Macrothink Institute™

Research in Applied Economics
ISSN 1948-5433
2023, Vol. 15, No. 1

The Keynesian Stimulus Model: Stimulating Economic Activities with Direct Transfers

Christopher Achazie Osuoha[1,*]

[1]School of Business, Wayland Baptist University, Plainview, TX, USA

*Corresponding author: School of Business, Wayland Baptist University, Plainview, TX, USA

Received: January 14, 2023 Accepted: May 29, 2023 Published: June 9, 2023

doi: 10.5296/rae.v15i1.20672 URL: https://doi.org/10.5296/rae.v15i1.20672

Abstract

Governments use direct transfers as a fiscal measure to stimulate economic activities during shocks. As COVID-19 continues to ravage economies globally, governments worldwide have responded with fiscal and monetary policies to manage the pandemic's economic impact. In addition, the U.S. government has intervened with direct transfers to provide liquidity to prevent a prolonged shock. However, opinions are divided on the efficacy of the Keynesian stimulus policy. This study used a mixed-method research design to analyze the classical Keynesian model and compares it with the monetarist model to provide insight into the stimulus policy outcomes of the Coronavirus Aid Relief and Economic Security (CARES) Act of 2020 and subsequent policies used to manage the COVID-19 shock. Time-series data from the Bureau of Economic Analysis (BEA), Bureau of Labor Statistics (BLS), and the Federal Reserve Bank (the Fed) of the percentage changes in GDP, disposable personal income (DPI), and personal consumption expenditure (PCE), as well as unemployment rates (UR), interest rates (INT), and inflation rates (IFL), were collected and analyzed. The study used multiple regression (MR) to empirically examine the variables' relationships to ascertain both models' short-term efficacy. The results suggest that DPI, PCE, and UR significantly predicted the percentage change in GDP in the Keynesian model, whereas, UR, INT, and IFL did not substantially predict the change in GDP in the monetarist model.

Keywords: COVID-19, direct transfers, the Keynesian and monetarist models, changes in GDP

1. Introduction

When the Coronavirus disease (COVID-19) first emerged in Wuhan, Hubei Province of China, the global concern was focused on its public health impact and the threat to human life. Governments worldwide implemented many measures to contain the spread of the virus. Apart from the daily increase in deaths and hospitalizations, these restrictive measures and recommended health protocols culminated in an economic shock. The U.S. government responded with a fiscal stimulus package(note 1) to prevent the economy from sliding into another Great Depression after the painful recession experienced a decade earlier. This study analyzes the Keynesian model to ascertain how fiscal transfers stimulate economic activities. The article seeks to illuminate how the $931 (note 2) billion direct transfers could boost economic activities to address the economic impacts of COVID-19. The pandemic caused unemployment, panic, and a decline in consumer confidence. Keynes (1957), Baker et al. (2020), and Baqaee and Farhi (2021) noted that increased liquidity sustains personal consumption expenditure (PCE) and disposable personal income (DPI) because of the multipliers it produces.

However, monetarists believe that expansionary monetary policy could produce the desired outcome of stimulating economic activities in the long run. Milton Friedman (1968) argued that monetary policy could offset severe economic disturbances from other sources in the long run. Mankiw and Reis (2018) disagreed with Friedman's classical long-run theme and its centrality on expectation. In their words, "The long run is a misleading guide to current affairs" (Mankiw & Reis, 2018, p. 87). Keynes argued that "in the long run, we are all dead" (Keynes, 1937). This article analyzes the fiscal stimulus applied during the ongoing pandemic compared with an alternative policy to illuminate the efficacy of Keynesianism.

The origin of COVID-19 is traceable to Wuhan, Hubei Province in China. Park et al. (2020) and Ren et al. (2020) explained that COVID-19, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), first appeared in Wuhan in December 2019. The early COVID-19 cases were diagnosed in December 2019; by February 2020, the virus had spread to an alarming proportion of the world and quickly became a global pandemic. In March 2020, COVID-19 began ravaging New York, spreading rapidly to other big cities in the United States, including Chicago, Seattle, and Miami, and becoming an unprecedented public health crisis. Baker et al. (2020) and Benzeval et al. (2020) documented many measures that federal and state governments used to contain the spread of the virus, including travel restrictions, shelter-in-place orders, and the closure of non-essential businesses. These measures caused many economic hardships, such as massive job losses, declines in consumer confidence, and a significant strain on national output. Ren et al. (2020) noted that fear and misinformation about the virus caused panic and disrupted the free flow of people, goods, and services. They emphasized the psychological effect of the fear of a deadly infectious disease on society and insisted that people feel unsafe, uneasy, and anxious (Ren et al., 2020). Ordinarily, when such fear and uncertainty grip society, people are compelled to be cautious of others to protect themselves. However, such precautionary health safety measures have severe economic consequences (note 3) and distort the market dynamics for non-essential products and services. Literature, including that of Baker et al. (2020), Chetty et al. (2020), and Baqaee and Farhi

(2021), supported the notion that the adverse effects of fear or stigma constrain consumer confidence and severely depress demand.

The U.S. government responded with fiscal stimulus, a Keynesian approach that President Franklin D. Roosevelt (FDR) used to implement the New Deal to revive consumer confidence and stabilize the economy during the protracted Great Depression of the 1930s. Gravelle, Hungerford, and Labonte (2009) explained that fiscal policy temporarily stimulates the economy but increases the budget deficit, raising government spending through direct or consumption spending by the recipients of tax cuts or cash transfers. The justification of the stimulus proponents is that direct cash transfers are a quick method to sustain household consumption and stimulate aggregate demand (AD). Dender, O'Reilly, and Perret (2020) argued that policies that provided liquidity support to vulnerable small businesses and families relieved them of the economic hardship caused by the containment measures. However, the stimulus transfers aimed to alleviate the pandemic's severe effects on social outcomes and stimulate AD through the multiplier effect of government transfers. Baker et al. (2020) discussed the rationale for the stimulus extensively. They offered valid evidence that "the effect of these payments relies on the household's marginal propensity to consume (MPC), out of the stimulus transfers" (Baker et al., 2020, p. 2). Their findings showed that MPCs are essential to public policy and economic theory because the MPCs from transfers produce multipliers in many policy models (Baker et al., 2020). Therefore, if the economy is expected to be hit by a severe shock, proactive policies become indispensable to insulate the economy from that shock. The significant rise of PCE after each round of the transfers supports Keynes's view on government intervention.

The trend shown in Figure 1 reemphasizes the Keynesian theory, suggesting that the main barrier to economic activities is contracting income due to the COVID-19 threat, leading to inadequate personal income and declining personal consumer spending; hence, the $600 payment of the second fiscal stimulus in January 2021 caused a rise in both DPI and PCE. Casado et al.(2020), Chetty et al. (2020), and Fornaro and Wolf (2020) found a link between the Keynesian theory and their empirical results. Moreover, they constructed various indices from different data sources to establish relations with the theoretical foundations.

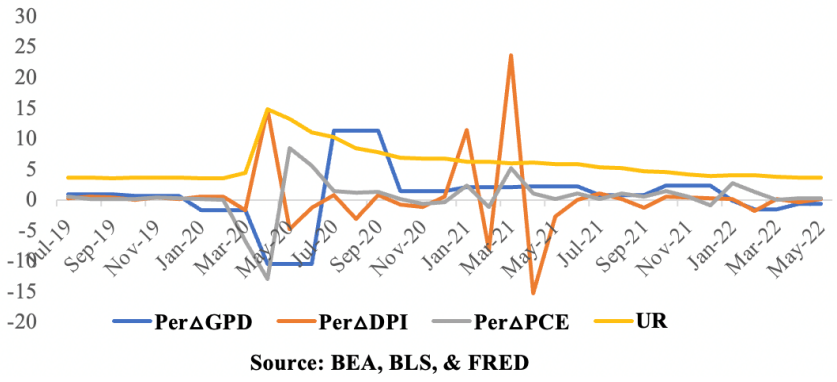

Figure 1. Perent Change in GDP, DPI, PCE, and UR from Preceding Month, Jul 2019-May 2022

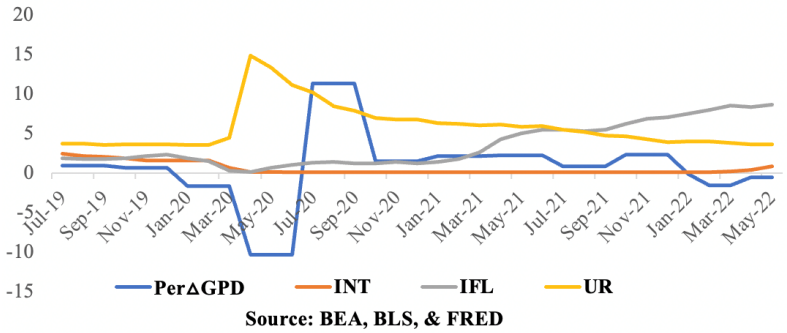

Figure 2. Perent Change in GDP, INT, IFL, and UR from Preceding Month, Jul 2019-May 2022

As shown in Figure 2, the lowering of the interest rate in February 2020 caused a significant decline in the inflation rate; thus, inflation neared 0% in April 2020 and then maintained an upward trajectory. The inflation rate reached a 40-year high of 7.9% in February 2022 (note 5) and has continued to rise since. While interest rates remained at their lowest from April 2020 until March 2022, the Federal Reserve Bank (Fed) raised interest rates from 0.20% in March 2022 to 1.21% in June 2022. The changes in GDP fluctuated significantly between March and October 2020. The GDP growth was unstable from June to October 2021 despite the Fed maintaining stable interest rates. The unemployment rate consistently declined from April 2020 to January 2022. Figure 2 suggests that starting from January 2022, the Taylor rule could not hold, thus reinforcing Guerrieri et al.'s (2020) view on monetary policy; therefore, the interest rates were adjusted in tandem with the rise in the inflation rate without considering the decline in GDP.

Carvalho and Rezai (2016) argued that changes in income distribution affect AD, which supports Keynes's theory that increased liquidity leads to higher output and a greater multiplier from consumer spending. Keynesians, including Chetty et al. (2020) and Baqaee and Farhi (2021), admit that the COVID-19 shock requires a stimulus to maintain household consumption and provide a higher MPC to restore macroeconomic equilibrium. However, critics of the Keynesian stimulus solution to shocks expounded the Hayekian free-market idea to reemphasize Freidman's claim that the money supply has an enormous effect on the national output. Krugman and Wells (2017) and Mankiw and Reis (2018) argued that fiscal stimulus was effective in confronting the Great Depression of the 1930s and the last Great Recession in 2008 despite the debate in the policy arena that trailed the outcomes of the New Deal policy and the American Recovery and Reinvestment Act (ARRA). The belief that fiscal stimulus was successful in those instances emboldened the federal government to proactively pass legislation to ameliorate the hardship and contain the economic effects of the pandemic.

On March 25, 2020, CARES Act (note 4) was passed as a comprehensive policy response to the economic hardship caused by the pandemic. The evidence from Baker et al. (2020) and Chetty et al. (2020) suggests that the $2 trillion stimulus program under the CARES Act, including the cash transfer of $1,200 per adult, an additional $500 per child under the age of

17 years, and the payroll protection assistance to small businesses, stimulated AD. The U.S. government provided two more rounds of the stimulus in 2021, with $600 and $1400 transfers, respectively. The argument that dominated the policy arena among mainstream economists is whether the size of the transfers was large enough to generate the expected multipliers and if the timings were consistent with the desired policy outcome. Although the pandemic continues, looking at the time horizon of the analysis of the policy measures is critical, as observed by Mankiw and Reis (2018). They argued that "Milton Friedman viewed the long run as the timeframe under which we should apply principles of classical economics, especially monetary neutrality" (p. 84). Their view was that regardless of the actions taken by the Fed, unemployment would, over time, reach its natural rate, which implies that the time horizon is a misleading guide to current affairs. Hence, this research focuses on the short run. The policy assessment of the past pandemics in the last century, including the 1918 Influenza, the 1957 H2N2 virus, the 1968 H3N2, and the 2009 H1N1 Swine Flu, shows that the time horizon shapes the dominant reactionary policies.

The aim of this research is to examine the direct stimulus payments by the U.S. government using the Keynesian model and the variations in the interest rates by the Fed using the monetarist model to determine their efficacy in stimulating economic activities during the COVID-19 pandemic. This study identifies relevant variables and employs similar procedures as those employed by Casado et al. (2020), Chetty et al. (2020), Fornaro and Wolf (2020), and Baqaee and Farhi (2021) to gather time series data from the beginning of the pandemic from primary sources.

2. Economic Shocks: A Literature Review

2.1 Theoretical Perspective

Economic shocks are critical events that impact the economy. Shocks disrupt demand and supply in a complex and unpredictable manner, thus destabilizing the macroeconomy. Therefore, there are two types of shocks: demand and supply shocks. Severe weather, war, and labor strikes that disrupt the supply of goods and services are factors that cause a supply shock. Carlsson-Szlezak, Reeves, and Swartz (2020) noted that supply shocks damage the supply side of the economy and thus, disrupt credit mediation, cause stunt capital formation, and slow recovery, which forces workers to leave the workforce and leads to the loss of vital skills and a decline in economic activities. However, increasing prices, loss of income, and an extensive drop in consumer and investor confidence constrain the animal spirit and cause demand shock. The impacts of shocks on the economy could be drastic. They can affect micro-level demand and supply changes, culminating in significant changes in AD and aggregate supply (AS). The COVID-19 pandemic is a severe health crisis of global magnitude. Andolfatto (2021) argued that this pandemic fits the bill of a supply shock because as the pandemic surges, it severely affects society's ability to produce goods and services. Barret et al. (2020) observed that economists see COVID-19 as a supply shock but reasoned that a supply shock could create a demand shock. Additionally, considering the nature of the economic effects of COVID-19, it is appropriate to place it within the Keynesian context as a demand shock because the demand

aspect appears more dominant than the supply aspect. Keynes (1936) identified the 1930s Great Depression as a demand-side problem caused by liquidity constraints that weakened consumer confidence and depressed AD. A supply shock is easier to correct by boosting suppliers' production ability.

The Coronavirus precipitated the economic contagion that continues to spread as the virus mutates into different variants. Baker et al.'s (2020) view were consistent with Chetty et al.'s view that the preventive health protocols to contain the spread of the virus severed market dynamics, stalled economic growth, and posed the potential threat of an epic recession on a global scale. Their views resonate with that of Carlsson-Szlezak, Reeves, and Swartz (2020), who argued that the pandemic's trajectory imposes a higher economic cost, making the prediction of its path nearly impossible as multiple dimensions of the pandemic were unprecedented and unknowable. Moreover, health authorities contend that the virus has been mutating into many variants and has now reached an endemic stage. Therefore, it is necessary to develop an appropriate policy response to mitigate the severity of its economic impacts. Recently, relevant works have examined the economic effects of the pandemic and policy interventions to reduce them. Notable among the literature are the studies by Baker et al. (2020), Chetty et al. (2020), and Baqaee and Farhi (2021), which used the Keynesian fiscal policy approach to analyze the pandemic's impact, and the studies by Dorn (2019), Fornaro and Wolf (2020), Casado et al. (2020), and Pollitt et al. (2020), which used the monetarist approach. Data constraints were a significant limitation in these studies that created gaps due to the ongoing nature of the pandemic and its antecedent economic impacts. For example, Dorn (2019) used the federal fund's rates to test the modern monetary theory (MMT) to investigate the efficacy of monetary theory. Fornaro and Wolf (2020) estimated the intertemporal effect of interest rates. In contrast, Baqaee and Farhi (2021) calibrated their model and data in a quantitative input-output model to test the impact of the stimulus on output, employment, and inflation.

New data will uncover fresh evidence and trends that may support or refute the findings in the earlier literature. However, the evidence available in the literature is valuable in developing the theoretical and empirical framework for this study. First, the information available in the related literature helps contextualize the problem, identify the research gaps, and develop an appropriate research design to fill the gaps. For example, Chetty et al. (2020) suggested that stimulus transfers rely on the MPC and the multipliers they produce, reinforcing the Keynesian classical theory that liquidity unleashes the propensity to consume. In addition, this article conceptualizes the research inquiry under the Keynesian and monetarist models to address the policy problems identified by reviewing the methods and exploring the gaps in the related literature. For example, Baker et al. (2020) identified PCE and DPI as variables to measure the relationship between the $1200 cash stimulus and MPC. Also, Fornaro and Wolf (2020) estimated the effect of nominal interest rates based on spending to stabilize output around its potential level and manage Friedman's temporary trade-off between inflation and employment. Second, the theoretical constructs of this study help address the policy questions with the policymakers and researchers as the target audience to provide the rationale for addressing severe shocks such as COVID-19 with these policy approaches.

Benzeval et al. (2020) found that the pandemic's shock affected different individuals and

households disproportionately. As Nakamura and Steinsson (2018) identified, the choice of policy approach depends on the exogenous variations, such as structural shocks and their causal effects. Chetty et al. (2020) isolated monetary expansion and focused on the Keynesian model. Fornaro & Wolf (2020) and Casado et al. (2020) argued that comparing both models helps to determine a better policy approach. However, data limitations constrained Baqaee and Farhi (2021) in their attempt to address this problem. Therefore, it is essential to compare the outcomes of the Keynesian fiscal stimulus and monetary expansion to rigorously evaluate the application of the Keynesian model to the COVID-19 shock.

2.2 Overview of Economic Stimulus

2.2.1 An Overview of the Keynesian Model

John Maynard Keynes's fiscal multiplier is the conceptual foundation of economic stimulus policy. Keynes (1936) claimed to discover the practical flaws of the free-market approach to shocks during the Great Depression and posited that increased government spending to stimulate the economy is critical in reviving the depressed demand. The idea behind this is that fiscal spending effectively manages the AD to stimulate a depressed economy by raising consumer confidence. In Dender, O'Reilly, and Perret's (2020) view, while fiscal measures could stimulate demand, fiscal policy could incentivize behavior congruent with the desired public health goals. Therefore, fiscal policy should target the macroeconomy and not individual consumers' financial burdens, which can divert income to non-consumable spending. The classical Keynesian goal of the stimulus is to reinvigorate economic activities, restore consumer confidence, and close the output gap to bring employment to its full potential. The positive shift in consumer expectations drove the recovery from the 1930s Great Depression and the 2008 Great Recession. Even Eggertsson's (2005) evaluation of FDR's fiscal approach to the Great Depression in a dynamic stochastic general equilibrium (DSGE) model showed that expanded government actual and deficit spending caused a significant shift in consumers' expectations. He argued that "the key to the recovery was the successful management of expectations about future policy" (Eggertsson, 2005, p. 4). However, Sergent (1983) and Temin and Wigmore (1990) offered a counternarrative: FDR's removal of the policy dogma to combine fiscal and monetary policies increased demand during the Great Depression.

FDR heeded Keynes's advice in designing the New Deal policy, thus rejecting the classical economists' orthodoxy, and opening a new frontier for economists to manage shock. Keynes (1936) refuted Friedrich Hayek's free-market theory and argued that the free market is incapable of self-correction. Keynes (1937) further argued that without intervention, it is difficult for the market to adjust itself in the long run during persistent contraction of AD; instead, the economy would reach a new equilibrium characterized by slow growth, a high unemployment rate, and a recessionary gap. Thus, the central idea of classical Keynesian theory is that direct stimulus transfers provide liquidity that increases consumption spending. Keynes's approach has been validated in recent literature. The evidence in Baker et al. (2020), Chetty et al. (2020), and Baqaee and Farhi (2021) validated the classical Keynesian theory because the cash transfers to households and small businesses increased consumption spending among low-income families, nearly restoring pre-COVID-19 consumer spending. However,

the results from Fornaro and Wolf (2020), Casado et al. (2020), and Pollitt et al. (2020) provided incomplete evidence of cash transfers increasing DPI. Fornaro and Wolf's (2020) estimate of the intertemporal substitution effect of nominal interest following the new standard Keynesian model proposed by Gali (2009) showed a demand-driven slump and supply-demand doom loop that may last longer than the pandemic and can cause a pessimistic animal spirit, the unwillingness of consumers to spend. These findings support the view that the cash transfers stimulated consumer spending, alleviated the pandemic's hardship, and stimulated the economy.

The long debate among economists on the role of government tends to draw the line at the choice of interventionist policy to manage the economy. Adam Smith (1776) made a clear case for limited government involvement in his thesis, "The inquiry into the causes of the wealth of nations." He laid out the free-market principle that profit motive and competition align private interest with the public interest. Smith (1776) brought to bear the idea that government should not control the private sector. However, more than a century later, Adolph Wagner (1883) found a positive correlation between fiscal spending by the government and economic growth. Hence, the increased public demand for government intervention for regulatory and protective purposes, particularly during shocks. Keynes (1937) argued that when the free market fails to achieve the optimal allocation of resources, the government's role is to disrupt the competitive market process to alter the distribution between individual consumers with intervention measures. Keynes's idea is that the government's increase in fiscal spending and the tax cuts will increase disposable income, drive consumption, and boost private sector investment. Hayek's view, which reflects the monetarist concern, is that fiscal stimulus has the long-term consequence of a higher inflation rate.

Keynesian theorists believe that stimulus spending increases disposable income and output, thus causing an increased demand for money. However, Mankiw (2011) showed that the effect of the stimulus on production and employment depends on the investment-savings (IS) and liquidity preference-money supply (LM) curves. He explained that the IS curve, which represents equilibrium in the goods market, and the LM curve, which represent equilibrium in the money market, jointly determine interest rates and national income in the short run (Mankiw, 2011). Thus, the consumption function assumes the following form:

$$C = C + c(Y + TR - tY) > 0 \quad \text{(Eq.1)}$$

Where $\bar{C}$ is the autonomous consumption, c is the marginal propensity to consume, Y is income, $\overline{TR}$ is transfer payment (stimulus), t is the tax rate, and $c>o$ shows the direct relationship between consumption and disposable income. Assuming that the private investment function is:

$$I = \bar{I} - bi \; b > 0 \quad \text{(Eq.2)}$$

Where b measures the interest rate elasticity of investment, $\bar{I}$ is the autonomous investment, which is not dependent on the federal funds rate and consumers' income. However, Baker et al. (2020), Chetty et al. (2020), and Baqaee and Farhi (2021) noted that transfer payment could cause a substantial shift in the AD curve. Hence, Cheng (2015) derived the AD curve as follows:

$$AD = C + I + G + NX = [\ \bar{C} + c\ \bar{T}\ \bar{R} + c(1-t)Y + \left(\ \bar{I} - bi\right) +\ \ \bar{G} +\ \ \bar{N}\ \bar{X} =\ \ \bar{A} +$$

$$c(1-t)Y - bi \qquad \text{(Eq.3)}$$

Where $\bar{A} =\ \bar{C} + c\ \bar{T}\ \bar{R} +\ \ \bar{I} +\ \ \bar{G} +\ \ \bar{N}\ \bar{X}$ represents the level of autonomous spending needed to maintain equilibrium in the goods market. Therefore, Eq.3 can be modified to meet the requirement for the market to clear as:

$$Y = AD =\ \ \bar{A} + c(1-t)Y - bi \qquad \text{(Eq.4)}$$

$$i = \frac{\bar{A}}{b} - \frac{[1-c(1-t)]Y}{b} = \frac{\bar{A}}{b} - \frac{Y}{aGb} \qquad \text{(Eq.5)}$$

Where $\frac{1}{aGb}$ is the slope of the IS curve and $\alpha_G = \frac{1}{1-c(1-t)}$ is the multiplier of fiscal spending. This implies that the IS curve is determined by the multiplier of fiscal spending α_g and the interest elasticity of private investment *b*.

Fadul's (2021) finding reemphasized the power of the government spending (*G*) multipliers discussed in Blanchard and Perotti (2002) as a post-estimation transformation that helps to appraise the ratio of response of economic activity to fiscal spending. Blanchard and Perotti (2002) estimated the spending multiplier as the ratio of the GDP response at the time horizon *k* to the initial variation of government expenditure at horizon *0*, dividing it by the average share of government spending in GDP to stimulate economic activities (Fadul, 2021). Thus, the multiplier is derived as follows:

$$impact(k) = \frac{Dy0}{Dg0}\ \frac{1}{x/y} \qquad \text{(Eq.6)}$$

Where $k = 0$ denotes the impact multiplier. This implies that for any 1% increase in government spending, the GDP will rise by the percentage calculated in Eq.6. However, Montford and Uhlig (2009) proposed a cumulative multiplier of fiscal measures to estimate the changes in GDP and *g* using their discounted present values. They modified Blanchard and Perotti's (2002) multiplier as a summation of responses in output *y* and the summation of the current value of the changes in *g* for both time horizons *t* from *0* to *T* as follows:

$$cumulative(T) = \frac{a_t^{0T}=0(1+i)^{-t}Dy_t}{a_t^{0T}=0(1+i)^{-t}Dg_t}\ \frac{1}{g/y} \qquad \text{(Eq.7)}$$

The shortcomings of this measure, as noted by Gordon and Krenn (2010) and later by Ramey (2019), are two-dimensional. First, the variation in GDP is calculated as a marginal effect of *g* on *y* relative to the marginal impact of *g* on itself, which is contradictory in the absence of innovation generated by *g*. Second, the equation assumes that the fiscal spending to GDP ratio (*g/y*) is constant, which Ramsey (2019) argued makes the multipliers counter-cyclical compared to the actual pattern. This study estimates the impacts of the stimulus using the Keynesian approach and compares it to the outcome from the monetarist model to avoid this problem in measuring the effect on GDP.

Considering GDP as a national accounting system, all the components of its equation rely on

liquidity to expand. Thus:

$$GDP = C + I + G + NX \quad \text{(Eq.8)}$$

Where C is consumption spending, I is investment spending, G is government spending, and NX is net export, $NX = (EX\text{-}IM)$. This implies that the GDP growth depends on the increase in these component variables. The Keynesian theorists believe that liquidity drives AD and AS; hence, fiscal intervention effectively stimulates the economy during shock. Regardless of the source of liquidity, an increase in liquidity raises households' and individuals' income and stimulates consumption spending. Gwartney et al. (2018) explained that "an increase in the supply of money will lead to a proportionate increase in the price level" (p. 285), which means that price (P) will drive output (Y), catalyzing higher private-sector productivity measured in the real GDP. The multiplier of consumption spending (M) will induce a higher velocity (V) of money that places the economy on a faster recovery path in the short run. Thus, operationalizing the quantity theory of money to demonstrate the effectiveness of the money transmission mechanism expressed as $PY = GDP = MV$ in Gwartney et al. (2018) which shows the relationship between monetary policy and increased private sector spending. From the Keynesian perspective, fiscal intervention after the CARES Act of 2020 was expected to significantly increase households' income. Indeed, the effect produced a significant rise in DPI and PCE, as shown in Figure 1.

However, the critical policy question remains unanswered: To what extent does fiscal transfer stimulate demand compared to monetary expansion? Thus, this crucial question touches on the fundamental assumption that raising household consumption spending translates into increased economic activities, as Keynes (1936) emphasized, and Baker et al. (2020) reemphasized. The premise of these submissions provides the Keynesian stimulus model's conceptual framework and this article's theoretical foundation. The new Keynesians have modified the classical Keynesian construct of liquidity to show that the efficacy of transfer payments relies on the household's MPCs that influence the consumers' behavior (Baker et al., 2020; Baqaee & Farhi, 2021). The CARES Act of 2020 was passed based on the envisioned liquidity it would provide consumers and the multipliers arising from the spending. Parker et al. (2013) explained that the limitations of traditional monetary policy were the rationale for the Obama Administration's preference for fiscal policy to stabilize the economy during the 2008 Great Recession. Stilwell and Primrose (2010) held a similar view, namely, that social spending during a severe economic shock reestablishes investor and consumer confidence to boost AD in the short run. The theoretical quagmire was recently raised by Andolfatto (2021) in his study of the problem of monetary-fiscal policy coordination using three policy parameters: nominal interest rate, budget deficit, and money growth rate. Andolfatto (2021) noted that the money growth rate determines inflation in a steady state. Still, during shocks, the fiscal authority decides the money supply, making long-run inflation a fiscal phenomenon (Andolfatto, 2021). For a pragmatic solution in dire situations, such as the COVID-19 shock, policymakers often turn to relevant policy models. Keynes (1937) recognized the link liquidity provides between demand and consumption and posited that "the transition from a lower to a larger scale activity involves an increased demand of liquid resources" (p. 668). The main criticism against Keynesianism is its enormous budget deficit consequences.

The pandemic challenged researchers to channel considerable efforts to identify the policy impact of fiscal transfers on economic aggregates—specifically, the effect of government spending during a severe shock. Opinions are still divided on whether increased government spending during the pandemic helped boost the U.S. economy and avert significant contraction. Keynesian theorists, including Baker et al. (2020), reemphasized Barro's (1981) position that temporary spending affects GDP more than a permanent purchases. In contrast, Dender, O'Reilly, and Perret (2020) contended, from a neoclassical perspective, that permanent purchases provide more remarkable results than temporary purchases. It implies that there is a considerable distinction between temporary and permanent changes in government spending. Hence, this article focuses on the short-run impact of the fiscal stimulus rather than the long-run effect. However, Baqaee and Farhi (2021) looked at fiscal spending multipliers differently. They grouped the fiscal multipliers into local and national types using cross-sectional panel data and econometric methods to estimate the impact (Baqaee & Farhi, 2021). The approach did not consider the possible implications of monetary policy. This article finds it critical to evaluate the direct effects of fiscal stimulus using multiple regression (MR) to seek a causal relationship between the aggregates of fiscal spending and changes in GDP and compare it to the outcome of monetary expansion.

2.2.2 An Overview of the Monetarist Model.

The conceptual foundation of the monetarist model is that reducing interest rates and reserve requirements increase the money supply and liquidity. Bordo and Rockoff (2013) argued that "lowering interest rates is more effective in managing the aggregate demand and supply to stimulate private-sector spending" (p. 8). The idea is that varying interest rates and money supply help steer the economy in the desired direction. Krugman and Wells (2017) noted that the broad definition of money comprises cash in circulation, current account balances, savings account balances, other near monies such as travelers' checks, and certificates of deposits used in regulating the economy. Like fiscal policy, "monetary policy can serve as contractionary and expansionary measures in the short run" (Krugman & Wells, 2017, p. 552). Expansionary monetary policy manages shocks such as the Coronavirus by lowering interest rates to make borrowing attractive and expand the aggregate money supply through the open market operation (OMO). Cochran et al. (2015) explained that the central bank could buy or sell government bonds to regulate the economy by injecting or withdrawing money from circulation to contract or expand liquidity. Seidman and Lewis (2015) explained that monetary policy could stimulate the economy during a severe recession without significantly increasing the budget deficit, which implies that the monetarist model does not affect the budget deficit; thus, stimulus-without-debt is preferable. Hamilton and Herrera (2001) noted that OMO directly regulates liquidity because of the shorter time lag of added liquidity, estimated at seven months. In Hamilton and Herrera's (2001) view, "for a modest and unanticipated expansion in aggregate demand, the liquidity effect of monetary policy dominates" (p. 7). The time lag found by Bernanke, Gentler, and Watson (1997) raised concern about whether lowering interest rates and increasing the money supply can raise the GDP growth rate. If it can, to what extent does it stimulate economic activities?

The policy lag found in Bernanke, Gentler, and Watson (1997) brings to bear the concern about

the effectiveness of monetary expansion in managing shocks such as the COVID-19 pandemic. Recall that during the 2008 Great Recession, Bernanke applied quantitative easing (QE) in trenches to maintain a steady money supply growth. On the other hand, the monetarists argued that fiscal measures alone could not address the severe shocks sufficiently. This argument resonates with the policy question posed by Fornaro and Wolf (2020) about what constitutes the optimal economic policy. Moreover, such a policy concern resonates with the research questions and reinforces the study's purpose of finding an appropriate metric for gauging the optimality of the Keynesian and monetarist models in addressing the Coronavirus shock. In a severe crisis like the COVID-19 pandemic, determining optimal endogenous variables such as inflation rate, unemployment, and GDP often presents a public policy challenge, making trade-offs between policy goals critical. For example, the CARES Act of 2020 and other relief policies prioritized liquidity over fiscal deficit because of limited government resources and competing spending demands. Schmitt-Grohe and Uribe (2005) considered this and proposed that interest rates and OMO are the best tools to regulate the economy. In their words, "the central goal of optimal monetary policy is price stability, and an optimal inflation rate of 0.5 percent with the volatility of 1.1 percent" (Schmitt-Grohe & Uribe, 2005, p. 393). Their position raised a new challenge of policy phases the government must undergo beyond the initial response to COVID-19 to relax measures, enact economic support recovery, and restore public finances after the pandemic (Dender, O'Reilly, & Perret, 2020). However, if these views are correct, how can monetary expansion maintain a stable price level and simultaneously stimulate AD without significant changes in the DPI and PCE during the pandemic?

There have been concerns about the utilization of government monetary expansion during shock and the potential antecedent inflation. Alpanda (2019) and McLeay and Tenreyo (2020) noted that the Phillips curve describes the trade-off between monetary policy utilization and inflation. Watson (2007) and Coibion and Gorodnickenko (2015) argued that the Phillips curve had maintained a flatter trend in the short run, implying that inflation has become significantly insensitive to standard measures of monetary policy utilization such as unemployment. In recent studies, including that of Kan (2021), the slope of the Phillips curve and the Fed's welfare loss function jointly determined optimal monetary policy. Therefore, it is vital to understand the slope of the Phillips curve and the factors that cause it to flatten. Policymakers must correctly interpret the dynamics of the Phillips curve and its application to address the COVID-19 shock to reach policy optimality. The rationale is that shocks, particularly cost-push shocks resulting from the pandemic, should capture the trade-off between inflation and GDP growth in policymaking. Guerrieri et al. (2020) observed that the shock represents the labor market conditions in the ongoing pandemic. If monetary expansion causes the inflation rate to rise, then monetary policy is optimal in the short term. Thus, Guerrieri et al. (2020) modified the Phillips curve to:

$$\pi A_t = be_t(\pi A_t + 1) + k_\gamma y_t + W_t + m_t \quad \text{(Eq.9)}$$

Where m_t is the cost-push shock from the pandemic, it becomes imperative to determine the optimal monetary policy. The optimal monetary policy optimizes the Fed's inflation rate, output gap, and federal lending rate at different stages of the shock. Thus, the shock moves the inflation rate and output gap in the opposite direction, representing the trade-off that faces the

Fed. It implies that the optimal inflation rate, output gap, and federal funds rate are a function of the shock m_t. The shock modifies the Taylor rule as:

$$i_t = \Phi_\pi \pi_y + \Phi_y y_t + \Phi_u \mu_t + (1 - \rho_h) ht \quad \text{(Eq.10)}$$

Taylor's rule shows that the optimal inflation rate will rise. The argument posed by Baker et al. (2020), Baqaee and Farhi (2021), and Guerrieri et al. (2020) is that the Phillips curve would generate a smaller rise in inflation and more loss in output. Guerrieri et al. (2020) argued that inflation is less responsive to changes in interest rates when the slope of the Phillips curve is flat, making the monetary policy less effective. The combination of the cost-push shock and weak personal consumption expenditure due to the COVID-19 containment measures depressed consumers' confidence in a manner that variation in interest rate could not stimulate economic activities enough to cause changes in the level of economic activities. Baker et al. (2020) and Guerrieri et al. (2020) explained that the variations in the expectation of inflation have a feedback effect on the output gap, which dampens AD.

Gravelle, Hungerford, and Labonte (2009) argued that fiscal stimulus is effective if it drives AD. On the one hand, monetarists argue that fiscal stimulus diverts transfers from domestic consumption spending to savings or leakages in the form of remittances to recipients abroad, which reduces the spending multipliers. On the other hand, Jomo and Chowdhury (2020) argued that the unprecedented nature of the Coronavirus pandemic generated uncertainties and discouraged household spending and business investment, as apprehension compels the holding of cash savings for future exigencies. Thus, they argued that "resources made available by the government in rich countries were spent because of the uncertainty about the future and reduced spending options, resulting in a situation similar to a Keynesian liquidity trap" (Jomo & Chowdhury, 2020, p. 232). However, Fornaro and Wolf (2020) offered a counternarrative that monetary policy could only do little because the policy rate is constrained by the zero lower bounds; hence, aggressive fiscal intervention can avert stagnation and expand AD. These divergent views and research gaps inspired the undertaking of this study to empirically analyze the COVID-19 stimulus using the Keynesian and monetarist models to compare their outcomes.

2.2.3 The Keynesian Model vs Monetarists Model

The results in recent literature, including those of Baker et al. (2020), Chetty et al. (2020), and Casado et al. (2020), support the classical Keynesian theory. However, the full effects of the stimulus on economic activities remain inconclusive because of the ongoing nature of the pandemic. The authors' evidence suggests that the automatic stabilizers, countercyclical policies, and Ricardian equivalence are not effective short-term panacea to the COVID-19 shock. Hence, this study empirically explores these research gaps and ascertains the link between the transfer programs and DPI, PCE, and UR to determine if the free-market approach is a viable alternative to the Keynesian model. A plethora of evidence of the successful application of the Keynesian theory to manage shocks exists in the literature.

Nevertheless, it is appropriate to check if the new dataset supports the outcomes of the ideas in the literature. In addition, the article also checks if the stimulus amount and number of rounds are adequate to yield a similar effect to past experiences. Zacharias, Masterson, and Kim (2008)

and Gravelle, Hungerford, and Labonte (2009) discussed the rationale extensively, noting that the Obama Administration used ARRA as a fiscal measure to address the 2008 Great Recession, combine transfers and tax cuts to provide relief to low-income families, and bailed out distressed firms to stimulate aggregate demand. For example, Parker et al.'s (2013) evidence indicate that the 2008 stimulus program lasted three months and raised PCE by 2.3%, shifting the partial equilibrium of demand for nondurable goods from $33 billion to $80 billion in the second quarter of 2008.

Keynes's (1936) evidence shows that stimulus models rely on fiscal authorities, whereas that of Friedman (1968, 1982) indicates that monetary expansion depends on variations in interest rates, money supply, and debt management. Keynes (1936, 1937) posited that liquidity unleashes the animal spirit, the propensity that drives personal consumption expenditure, thus forming the bedrock of the Keynesian theory. Alternatively, Freidman reinforced Hayek's free-market view that lowering interest rates to increase the money supply will increase liquidity (Freidman, 1982). Bordo and Rockoff (2013) found that "lowering the interest was more effective in managing the aggregate demand and supply shock to boost private-sector demand" (p. 8). Thus, they buttressed the monetarists' view that fiscal measures cannot provide the desired panacea for the COVID-19 shock. For example, Fornaro and Wolf (2020) found that the monetarist model could sustain demand and generates multipliers that reverse the supply-demand loop. A near consensus among monetarists is that changing nominal interest variables increases higher demand for liquidity which stimulates investment spending, sustains consumers ' expectations for future income, and boosts consumers' confidence (Baker et al., 2020; Baqaee & Farhi, 2021; Bernanke et al., 2005; Casado et al., 2020; Fornaro & Wolf 2020). Altig et al. (2020) contested these views by finding that a high level of uncertainty does not bode well with monetary policy for rapid recovery because firms and consumers are cautious and curtail investments, hiring, and spending on durable goods.

Suppose the economic impact of COVID-19 is unequal among economies and groups, as found in Susskind and Vines (2020), Elgin, Basbug, and Yalaman (2020), and Savalanli (2021). In that case, it is imperative to consider factors that affect these groups before choosing a policy approach. Fornaro and Wolf (2020) explained that keeping money cheap would attract more investment, increase AD, and incrementally increase economic activities. They reinforced Freidman's (1982) position on monetarist restraints to maintain fiscal discipline (Fornaro and Wolf, 2020). The monetarist model hinges on the premise that "an increase in the supply of money will cause a proportionate increase in the price level" (Gwartney et al., 2018, p. 285). It implies that price (p) drives output (y), stimulating higher private-sector activity. In addition, the higher multiplier of consumer spending (M) produces a higher velocity (V) in the monetary transmission mechanism, thus pushing the economy to the path of fast recovery in the short run. However, "money becomes a veil, and monetary policy is neutral in the long run" (White, 2012, p. 315; Krugman, 1997). Thus, the monetary transmission mechanism assumes the form $MV = PT$.

Keynes (1936, 1937), Stilwell and Primrose (2010), and Baker et al. (2020) used various quantitative methods to show that recession creates recessionary gaps in the short run. Eggertsson (2011), Pedrosa and Farhi (2015), Krugman and Wells (2017), and Mankiw and

Reis (2018) empirically demonstrated that expansionary fiscal policy shifts the AD curve rightward to cover the recessionary gap faster than the monetary policy to restore the economy to full potential. Therefore, the Keynesian model could provide a quick growth stimulant for a depressed economy struggling with the COVID-19 shock. This evidence holds in the recent literature. Chetty et al. (2020) and Casado et al. (2020) found significant aggregate effects of the COVID-19 stimulus on spending and economic activities. For example, spending increased significantly among low-income households in May 2020 after April's first round of stimulus payments.

A careful review of various works on Keynesian and monetarist models and their applications in managing shocks, including the COVID-19 pandemic, provides a broad and valuable theoretical grounding for this article. In addition, the related literature offers the framework for the research design and methods of analysis to address the policy questions under the two models. The Keynesian perspective on managing the COVID-19 pandemic is founded on Keynes's (1936) theory that fiscal stimulus provides liquidity to stimulate demand. The Keynesian idea is that cash transfers and the injection of money into the economy boost AD and consumer confidence, as expected from the CARES Act. Parker et al. (2013) noted that "in the winter of 2007–2008, facing an increasingly severe financial crisis and limitations of traditional monetary policy, Congress and the Administration turned to fiscal policy to stabilize the U.S. economy" (p. 2530). Stilwell and Primrose (2010) explained that increased spending during an economic crisis reestablishes investor and consumer confidence and stimulates AD in the short run.

In contrast, the monetarist model is rooted in Freidman's theory that reducing interest rates and reserve requirements increase the money supply and liquidity. These controversies between the Keynesians and monetarists could be solved empirically using the finite difference method from Chen, Liu, and Burrage (2008) to solve the boundary difference between the two models. Mankiw and Reis (2018) and Nakamura and Steinsson (2018) suggested using the structural shocks and their causal effects to investigate how the multipliers translate into economic activities and identify plausible exogenous variations. This article used the relevant policy questions to measure the causal impact of the explanatory variables on the dependent variable.

3. Methods

3.1 Empirical Strategy

This study used a mixed-method research design under the positivist paradigm to test the Keynesian and monetarist models' COVID-19 response outcomes. In Tolley et al.'s (2016) words, "positivist paradigms provide researchers with a set of unified principles and rules in conducting research" (p. 18). Denver and Frankel (2000) described the positivist paradigm as the researcher's rough sketch as the inquiry proceeds. Tolley et al. (2016) noted that positivists believe that reliable knowledge comes from direct observation or manipulation of natural phenomena through empirical or experimental means. Therefore, the positivist paradigm uses quantitative models to introduce the principles of objectivity, explanation, verification, and

prediction to analyze observations. The quantitative analysis utilized secondary data from relevant agencies to analyze the economic effects of the COVID-19 pandemic. A mixed-method research design in a positivist paradigm makes it possible to scientifically investigate the research questions and explore the gaps in the literature. Mitchell and Jolley (2010) identified three critical criteria that help infer that a variable or set of variables causes a change in another variable: "specifically, you must establish covariation, temporal precedence and changes are not due to something other than the suspected cause" (p. 505).

A mixed-method research design satisfies these criteria by combining quantitative and qualitative methods in a self-supporting way, as Specht (2019) described. Reinforcing Creswell's (1999) view, Specht (2019) noted that "combining quantitative and qualitative methods in a way in which they support each other help you reach a more concrete conclusion" (p. 138). A mixed method design avoids the problem of obscuring the conceptual distinction between the scientific investigation tool and the principles that determine how to deploy and interpret it. Creswell (1999) explained that triangulation, a unique feature of the mixed method study, "uncovers some unique variance neglected by a single method" (p. 467). Like most policy research, this article categorized variables of interest, then collected and analyzed relevant data. In addition, this research used a similar investigation procedure to that used by Meier, Brudney, and Bohte (2015), as modified by Baker et al. (2020), Chetty et al. (2020), and Baqaee and Farhi (2021), to develop the research design and operationalize the data to test the causal relationship between the dependent and explanatory variables. As Tolley et al. (2016) and Baker et al. (2020) suggested, a mixed-method design is valuable in combining two or more methods using triangulation and drawing a conclusion from the synthesis of the results. The mixed techniques used by Baqaee and Farhi (2021) improved the internal validity of the research process and findings.

3.1.1 Participants and Setting

Creswell (2013), Meier, Brudney, and Bohte (2015), and Tolley et al. (2016) noted that the research design and methodology of a study determine the setting and participants in the data collection, encoding, analysis, and interpretations. Following these procedures, this article relied mainly on a quantitative approach to obtain reliable data with sufficient validity to test the consistency of the theories, then employed qualitative data collection techniques, mainly interviews, to validate the empirical results. In addition, Tolley et al. (2016) and Wilkinson et al. (2021) explained that the involvement of other participants in mixed-method research is to assess expert views and current practices to deepen the understanding of the data through the triangulation of results from data collected from various sources.

Similarly, participants were interviewed, including economic and policy analysis experts about their views on the efficacy of the Keynesian and monetarist approach to the COVID-19 shock. The article maintained a high level of objectivity in collecting and analyzing the data but followed the recommendation of Creswell (2013) to integrate the phenomenological approach in selecting the five participants. Creswell (2013) recommended that the ideal sample size in phenomenology ranges from three to fifteen. Wilkinson et al. (2021) suggested that participants be purposefully selected to reflect their knowledge and strategic contribution to the field.

Purposive sampling, a non-probability sampling method like that used by Baqaee and Farhi (2021) and Wilkinson et al. (2021) was used to select five participants. All five participants earned Ph.Ds. in economics but varied in terms of their years of experience, area of specialization, location, and practice. The reason for this choice of variety was to obtain a diverse expert opinion on the two approaches to managing the COVID-19 shock.

This study relied mainly on a quantitative approach to obtain reliable data with sufficient validity to test the consistency of the theories. The article maintained a high level of objectivity in collecting and analyzing the data but followed the recommendation of Creswell (2013) to integrate the phenomenological approach to select the five participants. Consistent with Creswell's (2013) recommendation, the ideal sample size in phenomenology ranges from three to fifteen. The participants were purposefully selected to reflect their knowledge and strategic contributions to the field of economic policy analysis.

3.1.2 Empirical Models and Procedures

The study followed the critical steps suggested by Mitchell and Jolley (2010) and Creswell (2013) to develop empirical models to test Keynesian and monetarist theories. First, the identified variables were defined and operationalized before testing the empirical models' consistency with the data since correlation does not imply causation, and data without theory is treacherous. Thus, the empirical model provided the quantitative imperative to establish the link between the theory and the data. Like the approach of Dorn (2019), Baker et al. (2020), and Fornaro and Wolf (2020), the variables' conceptual and operational definitions helped to explain the predictability of the change in economic activities caused by these explanatory variables.

Moreover, MR helped determine the causal relationship between the monthly percentage change in GDP and the explanatory variables in both models. MR describes the linear relationship between multiple predictor variables and the dependent variable to explain their causal effects on the changes in the single dependent variable. For example, in Shine et al. (2018), fiscal variables such as tax cuts and increased government spending significantly impacted the GDP growth rate. In contrast, the evidence from Benzeval et al. (2020) suggests that fiscal measures had a significant effect in 2020 compared to the pre-COVID-19 baseline. The primary regression equation (Eq.11) is the empirical framework used to test the Keynesian and monetarist theories. The basic MR equations took the form expressed below:

$$\mathrm{Y} = \mathrm{c} + b_1 * x1 + b_2 * x_2 \ldots\ldots + e_i \qquad \textbf{(Eq.11)}$$

Where Y is the estimated dependent variable, c is the intercept, b is the regression coefficient of the predictors x (independent variables), and e is the error or stochastic term. Therefore, Eq.11 provides the standard theoretical form to fit the MR model's specification for the two theories. Next, a normality test was carried out to ensure that the data were normally distributed and had no outliers. No outliers were detected; hence, using any quantitative measure for corrections was unnecessary. After completing the normality test, the Keynesian Model was modified and augmented as:

$$Per\Delta GPD = C + b_1 * Per\Delta DPI_1 + b_2 * Per\Delta PCE_2 + b_3 * UR_3 + E_i \qquad \textbf{(Eq.12)}$$

Where Per△GPD is the percentage change in GDP, C is the intercept, per△DPI is the percentage change in the DPI, Per△PCE is the percentage change in PCE**, UR is the unemployment rate, and E_i is the random or stochastic error.**

Augmentation of the basic empirical model is necessary to avoid methodological issues associated with policy evaluation. Taylor (2011) noted that "estimated macroeconomic models used for policy evaluation have basic mechanisms built in them" (p. 687). The reason for augmenting Eq.11 is that empirical models differ significantly in their predictions of policy outcomes due to different assumptions about MPC, expectations, the extent of consumption, and the unintended effects such as the speed of price adjustment and the crowding-out impact of government spending. For example, augmenting the historical Keynes-Hansen-Samuelson multiplier-accelerator model by incorporating a life-cycle savings model reduced the stagnation effect quantitatively. However, it did not negate the quantitative intuitions of Hansen and Keynes **(**Samuelson, 1988**)**. Recent literature, including research by Baker et al. (2020) and Chetty et al. (2020), considered the conceptual idea of the Keynesian countercyclical fiscal policy that a depressed AD caused by a decline in investment can be offset by increasing government spending or temporary transfer stimulus. Like the Keynesian model, the alternative monetarist model was modified and augmented as:

$$Per\Delta GPD = C + b_1 * INT_1 + b_2 * IFL_2 + b_3 UR_3 + E_i \quad \textbf{(Eq.13)}$$

Where INT_1 is the monthly federal fund interest rate, IFL_2 is the monthly inflation rate, UR_3 is the monthly unemployment rate, and E_i is the random or stochastic error.

These modified empirical models provided the quantitative framework to evaluate the Keynesian argument that stimulus payments raise DPI and stimulate consumption to prevent a recession or fast-track recovery. In addition, the modified models helped to examine the monetarists' counterarguments arising from doubts about the reliability and stability of fiscal measures when the stimulus is temporal.

4. Data

The article used the data of the percentage change in the real GDP and the percentage changes in DPI and PCE, UR, INT, and IFL to analyze the outcome in both models. The theoretical foundations of the Keynesian and monetarist models, as well as evidence in the literature, including the studies by Baker et al. (2020), Chetty et al. (2020), and Baqaee and Farhi (2021), influenced the choice of the six variables selected for this article. The variables are the percentage change in the real GDP, the percentage change in DPI, the percentage change in PCE, the unemployment rate, the federal fund interest rate, and the inflation rate. In addition, secondary data was collected from different primary sources, including the BEA, the BLS, the Fed, and the Coin News U.S. inflation calculator. The electronic retrieval of the primary data made the fieldwork associated with quantitative data collection a reliable and straightforward process. Quantitative datasets were downloaded from the relevant internet web pages of the primary sources. The data of the variables had a population size (*N*) of 31, totaling 124 pooled data points for each model. The data collected were monthly time series data from July 2019 to January 2022, the most recent, for the analysis of the Keynesian and monetarist models.

Table 1. Variable, Definition, Form, Description, Units, and Sources of Data

Variable	Form	Description	Units	Source
Per△GPD	percent	The average of the percentage change in GPD from previous quarter	US ($'Billion)	BEA
Per△DPI	percent	The percentage change in DPI from previous month.	US ($)	BEA
Per△PCE	percent	The percentage change in PCE from previous month.	US ($)	BEA
UR	percent	The monthly rate of unemployment	Scale of 0 to 100 percent	BLS
INT	percent	The monthly federal funds interest rate	Scale of 0 to 100 percent	The Federal Reserve Bank (Fed)
IFL	percent	The monthly inflation rate	Percentage	The Fed and the Coin News U.S. inflation calculator

Table 1 provides detailed information about the variables, including the data description, forms, the units used to measure the data, and the data sources.

4.1 Data Collection and Analysis Procedures

Monthly time series data from July 2019 to the most recently available data in May 2022 was collected and analyzed to measure the effects of fiscal transfers and monetary policy on economic activities during the ongoing COVID-19 pandemic. The data are presented in Tables 2 and 3 in the Appendix and visualized in Figures 1 and 2. The percentage change in GDP **(***Per △GPD*) was computed by comparing the size of GDP to the previous quarter (BEA, 2021). However, the average for the three months was taken as the monthly percentage change. BEA used this method to measure the federal recovery program because it reports the quarterly real GDP data. The percentage change in GDP measures the policy impact on economic activities. Therefore, change in economic activities is measured as the percentage change in real GDP. Baker et al. (2020) used the average quarterly reported data to avoid calibrating demand and supply shocks. Baqaee and Farhi (2021) noted that the intertemporal and intersectoral elasticities of substitution from the realized short-term spending from BEA statistics fit well in models of a demand shock.

5. Results

5.1 Empirical Results

The results suggest that the two models' outcomes are consistent with their conceptual framework. The findings of the Keynesian model are compatible with the results of Baker et

al. (2020) and Chetty et al. (2020) but provide new evidence that suggests a potential leakage in the transfer that could divert spending from consumer goods and services to forced savings. The result shows that the percentage change in DPI declined a month after the round of stimulus payments, whereas the percentage change in PCE significantly rose a month afterward. From December 2020 to June 2021, after two rounds of stimulus transfers, the percentage changes in DPI and PCE showed a positive correlation. In the monetarist model, interest rate and inflation showed a stronger negative correlation after November 2020; inflation rose significantly while the interest rate remained stable. In March 2021, the inflation rate and change in GDP diverged and maintained that trend until December 2021, when they seemed to begin to converge.

The MR results were analyzed to address the policy questions. Creswell (2013), George and Mallery (2018), and Benzeval et al. (2020) noted that the linear MR models assume (a) the independence of the residuals; (b) the normality of the residuals; and (c) the constant variance of the residuals or homoscedasticity. These three conditions were the main assumptions of the MR analysis in both models. The Mahalanobis test helped to identify potential outliers. In contrast, Cooks's test helped identify more substantial undue influence in the regression model to ensure that each predictor variable contributed similarly to the predicted output to avoid one variable from dominating the MR results. As suggested by Meier, Brudney, and Bohte (2015), Tolley et al. (2016), and Wilkinson et al. (2021), the zero-order correlation was used to predict the change in GDP. The zero-order correlation measures the relationship between variables from 0 to 1, with values close to 0 indicating a weak relationship, whereas values relative to 1 show a strong relationship. It implies that the percentage change in GDP (dependent variable) is measured by the change in the explanatory variables in both models. Thus, $\hat{y}$ or fitted y, as the change in GDP was measured as changes in the predictor variables X_1, X_2, X_3, where X_1 = DPI, X_2 = PCE, and X_3 = UR in the Keynesian model whereas X_1 = INT, X_2 = IFL, and X_3 = UR in the monetarist model. Therefore,

$$\hat{y} = X_1 + X_2 + X_3 + E_i \quad \text{(Eq. 14)}$$

Table 2 presents the empirical evidence of the variables that influenced the percentage change in the real GDP of the U.S. during the period selected for this article.

Under the Keynesian model, the result provided new evidence that stimulus diverts disposable income from consumption to forced savings. In contrast, the PCE and UR were consistent with the fiscal stimulus theory. The result of the MR analysis of the monetarist model was marginally insignificant. However, INT and UR were significantly correlated with the percentage change in GDP.

The evidence presented in Table 2 indicates that the UR correlated with the percentage change in GDP. All the predictors in the Keynesian model were unbiased and approximately normally distributed. The coefficient of the UR was -0.563 and significant at a 95% confidence level. However, the correlation between the percentage change in GDP and UR was negative. The *R Square* as the coefficient of correlation was used because multiple independent variables in the model jointly explain the dependent variable's percentage change. The standardized coefficients of *beta* for the independent variables in Table 2 are the percentage change in DPI

(-0.036), the percentage change in PCE (0.065), and the UR (-0.327). Creswell (2013) and Meier, Brudney, and Bohte (2015) explained that *beta* is used to describe how much change in the dependent variable is caused by the difference in each predictor variable. Therefore, the *beta* coefficient of the UR is consistent with the Keynesian theory.

Table 2. The Linear Multiple Regression Results Dependent Variable: **Per△GPD**

	The Keynesian Model					The Monetarist Model			
Explanatory Variables	Coef.	Std. error	Beta	T. stat	Explanatory Variables	Coef.	Std. error	Beta	T. stat
Constant	4.36**	2.088		2.08 **	Constant	11.918**	4.987		2.39**
Per△DPI	-.029	.146	-.036	-.198	INT	-3.361**	1.655	-.533	-2.031*
Per△PCE	.104	.290	.065	.360	IFL	-.611	.594	-.254	-1.029
UR	-.56**	.314	-.327	-1.80**	UR	-1.223**	.476	-.710	-2.57**
N Statistics	31				31				
Observations	124				124				
R Square	.113				.229				
F Stat	1.142**				2.679				

Note: (1) Std. error is the standard error. (2) ***, ** and * means significant at 99%, 95% and 90% levels, respectively.

Source: Author's Multiple Regression Estimation in IBM SPSS with data from BEA – GDP, DPI, and PCE Outlays July 2019 – May 2022. FRED, and Coin News, USA.

The MR result of the Keynesian model had an *R Square* value of 0.113, *F* statistics of 1.142, and a significant *p*-value (< .05). The *R Square* shows how multiple independent variables in the model jointly explain the percentage change in the dependent variable. The standardized coefficients of *beta* for the independent variables in Table 2 are the percentage change in DPI (-0.036), the percentage change in PCE (0.065), and the UR (-0.327). *Beta* describes the change in the dependent variable that emanates from the changes in each predictor variable. The *beta* coefficient of the unemployment rate is consistent with the Keynesian theory. The empirical results in Table 2 indicate that the three predictive variables in the Keynesian model correlated with the percentage change in GDP; they are unbiased and approximately normally distributed. The UR and INT coefficients are -1.223 and -3.361, respectively. Both were significant at a 95% confidence level. However, the correlations between them and the percentage change in GDP were negative. The values of the Pearson correlation coefficient in Table 8 of the Appendix are INT (0.315), IFL (0.141), and UR (0.036). The residual plots in Figure 9 through Figure 12 in the Appendix show a moderate correlation between INT and percentage change in GDP. In contrast, they show weak correlations between the dependent variable and IFL and UR, respectively. The empirical results also indicate that no variable was removed. In addition, no multicollinearity and heteroscedasticity were present. The MR result of the monetarist model in Table 2 has an *R Square* value of 0.229, *F* statistics of 2.679, and a *p*-value > .05. Thus, this

article examined the relationship between the predictor variables and the dependent variable in the monetarist model with their *beta* coefficients. The standardized coefficients of *beta* for the independent variables for the monetarists model in Table 2 are INT (-0.533), IFL (-0.254), and UR (-0.710). The *beta* coefficients attribute the substantial change in the percentage change in GDP to the decreasing UR and INT in the monetarist model. However, the five participants' responses gathered through face-to-face and telephone interviews provided a qualitative imperative to gauge the empirical results and help analyze the predictability of the variables in each model.

5.2 Participants' Responses

The policy questions were used to frame the interview questions for the participants. Accordingly, the participants were asked 10 questions in the questionnaire in the appendix, including five in each model. The four research questions in each model helped obtain the participants' expert opinions on the efficacy of the policy outcomes under the Keynesian and monetarist models. The fifth question probed their assessment of the results of the fiscal and monetary policy measures in managing the COVID-19 shock. This is a practical demonstration of triangulation to obtain expert assessments from the field to validate the empirical result. Wilson (2014) noted that "triangulation refers to using more than one particular approach when researching to get richer, fuller data or help to confirm the results of the research" (p.74). Flick (2002) explained that approaching the research data with multiple theories and scholarly perspectives helps extend the possibilities for producing knowledge.

5.2.1 The Keynesian Model

The overall assessment of the participants is that government intervention was necessary, but some participants deferred on the timing and methods of the policy implementation. All the participants' views were consistent with Keynes's view that it is difficult for the market to correct itself in the long run without intervention. During persistent aggregate demand contraction, the economy would reach a new equilibrium with slow growth, a high UR, and a recessionary gap (Keynes, 1937). However, all the participants admitted a need for fiscal intervention but expressed concern that misdirected fiscal intervention could produce counterproductive outcomes. The unsettled argument remains on what constitutes optimal stimulus and how it can generate optimal results if the impact of the pandemic differs across households and small businesses. Susskind and Vines (2020), Elgin, Basbug, and Yalaman (2020), and Savalanli (2021) explained that the impact of COVID-19 differs across households due to some factors such as household income, dependency, and chronic illnesses that require a substantial part of the families' resources to manage. It is imperative to consider these factors before choosing a policy approach. Therefore, a targeted intervention is likely to generate a better policy outcome.

5.2.2 The Monetarist Model.

All participants expressed substantial satisfaction with the Fed's handling of the monetary policy measures. They admitted that the Fed could use monetary expansion to keep a steady flow of liquidity. A particular participant expressed concern that monetary policy does not

directly impact low-income families. All the participants admitted there was a trade-off between monetary policy and inflation. They implied that inflation during economic shocks does not harm economic growth in the short run. However, Alpanda (2019) and McLeay and Tenreyo (2020) admitted this view in their description of the Phillips curve as the trade-off between monetary policy utilization and inflation. For instance, Watson (2007) and Coibion and Gorodnickenko (2015) found that the Phillips curve had maintained a flatter trend, implying that inflation has become increasingly insensitive to standard measures of monetary policy utilization, such as unemployment. The participants' views were consistent with the monetarist's theory; however, the reality is that since the last quarter of 2021, inflation has consistently maintained an upward trajectory.

6. Discussion

The empirical test reinforced the theoretical foundation of the Keynesian stimulus theory that direct cash payment and support for small businesses directly impacted by the COVID-19 shock can stimulate economic activities. The empirical evidence provides insight into the rationale of the CARES Act, highlighting the politics of economic stimulus and the cost-benefits of its implementation. The empirical results reported by Fornaro and Wolf (2020) and Baker et al. (2020) suggest that direct government transfer payments significantly raise DPI and increase PCE, which correlates with increased economic activities, including a decrease in the UR. The findings in this study challenge the orthodoxy of DPI's positive correlation with the change in GDP.

The efficacy of the Keynesian stimulus depends on several factors that have to do with the size, scope, and frequency of the payment during the pandemic period. It raises concern and questions the rationale for the resistance of some policymakers who think that policy comes at an exceedingly high cost. Casado et al. (2020), Baker et al. (2020), and Weible et al. (2020) raised the question of leadership in policy decisions because choices impose different social and economic costs and benefits, which generates heightened public attention and policy impacts. Considering the relevant economic indices, whether the CARES Act was used for politicking rather than an economic panacea to avoid a recession, the policy concern should be whether the stimulus payment produced the desired outcome and long-term implications. The strong negative relationship between the coefficients of change in real GDP and the DPI demonstrates that DPI from direct cash transfer diverts to forced savings. This evidence suggests that policymakers should reevaluate the application of fiscal measures and target them appropriately. The evidence from Casado et al. (2020), Baker et al. (2020), and Chetty et al. (2020) suggest that transfers are more effective if they are used to replace the lost income of disengaged workers and help small businesses better manage their payroll cost to stop further job losses. This implies that policymakers should target stimulus transfers at households that need it to produce the desired multiplier effect. Wrongly targeting transfers would turn Keynes's idea of economic stimulus during recessions on its head and becomes counterproductive to the predictable Keynesian result. Poor fiscal and monetary policy timing often produces outcomes more diminutive than the Ricardian equivalence. The interest and rent-seeking propensities of

the policymakers should not superimpose the stimulus policy's goals.

Ultimately, the findings imply that the Keynesian theory is practical as part of the intervention approach, and the economic consequences of the COVID-19 pandemic are unavoidable without an objective interventionist policy. Policymakers can use this research's findings to evaluate the outcome of earlier stimulus policies to improve the policy effectiveness if the shock lingers longer. The correlation coefficients in both Keynesian and monetarist models indicate that unemployment strongly predicts increased economic activity. The general notion of public policy hinges on Fischer's reconceptualization of Dye's (1984) idea that public policy is "whatever governments choose to do or not to do" (p. 2). The dire situation of COVID-19 requires interventionist actions involving making the adjustment process reliant on the timing and inherent choices associated with reactionary policy decisions that focus on reducing the UR.

In severe shocks such as the COVID-19 pandemic, using each policy approach in isolation from the other tends to undermine the goal of stabilizing the economy faster. Keynes's (1936) conceptualization is that stimulus relies on fiscal authorities, whereas Friedman (1968, 1982) posited that monetary expansion depends on variations in interest rates, money supply, and debt management. The Keynesians have continued to follow Keynes's (1936, 1937) tradition that liquidity unleashes the animal spirit. Conversely, Freidman reinforced Hayek's free-market principle that lowering the interest rates to increase the money supply will increase liquidity (Freidman, 1982). These claims and counterclaims run deep into the policy choice to manage shocks. Earlier results by Bernanke et al. (2005) provided a middle ground to combine the Keynesian and monetarist models to achieve the goal of economic policy. Bernanke et al. (2005) found that changing nominal interest variables combined with fiscal measures increases higher demand for liquidity. This stimulates investment spending, sustains consumers' expectations for future income, and boosts consumer confidence. The significant implication of the results in this study is that the Keynesian and monetarist models reinforce each other. Keynes and Friedman may have said the same thing but in different economic languages. When investigated in isolation, the monetarist model was marginally insignificant at the p-value of 0.06. If the effects of the variables in both models are measured jointly, the variables may become better predictors of change in real GDP.

The major limitation encountered in this study is the high level of data disaggregation on the impact of COVID-19 on different jurisdictions, including states, counties, metropolitan statistical areas (MSA), and regions. Each of these jurisdictions' economies differs, and the pandemic affected each differently. However, BEA estimated their data for COVID-19 and the impact from estimates of payment card transactions of daily spending by industry. The article used aggregated national data of the relevant variables to predict GDP in each model. Moreover, the delays in releasing the official data remain a substantial impediment. Further work must illuminate gray areas and provide insight into how best to appropriately design stimulus to target consumption and DPI with minimal behavioral effects. We are not yet out of the pandemic's shock; the economic impact is ongoing, and data constraints are still challenging to policy research because of the time lag associated with policy outcomes. The article welcomes opportunities to further this study to provide post-pandemic answers to the policy questions.

Additionally, post-pandemic research will provide broader data to measure the full extent of the impacts of the COVID-19 pandemic under the Keynesian and monetarist models.

7. Conclusion

The Keynesian and monetarist theories aim to stimulate economic activities during severe shocks such as COVID-19 despite their different methods. The Keynesian model depends on the multipliers from fiscal spending to boost consumers' demand and cause a rise in aggregate demand. In contrast, the monetarist model relies on the changes in monetary variables, including INT, reserve requirements, and money supply, to provide liquidity to induce investment spending and employment. Thus, both models support the interventionist policy to manage the COVID-19 shock. Expert views obtained through the interviews with the participants served as the qualitative measure to validate the theoretical and empirical evidence. In the Keynesian model, empirical evidence suggests that DPI, PCE, and UR jointly and significantly predicted the percentage change in GDP. Unfortunately, INT, IFL, and UR did not jointly and significantly predict the percentage change in GDP. However, a strong correlation was found between the UR and the percentage change in GDP and between inflation and the percentage change in GDP. The study finds that the Keynesian theory is more practical in managing shocks but combining both models could yield a more desirable long-term outcome.

8. Recommendations

Further work must illuminate gray areas and provide insight into how best to appropriately design stimulus to target consumption and DPI with minimal behavioral effects. We are not yet out of the pandemic's shock; the economic impact is ongoing, and data constraints are still challenging to policy research because of the time lag associated with policy outcomes. Further research could uncover fresh evidence on whether unemployment benefits during the shock prolonged unemployment durations. As more data become available, research into a recovery plan that utilizes fiscal recovery rebates for about six months can generate and sustain the multipliers that drive DPI and PCE to restore the economy to its full potential. Future works that look at the indirect impact and the influence of uncertainties in individuals' and households' decisions can help understudy the shock's microeconomic effects on individual and family behavior. These will provide a broad perspective to mirror the efficacy of the Keynesian stimulus from a multidimensional spectrum.

Answers to the following research questions could contribute to furthering this study:

i. Does poor stimulus payment targeting undermine the outcome of the Keynesian stimulus policy?

ii. What is the appropriate size and scope of direct stimulus payment?

iii. Does the stimulus program prolong unemployment duration and discourage household savings?

iv. How can the Keynesian stimulus program be redesigned not to undermine intergenerational equity while dealing with the ramifications of a short-term shock?

The researcher welcomes opportunities to further this study to provide post-pandemic answers to these policy questions. Additionally, post-pandemic research will provide broader data to measure the full extent of the impacts of the COVID-19 pandemic under the Keynesian and monetarist models.

References

Alpanda, S., Granziera, E., & Zubairy, S. (2021). State dependence on monetary policy across business, credit, and interest rate cycles. *European Economic Review, 140*. https://doi.org/10.1016/j.euroecorev.2021.103936

Altig, D., et al. (2020). Economic Uncertainty Before and During the COVID-19 Pandemic. Working Paper Series, Cambridge, MA: NBER, 1-26.

Andolfatto, D. (2021). Is it Time for Some Unpleasant Monetarist Arithmetic? *Federal Reserve Bank of St. Louis Review Third Quarter Review*. https://doi.org/10.20955/r.103.315-32

Aczel, B., Palfi, B., Szollosi, B., Kovac, M., Szaszi, B., Szecsi, B., Zrubka, M., Gronau, F. Q., Bergh, D. V., Wagenmakers, E. (2018). Quantifying Support for the Null Hypotheses in Psychology: An Empirical Investigation. *Advances in Methods and Practices in Psychological Sciences, 1*(3), 357-366.

Baker, S. R., Farrokhnia, R., Meyer, S., Pagel, M., & Yannelis, C. (2020). *Income, Liquidity, and the Consumption Response to the 2020 Economic Stimulus Payments*. Boston, MA: NBER.

Baqaee, D., & Farhi, E. (2021). *Supply and Demand in Disaggregated Keynesian Economies with an Application to the Covid-19 Crisis*. Cambridge, MA: NBER.

Barret, E., Melissa Dickson, H-B., & Harriet, W. (2020). Storytelling and poetry in the time of Coronavirus. *Irish Journal of Psychological Medicine*. https://doi.org/10.1017/ipm.2020.36.: 278-282

Benzeval, Michaela et al. (2020). *The Idiosyncratic Impact of an Aggregate Shock: The Distributional Consequences of COVID-19*. Understanding Society Working Paper Series. https://doi.org/10.2139/ssrn.3615691

Bernanke, B. S., Gertler, M., & Watson, M. (1997). Systemic monetary policy and the effects of oil price shocks. *Brookings Papers on Economic Activity, 1*, 91-157.

Bernanke, B., Boivin, J., & Eliasz, P. (2005). Measuring Monetary Policy: A Factor Augmented Autoregressive (FAVAR) Approach. *Quarterly Journal of Economics*.

Blanchard, O., & Perotti, R. (2002). An Empirical Characterization of the Dynamic Effects of Changes in Government Spending and Taxes on Output. *The Quarterly Journal of*

Economics, 117(4), 1329-1368. https://doi.org/10.1162/003355302320935043

Bordo, M. D., & Rockoff, H. (2013). The Influence of Irvin Fisher on Milton Friedman's Monetary Economics. *Journal of the History of Economic Thought, 35*(2), 152-177.

Bureau of Economic Analysis (BEA). (2021). BEA Web site. September 30. Retrieved 9 October, 2021 from https://www.bea.gov/news/2021/gross-domestic-product-third-estimate-gdp-industry-and-corporate-profits-revised-2nd

Carlsson-Szlezak, P., Martin, R., & Paul, S. (2020). *Understanding the Economic Shock of Coronavirus*. Harvard Business Review, March.

Carvalho, A., & Rezai, A. (2016). Personal Income inequality and aggregate demand. *Cambridge Journal of Economics, 40*(2), 491-505. https://doi.org/10.1093/cje/beu085

Casado, M. G., Glennon, B., Lane, J., McQuown, D., Rich, D., & Weinberg, B. B. (2020). *The Effect of the Fiscal Stimulus: Evidence from Covid-19*. Cambridge, MA: National Bureau of Economic Research.

Castelnuovo, E., & Surico, P. (2010). Monetary policy, inflation expectations, and the price puzzle. *The Economic Journal, 120*(549), 1262-1283. Retrieved from https://EconPapers.repec.org/RePEc:ecj:econjl:v:120:y:2010:i:549:p:1262-1283

Cavallo, J. J., & Forman, H. P. (2020). The Economic Impact of the COVID-19 Pandemic on Radiology Practice. *Radiology, 296*(3). https://doi.org/10.1148/radiol.2020201495

Chen, C., Liu, F., & Burrage, K. (2008). Finite difference methods and a Fourier analysis for the fractional reaction-subdiffusion equation. *Applied Mathematics and Computation, 198*(2), 754-769. https://doi.org/10.1016/j.amc.2007.09.020

Cheng, X. (2015). *China's dynamic relationships between public spending, economic growth, and income inequality*. England, UK: University of Hertfordshire. https://doi.org/10.18745/th.16543

Chetty, R., Friedman, J. N., Hendren, N., & Stepner, M. (2020). *How Did COVID-19 and Stabilization Policies Affect Spending and Employment? A New Real-Time Economic Tracker based on Private Sector Data*. Cambridge MA: National Bureau of Economic Research. https://doi.org/10.3386/w27431

Chisholm, D. (1986). On Writing Dissertation. P S Winter. *American Political Science Association, 19*(1), 65-69.

Cochran, Clarke E., Lawrence, C., Mayer, T. R., Carr, J. N. C., Mark, J. M., & Laura, R. P. (2015). *American Public Policy: An Introduction*. Boston, MA: Cengage Learning.

Creswell, J. W. (1999). *Mixed-method research: Introduction and application.* In Handbook of educational policy, by G.J. Cizek. San Diego, CA: Academic Press.

Creswell, J. W. (2013). Steps in Conducting a Scholarly Mixed-Method Study. *DBER Series*. 48.

Dender, K. V., Pierce, O'R., & Sarah, P. (2020). COVID-19 and Fiscal Policies: Tax and Fiscal Policy in Response to the Coronavirus Crisis: Strengthening Confidence and Resilience. *Interfax, 48*(8/9), 736-742.

Cronk, B. C. (2018). *How to Use SPSS: A Step-by-Step Guide to Analysis and Interpretation* (10th ed.). New York, NY: Routledge.

Devers, K., & Frankel, R. M. (2000). Study Design in Qualitative Research - 2: Sampling and Data Collection Strategy. *Education for Health, 13*(2), 263-271. https://doi.org/10.1080/13576280050074543

Dorn, J. A. (2019). Myopic Monetary Policy and Presidential Power: Why Rules Matter. *Cato Journal*, *Washington, 39*(3), 577-595. https://doi.org/10.36009/CJ.39.3.5

Eggertsson, G. B. (2005). *Great expectations and the end of the Depression. Staff Report*. New York: Federal Reserve Bank of New York, 1-49. Retrieved from http://www.jstor.org/stable/29730131

Elgin, C., Basbug, G., & Yalaman, A. (2020). Economic Policy Responses to a Pandemic: Developing the Covid-19 economic stimulus index. *COVID Economics (CEPR Press),* (3) (April), 1-14. https://doi.org/10.1016/j.heliyon.2020.e05634

Federal Reserve Bank of St. Louis. (2021). Federal Funds Effective Rate. October 1. Retrieved 9 October, 2021 from https://fred.stlouisfed.org/series/FEDFUNDS.

Flick, U. (2002). *An introduction to qualitative research* (2nd ed.). London: Sage publications.

Fornaro, L., & Wolf, M. (2020). *Covid-19 Coronavirus and Macroeconomic Policy*. Barcelona: Universitat Pompeu Fabra.

Friedman, M. (1968). The Role of Monetary Policy. *American Economic Review, 58*(1), 1-17.

Freidman, B. (1999). The Future of monetary Police: The Central Bank as an Army with Only a Signal Corps. *International Finance, 2*(3), 321-338.

George, D., & Mallery, P. (2018). *IBM SPSS Statistics 25 Step by Step: A Simple Guide and Reference* (15th ed.). New York: Routledge.

Gravelle, J. G., Thomas, L. H., & Marc, L. (2009). *Economic Stimulus: Issues and Policies*. CRS Report for Congress, Washington DC: Congressional Research Services.

Guerrieri, V., Lorenzoni, G., Straub, L., & Werning, I. (2020). *Macroeconomic implications of COVID-19: Can adverse supply shocks cause demand shortages?* NBER Working Paper no. w26918. https://doi.org/10.3386/w26918

Gwartney, J. D., Richard, L. S., Russell, S. S., & David A. M. (2018). *Economics: Private and Public Choice* (16th ed.). Boston, MA: Cengage Learning.

Hamilton, J. D., & Herrera, A. M. (2001). Oil Shocks and Aggregate Macroeconomic Behavior: The Role of Monetary Policy. Discussion Paper 2001-10, San Diego: University of California.

Harjoto, M. A., Rossi, F., & Paglia, J. K. (2021). COVID-19: stock market reactions to the shock and the stimulus. *Applied Economics Letters, 28*(10, June), 795-801. https://doi.org/10.1080/13504851.2020.1781767

Jomo, K. S., & Anis, C. (2020). COVID-19 Pandemic Recession and Recovery. *Development, 63*(November), 226-237.

Keynes, J. M. (1936). *The General Theory of Employment, Income, and Money*. New York: Harcourt, Brace.

Keynes, J. M. (1937). The "Ex-Ante" Theory of the Rate of Interest. *The Economic Journal, 47*(188), 663-669.

Krugman, P. (1998). It's Baaack! Japan's Slump and the Return of the Liquidity Trap. *Brookings Paper on Economic Activity,* 137-205.

Krugman, P., & Robin, W. (2017). *Essentials of Economics* (4th ed.). New York: Worth Publishers.

Mankiw, N. G., & Reis, R. (2018). Friedman's Presidential Address in the Evolution of Macroeconomic Thought. *Journal of Economic Perspectives, 32*(1), 81-96. https://doi.org/10.1257/jep.32.1.81

McDonald, O. M. (2017). *Harvesting Daniels: Cognitive Tools for Cultivating Moral Authority to Secure Nations*. Dallas, TX: Grace House Publishing.

McLeay, M., & Tenreyro, S. (2020). Optimal inflation and the identification of the Phillips curve. *NBER Macroeconomics Annual, 34*(1), 199-255. https://doi.org/10.1086/707181

Meier, K. J., Brudney, J. L., & Bohte, J. (2015). *Applied Statistics for Public and Nonprofit Administration*. Stamford, CT: Cengage Learning.

Nakamura, E., & Steinsson, J. (2018). Identification in Macroeconomics. *The Journal of Economic Perspectives, 32*(3), 59-86. https://doi.org/10.1257/jep.32.3.59

Pedrosa, I., & Farhi, M. (2015). Macroeconomic theory in the aftermath of the crisis: mainstream and the new Keynesianism. *Nova Economia, 25*(2). https://doi.org/10.1590/0103-6351/1737.

Parker, J. A., Souleles, N. S., Johnson, D. S., & McClelland, R. (2013). Consumer Spending and Economic Stimulus Payments of 2008. *American Economic Review, 103*(6), 2530-2553.

Park, Ji. Y., Mi, S. H., Kyoung, U. P., Ji, Y. K., & Eun, H. C. 2020. First Pediatric Case of Coronavirus Disease 2019 in Korea. *Journal of Korean Medical Science, 35*(11, March). https://doi.org/10.3346/jkms.2020.35.e124

Pion-Berlin, D. (1986). Reflections on Writing Dissertation." PS, Winter. *American Political Science Association, 19*(1), 63-64.

Ren, S-Y., Gao, R-D., & Chan, Y-L. (2020). Fear can be more harmful than the severe acute

respiratory syndrome coronavirus 2 in controlling the coronavirus disease 2019 epidemic. *World Journal of Clinical Cases, 8*(4), 652-657.

Sargent, T. (1983). *The End of Four Big Inflations.* In Inflation: Causes and Effects, by Robert Hall. Chicago, IL: University of Chicago Press.

Cavalli, E. (2021). Implementation of Fiscal and Monetary Policy during the COVID-19 Crisis. SSRN, June 2021. http://dx.doi.org/10.2139/ssrn.3858830

Schmitt-Grohe, S., & Martin, U. (2005). Optimal Fiscal and Monetary Policy in a Medium-Scale Macroeconomic Model. NBER Macroeconomics Annual. *The University of Chicago Press Journals, 20*, 383-425.

Seidman, L., & Lewis, K. (2015). Stimulus without debt in a severe recession. *Journal of Policy Modelling, 37*, 945-960. https://doi.org/10.1016/j.jpolmod.2015.09.002

Stilwell, F., & David, P. (2010). Economic Stimulus and Restructuring: Infrastructure, Green Jobs, and Spatial Impacts. *Urban Policy and Research, 28*(1), 5-25. https://doi.org/10.1080/08111141003610046

Taylor, J. B. (2011). An Empirical Analysis of the Revival of Fiscal Activism in the 2000s. *Journal of Economic Literature, 49*(3), 686-702.

Temin, P., & Barrie, W. (1990). The End of One Big Deflation. *Explorations in Economic History, 27* (October), 483-502.

U.S. Bureau of Labor Statistics (BLS). (2021). Labor Force Statistics from the Current Population Survey. September 30. Retrieved 9 October, 2021 from https://www.bls.gov/cps/

Wilson, V. (2014). Research Method: Triangulation. *Evidence-Based Library and Information Practice, 9*(1), 74-75.

Zacharias, A., Masterson, T., & Kim, K. (2009). Who Gains from President Obama's Stimulus Package and How Much? *Economic Policy*, RePEc: lev: levypn: sr_06-12-09.

Notes

Note 1. U.S. Department of the Treasury (2021), Covid-19 Economic Relief provided three rounds of fast and direct relief payments during the various phases of the COVID-19 crisis. https://home.treasury.gov/policy-issues/coronavirus

Note 2. U.S. Government Accountability Office (2022), from April 2020 to December 2021, the federal government made direct COVID-19 stimulus payments to individuals totaling $931 billion to 165 million eligible Americans. https://www.gao.gov/blog/millions-people-may-still-be-eligible-covid-19-stimulus-payments-time-running-out

Note 3. Kaye et al. (2020), Economic impact of COVID-19 pandemic on healthcare facilities and system. In the United States, the COVID-19 pandemic has had detrimental and negative

economic impacts on low-income workers and marginalized communities. https://www.sciencedirect.com/science/article/pii/S1521689620301142

Note 4. Rockeman, Olivia (2022). U.S. inflation hit fresh 40-year high of 7.9% before oil spike. Bloomberg, March10, 2022. https://www.bloomberg.com/news/articles/2022-03-10/u-s-inflation-hits-fresh-40-year-high-of-7-9-before-oil-spike

Note 5. H.R. 748 – 116th Congress (2019-2020). CARES Act responds to the COVID-19 outbreak and its impacts on the economy, public health, state and local governments, individual, and businesses. https://www.congress.gov/bill/116th-congress/house-bill/748

Appendix A

Data for Empirical Estimation

Table A1: Percent change from preceding month

Time	*Per△GPD*	*Per△DPI*	*Per△PCE*	*UR*
Jul-19	*0.93*	*0.3*	*0.5*	3.7
Aug-19	*0.93*	*0.6*	*0.1*	3.7
Sep-19	*0.93*	*0.4*	*0.2*	3.5
Oct-19	*0.63*	*0*	*0.2*	3.6
Nov-19	*0.63*	*0.4*	*0.4*	3.6
Dec-19	*0.63*	*0.2*	*0.3*	3.6
Jan-20	*-1.70*	*0.6*	*0.2*	3.5
Feb-20	-1.70	0.5	0	3.5
Mar-20	-1.70	-1.7	-6.7	4.4
Apr-20	-10.40	14.8	-12.9	14.8
May-20	-10.40	-4.8	8.5	13.3
Jun-20	-10.40	-1.3	5.6	11.1
Jul-20	11.27	0.8	1.5	10.2
Aug-20	11.27	-3.1	1.21	8.4
Sep-20	11.27	0.8	1.3	7.8
Oct-20	1.5	-0.7	0.2	6.9
Nov-20	1.5	-1.2	-0.6	6.7
Dec-20	1.5	0.6	-0.4	6.7
Jan-21	2.10	11.4	2.4	6.3
Feb-21	2.10	-8.1	-1.1	6.2
Mar-21	2.10	23.6	5.2	6.0
Apr-21	2.23	-15.3	1.1	6.1
May-21	2.23	-2.7	0.1	5.8
Jun-21	2.23	0	1.1	5.9
Jul-21	0.77	1.1	0.1	5.4
Aug-21	0.77	0.1	1	5.2
Sep-21	0.77	-1.3	0.6	4.7
Oct-21	2.30	0.5	1.4	4.6
Nov-21	2.30	0.4	0.5	4.2
Dec-21	2.30	0.3	-0.9	3.9
Jan-22	2.00	0.1	2.7	4.0

Source: BEA – GDP, DPI, and PCE Outlays July 2019 – Jan. 2022. FRED, and Coin News, USA.

Table A2. Percent Change from the Preceding Month

Time	*Per△GPD*	*INT*	*IFL*	*UR*
Jul-19	*0.93*	2.40	1.8	3.7
Aug-19	*0.93*	2.13	1.7	3.7
Sep-19	*0.93*	2.04	1.7	3.5
Oct-19	*0.63*	1.83	1.8	3.6
Nov-19	*0.63*	1.55	2.1	3.6
Dec-19	*0.63*	1.55	2.3	3.6
Jan-20	*-1.7*	1.55	1.8	3.5
Feb-20	-1.70	1.58	1.5	3.5
Mar-20	-1.70	0.65	0.3	4.4
Apr-20	-10.40	0.05	0.1	14.8
May-20	-10.40	0.05	0.6	13.3
Jun-20	-10.40	0.08	1	11.1
Jul-20	11.27	0.09	1.3	10.2
Aug-20	11.27	0.10	1.4	8.4
Sep-20	11.27	0.09	1.2	7.8
Oct-20	1.5	0.09	1.2	6.9
Nov-20	1.5	0.09	1.4	6.7
Dec-20	1.5	0.09	1.2	6.7
Jan-21	2.10	0.09	1.4	6.3
Feb-21	2.10	0.08	1.7	6.2
Mar-21	2.10	0.07	2.6	6.0
Apr-21	2.23	0.07	4.2	6.1
May-21	2.23	0.06	5	5.8
Jun-21	2.23	0.08	5.4	5.9
Jul-21	0.77	0.10	5.4	5.4
Aug-21	0.77	0.09	5.3	5.2
Sep-21	0.77	0.08	5.4	4.7
Oct-21	2.30	0.08	6.2	4.6
Nov-21	2.30	0.08	6.8	4.2
Dec-21	2.30	0.08	7	3.9
Jan-22	2.00	0.08	4.7	4.0

Source: BEA – GDP, DPI, and PCE Outlays July 2019 – Jan. 2022. FRED, and Coin News, USA.

Appendix B

Interview Questionnaire for Participants

Participants Name…….

Section A: The Keynesian Model

Question 1: Do you think the changes in households' disposable personal income (DPI) and

support to small businesses from direct government transfer payments helped raise the GDP during the COVID-19 pandemic?

Response:……
……
…

Question 2: To what extent do you think increased personal consumption expenditure (PCE) helps boost economic activities during the COVID-19 pandemic?

Response……
……

Question 3: Do you think the changes in the unemployment rate due to COVID-19 correlate with economic activities?

Response:……
……
……

Question 4: Do you think the absence of government intervention could lead to increased economic activity?

Response……
……

Question 5: What is your overall assessment of the government's use of fiscal intervention to address the COVID-19 shock?

Response……
……

Section B: The Monetarist Model

Question 1: To what extent do you think the interest rate (INT) reduction raises the GDP growth rate?

Response……
……

Question 2: Do you think the falling unemployment rate (UR) resulting from money injection and altering the reserve requirements leads to GDP growth?

Response……
……

Question 3: Do you think changes in the inflation rate (IFL) could be associated with the change in GDP growth?

Response……
……

Question 4: To what extent do you think the absence of monetary policy intervention could lead to increased economic activities?

Response:……
……

Question 5: What is your overall assessment of the government's use of monetary policy measures to address the COVID-19 shock?

Response……
……

Date:

Beginning Time:

Finishing Time: