State Capitalism and Fiscal and Monetary Response to COVID-19

ABSTRACT

Across the globe, the unprecedented COVID-19 pandemic has triggered extraordinary response to soften adverse economic impacts. This study incorporates a novel empirical approach to the determinants of choice of government and central bank response to the COVID-19-induced economic crisis and a contextual analytical approach to the resulting emergence of state capitalism. Empirical findings using random-effects ordered and binary probit for panel data including ASEAN-5 and OECD countries from the second to fourth quarters of 2020 suggest that government effectiveness as a proxy for state capacity is an important institutional determinant for COVID-19 related fiscal and monetary policies. Different levels of state intervention across countries suggest that varieties of state capitalism will continue to evolve and expand post-pandemic. Thus, a call for the re-evaluation of national policies and a simultaneous focus on opportunities for international cooperation are recommended.

Keywords: state capitalism, fiscal policy, monetary policy, state capacity, COVID-19

JEL Classifications: E5, H3, P1

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1. INTRODUCTION

The coronavirus-19 (COVID-19) global pandemic has led to various outcomes around the world, whether political, social or economic in nature. This heterogeneity in impact across countries has been in part due to varied responses to the crises stemming from decisions made by national authorities. While differences in swiftness, type, and magnitude of response are important considerations, both the exogenous health and economic shock and the uncertainty that comes with addressing management and recovery are common to all countries. This study thereby investigates what factors determine extraordinary fiscal and monetary policy response to COVID-19, with particular attention paid to the explanatory power of state capacity, as contextualised through the concept of state capitalism (Zhang and Whitley 2013; Carney 2016; Nölke 2018; Wright, Wood, Musacchio, Okhmatovskiy, Grosman and Doh et al 2021).

As a political economy study, it seeks to provide an actor-centred focus on the role of the state by first exploring the implications of state intervention on choice of policy response across countries and further, on the rise and return of state capitalism amid the global pandemic. It develops an empirical approach using random-effects ordered and binary probit models to examine macroeconomic, health, geographic, and institutional variables as determinants of fiscal and monetary policy related to the COVID-19 crisis. It uses panel data consisting of a sample of 40 countries for the time period spanning the onset of the pandemic in the second quarter of 2020 until the fourth quarter of the same year. The study also proposes a comparative approach to the experiences of advanced and emerging economies through the consideration of OECD and ASEAN-5 countries.

The study's main contributions are thereby a novel and interdisciplinary approach to government and central bank response to the global pandemic, with prime focus on institutional determinants as well as an analysis of the emergence and persistence of varieties of state capitalism in the

context of the pandemic-induced crisis and post-COVID-19 recovery. The study's geographic focus, with the inclusion of countries in the Global South, offers not just a non-Western centric view but also a wider overview of national experiences during the global pandemic. By situating state capitalism in the context of a global pandemic, the study also contributes to bridging the artificial divide between comparative and international political economy.

The paper is structured as follows: after this introductory section, stylised facts on COVID-19 and institutions across ASEAN-5 and OECD countries, a review of related literature on state capitalism, and a summary of institutional approaches to fiscal and monetary policy and specific COVID-19 responses follow in Section 2. Section 3 elaborates on the empirical approach to testing the study's hypotheses, the sample selection, findings, and interpretations. Conclusions, policy recommendations, the study's limitations, and avenues for further study will be included in the final section.

2. THEORETICAL BACKGROUND AND RELATED LITERATURE

In the first few months of the COVID-19 pandemic, notable differences in extraordinary responses were observed between advanced and emerging economies. Specific to fiscal response for instance, bigger packages were found to peak in March 2020 across advanced economies (Alberola et al. 2021) while unconventional monetary responses peaked in April 2020 in emerging markets (Drakopolous et al 2021). Contributing factors to differences include pre-pandemic macroeconomic conditions and institutional settings, as well as cross-national containment and mitigation measures induced by the country-wide 'socially constructed realms of the disease[1]' (Capano et al. 2020).

2.1 Stylised Facts

As an unprecedented global health and economic crisis, the COVID-19 pandemic has induced equally unprecedented health and economic impacts across countries. In order to illustrate differences across the experiences of advanced and emerging economies with an otherwise

common threat, this study proposes a comparative approach to ASEAN-5 (Singapore, Malaysia, The Philippines, Indonesia, and Thailand) and OECD countries across different regions. For instance, in Italy, a slow and chaotic national response was the product of predominant institutional arrangements. In South Korea, high capacity and previous related experience allowed for massive testing and tracing. In the Philippines, national security approaches have been prioritised over containing the virus and minimising damage (Capano et al. 2020).

[FIGURE 1 HERE]

With respect to economic outcomes, Figure 1 shows the average quarterly GDP growth rate and confirmed COVID-19 related deaths comparing OECD and ASEAN-5 countries from the onset of the pandemic in the second quarter of 2020. As can be seen, negative GDP growth rate was common to both groups at the beginning, however, OECD countries were able to see positive growth in the following quarter. Both groups show trends towards recovery over time although ASEAN-5 countries continued to lag behind. On the other hand, ASEAN-5 countries registered much lower fatality rates over all three quarters than OECD countries. In this regard, Capano et al. (2020) highlight past experience with similar diseases as in some Asian countries showing that the capacity of governments to learn from pandemics in the past and thereby operationalise political support, taking national leadership, organisation of government and civil society, and blindspots towards vulnerabilities of certain groups into account, led to different government responses. Serikbayeva et al (2020), controlling for health variables, affirms that state capacity in attaining positive policy outcomes is associated with lower death levels from COVID-19. Figure 1 illustrates that a tradeoff is evident between health and economy: ASEAN-5 countries were able to reduce health impacts and death levels in the first three quarters of the pandemic while experiencing negative economic growth, whereas OECD countries were later able to generate positive economic growth while confirmed COVID-19 deaths rose in number.

[FIGURE 2 HERE]

Figure 2 shows the relationship between the simultaneous evolution of the disease and government imposed restrictions at the onset of the pandemic. While conventional wisdom would generally attribute lower fatality rates to more stringent measures, implying the potential endogeneity of COVID-19 deaths to government restrictions, Figure 2 shows that no strong negative correlation can be observed across states. In some countries, such as Spain, Italy, United Kingdom, and United States, relatively stringent measures were put into place but above-average fatality rates related to COVID-19 were still observed. Nevertheless, countries such as the Philippines and Colombia are seen to have more restrictive impositions and low fatality rates, consistent with preliminary empirical studies (Chisadza et al. 2021) while Japan's experience highlights a unique scenario of low death and stringency levels.

[FIGURE 3 HERE]

With respect to institutions, Figure 3 shows the relationship between country-level institutional features and government effectiveness. Government effectiveness, as taken from the World Governance Indicators (WGI), is defined as the perceptions of the quality of public and civil service as well as the government's degree of independence from political pressures, the quality of policy formulation and implementation, and the credibility of commitment to such policies. For instance, varied relationships between levels of central bank independence and government effectiveness across states can be seen. In the case of members of the European Central Bank, greater central bank independence is associated with relatively greater government effectiveness. However, much heterogeneity can be evidenced as most other advanced economies have less independent central banks alongside high levels of government effectiveness, whereas emerging economies generally show lower government effectiveness with varied levels of central bank independence. As a response to the COVID-19 pandemic, central banks in advanced economies

imposed actions that halted US dollar appreciation and thereby allowed emerging markets to cut rates aggressively. A coordinated policy response between fiscal and monetary authorities in most emerging markets was thereby made possible despite limited fiscal space (Aguilar and Cantú 2020). For example, in ASEAN-5, a deficit burden-sharing arrangement with the Indonesian Ministry of Finance was announced by Bank Indonesia, facilitating the purchase of government bonds to finance fiscal response to the COVID-19 crisis. In the Philippines, Bangko Sentral ng Pilipinas purchased government bonds through a 'provisional advance' facility (Pordeli et al 2021).

Additionally, Figure 3 shows that no strong correlation is evident between government effectiveness and health equality or the degree to which citizens can better participate in political processes due to access to healthcare. However, a strong association between government effectiveness and liberal democracy can be seen, with more democratic OECD countries shown to have higher levels of government effectiveness and most ASEAN-5 countries exhibiting lower levels for both. A striking exception is Singapore, which demonstrates the highest level of government effectiveness among all countries considered but with below-average levels of liberal democracy.

2.2 The Rise and Return of State Capitalism

As governments have readily and increasingly intervened in most economies in the world both as regulator and market agent to ensure the containment of the virus and the management of and recovery from economic impacts related to it, a steady rise and return of state capitalism has been observed across countries. In this regard, this study proposes a link between the emergence of varieties of state capitalism and cross-country variations in institutional variables related to state capacity. The study argues that such country-level institutional features may influence the adaptation of specific fiscal and monetary responses in the early months of the COVID-19 crisis and later lead to varying outcomes.

Different approaches to state capitalism in such overlapping disciplines as political science, history, and economics have produced numerous definitions of the concept as well as corresponding theoretical concentrations. While there is a lack of complete consensus in defining state capitalism in existing literature, it can be concluded that the most important common grounding among contributions is the stability of state intervention, or state capacity, expressed in different forms and depths. For instance, Alami and Dixon (2019) generally refer to state capitalism as the involvement of the state in policy instruments, strategic objectives, institutional forms, and networks. Bremmer (2010) broadly defines it as a system in which the state is the main economic actor and markets are used primarily for political gains. Zhang and Whitley (2013) and Nölke (2014) define it as a type of state–business relation and Nölke et al (2015), Carney (2016), and Nölke (2018) expand the concept as a state-led and state-permeated national variant, taking institutional complementarities into account, within the Varieties of Capitalism spectrum. Mussachio et al (2015) define wholly owned state-owned enterprises, the state as a majority investor, the state as a minority investor, and the state as a strategic supporter of specific sectors as four broad classifications of state capitalism and examine firm performance for each type relative to private firms and subject to country-level institutional contingencies.

With respect to political institutions, Aguilera et al (2021) demonstrate the importance of institutions in examining how political ideology shapes the relationship between state ownership and performance through the consideration of the effectiveness of a state in implementing policy or state capacity and its limitations or political constraint. Ricz (2021) conceptualises a contemporary illiberal model of state capitalism, focusing on emerging economies after the Global Financial Crisis (GFC) and likewise acknowledging the existence of national varieties. He argues that while short-term economic success have been seen, measures with the consolidation of political power at any costs as a goal may undermine development in the long-run. Specific to the internationalisation of state-owned enterprises (SOEs), Cheung et al (2020) define the government as being progressively positive and impactful in decision-making and Cuervo-Cazurra and Li (2021) contrast views on the liability and advantage of stateness.

Additionally, Wang et al (2021) find that in emerging markets, differences in firm innovativeness and profitability are contingent upon government affiliation.

Focusing on the COVID-19 health and economic crisis, this study seeks to highlight the definition of state capitalism as a government's direct influence on economic relationships assuming that its reach is not limited to fiscal, regulatory, welfare, and security roles (Wright, Wood, Curevo-Cazurra, Sun, Okhmatovskiy, and Grosman 2021), or in other words, the fullness of state capacity. In a related study, Wright, Wood, Musacchio, Okhmatovskiy, Grosman and Doh (2021) define state capitalism as a system in which the state disposes of different tools for proactive intervention in the economy and find that such interventions in markets come in different forms across different economic systems. To capture these varieties and complexities, they conceptualise state capitalism as being multidimensional, and not binary, thereby developing a framework in which heterogeneity is evidenced by positioning countries along defined dimensions. They determine three main mechanisms of state intervention in the economy as being state ownership, statism, and the degree of threat governments pose to the private market[2]. Eight resulting categories correspond to a combination of these three mechanisms, with extremes being interventionist entrepreneurial welfare states exhibiting high levels of government threat, statism, and state ownership and market-oriented states demonstrating low levels in all three dimensions.

In an attempt to provide a functional framework that can synthesise different views on state capitalism, Alami and Dixon (2019) classify key and common arguments on its properties and practices under strategic management, comparative capitalism, and global political economy. They identify the theorisation, periodisation, and the location of state capitalism as three issues to be addressed in the further development of a productive analytical framework on state capitalist diversity. In addition, Alami and Dixon (2020) identify two gaps to be filled as being the determination of constellation of actors involved in the promulgation of the new state capitalism narrative and the deepening of the understanding of changing landscapes of state intervention

through a closer examination of practices across geographical settings. Evidently, the ongoing debate on state capitalism is a lively one and the COVID-19 crisis presents itself as a natural experiment to observe the emergence of varieties and commonalities and to emphasise the state's deep involvement in tackling socio-economic challenges (Wright, Wood, Curevo-Cazurra, Sun, Okhmatovskiy, and Grosman 2021). Thus, state capitalism, as a concept that focuses on the mechanisms of state intervention and capacity, serves as an appropriate analytical starting point not just to understand how states have responded to economic and health crises induced by the global pandemic but also to locate future trajectories of political economies post-COVID.

2.3 Government and Central Bank Responses to COVID-19

As suggested by the emergence of extraordinary government and central bank response to COVID-19, fiscal and policy rules are suspended and it is therefore important to consider possibly new and unusual determinants of government and central bank responses from a contextually-appropriate perspective. Existing literature on variables that drive aspects of fiscal policy under normal conditions have used quantitative approaches. Macroeconomic variables such as economic growth, lagged structural deficit and/or budget balance, inflation, unemployment, debt-to-GDP ratio, exchange rate regime, credit rating, and real long-term interest rates are controlled for accordingly. Institutional factors include quality of rule of law and voice and accountability while the size, political fragmentation, and strength of government, political ideology, maximum political distance in government, broad policy reform, upcoming elections, prior adjustments, and cabinet change or government crisis are some political features also used (de Haan and Sturm 1994; Alesina et al 1998; Mireau et al 2007; Lavigne 2011; Giesenow et al 2020; Ziogas and Panadiotidis 2021). For choice of monetary policies and frameworks, including both domestic targets and external regimes, some political and institutional determinants have been identified as central bank independence, government ideology, government consumption, political business cycles, depth of financial market, and polity scores (Alesina et al 1997; Alesina and Stella 2010; Belke and Potrafke 2012; Cobham and

Song 2020) while controlling for macroeconomic variables such as economic size, output gap, trade openness, strength of anchor network, domestic savings, and past inflation.

In contextualising determinants of responses to COVID-19, Greer et al (2020) propose, due to the increased role of the state, social policy, regime type, formal political institutions, and state capacity as key focuses. When referring to social policy, they argue that outside pre-existing policies, the successes of public health measures that are more authoritarian in nature, like physical distancing or temporary economic shutdowns, depend on how much society complies with them. They also suggest that understanding COVID-19 politics requires a perspective on comparative authoritarianism. In considering regime type, which they add pertains to a cluster of institutions in a state, authoritarian regimes may have difficulty maintaining the internal and external flow of good information and thereby struggle to effectively implement actions. Formal political institutions are defined as political institutions below the level of the regime and federalism and presidentialism are two types that they outline when considering coordination and performance. They also highlight the importance of the strength of state capacity on determining response and shaping the space for available policy options. This is consistent with the framework on state capitalism and its focus on state intervention. Specific to the context of the pandemic, state capacity includes control over health care systems and public administration.

A number empirical studies on government and central bank responses to COVID-19 have proposed various hypotheses and put forward preliminary results. Benmelech and Tzur-Ilan (2020) investigate the determinants of fiscal and monetary responses across countries and find that high-income economies tended to announce larger fiscal policies and that credit rating is the most important determinant of fiscal spending during the health and economic crisis. They also find that the use of nonconventional monetary policy tools is associated with high-income countries with historically low interest rates. Elgin et al (2020) find through a cross-country panel data study that central bank independence determines policy response such that more independent central banks tend to adopt smaller policy rate cuts and give rise to larger fiscal and

macro-financial packages as well. Additionally, Yilmazkuday (2021) shows that central banks of emerging markets or countries without a zero bound on their interest rates lowered policy rates as a response to reduced economic activity and volatile exchange rates as induced by the pandemic, whereas advanced economies or countries with a zero bound on their interest rates did not do so. Bunyavejchewin and Sirichuanjun (2020) find using different political and institutional proxies that regime type is related to government response to COVID-19, specifically that governance quality showed moderate impacts on policy implementation.

3. EMPIRICAL APPROACH

The study empirically tests which determinants matter for greater government and central bank response in an unprecedented and simultaneous global health and economic crisis. However, known conditions, assumptions, and conventional wisdom may not be wholly applicable. Usual fiscal and monetary rules may be suspended and different expectations may be observed from prudent use of policy tools across countries in normal times. Thus, the purpose of this empirical approach is to examine state involvement and capacity across countries in addressing specific socio-economic challenges posed by the COVID-19 pandemic. Dependent variables are specific fiscal and monetary measures enforced in response to the COVID-19 global pandemic. The fiscal measures of interest to this study are income support and debt/contract relief for households while monetary measures include conventional policy rate cuts and nonconventional quantitative easing. The empirical approach aims to identify determinants for the implementation or non-implementation of each of these chosen policies, not whether governments and central banks opt for one type of measure over another. Table 1 summarises the dependent variables.

[TABLE 1 HERE]

3.1 Determinants of COVID-19 Related Response

As per theory building and taking the context of the global pandemic into account, this study proposes independent variables classified as macroeconomic, health, geographic, and institutional in nature.

Macrovariables. As per existing literature on government and central bank response to COVID-19 (Benmelech and Tzur-Ilan 2020; Elgin et al 2020; Yilmazkuday 2021), GDP growth and inflation are used as control variables for both fiscal and monetary policies, with debt-to-GDP ratio added for fiscal response and a dummy for zero lower bound for central bank measures. Common to various macroeconomic perspectives, the COVID-19 pandemic came as a negative exogenous shock thus theoretically requiring a counter-cyclical management through expansive macroeconomic policy, whether fiscal or monetary in nature. Thus, a negative sign is expected between expansionary policy and GDP growth under normal conditions, however, this may not be the case for the COVID-19 crisis. With respect to government debt, it is considered a restriction that implies less fiscal space to do expansive policies. However, implementing policy in normal times to maintain fiscal space is shown to give insurance during financial crises, such that debt-to-GDP ratios may not necessarily determine domestic and international policy responses (Romer and Romer 2019). Under the strict assumption that monetary policy should be independent from fiscal policy and that the monetary authority has its own goal of keeping inflation low and stable, including debt-to-GDP as a control for central bank response would not be appropriate[3].

With inflation targeting being the usual goal of monetary authorities, a negative sign is expected for inflation for policy rate cuts and quantitative easing in usual times and under normal conditions. Lower inflation rates should lead to greater policy rate cuts. This is because lower interest rates can lead to greater borrowing and spending, speeding up the economy and thereby raising inflation. Higher inflation should be responded to with less or no quantitative easing as excessive buying of government bonds may inject too much money into the economy to expand it, thereby making inflation higher than desired[4]. Inflation is also considered a determinant for

fiscal policies income support and debt/contract relief. According to conventional wisdom, higher inflationary pressures should signal a reduction in government spending or an increase in government revenues to reduce aggregate demand, therefore leading to a negative sign. However, these outcomes may not necessarily be observed as contractionary fiscal policies are politically costly especially at a time such as a global health and economic crisis. For monetary policy, apart from inflation, whether or not a country's policy rate is at the zero lower bound or close to it is also considered as a control for monetary space. Theoretically, a negative relationship between zero lower bounds and policy rate cuts may be expected as policy rates being at the zero lower bound can cause a liquidity trap that limits the central bank's capacity to act effectively; however, a positive sign for the zero lower bound dummy may be expected for quantitative easing as nonconventional policy tools could be implemented as fiscal stimulus when a conventional policy rate cut is no longer deemed feasible by the monetary space.

Health. The proportion of the population over 65 years old and confirmed deaths per one million people due to COVID-19 are included as variables pertaining to the social realm of COVID-19 across states. The greater the proportion of people considered most vulnerable to COVID-19 in a population and the higher the fatality rate due to the disease, the more likely both the government and central bank will respond with their respective expansionary policies in order to ensure the economy continues to function despite the epidemiological evolution of COVID-19 at the country-level. In terms of containment, the stringency index measures the restrictiveness of rules in place such as school closings, travel restrictions, and lockdowns, and vast heterogeneity has been seen across countries over time. At times, the more stringent the measures especially in the beginning of the pandemic, the lower is the need for expansionary policies as there is less opportunity for the virus to spread and halt economic activity. However, it could also be that the more stringent the measures are, the greater the need for fiscal and monetary measures for businesses as there is less opportunity for economic activity to continue.

Geography. A dummy variable for whether or not a country is landlocked is also considered in order to control for the ease by which countries can close geographic borders especially at the

start of the pandemic. Landlocked countries may not be able to neither mitigate the spread of the virus from neighbouring countries nor sustain economic activity as easily as isolated countries, and these factors may influence the type of response. Additionally, considering the analytical focus of this study, a dummy variable for whether a country is part of ASEAN-5 is included to test the likelihood for emerging markets in the sample to enforce the specific kinds of fiscal and monetary policy, as opposed to advanced economies in the OECD.

Institutions. This study argues that a rational institutional framework should have a bigger reaction to an exogenous shock like a global pandemic and that if a country does not react rationally while having the resources and capacity to do so, its institutional framework cannot be considered functional. As per the framework developed by Greer et al (2020), liberal democracy which proxies regime type and government effectiveness and central bank independence which proxy state capacity are considered institutional determinants of government and central bank response. State capacity as a central component of state capitalism is the main institutional feature of interest in this study and greater state capacity means greater state intervention. Thus, greater institutional quality in terms of government effectiveness as a proxy for state capacity is argued to translate to better choice of policy on top of higher quality management and implementation. While state capacity is hypothesised to be the most important institutional factor during the pandemic, its influence is also argued to be contingent upon related institutional features. Since the GFC, questions on central banks' independence have been raised as monetary policies have repeatedly adapted to government fiscal policy. For instance, quantitative easing, a nonconventional monetary tool which involves the purchase of government bonds by the central bank, supports the expansionary needs of government and fiscal policy. Thus, greater central bank independence from the government means that the monetary authority may make decisions more freely and enforce policies based solely on meeting their own internal and external targets, which under normal circumstances would mean bigger reactions coordinated with large fiscal policies. Considering liberal democracy, more democratic governments could refrain from implementing too many fiscal policies while less democratic ones might do the opposite.

Table 2 summarises indicators to be used in this study, as well as theoretical justifications.

[TABLE 2 HERE]

3.2 Data and Methodology

The full sample used in this study comprises of ASEAN-5 countries and 35 OECD countries with available data[5] ($N = 40$) over the time period of three quarters from April to June, July to September, and October to December 2020 ($t = 3$). The dependent variable is the fiscal or monetary measure induced by the COVID-19 global pandemic. Probit regression as a discrete choice model to explain choices between policy alternatives in an unprecedented crisis is deemed appropriate. Thus, the econometric techniques used are random-effects ordered and binary probit for panel data as determined by the nature of the corresponding dependent variables as discrete potential outcomes. Panel data is used to take cross-country heterogeneities into account.

Thus, the study's baseline model can be written as:

$$Pr(Response_{it}) = \Phi(\beta_1 + \beta_2 Macro_{it} + \beta_3 Health_{it} + \beta_4 Geography_{it} + \beta_5 Institutions_{it} + \varepsilon_{it}) \quad (1)$$

wherein equation (1) considers vectors containing corresponding macroeconomic controls, health, geography, and institutional variables as determinants of fiscal or monetary response, while *i* denotes country and *t* denotes time[6]. The vector for macroeconomic controls include GDP growth, debt-to-GDP ratio, inflation, and zero lower bounds, accordingly. Health pertains to population over 65 years and geography includes dummies for landlocked and ASEAN-5 countries. The main institutional variable of interest is government effectiveness to proxy state capacity. However, central bank independence is also included as a determinant for greater monetary response. Interactive terms of government effectiveness and central bank independence with each other and other health and institutional variables not initially included in the vectors are considered in succeeding estimations beyond the baseline model[7]. Evidently, endogeneity

issues may arise as a result of health variables affecting one another and being affected by other institutional variables. For instance, fatality rates due to COVID-19 may be affected by stringency measures and vice versa (Ferraresi et al 2020; Greer et al 2021). Likewise, stringency measures may also be dependent on the level of liberal democracy in a country. Hence, the aforementioned health and institutional variables are introduced separately in regressions when interacted with government effectiveness or central bank independence. Table 3 reports the frequency of specific fiscal and monetary responses across countries throughout the three quarters covered.

[TABLE 3 HERE]

3.3. Results and Interpretations

The results of the random- effects ordered probit and binary probit estimations for panel data are reported on Tables 4.1, 4.2, 5.1, and 5.2[8]:

[TABLES 4.1, 4.2, 5.1, AND 5.2 HERE]

As seen in Table 4.1, only government effectiveness, GDP growth, and debt-to-GDP ratio show consistent statistical significance as determinants for income support. A negative sign between expansionary policy and GDP growth may be expected under normal conditions, and as shown by the results, also during an unprecedented crisis. Debt-to-GDP exhibits a positive sign consistently indicating that greater fiscal space translates to greater income support in times of crisis. Government effectiveness shows a positive sign which implies that the more state capacity a government has, the greater the fiscal response in terms of income support will be. When interacted with other health and institutional variables, government effectiveness does not show statistical significance. This means that taking government effectiveness as a given, liberal democracy, central bank independence, fatality rates, and stringency index are not important determinants for this type of fiscal response.

Table 4.2 shows that government effectiveness is once again the only statistically significant determinant for greater debt/contract relief packages, exhibiting both positive and negative signs. More crucially, interactive terms between government effectiveness and stringency index on column 5 and liberal democracy on column 6 imply that state capacity is important to this type of fiscal response taking levels of restrictiveness in terms of democracy and pandemic-related mobility. For the interaction with stringency index, a positive sign is seen implying that greater government effectiveness coupled with more restrictive measures can lead to greater debt/ contract relief packages. This could be because households not allowed to operate under normal conditions will need more assistance, which can be addressed by better government performance. On the other hand, a negative sign is seen in the interaction with liberal democracy indicating that more state capacity and stronger democracies together can lead to lower intervention in the form of debt/contract relief. This again is consistent with the argument that more democratic countries, despite enjoying greater state capacity, may refrain from intervening in the economy through certain types of fiscal packages.

For conventional policy rate cuts enforced by central banks as seen on Table 5.1, macroeconomic and health variables GDP growth, inflation, zero lower bounds, and population over 65 years are consistently statistically significant determinants. Both GDP growth and zero lower bound show negative signs, pointing to how the business cycle may be counter-cyclically managed and how countries with policy rates close to or at the zero lower bound are less likely to pursue policy rate cuts. Results also suggest that the greater the proportion of the population more vulnerable to COVID-19, the less likely is the central bank to cut policy rates. As seen on column 2, being part of ASEAN-5 shows a negative sign and statistical significance, indicating that emerging markets are less likely to cut policy rates. While central banks in emerging markets have been able to counter-cyclically respond to adverse shocks, they have mostly followed the lead of advanced economies. Government effectiveness does not show statistical significance on its own or interacted with other health and institutional variables, implying that it is not an important determinant for this type of monetary response. On the other hand, central bank independence produces negative and statistically significant interactions with confirmed deaths on column 7

and stringency index on column 8. This implies that despite taking greater central bank independence as a given, countries are less likely to cut policy rates with more restrictive measures and greater fatality rates due to COVID-19. Policy rate cuts are therefore shown to be contingent upon the unfavorable evolution of the pandemic, as a way to predict the country-wide trajectory in terms of population mobility and vulnerability, and the ability of central banks to decide independently.

Table 5.2 shows the results for nonconventional quantitative easing. GDP growth, inflation, population over 65 years, and government effectiveness show statistical significance. A negative sign for inflation implies that greater inflationary pressures reduce the likelihood for quantitative easing which is normally done to stabilise inflation. While zero lower bounds does not show statistical significance, it shows the correct positive sign in line with central banks more likely to adapt nonconventional policies when conventional options are no longer viable. Additionally, having a greater proportion of the population most vulnerable to COVID-19 leads to greater likelihood of implementing this nonconventional monetary policy, with this social realm of the disease as a way to forecast the extent to which a country's population may be affected by the virus. Consistent with results on Table 5.1 regarding interactive terms with confirmed deaths and stringency index, results are consistent with the view that the vulnerable demographic helps predict how long the crisis will last domestically, therefore guiding the decision-making of central bank authorities. Government effectiveness is statistically significant on its own but not when interacted with other variables, showing a negative sign consistently. This means that the less effective a government is in implementing its policy goals, the more likely is the central bank to purchase government bonds and assets as a way to meet its own targets. On the other hand, central bank independence is not found to be statistically significant.

3.4 COVID-19 and State Capitalism

The results, which show that government effectiveness as a proxy for state capacity can be an important determinant for policy response across countries, reinforce that throughout the COVID-19 pandemic, more effective governments have been able to enforce bigger fiscal

packages while less effective governments have required central banks to help in stabilisation through monetary responses. Governments with greater state capacity are better equipped to effectively intervene in the economy during a global crisis in the way they deem fit. Conversely, less effective governments are in greater need of assistance from their central banks. In other words, the results suggest that the extent of state capacity is a central institutional determinant for both fiscal and monetary response, such that stronger state capacity leads to bigger government response while weaker state capacity leads to greater central bank intervention.

As state capitalism is shown to emerge not just from the usual channels of state investment or ownership or as a result of institutionalised state-business relations in pre-pandemic times, but also depending on the degree of intervention to guide the direction of economic stabilisation through policy, state capacity gains greater importance taking the context of COVID-19 into account. The empirical results show that greater state capacity means greater fiscal policy-oriented state intervention. With respect to smaller state capacity, lower government effectiveness can put pressure on central banks to finance budget deficits, thereby effectively putting the institutional separation between fiscal and monetary policy and central bank independence into question (Makin and Layton 2021). In short, the type of state capitalism, whether classified as having stronger or weaker state capacity, can have significant implications on both fiscal and monetary policy choice during an unparalleled global crisis. The importance of a multidimensional view on state capitalism is therefore highlighted as different levels of state capacity can lead to different degrees and forms of state intervention. Such interventions can therefore pave different paths towards economic stabilisation and consequently lead to the emergence of varieties of state capitalism.

While state-led capitalist varieties have been associated in the literature with Asian countries and developmental states (Zhang and Whitley 2013; Carney 2016; Nölke 2018), the global crisis has shown that levels of state intervention are rising worldwide. Wright, Wood, Musacchio, Okhmatovskiy, Grosman and Doh (2021) find that pre-pandemic, countries within ASEAN-5 are

spread across different varieties of state capitalism. The Philippines and Indonesia are classified as interventionist states with above-median government threat and low statism and ownership levels. Thailand is found to be an interventionist entrepreneurial state with relatively higher levels of ownership and Malaysia and Singapore are entrepreneurial states with high ownership, low statism, and below median government threats. For OECD members, there is a clear divide within higher income countries. Japan, United States, and most European countries are shown to be either market-oriented or welfare states defined by low ownership and government threat and distinguished by levels of statism. Relatively lower income countries such as Turkey, South Korea, Mexico, and some European countries are classified as mostly interventionist or interventionist entrepreneurial states all featuring above median government threat, with Greece singled out as an interventionist entrepreneurial welfare state.

While results of this study show that states have played a big role across ASEAN-5 and OECD countries at least over the course of the last three quarters of 2020, current degrees of state intervention may not be temporary as they could bring the permanent return and dominance of different types of state capitalism should the pandemic or its effects be prolonged indefinitely. As the global pandemic highlighted heterogeneities in responses, different levels of government effectiveness or state capacity may reinforce varieties of state capitalism across countries and regions. As a likely scenario, the mechanisms of state intervention in economies, such as threats posed to the market, statism, and ownership (Wright, Wood, Musacchio, Okhmatovskiy, Grosman and Doh 2021), will only evolve and expand accordingly during recovery as a result of the state's overall increased prominence during the management of the COVID-19 crisis, especially if economies fail to disentangle from heavy reliance on the state.

Likewise, a hysteresis effect may be evident such that in the post-pandemic scenario, the path-dependent government and institutional machinery that allows governments to expand their capacity can lead to a remarkable movement towards certain types of state capitalism after many years of neoliberalism. In addition, previous economic crises have shown that the Washington

Consensus and the ‘business as usual’ neoliberal agenda have to be re-evaluated, as the use of non-market solutions by states in otherwise liberal markets is increasingly evidenced. For instance, aspects of state-business relations involving formal or informal coordination have paved the way for the return of state capital finance in developed financial markets. Uneven effects of nonconventional monetary policy like quantitative easing have been seen, with central banks expanding into the purchase of corporate bonds on top of government bonds as seen in the examples of the European Central Bank, the US Federal Reserve, and the Bank of England (Wright, Wood, Musacchio, Okhmatovskiy, Grosman and Doh 2021; Makin and Layton 2021). The results of this study, as shown on Table 5.2, demonstrating a strongly significant negative sign for government effectiveness and a positive sign for central bank independence as institutional determinants of the likelihood for enforcing quantitative easing, support this.

While the empirical results of this study are preliminary, autocratic responses may continue to emerge as the pandemic progresses, governments shift market roles inwards, and countries lift and enforce mobility and economic restrictions in an uncoordinated manner (Wright, Wood, Musacchio, Okhmatovskiy, Grosman and Doh 2021). However, with various types of state capitalism, there is no one (best) way to achieve economic stability. Thus, congruent to state capitalism as a whole, renewed international cooperation and increased multilateralism posit themselves as viable pathways for post-COVID-19 recovery across countries given that the resurgence of increased state intervention prior to and continuing through and after the pandemic highlights transnationalising tendencies as state capitalism’s most salient novelty. In the same global way that the pandemic started and evolved, concerted global efforts, even and especially among state capitalists, must play an equally significant role in ending and recovering from the adverse effects of the resulting health and economic crisis. In a globalised world, states are rational enough to understand that the only way out of the pandemic is together.

4. CONCLUSIONS AND RECOMMENDATIONS

The post-COVID-19 world has changed substantially and an opportunity to re-think conventional wisdom has been presented amidst the health and economic crisis that has led to unprecedented global repercussions. This study has contributed to this call for re-evaluation in two ways: firstly, it has developed a novel empirical approach to and analytical framework on government and central bank interventions during crises; secondly, it has contextualised the rise and return of state capitalism through the consideration of institutional determinants proxying state capacity throughout the progression of the COVID-19 health and economic crisis. The results of the study's empirical approach have shown that government effectiveness is an important institutional determinant for extraordinary fiscal and monetary policy tools during a crisis like the COVID-19 global pandemic.

With respect to policy implications and recommendations, policy tools must be critically re-evaluated as side effects have already included unprecedented budget deficits and adverse effects of escalated public debt on economic growth. With the inevitable persistence of state capitalism and its observable tendencies towards internationalisation, international cooperation and multilateralism set themselves up as promising avenues for reshaping global recovery. Debt stay and restructuring to address budget deficits have been suggested as urgent solutions to prevent another crisis (Stiglitz and Rashid 2020), with voluntary sovereign debt buybacks and the issuance of Special Drawing Rights (SDRs) for developing countries as was done post-GFC suggested as alternatives at little cost to advanced economies (Stiglitz 2020). Particular to ASEAN, the reinvention of welfare regimes for managing future crises and pandemics alongside greater regional and strategic cooperation with its neighbours through the Regional Comprehensive Economic Partnership (RCEP) can be a welcome opportunity (Mok et al 2021).

State capitalism is clearly geared towards a more permanent comeback, with the viability of sustaining a balance between regulatory and market roles upon the premise of greater

internationalisation as both its greatest challenge and opportunity. Thus, it is important for future studies to continue to map out converging and diverging trajectories of state capitalism across countries for long-term policy benefits. For states, addressing rent-seeking by drug companies and suspending patents and intellectual property rights for vaccines are clearly first-order priority and the fastest path to coordinated global recovery. Also part of this overall rethinking involves scaling up sustainable finance and re-embracing sustainability goals to provide especially affected sectors with a concrete pathway for successful recovery and transition post-COVID-19.

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ENDNOTES

[1] Taking the equal epidemiological and biological nature of COVID-19 across countries into account, these country-specific social realms may include lifestyle and diet-related co-morbidities, levels of social interactions, environmental factors, and state capacity (Capano 2020).

[2] They add that these are broader in scope than previous management literature on state ownership and state-controlled capital while also encompassing tariffs, subsidies, and formal and informal networks as in other social sciences.

[3] Central bank independence, however, is considered for monetary response to take this assumption into consideration.

[4] Under normal conditions, the Taylor Rule is the reaction function of central banks regarding policy rates and the benchmark for monetary policy. It is used to evaluate whether or not monetary policy stance is in line with the prediction that monetary policy is tightened either as inflation rises relative to the central bank's target or as actual output increases compared to its potential. Consistent with the objectives of this study, GDP growth is used for output gap and inflation rates for inflation gap, both accounted for as determinants of monetary response.

[5] See Appendix Table A.1 for list of countries in the sample.

[6] In order to take quarterly periods into account, moving quarterly averages are calculated for dependent variables income support, debt/contract relief, policy rate cuts, and quantitative easing (all available daily), as well as independent variables inflation rates (available monthly), zero lower bound (available daily), confirmed deaths, and stringency index (both available daily). For time-invariant variables and those only available annually such as whether a country is landlocked and whether it is part of ASEAN-5, debt-to-GDP ratio, population over 65 years, liberal democracy, government effectiveness, and central bank independence, the constant value, data for the year 2020 or the most recent available year is retained for all quarters.

[7] Cross-country heterogeneities in response are also explained by differences in the timing, sequencing, and speed (Capano 2020). The most consistent measure for time considering all variables included in this study is quarterly since the onset of the pandemic in the second quarter of 2020. Thus, in order to approximate the probabilities of greater fiscal and monetary responses while taking state capacity as a given, the interactive terms of government effectiveness and central bank independence with each other and with institutional variable liberal democracy (annual data expressed as time invariant across quarters) and health variables confirmed deaths per million and stringency index (daily data expressed as moving averages per quarter) are considered.

[8] Appendix Tables A.4 and A.5 show robustness checks using pooled OLS.

FIGURES

Figure 1. Economic and Health Outcomes in ASEAN-5 and OECD Countries

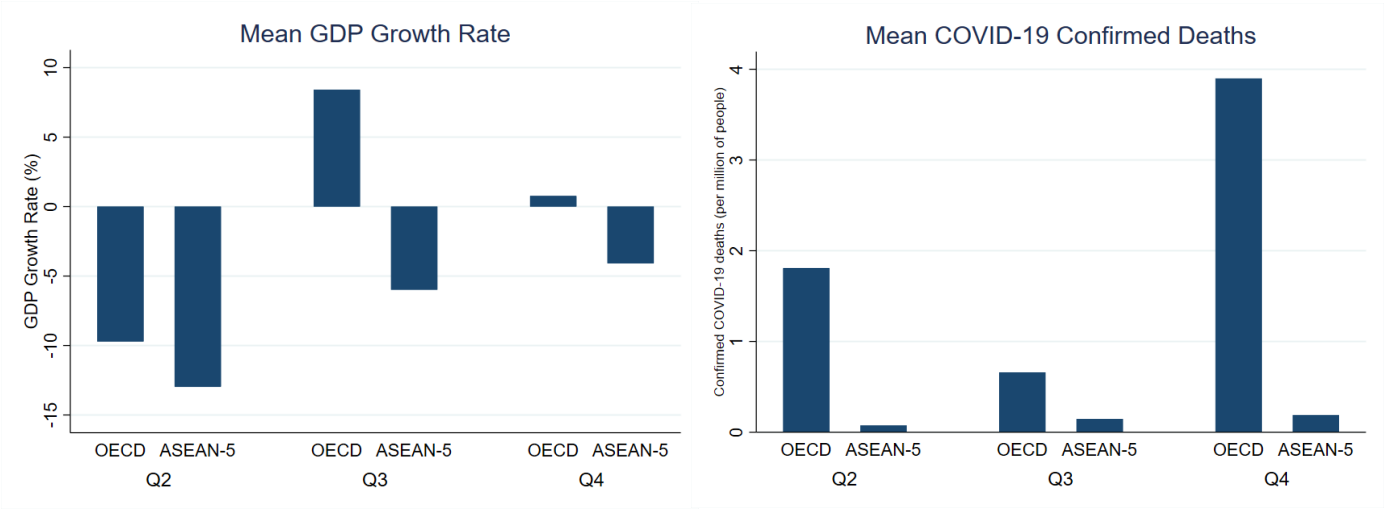


Figure 2. Correlation Between Government-imposed Restrictions and Pandemic Progression

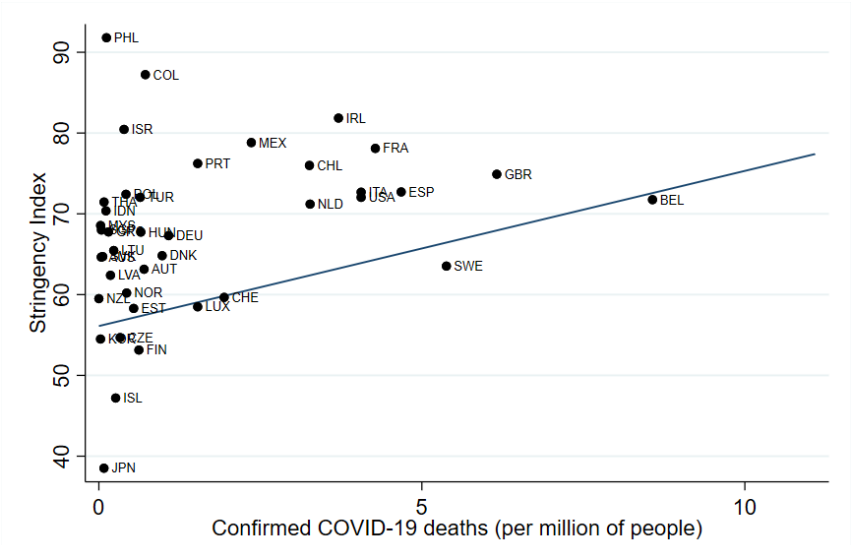
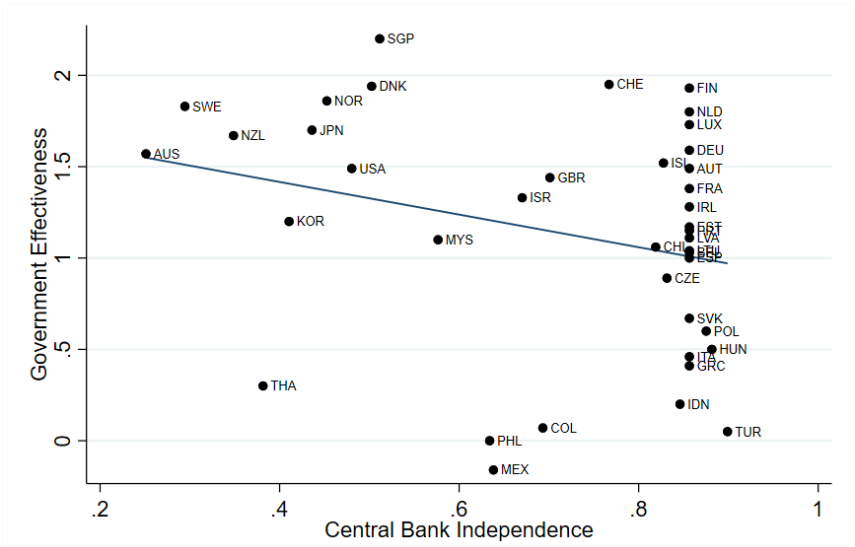
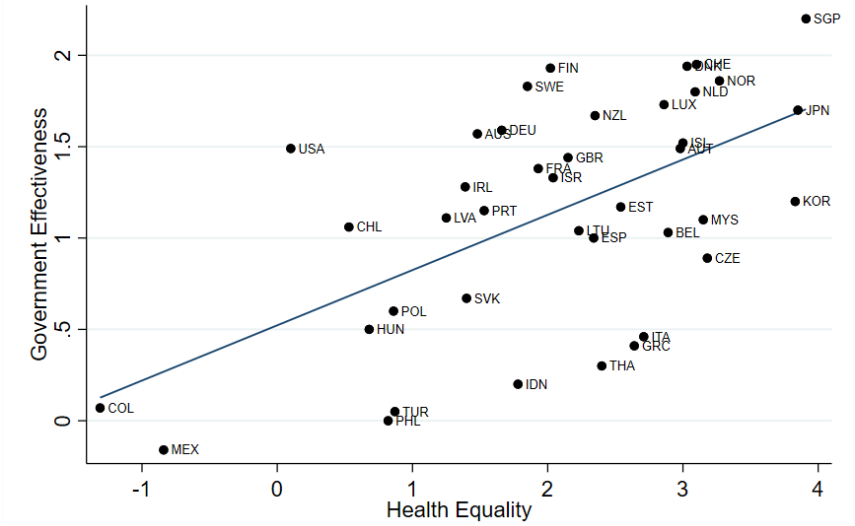
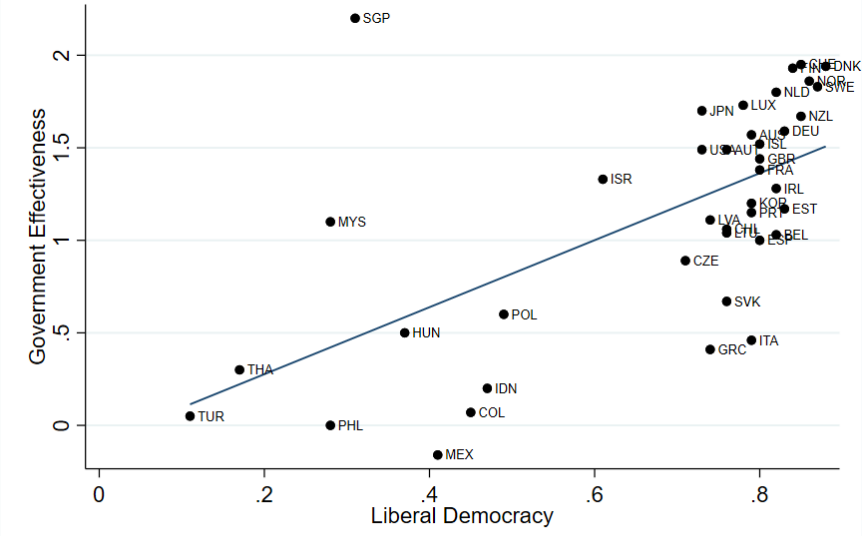


Figure 3. Correlation Between Government Effectiveness and Institutional Factors







TABLES

Table 1: Government and Central Bank Response as Dependent Variables

Indicator	Type of Response	Description and Measurement	Source
Income Support	Fiscal Policy	Ordinal variable that records if the government is covering the salaries or providing direct cash payments, universal basic income, or similar, of people who lose their jobs or cannot work and includes payments to firms if explicitly linked to payroll/ salaries: 1 - No income support 2 - Government replaces less than 50% of lost salary or median salary if flat sum 3 - Government replaces more than or equal to 50% of lost salary or median salary if flat sum	Oxford Coronavirus Government Response Tracker (OxCGRT)
Debt/Contract Relief for households	Fiscal Policy	Ordinal variable that records if the government is freezing financial obligations, for example stopping loan repayments, preventing services like water from stopping, or banning evictions: 1 - No debt/contract relief 2 - Narrow relief, specific to one kind of contract 3 - Broad debt/contract relief	OxCGRT
Policy Rate Cut	Monetary Policy	Binary variable that reports policy rate cuts made by central banks: 0 - No policy rate cut 1 - Yes	Bank for International Settlements' (BIS) global database on central banks' monetary responses to Covid-19 and countries' central bank websites
Quantitative Easing	Monetary Policy	Binary variable that reports central banks' outright purchases of government bonds: 0 - No purchase of government bonds 1 - Yes	BIS' global database on central banks' monetary responses to Covid-19 and countries' central bank websites

Table 2: Indicators, Theoretical Justifications, and Sources

Indicator	**Theoretical Justification**	**Source**
Macroeconomic variables		
GDP growth	Business cycle	ADB, OECD
Debt-to-GDP ratio	Public debt and Fiscal space	World Bank, OECD, Eurostat
Inflation Rate	Inflation Targeting	ADB, Eurostat
Zero Lower Bound	Monetary space	ADB, Eurostat
Health variables		
Population over 65 years	Social realm of the disease and Vulnerable demographic	World Development Indicators
Confirmed Deaths	Social realm of the disease and Pandemic progression	COVID-19 Data Repository by Center for Systems Science and Engineering (CSSE) at Johns Hopkins University
Stringency Index	Social realm of the disease and Pandemic restrictions	OxCGRT
Geographic variables		
Landlocked	Geography	Complied by authors
ASEAN-5	Region	Compiled by authors
Institutional variables		
Liberal Democracy	Regime type	Varieties of Democracy (V-Dem)
Government Effectiveness	State capacity	World Bank
Central Bank Independence	State capacity	Central Bank Independence (CBI) index

Table 3: Frequency of Responses

Fiscal and Monetary Responses	Codes	Frequency	Percent Frquency (%)
Income Support	1	8	6.67
	2	32	26.67
	3	80	66.67
Debt/Contract Relief	1	13	10.83
	2	37	30.83
	3	70	58.33
Policy Rate Cut	0	89	74.17
	1	31	25.83
Quantitative Easing	0	38	31.67
	1	82	68.33

Table 4.1: Determinants of Income Support using Ordered Probit

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP growth	-0.304*	-0.305*	-0.298	-0.305	-0.313**	-0.286	-0.309**
	(0.179)	(0.180)	(0.183)	(0.202)	(0.154)	(0.183)	(0.176)
Debt-to-GDP	0.014	0.013	0.014	0.013	0.013	0.016**	0.016**
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Inflation	0.241	0.252	0.263	0.245	0.245	0.142	0.298**
	(0.180)	(0.178)	(0.180)	(0.186)	(0.177)	(0.192)	(0.161)
Population over 65 years	-0.026	-0.021	-0.011	-0.034	-0.033	0.014	-0.026
	(0.076)	(0.078)	(0.101)	(0.076)	(0.076)	(0.097)	(0.081)
Government Effectiveness	2.21***	2.24***	2.24***	2.36***	0.423	-0.105	0.277
	(0.664)	(0.674)	(0.634)	(0.764)	(1.57)	(1.83)	(2.92)
Landlocked		-0.332					
		(0.757)					
ASEAN-5			0.372				
			(1.37)				
Confirmed Deaths				0.111			
				(0.133)			
Stringency Index					-0.027		
					(0.025)		
Liberal Democracy						-5.39	
						(4.63)	
Central Bank Independence							-3.15
							(5.72)
Government Effectiveness x Confirmed Deaths				-0.031			
				(0.190)			
Government Effectiveness x Stringency Index					0.030		
					(0.026)		
Government Effectiveness x Liberal Democracy						4.11	
						(3.03)	
Government Effectiveness x Central Bank Independence							2.89
							(3.81)
/cut1	0.106	0.146	0.482	0.189	-1.78	-1.96	-1.82
	(1.12)	(1.12)	(1.56)	(1.21)	(2.26)	(2.10)	(4.00)
/cut2	2.45	2.47	2.81	2.60	0.574	0.412	0.505
	(1.24)	(1.24)	(1.63)	(1.37)	(2.27)	(2.07)	(4.03)
No. of observations	114	114	114	114	114	114	114
No. of countries	40	40	40	40	40	40	40
Wald chi^2	16.60	16.69	19.15	23.11	29.50	19.46	20.31
Log-likelihood	-65.0	-64.90	-64.92	-64.23	-64.42	-63.85	-64.57

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4.2: Determinants of Debt/Contract Relief using Ordered Probit

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GDP growth	0.037	0.037	0.043	-0.004	-0.045	0.036	0.036
	(0.144)	(0.144)	(0.145)	(0.148)	(0.231)	(0.146)	(0.143)
Debt-to-GDP	0.007	0.006	0.007	0.007	0.010	0.001	0.007
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.008)	(0.009)
Inflation	-0.017	-0.009	0.014	-0.011	-0.023	0.072	-0.042
	(0.184)	(0.184)	(0.193)	(0.188)	(0.184)	(0.205)	(0.189)
Population over 65 years	-0.075	-0.067	-0.046	-0.077	-0.120	-0.038	-0.093
	(0.087)	(0.094)	(0.103)	(0.086)	(0.092)	(0.095)	(0.091)
Government Effectiveness	-0.259	-0.260	-0.239	-0.039	-4.17**	4.72**	0.409
	(0.779)	(0.780)	(0.763)	(0.801)	(2.07)	(2.36)	(3.06)
Landlocked		-0.369					
		(1.26)					
ASEAN-5			0.668				
			(1.48)				
Confirmed Deaths				0.126			
				(0.126)			
Stringency Index					-0.086*		
					(0.045)		
Liberal Democracy						3.33	
						(3.54)	
Central Bank Independence							1.98
							(5.86)
Government Effectiveness x Confirmed Deaths				-0.123			
				(0.121)			
Government Effectiveness x Stringency Index					0.063**		
					(0.030)		
Government Effectiveness x Liberal Democracy						-7.05**	
						(3.48)	
Government Effectiveness x Central Bank Independence							-0.787
							(3.98)
/cut1	-3.49	-3.47	-2.90	-3.31	-9.73	-1.23	-2.24
	(1.69)	(1.69)	(2.13)	(1.70)	(3.39)	(2.17)	(4.31)
/cut2	-1.38	-1.35	-0.777	-1.17	-7.43	0.920	-0.124
	(1.38)	(1.39)	(1.84)	(1.39)	(3.41)	(2.00)	(4.08)
No. of observations	114	114	114	114	114	114	114
No. of countries	40	40	40	40	40	40	40
Wald chi^2	1.50	1.56	1.63	2.25	6.47	5.61	1.94
Log-likelihood	-84.51	-84.45	-84.41	-84.16	-81.52	-81.99	-84.39

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5.1: Determinants of Policy Rate Cuts using Binary Probit

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
GDP Growth	-0.766**	-0.976***	-0.767**	-0.743**	-0.767**	-0.780***	-0.804	-0.945**	-0.791**	-0.767**
	(0.325)	(0.347)	(0.326)	(0.329)	(0.301)	(0.220)	(0.643)	(0.405)	(0.323)	(0.328)
Inflation	0.424**	0.320	0.425**	0.431**	0.452**	0.344*	0.342	0.497*	0.325	0.429*
	(0.208)	(0.208)	(0.211)	(0.216)	(0.225)	(0.177)	(0.297)	(0.284)	(0.212)	(0.221)
Zero Lower Bound	-1.015*	-1.362***	-1.032*	-0.950*	-1.183**	-1.339**	-1.620	-1.289**	-1.139*	-1.02*
	(0.524)	(0.527)	(0.556)	(0.548)	(0.540)	(0.542)	(1.040)	(0.606)	(0.612)	(0.530)
Population over 65 years	-0.086*	-0.152**	-0.083*	-0.082	-0.076	-0.104*	-0.055	-0.077	-0.104*	-0.086*
	(0.051)	(0.070)	(0.051)	(0.050)	(0.056)	(0.057)	(0.057)	(0.065)	(0.055)	(0.942)
Government Effectiveness	-0.063	-0.114	-0.068	-0.133	-0.134	-1.137	-0.120	0.038	-0.222	-0.208
	(0.378)	(0.358)	(0.370)	(0.454)	(1.866)	(0.812)	(0.369)	(0.468)	(0.422)	(0.942)
Central Bank Independence	-0.173	0.108	-0.118	-0.081	-0.409	0.682	1.810	14.904*	3.058	-0.471
	(1.078)	(1.225)	(1.136)	(1.094)	(1.324)	(1.174)	(1.399)	(7.828)	(2.748)	(2.06)
ASEAN-5		-1.435*								
		(0.818)								
Landlocked			-0.101							
			(0.495)							
Confirmed Deaths				-0.069			0.862			
				(0.169)			(0.571)			
Stringency Index					0.013			0.191*		
					(0.043)			(0.106)		
Liberal Democracy						-1.261			3.539	
						(1.884)			(2.694)	
Government Effectiveness x Confirmed Deaths				0.018						
				(0.157)						
Government Effectiveness x Stringency Index					0.002					
					(0.029)					
Government Effectiveness x Liberal Democracy						1.994				
						(1.457)				
Central Bank Independence x Confirmed Deaths							-1.208*			
							(0.733)			
Central Bank Independence x Stringency Index								-0.252*		
								(0.136)		

Central Bank Independence x Liberal Democracy									-4.297	
									(4.381)	
Government Effectiveness x Central Bank Independence										0.239
										(1.54)
Constant	0.526	1.796	0.466	0.559	-0.363	0.836	-0.900	-11.321*	-1.455	0.702
	(0.956)	(1.370)	(1.033)	(1.038)	(3.053)	(1.251)	(1.322)	(6.493)	(1.711)	(1.42)
No. of observations	120	120	120	120	120	120	120	120	120	120
No. of countries	40	40	40	40	40	40	40	40	40	40
Wald chi^2	13.55	18.63	14.75	14.59	16.98	45.17	7.78	14.51	16.87	17.28
Log-likelihood	-33.74	-31.76	-33.73	-33.49	-33.36	-32.59	-30.40	-30.31	-32.97	-33.73

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5.2: Determinants of Quantitative Easing using Binary Probit

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
GDP Growth	-0.417*	-0.412*	-0.423*	-0.439	-0.210	-0.404*	-0.534	-0.149	-0.390	-0.421*
	(0.238)	(0.224)	(0.228)	(0.336)	(0.199)	(0.233)	(0.350)	(0.212)	(0.238)	(0.240)
Inflation	-0.904*	-0.952**	-0.912**	-1.030	-0.982*	-1.117**	-1.042	-0.889**	-1.201**	-0.947*
	(0.465)	(0.423)	(0.395)	(0.661)	(0.584)	(0.520)	(0.667)	(0.434)	(0.505)	(0.487)
Zero Lower Bound	3.627	3.403	3.640	4.003	3.466	2.995	5.284	3.267	2.685	3.74
	(3.225)	(2.753)	(3.379)	(4.605)	(3.397)	(2.825)	(5.306)	(2.402)	(2.800)	(3.47)
Population over 65 years	0.400*	0.326	0.455	0.471*	0.478*	0.291	0.491	0.408*	0.302	0.402*
	(0.234)	(0.261)	(0.306)	(0.268)	(0.274)	(0.219)	(0.320)	(0.226)	(0.218)	(0.240)
Government Effectiveness	-4.876*	-4.759*	-4.863*	-5.754	-2.209	-5.057	-6.304	-4.391**	-7.454*	-4.10
	(2.568)	(2.435)	(2.956)	(3.703)	(3.073)	(4.733)	(5.232)	(2.050)	(3.814)	(3.87)
Central Bank Independence	2.619	2.516	4.368	3.181	2.636	1.890	1.532	-1.351	3.594	4.47
	(4.787)	(4.600)	(5.021)	(5.583)	(4.954)	(4.288)	(8.863)	(8.516)	(14.730)	(8.47)
ASEAN-5		-1.324								
		(2.493)								
Landlocked			-2.598							
			(3.497)							
Confirmed Deaths				-0.318*			-1.493			
				(0.184)			(1.962)			
Stringency Index					0.088			-0.003		
					(0.056)			(0.097)		
Liberal Democracy						15.129			12.723	
						(10.553)			(10.940)	
Government Effectiveness x Confirmed Deaths				0.094						
				(0.173)						
Government Effectiveness x Stringency Index					-0.044					
					(0.041)					
Government Effectiveness x Liberal Democracy						-3.801				
						(7.781)				
Central Bank Independence x Confirmed Deaths							1.512			
							(2.300)			
Central Bank Independence x Stringency Index								0.066		
								(0.139)		

Central Bank Independence x Liberal Democracy									-1.240	
									(20.385)	
Government Effectiveness x Central Bank Independence										-1.34
										(5.58)
Constant	-1.159	0.176	-2.715	-1.094	-7.684	-5.112	0.306	-1.609	-4.634	-2.32
	(3.576)	(4.805)	(3.857)	(4.111)	(5.822)	(4.795)	(6.475)	(6.758)	(8.602)	(5.36)
No. of observations	120	120	120	120	120	120	120	120	120	120
No. of countries	40	40	40	40	40	40	40	40	40	40
Wald chi^2	24.75	28.70	23.79	21.52	27.22	26.74	14.32	24.83	24.56	22.28
Log-likelihood	-32.74	-32.65	-31.15	-31.79	-31.73	-31.35	-31.35	-32.02	-31.46	-32.74

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

APPENDIX

Table A.1 Sample of Countries

ASEAN-5
Indonesia, Malaysia, The Philippines, Singapore, Thailand
OECD
Australia, Austria, Belgium, Chile, Colombia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, South Korea, Spain, Sweden, Switzerland, Turkey, United States, United Kingdom

Table A.2 Descriptive Statistics

Indicator	Number of Observations	Maximum	Minimum	Standard Deviation
Income Support	120	3	1	0.614
Debt/Contract Relief	120	3	1	0.686
Policy Rate Cuts	120	1	0	0.440
Quantitative Easing	120	1	0	0.467
GDP growth rate	120	18.53	-19.47	8.66
Debt-to-GDP ratio	120	200.24	13.39	48.56
Inflation Rate	120	13.51	-2.67	2.33
Zero Lower Bound	120	1	0	0.500
Confirmed deaths per million people	120	11.09	0	2.51
Population over 65 years old	120	28	5.31	5.17
Stringency Index	120	91.8	23.5	13.56
Liberal Democracy	120	0.88	0.11	0.213
Government Effectiveness	120	2.2	-0.16	0.622
Central Bank Independence	120	0.899	0.251	0.196
Landlocked	120	1	0	0.332
ASEAN-5	120	1	0	0.332

Table A.3 Correlation Matrix

	Income Support	Debt/Contract Relief	Policy Rate Cuts	Quantitative Easing	GDP growth rate	Debt-to-GDP ratio	Inflation Rate	Zero Lower Bound	Confirmed deaths per million people	Population over 65 years old	Stringency Index	Liberal Democracy	Government Effectiveness	Central Bank Independence	Landlocked	ASEAN-5
Income Support	1.00															
Debt/Contract Relief	-0.004	1.00														
Policy Rate Cuts	-0.206	-0.048	1.00													
Quantitative Easing	-0.123	0.133	-0.253	1.00												
GDP growth rate	-0.027	0.002	-0.283	-0.020	1.00											
Debt-to-GDP ratio	-0.041	0.091	-0.250	0.198	0.005	1.00										
Inflation Rate	0.199	0.005	0.437	-0.319	0.107	-0.258	1.00									
Zero Lower Bound	0.176	-0.131	-0.538	0.429	0.107	0.396	-0.386	1.00								
Confirmed deaths per million people	0.006	-0.061	-0.152	0.075	-0.087	0.184	0.024	0.192	1.00							
Population over 65 years old	0.079	-0.112	-0.533	0.335	0.123	0.496	-0.353	0.657	0.137	1.00						
Stringency Index	0.247	-0.009	0.294	0.102	-0.404	0.082	0.085	-0.155	0.356	-0.377	1.00					
Liberal Democracy	0.221	-0.161	-0.465	0.274	0.192	0.219	-0.414	0.626	0.126	0.675	-0.240	1.00				
Government Effectiveness	0.425	-0.128	-0.410	-0.078	0.067	0.074	-0.405	0.362	-0.096	0.468	-0.380	0.620	1.00			
Central Bank Independence	-0.056	0.061	-0.035	0.268	0.101	-0.001	0.195	0.309	0.242	0.141	0.077	0.056	-0.281	1.00		
Landlocked	0.041	-0.115	-0.050	-0.068	0.032	-0.182	0.066	0.038	0.191	0.126	-0.165	0.032	0.106	0.248	1.00	
ASEAN-5	-0.165	0.106	0.238	-0.176	-0.288	-0.225	-0.131	-0.418	-0.263	-0.588	0.116	-0.667	-0.231	-0.235	-0.143	1.00

Table A.4 Robustness Checks for Fiscal Response using Pooled OLS

	Income Support			Debt/Contract Relief		
	(1)	(2)	(3)	(4)	(5)	(6)
GDP growth	-0.063 (0.049)	-0.041 (0.059)	-0.053 (0.060)	0.007 (0.064)	0.014 (0.067)	-0.003 (0.075)
Debt-to-GDP	0.003** (0.001)	0.004** (0.002)	0.004** (0.002)	0.002 (0.001)	0.001 (0.002)	0.002 (0.002)
Inflation	0.076*** (0.026)	0.065* (0.037)	0.064* (0.038)	-0.025 (0.028)	0.010 (0.045)	0.006 (0.046)
Population over 65 years	0.000 (0.013)	0.000 (0.020)	-0.003 (0.023)	-0.020 (0.015)	-0.003 (0.019)	-0.015 (0.023)
Government Effectiveness	0.516*** (0.110)	-0.102 (0.431)	-1.07* (0.583)	-0.139 (0.127)	0.593 (0.484)	-0.484 (0.641)
Confirmed Deaths		-0.020 (0.050)			-0.017 (0.063)	
Stringency Index			-0.013 (0.009)			-0.020 (0.013)
Liberal Democracy		-0.816 (0.739)	-1.09 (0.804)		0.927 (0.849)	0.643 (0.881)
Central Bank Independence		-0.393 (1.10)	-0.379 (1.05)		-0.305 (1.27)	-0.272 (1.28)
Government Effectiveness x Confirmed Deaths		0.041 (0.050)			0.001 (0.062)	
Government Effectiveness x Stringency Index			0.013** (0.006)			0.015 (0.009)
Government Effectiveness x Liberal Democracy		0.471 (0.456)	0.793* (0.463)			-1.16 (0.013)
Government Effectiveness x Central Bank Independence		0.522 (0.672)	0.587 (0.644)		0.313 (0.843)	0.294 (0.842)
Constant	1.67*** (0.205)	2.30*** (0.711)	3.22*** (0.927)	2.79*** (0.264)	2.39*** (0.712)	3.89*** (0.903)
No. of observations	114	114	114	114	114	114
No. of countries	40	40	40	40	40	40
R^2	0.263	0.546	0.321	0.051	0.125	0.148

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A.5 Robustness Checks for Monetary Response using Pooled OLS

	Policy rate cuts			Quantitative easing		
	(1)	(2)	(3)	(4)	(5)	(6)
GDP growth	-0.107***	-0.113***	-0.108***	-0.017	-0.028	-0.019
	(0.029)	(0.031)	(0.037)	(0.035)	(0.039)	(0.045)
Debt-to-GDP	0.000	0.001	0.001	-0.001	0.000	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	0.001	(0.001)
Zero Lower Bound	-0.146	-0.250*	-0.243**	0.238*	0.123	0.169
	(0.113)	(0.120)	(0.122)	(0.133)	(0.156)	(0.157)
Inflation	0.044***	0.011	0.007	-0.061***	-0.030	-0.037
	(0.013)	(0.024)	(0.024)	(0.013)	(0.032)	(0.032)
Population over 65 years	-0.019*	-0.026**	-0.024*	0.023*	0.019	0.022
	(0.010)	(0.011)	(0.013)	(0.012)	(0.014)	(0.015)
Government Effectiveness	-0.125*	-0.254	0.003	-0.268***	-0.652**	-0.651
	(0.074)	(0.258)	(0.387)	(0.070)	(0.261)	(0.403)
Central Bank Independence	-0.069	0.902	0.939	0.328	-0.550	-0.498
	(0.210)	(0.684)	(0.672)	(0.266)	(0.820)	(0.857)
Confirmed Deaths		-0.019			-0.049	
		(0.030)			(0.047)	
Stringency Index			0.003			0.001
			(0.006)			(0.008)
Liberal Democracy		-0.620	-0.663		0.881	0.627
		(0.501)	(0.532)		(0.656)	(0.616)
Government Effectiveness x Confirmed Deaths		0.001			0.028	
		(0.025)			(0.041)	
Government Effectiveness x Stringency Index			-0.003			0.001
			(0.004)			(0.005)
Government Effectiveness x Liberal Democracy		0.805**	0.774		-0.255	-0.174
		(0.327)	(0.334)		(0.468)	(0.456)
Government Effectiveness x Central Bank Independence		-0.494	-0.552		0.638	0.558
		(0.396)	(0.399)		(0.525)	(0.527)
Constant	0.760***	0.489	0.231	0.382	0.643	0.571
	(0.236)	(0.452)	(0.622)	(0.248)	(0.408)	(0.637)
No. of observations	114	114	114	114	114	114
No. of countries	40	40	40	40	40	40
R^2	0.484	0.527	0.519	0.323	0.364	0.351

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1