative number.

The Great Depression in the 1930s causes massive economic turbulences to appear all at once. Due to a significant and ongoing spillover of labor surplus, employment participation had reached an all-time low which results in rises in the unemployment rate to levels never seen before (Garraty, 1975), while real wages skyrocket (Ohanian, 2009).

The theory by Hansen (1939), who argued that the US economy would be difficult to recover from after the disaster, appeared to be false, as the US economic recovery was expressed by good economic development following World War II. However, it may appear that it won't be restored to its prior potential level before the downturn hits for a long time, but will be locked in a long period of reduced growth mode which is called a secular stagnation. The threat of secular stagnation resurfaced in the global recession and financial bubble in 2008.

1.2. Tradeoff between lives and economy

Hsu (2020) investigates the best containment strategy for a pandemic in an open market through quantitative assessments based on a model that combines a standard epidemiological compartmental model with a multi-country, multi-sector Ricardian model of international trade with full input-output connections.

1.2.1. Objective

The paper starts by analyzing the effects on countries if they embraced South Korea's containment policy. Using a novel approach, we compute a Nash equilibrium of optimal long-run national policies and compare them to a baseline where countries continue their current policies until vaccines become available.

When adopting a Korean policy, most countries suffer in both welfare and real income. In the long run, however, optimal policies indicate that certain countries should tighten while others should loosen. The difference between short-run results under Korean policy and long-run results under optimal policies emphasizes the long-term cost of mortality. The welfare gains from optimal policies are asymmetric, with the gains for the set of countries that should tighten up being much larger than those for the countries that should loosen.

The psychological cost of mortality is intentionally left out of the model, so our findings suggest that once it is factored in, those countries that need to tighten up will almost certainly tighten up even more, with significant welfare implications. We also discover that in open economies, the welfare implications of optimal policies differ dramatically from those in closed economies. With detailed mathematical analysis, this research aims to shed light on the argument about the stringency of containment strategies. Its key contribution is to utilize a novel approach to compute a Nash equilibrium of optimal national policies in this highly complicated model with many cross-sectional links across countries and sectors, all of which interact with disease dynamics. Despite the necessity to make assumptions in order to narrow the field of prospective policies, our quantitative analyses are instructive: the following are the primary takeaways.

Our assessments based on a one-dimensional measure do not reflect the whole potential variety of containment approaches, and we may have missed additional methods to prevent a pandemic. In an open-economy framework, open-economy considerations are critical for optimal containment strategies or other policies, as we have shown.

To calculate the initial recovery country score, Tamola and Fernandez (2020) considered the following categories: supply variables, demand factors, financial conditions, and policy spaces. As a result, it is discovered that LAC's initial recovery circumstances lag behind those of the rest of the globe and other countries with comparable income levels (14 percent and 7.7 percent below). Supply and financial issues are the key drivers to the comparatively low value of the Recovery Index amongst the LAC countries. Labor market characteristics and a low connectivity environment contribute to the relatively low score for supply components, while low financial developments contribute to the relatively low score for financial aspects.

The Covid-19 pandemic has triggered difficulties in a variety of areas, most notably the economic crisis, which has spilled over into other areas. Various researches were carried out to determine the severity of the crisis, how to avoid or mitigate the effects, and how to recover from the pandemic. Experts feel that economic growth and political stability will have a significant impact. This is because the lockdown will significantly impact community activities, resulting in poor economic activity and a shift in public opinion towards the government's initiatives.

Stratford and O'Neill (2020) discovered that decreasing growth would have a frightening effect because growth is necessary for economic and political stability. It was indicated in this study that the country should not solely focus on economic growth while dealing with difficulties associated to Covid-19 but also take into account more complex policies, such as their environmental impact.

1.3. The following are some things to think about in terms of growth strategies and other, more comprehensive policies

1.3.1. Employment

Much of the workforce has been replaced by machines as technology has advanced. This impacts the growing number of unemployed, even while it is vital to use employee earnings for consumption for the economy to develop. Rather than employing improved

productivity to cut prices and sell more goods, corporations may give workers a shorter workweek with higher wage hours to tackle this problem. As a result, regulations that support and encourage businesses to reduce working hours rather than lay off employees, provide safe jobs, increase employment, raise minimum wages, and so on are required.

1.3.2. Private debt crisis risk

Due to expectations and interest, debt poses a high level of risk. A high level of debt can quickly turn a small drop in predicted growth into a major crisis. We must find measures to cut debt for people and businesses to make our economy more resilient to slower growth. As a result, efforts must be made to ensure the debt level does not rise due to the epidemic. This can be accomplished by encouraging central bank and government financing, facilitating interest relief, facilitating small and medium-sized enterprises financing, and utilizing macroprudential devices to limit the consequences of debt on inflation and price levels.

1.3.3. Rental extraction inequality

Growth is required to safeguard the privileges of landlords, financiers, monopoly interests, and other tenants. Instead of producing wealth, renters drain wealth earned by others through controlling monopolized and restricted assets. This condition can persist as long as the rate of economic expansion outpaces the rate of rent extraction. However, the period of wealth development comes to an end. Landlords, financiers, monopoly interests, and other leaseholders continue to take wealth and amass assets, resulting in growing inequality. We must spread tenant power to prevent rising inequality as growth slows. Immediate prevention is required. Many renters will be in arrears due to the existence of Covid-19. Protection is required for both tenants and asset owners. In addition, property taxes and monopoly taxes are required. Tax relief and relief for small and medium enterprises will mitigate this danger.

1.3.4. Basic needs

A drop in income or a rise in costs threatens the poorest people's ability to meet their fundamental necessities. Growth and stability will then be jeopardized. The role of the government in resolving this issue is critical. Assistance from public funding might be provided to those in need. Policies to build social safety nets and create a social infrastructure that can assist in times of disaster are required.

1.4. Recovery Form

Backer et al. (2021) explore post-crisis recovery owing to the pandemic; the recovery can be in the shape of a V, U, or L, which is shown in Figure 1. A V-shaped recovery indicates that GDP is returning swiftly after a brief (but potentially deep) recession, a U-shaped recovery indicates a (slightly) slower recovery, and an L-shaped recovery indicates that GDP has never (even partially) recovered from recession losses.

When the economy enters a "bad phase," characterized by a self-sustaining state of economic depression and deflation, U- or L-shaped recoveries emerge. When the shock has passed, it takes more for the economy to recover might be more than 9 months. There is a discontinuous transition between V-shape recoveries and L-shape recessions as a function of the crisis characteristics (amplitude and length of the shock). When the shock is mild enough not to affect the financial health of the firms, a V-shape recovery is observed. Stronger shocks, on the other hand, can result in a permanent dysfunctional state (L-shape), with high unemployment, falling incomes and savings, and substantial financial instability, as well as bankruptcies. However, an L-shaped scenario can be avoided if consumer demand increases following the shock. A one-time strategy of helicopter money (directly providing money to families) can drive the economy towards a path of recovery over a few years, facilitating and boosting consumption (U-shape).

Depending on the amplitude and length of the shock, the model can describe different types of recoveries (V-, U-, W-shaped), even the absence of full recovery (L-shape). The model depicts an economy in a self-sustaining "bad" phase, marked by a lack of savings, mass unemployment, and deflation. A severe enough shock can cause the model to degrade from a thriving economy to a bad state that can last for a long time.

The ongoing debate and ambiguity about the recovery's structure are mirrored in the uncertainty surrounding real GDP growth estimates. According to the ECB's Survey, the euro area's year-over-year real GDP growth is expected to be 5.7% in 2021, with a strong chance that growth might be as low as 2% or as high as 10%. This wide range of GDP growth projections is unprecedented, showing the difficulty of applying traditional macroeconomic models to the post-COVID-19 recovery. A growth rate of more than 10% for 2021 indicates a V-shaped recovery, whilst a growth rate of less than 2% indicates an L-shaped recovery.

Backer et al. (2021) research used three microfinancial models: an unrestricted model, a model with zero restrictions following the block exogeneity of yield and spread PCs principles, as well a model with the same restrictions as model 2 but without the block exogeneity of yield and spread PCs. The forecasts from the benchmark macroeconomic model without financial market variables and model 1 appear less realistic for several countries. For example, the benchmark macroeconomic model predicts that GDP growth in Portugal will not return to normal until 2024, whereas model 1 predicts negative growth rates in Spain until 2025.

The results show that the model used to forecast real GDP is conditioned on macrofinancial data through August 2020, implying that the shape of the recovery in most euro area nations analyzed will most likely be between a U and an L, with significant persistent losses. These findings are consistent with those of Primiceri and Tambalotti (2020), Lenza and Primiceri (2020), Foroni et al. (2020), and Schorfheide and Song (2020), all of whom forecast that the COVID-19 situation would result in long-term losses in various jurisdictions.

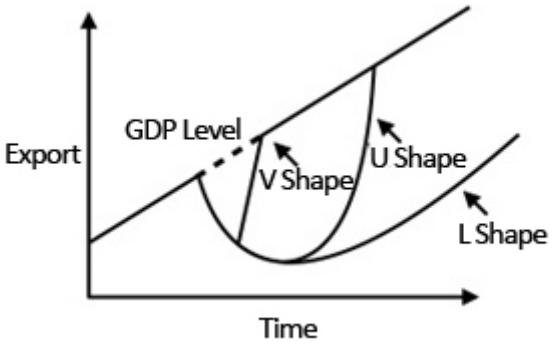

Figure 1. **Recovery Forms**

1.4.1. Labour Market

Gregory and colleagues (2020) designed and calibrated a labor market search-theoretic model to estimate the aggregate US labor market evolution during and after the coronavirus pandemic. The model is intended to reflect the heterogeneity of individual workers' transitions between states of unemployment, employment, and different employers, as well as the trade-offs involved in deciding between temporary and permanent layoffs. Workers are ex-ante heterogeneous in terms of their baseline productivity, the distribution of the component of productivity that is distinctive to their match with a particular employer, and their ability to search the labor market (Gregory, Menzio, and Wiczer, 2020). Wages, according to Moen (1997) and Menzio and Shi (2001), guide the search process that brings employees and unfilled jobs together (2011). Gregory, Victoria, et al. (2020) show that the lockdown, defined as a temporary drop in worker productivity, results in the termination of some employment contracts, the suspension of others, and the continuation of others. Continuing or suspended relationships are ones in which the surplus stays positive despite the lockdown. Suppose production and ties during the lockdown are poor enough that the firm and the worker would rather collect unemployment benefits than continue production and retain strong relationships. In that case, the relationship is suspended rather than continued.

The speed with which the economy recovers after the lockdown is lifted is determined by three factors: first, the percentage of workers who enter unemployment while maintaining a relationship with their employer at the start of the lockdown. Second, the rate at which inactive relationships dissolve during the lockdown, and third, the percentage of workers whom their employer does not recall at the end of the lockdown.

Factors (1) and (2), in turn, are influenced by the costs of sustaining and reactivating a momentarily inactive relationship, the employer's ability to endure the lockdown without revenue, and the rate at which the quality of a temporarily inactive relationship degrades. Factor (3) is based on the non-randomly selected set of workers who are permanently laid off during the lockdown's job-finding rate.

The employment model can produce either a V-shaped recession (one in which the unemployment rate quickly returns to its baseline level once the lockdown restrictions are lifted) or an L-shaped recession (one in which the unemployment rate quickly returns to its baseline level once the lockdown restrictions are lifted) (one in which the unemployment rate takes several years to return to its pre-lockdown level). Workers who begin unemployment with a suspended relationship with their previous employer and retain it throughout the lockdown or who have no relationship with their previous company by the end of the lockdown experience a V-shaped recession. An L-shaped recession happens when many workers lose their jobs without preserving relationships with their previous employers, and these workers cannot find new, stable jobs quickly.

The quarantine imposed to prevent the spread of the new coronavirus has been demonstrated to have long-term harmful consequences for unemployment. This is because the lockdown disproportionately affects workers looking for steady jobs for years. The unemployment rate is still roughly 5 percentage points over its steady-state level 30 months after the epidemic began, despite the lockdown lasting only 3 months. Similarly, 50 months after the pandemic began, the unemployment rate is still roughly 2:5 percentage points over its steady-state level. A recession with such a slow recovery is known as an "L-shaped" recession. The ex-ante heterogeneity of workers causes the slow pace of the recovery.

According to the World Economic Forum and the International Labor Organization (ILO), as a result of the global pandemic, 93 percent of the world's workers were living under some form of workplace restrictions at the time, and 8.8 percent of global working hours were lost in 2020 compared to the fourth quarter of 2019, equating to 255 million full-time jobs. According to the ILO, workers who were jobless but actively seeking work, workers who were employed but had their working hours decreased, and workers who were unemployed but not actively seeking work were all included in the loss of working hours.

According to economists and others, pandemic-related labor market disruptions in industrialized and emerging economies could have long-term consequences. Even after the pandemic has passed and economic activity has resumed, one group of economists believes that businesses will continue to learn labor-saving lessons, resulting in fewer employment being created in

retail stores, restaurants, auto dealerships, and meat-packing plants, among other areas. Labor markets in the United States are improving, but total unemployment remains higher than pre-pandemic levels. Federal Reserve Chairman Jerome Powell testified before the Senate Banking Committee on February 23, 2021, that while new COVID-19 cases and hospitalizations had decreased, indicating hope for an economic recovery later in 2021, the recovery so far had been "uneven and far from complete," and the path ahead was "highly uncertain."

The sluggish economic recovery is expected to exacerbate the gap between developed and developing economies. Inequalities in living standards are thought to represent differences in cumulative per capita income, with losses from 2020 to 2022 predicted to be equal to 20% of global GDP in 2019, or $18 trillion. Low-income and developing market economies are expected to suffer disproportionately large losses.

Furthermore, the IMF estimated that 95 million people may have fallen into extreme poverty by 2020.

In April 2021, the IMF predicted that the pandemic's economic consequences would push 95 million people into extreme poverty in Sub-Saharan Africa and South Asia, reversing a decades-long trend. 68 The IMF, on the other hand, concluded that spending on social programs to mitigate the pandemic's effects might lower the number of people living in extreme poverty to 80 to 90 million. Foreign investors withdrew an estimated $26 billion from developing Asian countries in the early stages of the pandemic, including more than $16 billion from India, raising fears of a significant economic downturn in Asia. According to some estimates, 29 million people in Latin America could become poor.

1.5. Monetary Policy

The aftermath of the 2008 Global Financial Crisis (GFC) results in the prioritization of monetary policy as a toolbox in economic crisis management. This can take the shape of direct interest rate decreases or, as recently witnessed with GFC interventions, even greater measures like quantitative easing. Since interest rates are already extremely low, the interest-rate channel may be ineffective, resulting in a stagnation trap and an L-shaped rebound.

As a result, two more policy channels have emerged: easy credit for businesses and "helicopter money" for households. Giving struggling businesses free access to credit lines, regardless of their financial position, is one method to loosen their grip. The reason to focus on corporate credit limitations rather than the banking sector is that the most significant dangers from the Covid-19 shock will not be transferred through a systemic financial crisis. Moreover, due to the 2008 financial crisis, central banks and other monetary institutions are better able to avert systemic risks in the financial sector – they have effectively "flattened the curve" of financial panic. Credit is required to avert a wave of bankruptcies, and combining the two policies can be beneficial if the policy is sufficiently strong. For strong enough shocks, flexibility on firm fragility may be required for a long time (a few years) after the shock to avoid a second wave of bankruptcies. Removing support to firms too soon before a robust recovery can increase the bankruptcies of illiquid but otherwise viable firms. A policy intervention that is too weak is ineffective and can lead to a "swoosh" recovery or no recovery at all.

Governments can also play a more active role in reducing losses caused by the pandemic by issuing debt to meet emergency needs. On the other hand, future governments will be subject to interest rate increases due to this process. Injecting cash into the economy to boost consumption and facilitate recovery is another option. This entails the central bank increasing the money supply by lending newly created money straight to the government. The money, which distribution has to be intermediated via the banking sector, can then be used for emergency healthcare or other infrastructure projects by the government. However, this approach has been regarded as radical because an increase in the money supply might lead to out-of-control inflation. The consumption propensity of households determines its effectiveness.

Following the financial crisis of 2008, the major central banks cut their main interest rates to zero or even significantly below zero. However, once these rates are at zero, maintaining them is tough. The problem of the effective lower bound on rates was largely seen as an abnormality prior to the 2008 crisis. Since 2008, however, many large central banks have reached their own effective lower limits, which has been accompanied by disappointing macroeconomic performance: advanced economies' cyclical rebounds turned out to be moderate and temporary; core inflation has remained below central bank targets for the majority of the past decade; and long-term interest rates have continued their downward trend.

The fact that the natural interest rate – and hence the entire range of interest rates – has been on a downward trend for such a long time is seen as an expression of an excess of intended savings over desired investment and/or a fall in capital productivity. By limiting the efficiency of monetary policy, the low natural interest rate has become a key impediment to long-term growth. As a result, economic slowdowns are more frequent, deeper, and longer than economic recovery periods, lowering average GDP growth.

Only if governments increase their fiscal deficits or if monetary policy becomes aggressively expansionary, stimulating the spread of credit and the rise in asset prices, which become the engine of economic growth, can the economy approach full utilization of resources. Growth will not forever stifle an economy suffering from secular stagnation. However, the underpinnings of this expansion are unsustainable in the long run.

The risk aversion in the private sector is likely to increase due to the shock generated by Covid-19. Households can cut back on certain discretionary expenditures to build up a larger savings buffer in future crises. Moreover, if consumers save more and consume less, the corporate investment will fall due to the loss in their outlets. Previous disparities in terms of education, skills, wealth, and age have interacted with the pandemic, aggravating pre-existing inequalities.

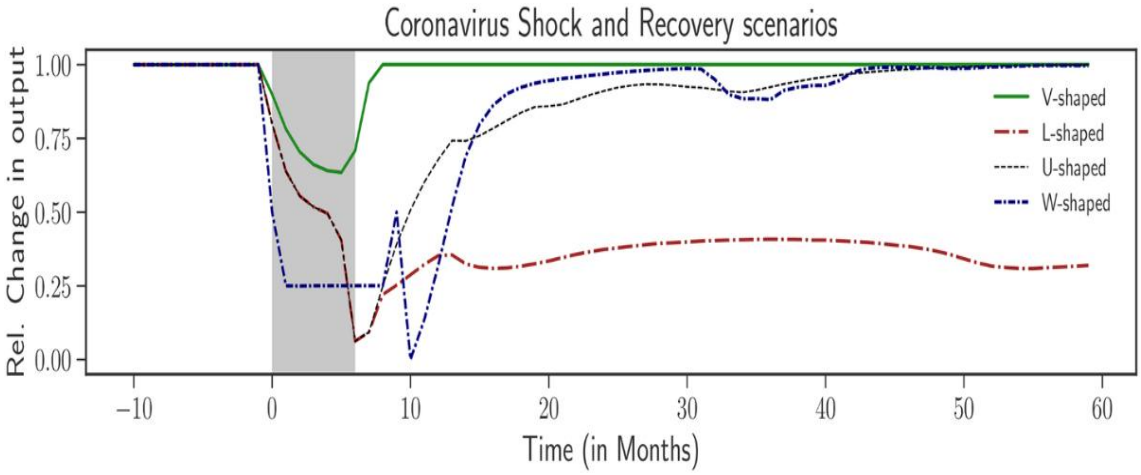

Figure 2. **Coronavirus Shock and Recovery Scenarios**

According to the simulation results, the economy declines and remains in a low position after a three-month shock. Refer to Figure 2. There has been a large drop in real earnings, coupled with a high unemployment rate, bankruptcy in a huge percentage of businesses, and a permanent decrease in household savings. With such a high bankruptcy rate, loan interest rates have risen dramatically. Extending the loan limits of the firms for the duration of the crisis can improve this L-shaped scenario. Even though a temporary loss in output is unavoidable, this improves the situation of the economy (V-shaped recovery).

The two other policies, "helicopter money" and adaptive policy, have comparable results to the native policy. Households begin to overspend compared to pre-crisis levels when consumption returns to its original value because their savings increase throughout the shock (mirroring the increase in firms' debt), and they desire to spend a fixed fraction of them. However, excessive expenditure may not be enough to restore the economy to its pre-crisis state. The adaptive approach is the most successful for a longer shock duration of 9 months. Although a recession is unavoidable during a crisis, the economy recovers 100 percent of its pre-shock output after the conclusion of the crisis. However, the gradual removal of the easy credit policy permits the economy to return to its pre-shock level with minimal bankruptcies. It is vital to emphasize that this policy must be implemented for a long time after the shock has occurred (almost 7 years in our simulations).

1.6. G-Shaped Recovery

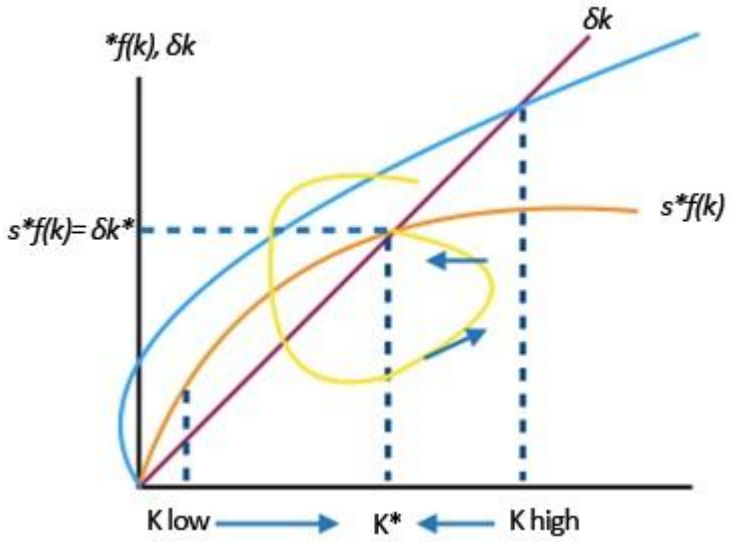

Figure 3. **G-Shaped Recovery: Steady State Equilibrium in Solow Model**

In Figure 3, if our initial allocation of (k) were too high, (k) would decrease because depreciation exceeds investment. If our initial allocation were too low, k would increase because investment exceeds depreciation. At the point where both (k) and (y) are constant, it must be the case that,

$$\Delta k = s * f(K) - \delta k = 0 \qquad (1)$$

$$s * f(k) = \delta k \qquad (2)$$

This occurs at our equilibrium point k*. At k* depreciation equals investment.

Should move to the new k* point instead of the lower old k* point.

Growth theories have received much attention. Inequality and political populism will be affected by the slowing economy. Jackson (2019) researched the relationship between falling growth and labor productivity, pay levels, social inequality, and other economic relationships. There has been a downturn in household consumption in recent decades. This is linked to a rise in personal debt and political risk. According to Say's law, "supply creates its own demand." This indicates that people will spend their money in the economy when they obtain it.

As it should be, while the economy's supply continues to grow, there will be no slowdown or congestion. On the other hand, according to US Economist Robert Gordon, the slowdown in growth was caused by a drop in the rate of invention, which meant that technical development had come to a halt and did not continue. Furthermore, this is occurring in the context of an aging population, rising inequality, and consumer and government debt overhangs. The era of developed countries, according to Gordon, had come to an end.

Say's law can be seen in the opposite direction, implying that a lack of demand might lead to a lack of supply. However, as Keynes demonstrated, this law may not hold true. When people use their money to speculate and invest in financial assets, revenue does not return to the market, which can cause growth to be disrupted. Slowing demand, along with greater financial asset investment, will shift funds away from high-yielding investments and result in low-cost loans. Speculation will be encouraged by these low-cost loans.

The current sluggishness is beginning to show. GDP per capita increased by more than 4% per year in the mid-1960s. It had dropped significantly from its peak in the mid-1960s to slightly more than 1% annually by 2016. There was a minor rebound from trend growth rates following the second oil crisis in the early 1980s. After the financial crisis, a similar recovery is shown towards the end of the scenario period. It remains to be seen whether the recent rebound ushers in a new era of stronger OECD growth.

However, there are indicators that OECD countries have not grown in the recent decade. Changes in labor productivity patterns, in addition to worries about growth rates, are relevant data. Growth in labor productivity follows a similar pattern to that of GDP per capita, with a few exceptions. After the second oil crisis, there was no partial rebound in growth rates, merely a slowing of the decrease. Apart from that, nothing has stood in the way of growth in recent years. In 2016, labor productivity increased by only 0.6 percent a year, or just over half the GDP growth rate per capita.

Changes in worker productivity patterns are linked to changes in the economy's patterns. The late modern economy saw a transition away from primary and secondary manufacture of material goods and toward service providing. On both the demand and supply sides, this transformation might occur. To boost growth, industrialized economies have used a combination of financial innovation, low-interest rates, and (more recently) direct monetary financing to increase liquidity (particularly from the financial sector).

Studies show that there has been an increase in inequality in developed countries. Covid-19 has revealed structural deficiencies in the economy. This has actually been happening since before the pandemic and had the biggest impact on sectors that are important to people's welfare. This phenomenon can also be studied during the 2008 economic crisis.

Pre-financial-crisis indicators of precarity were already obvious (Jackson, 2019). The evidence presented by Piketty was compelling. According to Piketty, Saez, and Zucman (2017), the richest 1% of the population in the United States got almost 15% of the national income in 2015. It was the highest level of participation since 1940. Against the backdrop of diminishing growth rates, Piketty claims that inequality is an unavoidable element of a capitalist economy. Piketty's research uncovered a key theoretical argument on the origins of inequity.

The first is rising inequality within advanced economies, and the second is the reason for rising inequality, as defined by Piketty (2014). According to Pickety, falling economic growth rates contribute to increased inequality. A tax on capital assets is one of Piketty's (2014) ideas for combating systemic inequality. The second possible policy is an increase in differential income tax rates. Taylor (2017) proposes a universal basic income as a third policy alternative.

Picketty (2014) proposes a hypothesis through the formulation of two "fundamental laws" of capitalism:

1. The relationship between share capital and profit sharing to owners of capital

$$\alpha = r\beta \qquad (3)$$

where r is the rate of return on capital, and is K/Y where K is capital and Y is net national income, so it can be written

$$\alpha Y = r\mathrm{K} \qquad (4)$$

So the income earned from the capital is equal to the total capital multiplied by the levels of that capital. Although this law does not force economics in one direction or another, it does provide the accounting

framework within which the evolution of the relationship between capital, income, and rates takes place.

2.Capital relationships, savings, long-term growth

In the long run the ratio of capital to income (tends towards the ratio of savings *s* to the rate of growth *g*.

$$\beta \to \frac{s}{g} ast \to \infty \qquad (5)$$

So the capital share of income can be written as

$$\alpha \to r \frac{s}{g} ast \to \infty \qquad (6)$$

When growth declines, the capital to income ratio increases leading to an increase in the share of income which becomes capital and a decrease in the share of labor income.

This relationship presents a rapidly increasing number of savings rates where income is higher than lower (prosperity to consume less than income) which will strengthen inequality because it allows owners of capital to accumulate more capital and set higher returns. The superior strength of capital will trigger structural inequalities, as Krusell and Smith (2014) point out.

Jackson & Victor (2016) stated that the capital share of income is very responsive to the elasticity of substitution of production factors, namely capital and labor. In this research, the SIGMA model was developed to be explored capital's share of income and its behavior on inequality when the growth rate decreases to zero.

The rate of return on capital can be calculated using the production function Constant Elasticity of Substitution (CES) by Arrow, Chenery, Minhas, and Solow (1961) with the following *Y* input:

$$Y(K, L, \sigma) = (aK^{(\sigma-1)/\sigma} + (1-a)(AL)^{(\sigma-1)/\sigma})^{\sigma/(\sigma-1)} \qquad (7)$$

where σ is the elasticity of substitution between labor and capital, a is a distribution parameter and A is the coefficient of technology-augmented labor. With respect to K that the marginal productivity of capital r_k is given by:

$$r_k = \frac{\partial Y}{\partial K} = a\beta^{-1/\sigma} \qquad (8)$$

where β is the capital to income ratio 7. This relationship can now be used to derive the return to capital, r_kK:

$$r_k K = a\beta^{-1/\sigma} K \qquad (9)$$

Taking *Y* to be the national income and using Piketty's first law of capitalism it can be shown that capital's share of income α is

$$\alpha = a\beta^{(\sigma-1)/\sigma} \qquad (10)$$

For σ > 1, capital's share of income is an increasing function of the capital to income ratio. As the capital to income ratio rises, capital's share of income increases. Conversely, when σ < 1, capital's share of income is a decreasing function of the capital to income ratio. As the share of capital to income rises, capital's share of income decreases.

Jackson and Victor (2016) find that the savings rate declines to zero alongside the growth rate, and the capital-to-output ratio converges to a constant value. When there is no net investment and no more economic growth, both the output and the capital stock are unchanging. There is no indication of an explosive increase in the share of income going to capital, even under high elasticities of substitution between labor and capital.

Piketty's hypothesis of an inevitable dramatic increase in inequality arising from a decline in the growth rate holds only under particular circumstances such as where an increasing proportion of the national income goes to capital and a declining proportion goes to labor, so the explosive increase in inequality is valid.

The behavior of the savings rate, along with the declining growth rate, depends on the confidence of investors to protect the return on capital and also depends on its turn on the power of capital and labor in the economy. The rate of return on capital falls more or less depending on whether the elasticity of substitution between labor and capital is lower or higher. With low substitutability between labor and capital, the owners of capital can't increase revenues by lowering costs. The effect of investment is simply to push up the capital-to-output ratio in the economy without a corresponding growth in demand. In the end, when the growth rate falls to zero, net investment is simply soaking income away from consumption and government expenditure, building capital for no apparent reason. Keynes characterizes this condition as the euthanasia of the rentier, in which a persistent oversupply of savings looking unsuccessfully for profitable investment leads to a progressive decline in the rate of return on capital (Keynes, 1936). When there is high substitutability between capital and labor, there is more chance for private investors to stabilize their profits, leading to an increasingly high share of income going to capital. This situation fits the Piketty analysis of inequality.

The long-term behavior of the rate of return was rather different; the savings rate falls to zero alongside the declining growth rate. When the growth rate has declined to zero, a zero net savings rate is consistent with a constant capital-to-output ratio, consistent with post-Keynesian models. We can summarize that capital's share of income is clearly bounded when the savings rate declines rather than remaining constant, in contrast to the Piketty hypothesis.

Inequality in incomes can arise simply from differential savings rates between different household sectors. In US economy, the savings rate of workers is lower than the savings rate across the economy. At the end, without any decline in the growth rate, the disposable incomes of capitalists are more than 40% higher than the disposable income of workers. Under conditions of slowing growth, inequality is dependent on two key factors: the elasticity of substitution and the behavior of the savings rate. When the savings rate

remains constant and the elasticity of substitution is high, the inequality between capitalists and workers is sharpen. When elasticity of substitution is low, inequality is declining most of them because of the steep decline in the rate of return on capital.

Where the saving rate declines alongside the growth rate, each value of the elasticity of substitution inequality remains bounded, and inequality is lower for each value of the elasticity of substitution. When the overall rate of savings across the economy is conserved, income inequality is highly sensitive to the elasticity of substitution between labor and capital. When the elasticity of substitution is high, capitalists can protect their return on capital by continually substituting capital for labor, trampling wages, and increasing inequality. When the elasticity of substitution is low and constant saving, capitalists are unable to substitute away from labor, and as the growth rate slows down, rates of return to capital fall, and capitalist income is moderated, leading to a significant decline in income inequality. When the savings rate declines alongside the growth rate, income inequality is bound and falls over the run even for high elasticity of substitution.

According to Jackson and Victor (2021), when the level of fiscal intervention is no longer increasing, inequality increases hyper capitalism scenario and declines for proto socialism scenario. Policy measures are insufficient to contain inequality in the longer term. Once the level of intervention has stabilized, income inequality returns to an increasing path. The basic income scenario has the least impact on inequality. In hyper capitalism scenario, an income tax is more effective and under proto socialism scenario, the capital tax becomes the more effective instrument.

The analysis contains a couple of critical assumptions. The first of these concerns the behavior of the savings rate as the growth rate declines (Piketty implicitly assumed it would stay constant). The second relates to the ease with which it is possible to substitute capital for labor. Shortly the idea that rising income inequality is an inevitable consequence of falling growth rates is incorrect. Under the appropriate conditions, an economy with a declining growth rate might equally be headed towards lower income inequality and greater stability of employment.

A decade after the financial crisis, growth rates in advanced economies have yet to return to those experienced in the pre-crisis era. A long-term decline in the rate of labor productivity growth is one debt overhang, shifting patterns of demand, and the geopolitics of resource supply play contributing roles. Moreover, the biggest problem is that the widespread technological advances facilitated by a ready abundance of high-quality energy resources in the first seventy years of the 20th century are no longer available to advanced economies in the 21st. The policy strategy hindered technological innovation, reinforced inequality, and exacerbated financial instability. Jackson's (2018) important finding is that maybe this is a time for policy to consider seriously the possibility that low growth rates might be 'the new normal' and to address carefully the 'post-growth challenge' this poses.

According to World Economic Outlook prepared by the IMF, the global economy is projected to experience a stronger recovery in 2021 and 2022 than indicated in previous forecasts, with global growth projected to increase at a rate of 6% in 2021 and 4.4% in 2022. The IMF also concluded the global economic recovery would occur at different speeds across and within individual countries, the extent of policy support and various structural conditions. The IMF, the OECD, and The World Bank all revised their forecasts downward between late 2019 and mid-2020, reflecting the rapidly deteriorating state of the global economy and a marked decline in projected rates of growth. The OECD released an updated forecast in May 2021 that estimates that global economic growth declined by 3.5% in 2020. In the updated estimate, the rate of GDP growth in developed economies declined by 4.8% in 2020 and by 2.3% in developing economies.

The updated forecast projects the global economy could grow by 5.8% in 2021 and 4.4% in 2022; developed economies could grow by 5.5% in 2021 and 3.8% in 2022, while developing economies could grow by 6.2% in 2021 and 4.9% in 2022. As a consequence of the slowdown in economic activity in the fourth quarter of 2020 and projected slow, but partial recovery in 2021, the OECD estimated there would be long-lasting effects on the global economy, including. Output was projected to remain around 5% below pre-crisis expectations in many countries in 2022, raising the specter of substantial permanent costs, disproportionately affecting vulnerable populations. Smaller firms and entrepreneurs are more likely to go out of business. Many low-wage earners lost their jobs and are only covered by unemployment insurance, at best, with poor prospects of finding new jobs quickly.

The economic slowdown is expected to have the greatest impact on developing and emerging economies that rely on commodity exports to fund yearly economic development. Reduced remittances, weaker currencies, and tighter financial conditions are expected to hurt developing countries, in addition to lower commodities export prices and lower global demand for exports. The pandemic's economic effects were spread through three trade channels: directly through supply chains as reduced economic activity spread from intermediate goods producers to finished goods producers; as a result of a drop in overall economic activity, which reduced demand for goods in general, including imports; and through reduced trade with commodity exporters that supplie finished goods producers. Many nations, according to the IMF, are dealing with a multi-layered crisis that includes a health crisis, a domestic economic crisis, falling external demand, capital outflows, and a drop in commodity prices. As a result, the IMF stated that the forecast is contingent on several factors, including the ability of displaced workers to secure employment, possibly in different sectors, global supply chain reconfigurations that affect productivity as companies try to enhance their resilience to supply disruptions, and the extent of cross-border spillovers from weaker external demand as well as funding shortfalls.

Most developing and emerging economies were projected to experience a decline in the average rate of economic growth of 2.2% in 2020, reflecting tightening global financial conditions and falling global trade and commodity prices. In January 2021, the World Bank released its updated economic forecast, which indicated that global economic growth would reach 4.3% in 2020 and 4.0% in 2021, compared with June 202 projections of -5.2% for 2020 and 4.2% in 2021, but rise by a slower rate of 3.8% in 2022. The assessment also concluded that absent "substantial and effective reforms," the global economy would experience a decade of "disappointing growth."

The Bank concluded that the forecast was tilted toward downside risks. In particular, the Bank assessed that all regions of the world remain vulnerable to renewed outbreaks of the virus, that there were logistical impediments to the distribution of effective vaccines, that there are financial stresses in addition to elevated debt levels and there is the possibility that the pandemic could have a more negative effect on incomes and growth.

The World Bank, like the OECD and the IMF, predicted that the global recession would have the most significant impact on developing and emerging nations that rely on global trade, tourism, or remittances from abroad, as well as those that rely on commodity exports. In addition, the World Bank predicts that most emerging and developing countries will expand at their slowest rates since the 1960s in 2020, with 90% of these economies experiencing per capita income declines and many millions of people returning to poverty. According to the Bank's baseline scenario, the projected economic recovery was expected to be slow, reflecting consumption and work pattern shifts as consumers attempted to rebuild savings and businesses strengthened balance sheets.

2. RESEARCH METHODS

2.1. CGE Methods

We form economic recovery index which consist of 6 clusters. First cluster is demand side. Second cluster is supply side. Third cluster is monetary policy. Fourth cluster is fiscal policy. Fifth cluster related with health indicator. Finally, sixth cluster related with institutional quality.

Projection of Indonesia's economic growth, especially after the recession due to the Pandemic in 2020, using the Computable General Equilibrium (CGE) analysis model developed by Hans Lofgren (2002). The data used is using the Indonesian Social Accounting Matrix (*Sistem Neraca Sosial Ekonomi)* table 2008 with a value calibrated with the 2019 GDP value as the baseline for the CGE model. In this CGE Model, the production and trade block covers four categories: domestic production and input use; the allocation of domestic output to home consumption, the domestic market, and exports; the aggregation of supply to the domestic market (from imports and domestic output sold domestically); and the definition of the demand for trade inputs that is generated by the distribution process. Production is carried out by activities that are assumed to maximize profits subject to their technology, taking prices (for their outputs, intermediate inputs, and factors) as given. In other words, it acts in a perfectly competitive setting. The CGE model includes the first-order conditions for profit-maximization by producers. Two alternative specifications are permitted at the top level of the technology nest: the activity level is either a CES or a Leontief. Refer to Figure 4.

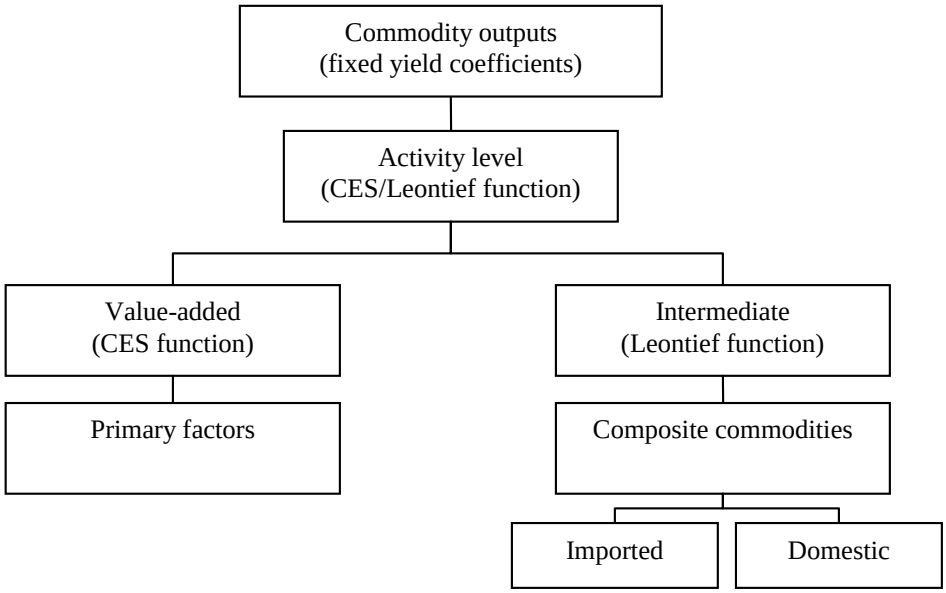

Figure 4. **Production Technology**

Source: Lofgren (2002).

According to the default closure, the quantity supplied of each factor is fixed at the observed level. An economy wide wage variable is free to vary to assure that the sum of demands from all activities equals the quantity supplied. Each activity pays an activity-specific wage that is the product of the economy wide wage and an activity-specific wage (distortion) term.

For the default closure, the latter terms are fixed. Alternatively, it is possible to assume that a factor is unemployed and the real wage is fixed. This assumption may, for example, be appropriate in settings where there is considerable unemployment for a given labor category. Compared with the default closure, the only change is that the economy wide wage variable is fixed (or exogenized) while the supply variable is flexed (or endogenized).

Each activity is free to hire any desired quantity at its fixed, activity-specific wage (which, implicitly, is indexed to the model numéraire). In this setting, the supply variable is superfluous; it merely records the total quantity demanded. Under a third closure, the factor market is segmented and each activity is forced to hire the observed, base-year quantity that is, the factor is activity-specific. This closure may be preferred in short-run analyses or when there are significant quality differences between the units of a factor that are used in different activities for example, units of non-agricultural capital used in different industrial and service activities. For this case, the quantities of activity-specific factor demands and the economy wide wage are fixed while the activity-specific wage terms and the supply variables are flexible.

In the CGE model, institutions are represented by households, enterprises, the government, and the rest of the world. The households (disaggregated as in the SAM) receive income from the factors of production (directly or indirectly via the enterprises) and transfers from other institutions. Transfers from the rest of the world to households are fixed in foreign currency. In fact, all transfers between the rest of the world and domestic institutions and factors are fixed in foreign currency. The households use their income to pay direct taxes, save, consume, and transfer to other institutions. The basic model version defines direct taxes and transfers to other domestic institutions as fixed shares of household income, whereas the savings share is flexible for selected households. The treatment of direct tax and savings shares is related to the choice of closure rule for the government and savings investment balances.

The income that remains after taxes, savings, and transfers to other institutions is spent on consumption. Household consumption covers marketed commodities, purchased at market prices that include commodity taxes and transaction costs, and home commodities, which are valued at activity-specific producer prices. Household consumption is allocated across different commodities (both market and home commodities) according to linear expenditure system (LES) demand functions, derived from maximization of a Stone Geary utility function.

The equations used in this model to represent the production and demand for national products are expressed in the following form:

CES Technology: Activity Production Fucntion

$$QA_a = \alpha_a^a \cdot \left(\delta_a^a \cdot QVA_a^{-\rho_a^a} + (1-\delta_a^a) \cdot QINTA_a^{-\rho_a^a}\right)^{-\frac{1}{\rho_a^a}}$$

$$\begin{bmatrix}\text{activity}\\ \text{level}\end{bmatrix} = CES\begin{bmatrix}\text{quantity of aggregate value added},\\ \text{quantity of aggregate intermediate input}\end{bmatrix}$$

. (8)

Output Transformation (CET) Function

$$QX_c = \alpha_c^t \cdot \left(\delta_c^t \cdot QE_c^{\rho_c^t} + (1-\delta_c^t) \cdot QD_c^{\rho_c^t}\right)^{\frac{1}{\rho_c^t}}$$

$$\begin{bmatrix}\text{aggregate marketed}\\ \text{domestic output}\end{bmatrix} = CET\begin{bmatrix}\text{export quantity, domestic}\\ \text{sales of domestic output}\end{bmatrix}$$

(9)

Meanwhile, the institutional equation that plays a role in the CGE model is stated in the following form:

Household Consumption Expenditures

$$EH_h = \left(1 - \sum_{i \in INSDNG} shii_{i\,h}\right) \cdot (1 - MPS_h) \cdot (1 - TINS_h) \cdot YI_h$$

$$\begin{bmatrix}\text{household income}\\ \text{disposable for}\\ \text{consumption}\end{bmatrix} = \begin{bmatrix}\text{household income, net of direct}\\ \text{taxes, savings, and transfers to}\\ \text{other non-government institutions}\end{bmatrix}$$

(10)

Household Consumption Spending on Marketed Commodities

$$PQ_c \cdot QH_{c\,h} = PQ_c \cdot \gamma_{c\,h}^m + \beta_{c\,h}^m \cdot \left(EH_h - \sum_{c' \in C} PQ_{c'} \cdot \gamma_{c'\,h}^m - \sum_{a \in A} \sum_{c' \in C} PXAC_{a\,c'} \cdot \gamma_{a\,c'\,h}^h\right)$$

$$\begin{bmatrix}\text{household consumption}\\ \text{spending on market}\\ \text{commodity } c\end{bmatrix} = f\begin{bmatrix}\text{total household consumption}\\ \text{spending, market price of c, and other}\\ \text{commodity prices (market and home)}\end{bmatrix} \qquad \begin{matrix} c \in C \\ h \in H \end{matrix} \quad (33)$$

(11)

Government Revenue

$$YG = \sum_{i \in INSDNG} TINS_i \cdot YI_i + \sum_{f \in F} tf_f \cdot YF_f + \sum_{a \in A} tva_a \cdot PVA_a \cdot QVA_a + \sum_{a \in A} ta_a \cdot PA_a \cdot QA_a + \sum_{c \in CM} tm_c \cdot pwm_c \cdot QM_c \cdot EXR + \sum_{c \in CE} te_c \cdot pwe_c \cdot QE_c \cdot EXR + \sum_{c \in C} tq_c \cdot PQ_c \cdot QQ_c + \sum_{f \in F} YIF_{gov\,f} + trnsfr_{gov\,row} \cdot EXR \quad (12)$$

2.2. Regression Methods

Numerous factors have an effect on the economic growth and the country development, and one of the most important ones is gross domestic product (GDP). On the other hand, many factors also influence the gross domestic product. In this paper, the GDP is considered as the dependent variable while there are 10 independent variables namely credit, labor, total factor of productivity (TFP), human development index (HDI), regulatory quality, current account balance to GDP, current account expenditure, internet bandwidth, debt to GDP, and economic openness. They represent the demand side, supply side, monetary policy, fiscal policy, health and institutional quality. Panel regression was used to determine the marked coefficients to find whether the chosen factors impact the GDP.

Model Specification

The standard regression equation is as follows:

$$ln_{gdp_{it}} = C + \beta_0\, ln_{credit_{it}} + \beta_1\, EconomicOpenness_{it} + \beta_2\, ln_{labor_{it}} + \beta_3\, TFP_{it} + \beta_4\, HDI_{it} + \beta_5\, RegulatoryQuality_{it} + \beta_6\, CABalancetoGDP_{it} + \beta_7\, Currenthealthexpen\sim f_{it} + \beta_8\, ln_{internetbandwidth_{it}} + \beta_9\, governmentdebtGDP_{it} + \varepsilon \quad (13)$$

where:

ln_gdp	GDP of Country *i* at year *t*
ln_credit	Credit growth of Country *i* at year *t*
EconomicOpenness	The degree to which non domestic transactions (imports and exports) take place and affect the size and growth of the national economy of Country *i* at year *t*
ln_labor	Labor growth of Country *i* at year *t*
TFP	The total-factor-productivity of Country *i* at year *t*
HDI	The Human Development Index of Country *i* at year *t*
RegulatoryQuality	The ability of the government of Country *i* to formulate and implement sound policies and regulations that permit and promote private sector development at year *t*
CABalancetoGDP	The ratio of the current account balance to the GDP of Country *i* at year *t*
Currenthealthexpen~f	Health spending which measures the final consumption of health care goods and services of Country *i* at year *t*
ln_internetbandwidth	The maximum amount of data transmitted over an internet connection in a given amount of time of Country *i* at year *t*
governmentdebtGDP	Country *i*'s public debt to its GDP at year *t*
ε	The idiosyncratic error term

Dependent Variable

The GDP represents the total value of all the final goods and services produced during a specific time period in a specific territory. GDP is stated in monetary units, and includes only goods and services intended for further processing and production. GDP also indicates the measure of production activities and it is a generally accepted indicator of the condition of a specific economy.

Independent Variable

In this paper, a total of ten factors have been chosen for analysis as independent variables namely credit, labor, total factor of productivity (TFP), human development index (HDI), regulatory quality, current account balance to GDP, current health expenditure, internet bandwidth, debt to GDP, and economic openness.

Data Collection

The data of the ten variables of interest (credit, labor, TFP, HDI, regulatory quality, CA balance to GDP, current health expenditure, internet bandwidth, debt to GDP, and economic openness) are obtained from the WHO database and World Bank Database. The GDP of countries of origin is introduced as the dependent variable, which is drawn from the World Bank's World Development Indicators (WDI) database. These all use the annual time series data of the 10 variables between 2010 and 2019 using the 31-selected-country dataset.

3. RESULTS AND DISCUSSIONS

World Economic Forum (2020) suggest to fighting the K-shaped curve via a tech-led strategy. Whether it involves robotic process automation, AI that is fed on multivariate data, or augmented reality to increase sales on Facebook and Instagram shop, almost every business today is now a tech business. Being able to use technology to address concerns that are not being addressed by government stimulus packages is the first and crucial step in ensuring that businesses can remain operational and shorten the unemployment recovery curve.

Table 1. **Rank of GDP Gap**

Rank	Country	2021 Gap
1	Iran	9.5
2	India	7.3
3	Argentina	6.6
4	Turkey	5.1
5	Mexico	4.4
6	France	4
7	Spain	3.9
8	United Kingdom	3.1
9	Germany	2.9
10	United States	2.9
11	Japan	2.8
12	Italy	2.7
13	Malaysia	2.7
14	South Africa	2.6
15	Saudi Arabia	2.3
16	Brazil	2.2
17	China	2.1
18	Canada	1.7
19	Russia	1.7
20	Australia	1.6
21	Netherlands	1.3
22	Korea	1.1
23	Philippines	0.6
24	Thailand	0.3
25	Indonesia	-0.2
26	Pakistan	-0.4
27	Nigeria	-0.7
28	Kazakhstan	-1.2
29	Poland	-1.8
30	Egypt	-2.8

Source: IMF WEO data, processed.

3.1. Regression Result

The result shows that there is a positive relationship between each dependent variable and the GDP. This except for economic openness which is negative. That means that an increase in each independent variable, such as credit, labor, TFP, HDI, regulatory quality, current account balance to GDP, current account expenditure, internet bandwidth, and debt to GDP significantly leads to an increase in GDP. This while an economic openness shows a negative relationship with GDP.

Looking at the details on Table 2, we can conclude from the regression result that a 1% increase in credit would significantly boost the GDP by 0,246%, and similarly for all the other variables except for economic openness. The HDI in fact has the highest coefficient amongst the other independent variables where an increase in HDI by only 1 point would significantly cause an increase to the GDP by more than 331%. Similarly, a 1-poin increase in TFP has a 27,2% increase effect on the GDP. Although the coefficient is relatively low, the current health expenditure variable still has a positive relationship on GDP, where 1% increase in current health expenditure would result in an increase of GDP by 0,017%.

Table 2. **Regression Results**

Independent Variable	Dependent Variable ln_gdp			
	Coef.	St.Err.	t-value	Sig
ln_credit	0,246	0,021	11,51	***
EconomicOpenness	-0,004	0	-10	***
ln_labor	0,556	0,028	20,02	***
TFP	0,272	0,102	2,67	***
HDI	3,312	0,296	11,2	***
RegulatoryQuality	0,16	0,034	4,74	***
CABalancetoGDP	0,016	0,004	4,01	***
Currenthealthexpen~f	0,017	0,009	2,05	**
ln_internetbandwidth	0,047	0,015	3,1	***
governmentdebtGDP	0,001	0	1,76	*
Constant (C)	-2,598	0,453	-5,74	***

Source: Authors' Calculation.

3.2. Standard Deviation of Growth

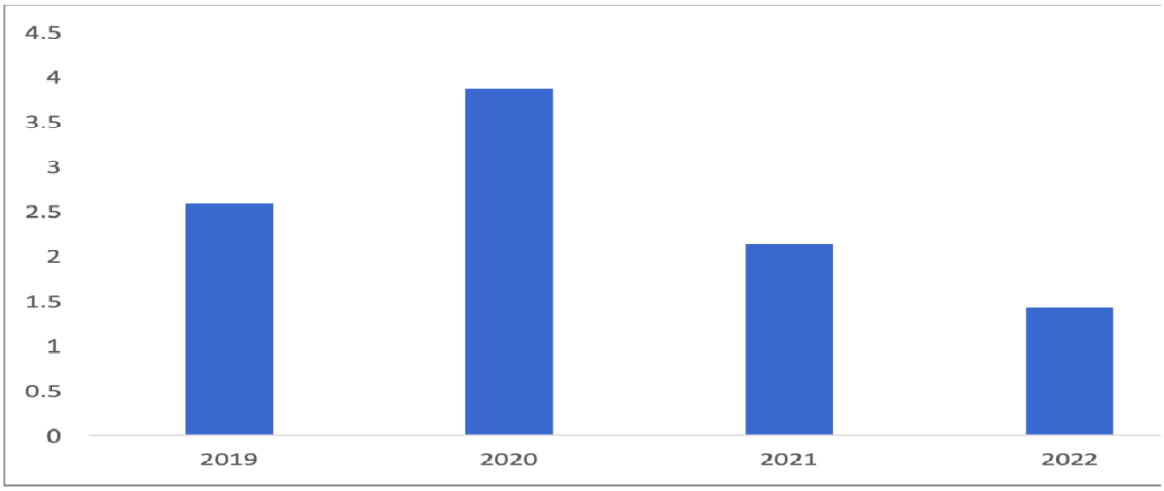

Figure 5. **Standard Deviation of Growth in WEO IMF Analysis 2019-2022**

Source: IMF World economic outlook database, January 2021.

IMF revised 2021 growth projection for sample countries in April 2021. With this new projection, the correlation between economic growth and vaccine become higher.

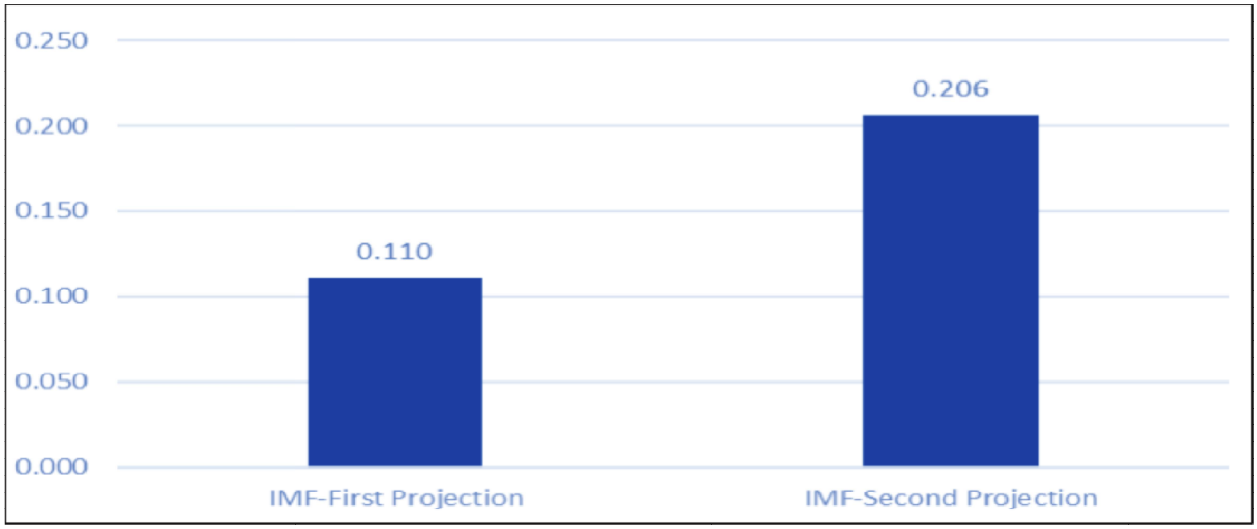

Figure 6. **The Correlation between Growth and Vaccine**

Source: IMF WEO, John Hopkins Vaccine Progress Database, Processed.

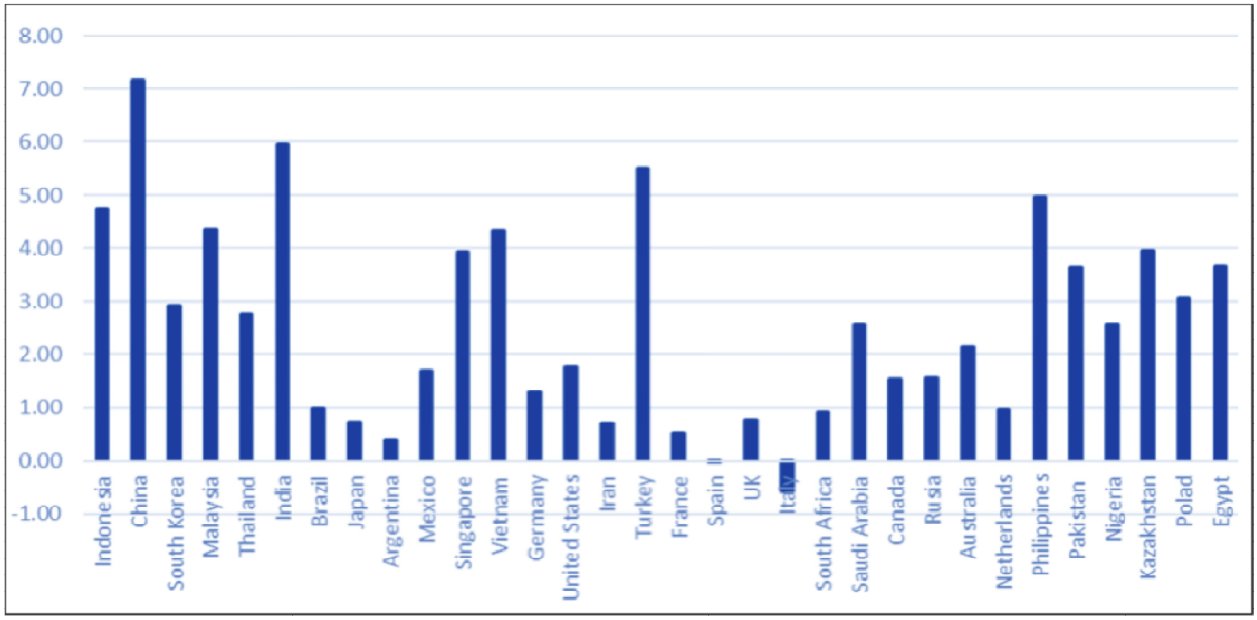

Figure 7. **Economic Growth Average of Sample Countries 2010-2020**

Source: WDI Database.

Indonesia is in the 5th position after China, India, Turkey, and Philippines. Malaysia and Vietnam are following the 6th and 7th place. Only two countries in sample that have average negative growth namely Spain and Italy. Argentina, France and Iran have near zero economic growth.

3.3 Scoring Result

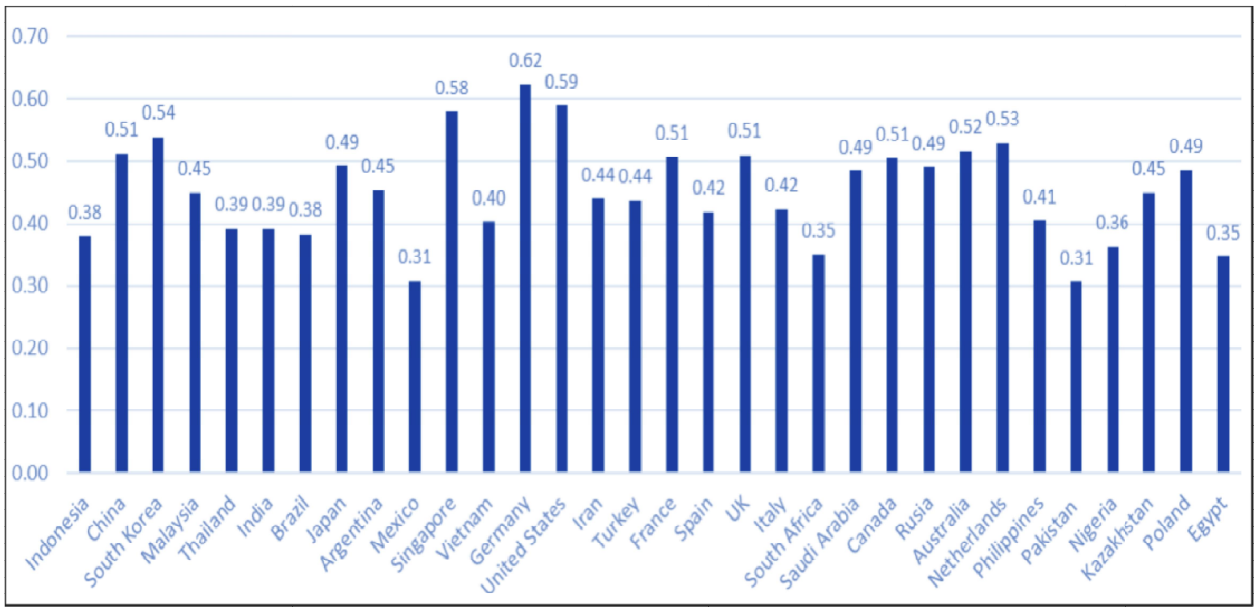

Figure 8. **Economic Recovery Index**

Source: Authors' Calculation.

As shown on Figure 8, five of the highest scoring countries are Singapore, Germany, United States, Netherlands, and South Korea. Five of the lowest scoring countries are Pakistan, Mexico, Nigeria, South Africa, and Brazil.

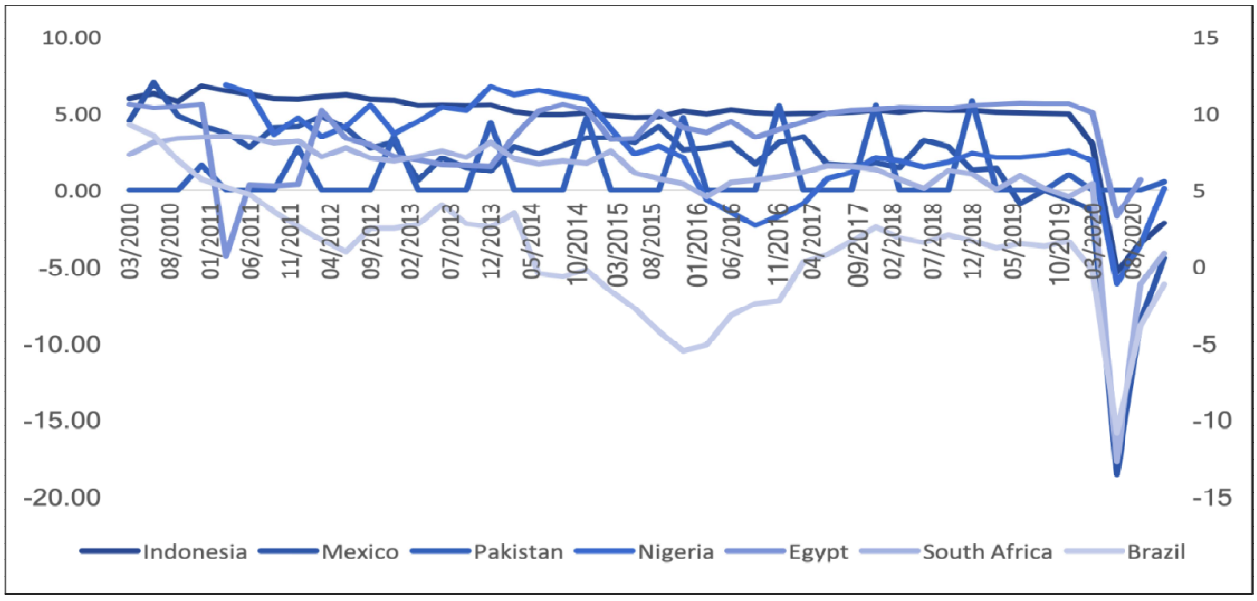

Figure 9. **Countries Vulnerable to G Shaped Recovery**

Source: CEIC, processed.

As shown in Figure 9, several counties in samples, including Pakistan, Mexico, Egypt, South Africa, Nigeria, Indonesia, and Brazil, are trapped in long stagnation. Some low-scoring factors in those countries represent the variables of weakness that require improvement.

Table 3. **Indicators vs. Score**

Indicators	Score
Internet Bandwidth	0.049
Vaccine Rate	0.050
Economic Openness	0.055
Number of hospital bed (per 10 thousand people)	0.062
CA Balance to GDP (%)	0.145
Number of Doctor (per 10.000 people)	0.186
Institutional Quality	0.221
TFP	0.252
LPI Score	0.273

Note: TFP (Total Factor Productivity); LPI (Logistic Performance Index); CA (Current Account)

Table 4. **Index Calculation**

Index Calculation							
Country	Credit Growth	M2 growth	LPI Score	Internet Bandwidth	HDI	Tourism rev/GDP	Number of Doctor (per 10.000 people)
India	0.352241266	0.509402575	0.426966292	0.314791086	0.130555556	0.897434247	0.124031008
Brazil	0.052619795	0.066210588	0.320224719	0.128841227	0.510262346	0.984277089	0.45994832
Mexico	0.291617836	0.303724395	0.353932584	0.092679919	0.567824074	0.845089444	0.516795866
South Africa	0.06555451	0	0.539325843	0.00507708	0.405169753	0.884012589	0.136950904
Pakistan	0.2134808	0.552115384	0	0.016164335	0	0.958125014	0.15503876
Nigeria	0.861556908	0.258973896	0.061797753	0	0.045492919	1	0
Indonesia	0.407393065	0.508192024	0.41011236	0.079580485	0.343055556	0.831149479	0.012919897

Source: CEIC Database, processed by authors.

Table 5. **Recovery Index, Global Normalcy Index, and Resilience Ranking**

Country	Nikkei Covid-19 Recovery Index (120 negara) per 7 Juli 2021	The Economist Global Normalcy Index (50 negara) per 28 Juli 2021	Bloomberg Covid-19 Resilience Ranking (53 negara) per 28 Juli 2021	Standardized Nikkei	Standardized Economist	Standardized Bloomberg
Brazil	79	32	35	1.52	1.56	1.51
South Africa	120	46	51	1	1.09	1.04
Egypt	72	5	37	1.67	10	1.43
Pakistan	69	7	45	1.74	7.14	1.18
Indonesia	110	48	53	1.09	1.04	1
Nigeria	49	3	38	2.45	16.67	1.39
Mexico	59	6	36	2.03	8.33	1.47

Source: Bloomberg, Nikkei, Economist.

The five countries less likely to be trapped in a long stagnation (Singapore, Germany, United States, Netherlands, and South Korea) score high, particularly on their institutional quality and health quality. On the other hand, all the low-performing economies (Brazil, Mexico, South Africa, Pakistan, and Nigeria) score below 0.47 on their institutional quality. The five high-performing economies also score quite high on their health quality.

We further evaluate 7 of the low-performing countries based on their scores on credit growth, M2 growth, labor growth, LPI score, internet bandwidth, HDI, tourism revenue per GDP, Current Account to GDP, number of hospital beds (per 10 thousand people), tax revenue per GDP, government debt per GDP, economic openness, CFR, TFP, Vaccine rate, and Economic Recovery Index as shown on Table 4. Credit growth shows the rising number of companies that demand loans from banks when they start new projects, and Brazil is shown to have the lowest growth at 0.05. M2 is a measure of the money supply of an economy that includes cash, checking deposits, and easily convertible near money, and all the economies' scores are below 0.5. The Labor growth of these 7 countries is statistically high. However, the internet bandwidth is low, with South Africa's as low as 0.005 to India's 0.31 at the highest. The logistics performance (LPI) score shows that the quality of customs, infrastructure, international shipment, logistics, and competence of these 7 countries are low. The Human Development Index (HDI), a statistical composite index of life expectancy, education, and per capita income indicators, of all these 7 countries is low and below 0.60. Another health indicator of an economy is the number of hospital beds per 10 thousand people. As expected of these 7 economies, the number is very low. The debt-to-GDP ratio of all the bottom 7 economies is above 60. This shows that it is unlikely the country will pay back its debt and the higher its risk of default. The Case Fatality Rate (CFR), the probability of people dying due to a disease in the 7 economies, is high. The vaccination rates of the 7 economies are also very low, ranging from 0.005 to 0.127.

Lastly, to assess how countries compare regarding their recovery capacity, we use Economic Recovery Index, which measures the degree to which countries have the right policies, institutions, and factors to recover rapidly. The recovery index of all 7 economies is low. We compare the Standardized Covid-19 Recovery Index (Nikkei, 2021), the Standardized Normalcy Index (The Economist, 2021), and the Standardized Covid-19 Resilience Ranking (Bloomberg, 2021), as shown in Table 5. Nigeria and Mexico score highest on the Covid-19 Recovery Index at 2.45 and 2.03, respectively. The rest of the economies score lowly at around 1.6. Egypt, Pakistan, Nigeria, and Mexico score highest on the Normalcy Index at 10.00, 7.14, 16.67, and 8.33, respectively. The remaining economies score around 1.5. The Resilience Ranking of all economies scores around 1.4.

3.4. Mapping by Cluster

As shown in Figure 10, there are 7 countries with the highest possibility of a G-Shaped Economic Development based on our research and scoring. The 7 most vulnerable countries we identified were, in order: Pakistan, Mexico, Egypt, South Africa, Nigeria, Indonesia, and Brazil.

We identified these particular economies mainly based on their Internet Connectivity, Covid-19 Vaccine Success Rate, Economic Attractiveness, Hospital Occupancy Rate, Current National Account Balance, Available Medical Staff, Quality of Public Services, Economic Productivity, and Quality of their National Logistics Networks.

We entered these recovery indices into the table based on the combination of all research we accumulated. The lowest number indicates the country with the most overall challenging economy. Pakistan was rated very low in this performance rating because of its very low position within the first quadrant of the supply/demand index. South Africa and Indonesia were included in the same quadrant, with a slightly better performance.

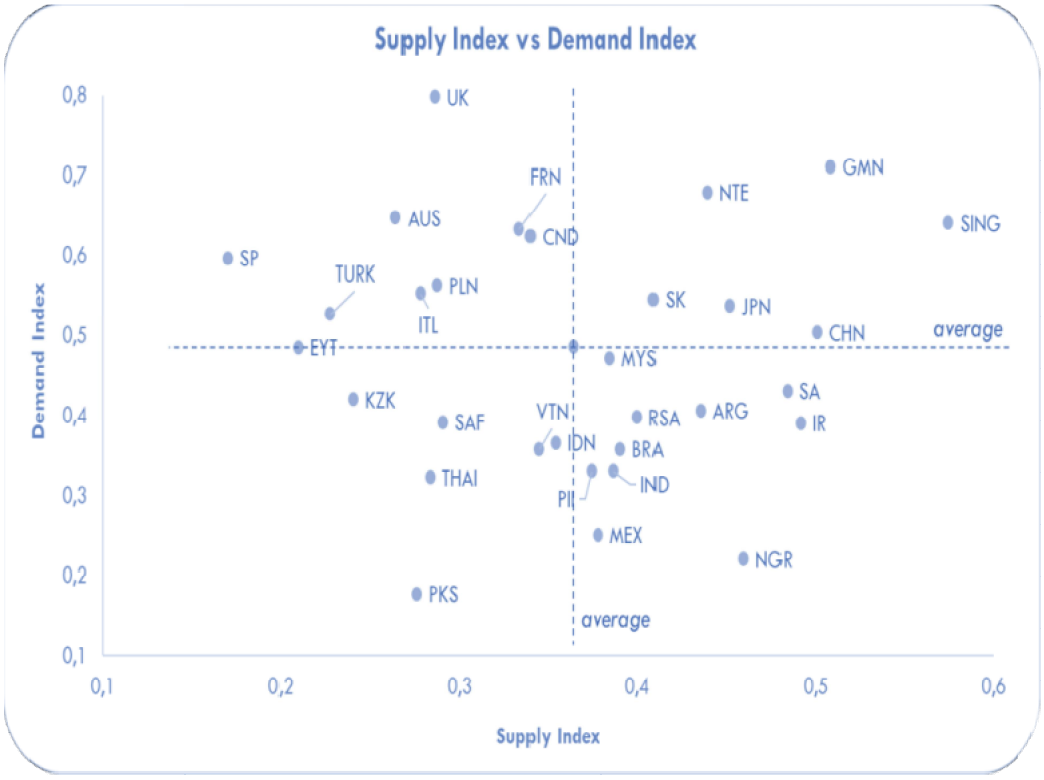

Figure 10. **Demand and Supply Indicator**

3.5. Monetary Policy versus Fiscal Policy

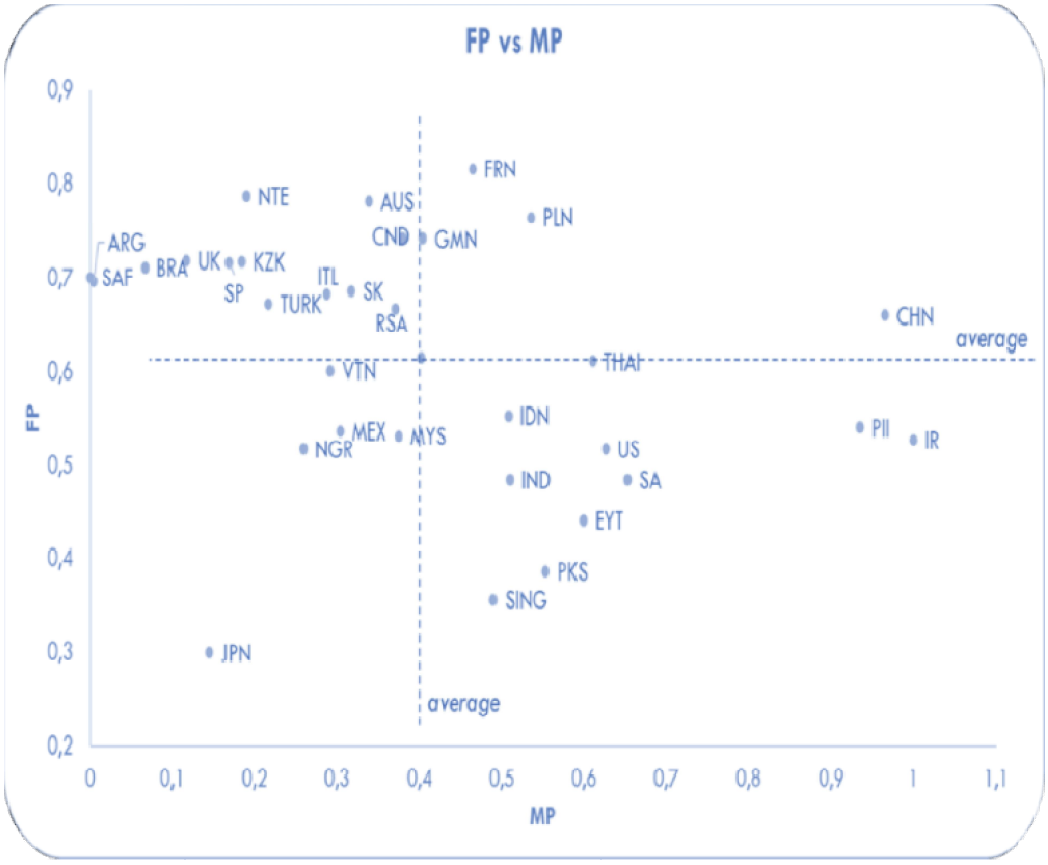

Figure 11. **Monetary Policy versus Fiscal Policy**

As shown in Figure 11, Mexico and Nigeria here are in quadrant 1, evaluating their monetary and fiscal performance. This is hurtful to these particular economies, even though Japan with a leading world economy has a worst performance in this particular section. This indicates that an isolated negative performance in one section does not automatically put you in our bottom group of low-recovery-index economies, all evaluations accumulatively result in the position of each country.

3.6. Institutional Quality and Health Indicator

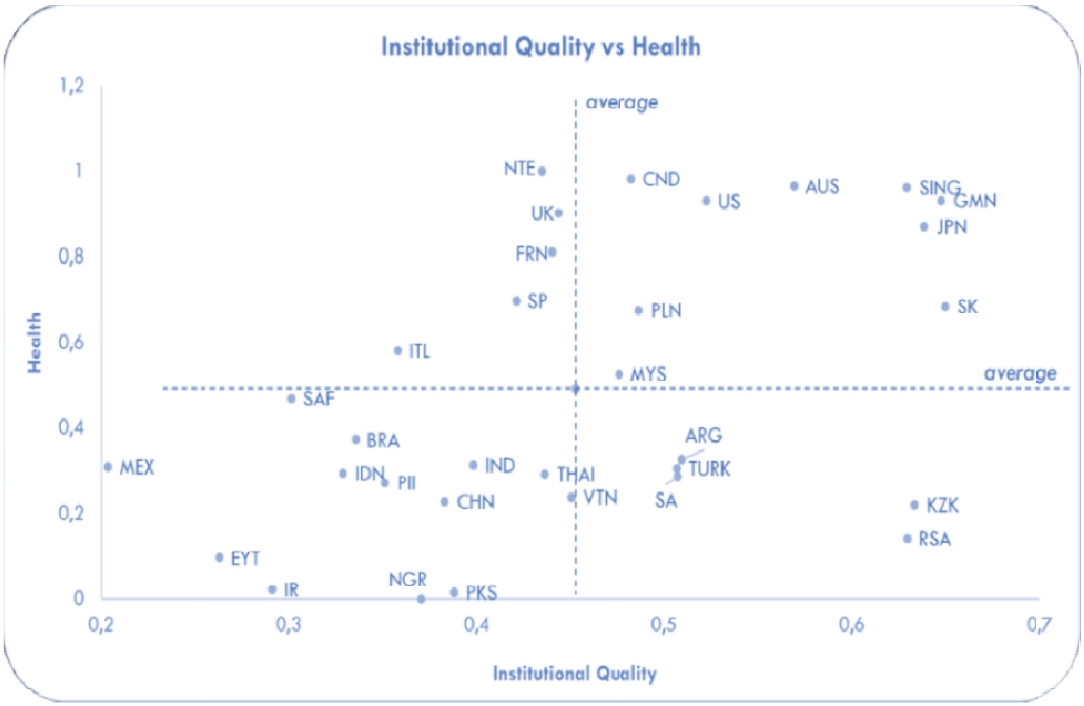

Figure 12. **Institutional Quality and Health Indicator**

As shown in Figure 12, all bottom seven economies show inferior institutional and health quality indicators as a common factor demonstrating their inferior economic performance. Both Nigeria and Pakistan show an extreme lack of economic performances by being present in the bottom of all three economic evaluations. Even though China performs negatively in this particular section, the institutional and health evaluation, the country still shows a strong economic growth and is now the number 1 economy in the world.

By mapping these results, it can be seen that our evaluation is not merely focused on a strong economic growth or fiscal performance, but it also includes indications depicting the quality of a country's welfare, health and institutional performance. So, for a country to get a high score in our evaluation needs to perform well in most indicators.

3.7. CGE Simulation Results for Indonesian Case

Through this model, the Indonesian economy in particular until 2024 can be projected dynamically. Using the principle of recursive dynamics in CGE analysis, the simulation results are shown below in Figure 13.

The analysis assumes that the economic model is driven by companies, households, and the government in various sectors of the business economy. The simulation is carried out by adjusting the output capacity of business sector to a maximum of 65% in the transportation business sector; Hospitality; Food and Beverage Accommodation; and building/building rental services until 2022, it is based on the assumption that social restrictions in Indonesia would be applied until 2022, so the economic growth in 2022 is to be projected at 4.5%. Meanwhile, until 2024 it is assumed that the transportation sector and rental services capacity buildings are working only 65% from its full capacity compared to economic conditions in 2019, it is assumed that the remote working policy will be adopted permanently so that the transportation sector does not return to full capacity as in 2019 and rental services for companies that does not require a building bigger than 2019 to be the basis for analyzing economic growth projections in the future years.

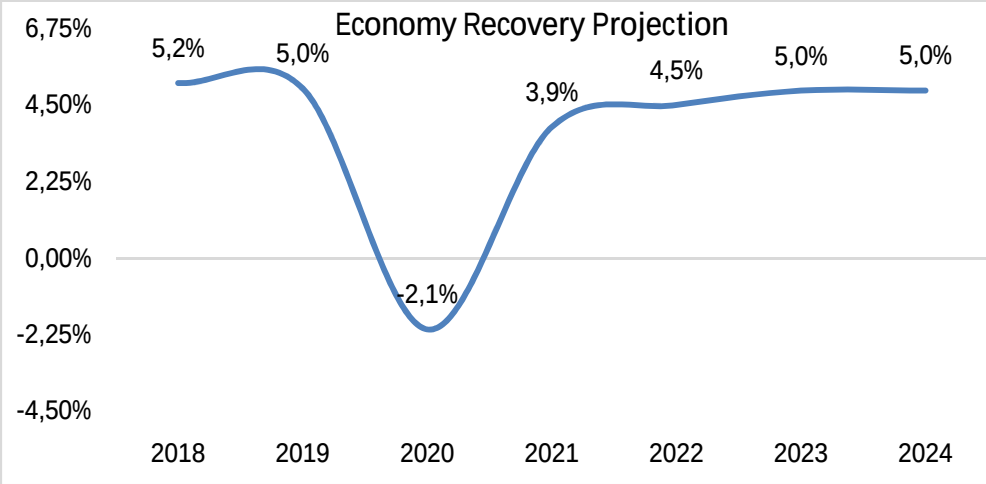

Figure 13. **Economic Recovery Projection**

Source: Authors' Calculation.

Economic crisis that occurred in 2020 tends to leave permanent scars on the economy, especially due to the Pandemic which caused people's work patterns to adopt remote working suddenly and permanently. The change in pattern of course will indirectly reduce the activities of the affected business sector and reduce people's income, especially those who work in the business sector affected by the pandemic. Despite the decline in the previously mentioned sectors, the model also assumes a shift in the flow of capital and public finances from the transportation sector to the Information and Communications sector as a consequence of reducing spending of household in the transportation sector to the Information and Communications sector, particularly usage of Internet for remote working needs. Indonesian economy, which is dominated by household consumption, greatly influences the direction of Indonesia's economic growth. The contraction of household consumption due to the decline in economic activity in 2020 and a shift in economic activity from one sector to another are the main basis for the recovery and adjustment of Indonesia's economic direction in conducting simulations. The simulation results show that until 2024 with the assumptions previously mentioned, the projection of economic growth is just only 5%.

Economic growth, which is expected to recover after the crisis in 2020 to above 5% has not been seen in this simulation until 2024 and even tends to decline compared to 2018, which achieved economic growth of 5.2%. Stagnant economic growth at around 5% and then continued in 2020, the occurrence of the Pandemic in Indonesia, which disrupted the macroeconomy without any substantive economic transformation in search of new sources of economic growth, will cause stagnation of economic growth in the future years. In addition, with improvement in the productivity of the production of goods/services, Indonesia will have a higher comparative advantage compared to other countries, thereby potentially increasing imports of goods/services for household consumption and reducing economic growth. This increase in household imports is another effect if the economic transformation, especially increasing in industrial productivity, is not carried out.

3.8. IMF

The basic purpose of the IMF is to ensure global monetary stability. In order to attain this goal, one of the IMF's key functions is to offer emergency loans to countries undergoing economic crises. The pandemic of COVID-19 has prompted unprecedented requests for financial help from the International Monetary Fund (IMF). More than a hundred of the IMF's 189 member countries have requested IMF programs. They are willing to employ the whole IMF's current financial capacity-roughly $1 trillion-to respond to the pandemic and its economic implications.

In addition, the IMF has adopted several other policy measures to strengthen its COVID-19 response. The International Monetary Fund (IMF) uses its Catastrophe Containment and Relief Trust (CCRT), a donor country trust fund, to cover six months of debt payments owed to the IMF by 29 low-income nations. In addition, the IMF established a new Short-Term Liquidity Line. It is a revolving and renewable backstop for member nations with sound economic policies that require short-term and moderate financial assistance to bolster a country's liquidity reserves. The IMF also approved recommendations to speed up the Board's examination of member finance requests for emergency financing, as well as doubling (to nearly $100 billion) the amount of money available to members' access to IMF emergency assistance. The IMF provides funding to poor and emerging market economies that are short on financial resources.

IMF urged countries to shift their focus from saving their economies from collapse to restoring growth-oriented policy reforms to improve their recovery chances and make them more sustainable. IMF stated that the COVID-19 epidemic delayed and reversed several pro-growth initiatives and that reinstating them can help make up for output lost during the pandemic. Labor policies that help retrain people and match them with job vacancies, as well as reforms that allow for faster

restructurings and resolution of unviable enterprises, can help shift workers and capital to more promising, dynamic sections of the economy, according to Okamoto. Improved competition policy frameworks, such as those currently being debated in Europe and the United States, can help limit market power concentration among a few firms while fostering more dynamic competition and innovation.

4. CONCLUSIONS

Covid-19 has created the possibility of being caught up in stagnant economic growth. The ability of countries to recover is determined by various variables such as demand and supply patterns, monetary and fiscal policies, as well as variables of health and quality of the country's institutions. The G-shaped model offers a way to avoid the G-trap by improving the components of demand and supply, monetary, fiscal, health, and institutional quality. This paper's evaluation is not merely focused on strong economic growth or fiscal performance but also included indications depicting the quality of a country's welfare, health, and institutional performance.

This paper identifies several countries with a high possibility of being trapped in a G-shaped recovery. This paper also found the secular stagnation phenomenon in advanced economies. This paper uses the economic scoring and indexing methods and the panel regression model, forming an economic recovery index of 6 clusters (demand side, supply side, monetary policy, fiscal policy, health indicator, and institutional quality).

This paper also employed the Computable General Equilibrium (GCE) simulation analysis model developed by Hans Lofgren to project Indonesian economic growth, particularly after the pandemic, with a value calibrated with the 2019 GDP value as the baseline for the CGE model.

Using 33 country samples, there are 7 countries with the highest possibility of G-Shaped Economic Development: Pakistan, Mexico, Egypt, South Africa, Nigeria, Indonesia, and Brazil. Several counties in samples, including Pakistan, Mexico, Egypt, South Africa, Nigeria, Indonesia, and Brazil, are trapped in long stagnation.

Using the CGE simulation analysis, it is shown that until 2024 with the model's assumptions, the projection of economic growth for Indonesia is only 5%. The change in work patterns caused by the pandemic reduces the activities of the affected business sector and reduces people's income. In particular, those who work in the business sector. However, the CGE model assumes a shift in capital and public finances flow from the transportation sector to the Information and Communications sector. This is caused by the reduction in household spending in the transportation sector and the increase in spending in the Information and Communications sector, mainly using the Internet for WFH needs.

In Indonesia, the direction of economic growth is greatly influenced by household consumption. Thus, the contraction of consumption becomes the basis for recovery because of the shift in economic activity from one sector to another. It is the basis for the recovery and adjustment of Indonesia's economic direction in conducting simulations. It is worth considering future research in using the framework of the circular economy model to find new possible projections of future global economic growth (more appropriate global prosperity).

5. RECOMMENDATIONS

The 7 out of 33 country samples analyzed make up 15.41 percent of the global population or 5.83% of GDP. Thus, joint global action and efforts to make improvements in these economies are extremely important. For comparison, the low-performing economies differ in many quality attributes compared to the high-performing economies. The five highest score countries (Singapore, Germany, United States, Netherlands, and South Korea) have several common attributes demonstrating their superior economic performance. These countries perform well, particularly in their institutional and health quality indicators. The top-performing economies are also superior in other economic aspects such as Internet Connectivity, Covid-19 Vaccine Success Rate, Hospital Occupancy Rate, Available Medical Staff, Economic Productivity, and Quality of their National Logistics Networks.

The 7 low-performing economies, however, extremely lack these attributes. They score exceptionally high in tourism revenue-per-GDP and their debt-to-GDP. Their high debt-to-GDP ratio puts them at risk of default. However, these economies tend to generate a large number of their income from tourism revenue and foreign-exchange earnings, which are common traits of a developing country. It is thus very important for these economies to attain development; however, they require assistance and financial aid from international organizations to continue their development. Their low performance on credit growth and LPI scores indicates low economic activity, as only some companies can borrow from banks to start new projects. Thus, the improvement of the GDP growth rate, deposit growth, solvency ratio, and banks' efficiency may positively influence credit growth. Improving The Human Development Index is also very crucial. The economies must focus on good public health measures to raise life expectancy. They score low on the number of hospital beds, low on the vaccination rates, and high on case-fatality rates; thus, developing health infrastructure is key. Also, they need to take fundamental measures to increase health literacy, improve the quality of health services, and develop other supporting elements such as equipment, access, information technology, systems, staff, water quality, sanitation, and others. The education levels can also be raised rapidly by improving internet access and educational institutions. Improving GDP will need appropriate measures and varies from country to country. However, one that will suffice for Singapore is combating corruption. Lastly, based on the economic indexes, the economies have much to improve on their policies, institutions, and other factors in place to develop and recover rapidly. This means applying differentiated policies to the economy's needs, which helps policymakers prioritize policies that support economic growth while improving living standards.

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