The Role of Government Actions in the Economic Recovery Process:International Evidence During Pandemic Period

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Abstract. This paper examines the role of government policy enforced during the pandemic in global economic indicators, such as foreign direct investment, exports, and imports. During the pandemic, the world economy has taken a hit and governments take action urgently to stabilize the economic situation. We mainly focus on data from seven large economic volume countries —— Australia, Brazil, Canada, China, India, the United Kingdom, and the United States.

Incorporating evidence from the data and models presented in this paper, this study demonstrates that government policies have different impacts on economic indicators. An increase in the stringency index and government response index leads to a decrease in foreign direct investment, exports, and imports. However, an increase in the containment and health index has the opposite effect, leading to an increase in foreign direct investment, exports, and imports.

Keywords: international trade, Covid-19, government action, economic recovery

1   Introduction

In the past five years, the world economy and society have experienced turbulence due to COVID-19. Governments have taken actions to control economic fluctuations to ensure the stability of each country's economy. Foreign direct investment, exports, and imports are essential economic indicators for a country. Foreign direct investment (FDI) creates economic links between economies and is particularly important for the development of developing countries, as it creates opportunities in various ways. Investigating the impact of monetary policy on FDI can provide policy recommendations to maintain FDI stability.[4] Two other essential economic indicators of international trade are exports and imports. Each country can benefit from imports to acquire resources not produced locally and export surplus goods to earn profits. Therefore, we consider these factors to measure how government actions might affect them.

Although there is a large amount of research analyzing how the government measures taken during the pandemic affected the world economy, for example, Mario Coccia's research on the effects of strict containment policies[2], Tim Dorlach's research

on social policy responses[3], and Audrey Paterson, Rilwan Sakariyahu, Rodiat Lawal, and Adedayo Alabi's research on the impact of government policy responses to the COVID-19 pandemic and Brexit on the UK financial market[7], this essay will discuss how the four government policies influenced foreign direct investment, exports, and imports in the selected countries.

2   Literature Review

Karahan and Bayir (2022) analyzed the impact of monetary policy on FDI inflows to developing countries before and during the epidemic and predicted the impact of monetary policy on the amount of FDI inflows to developing countries after the epidemic. The study concluded that expansionary monetary policies implemented before and during COVID-19 raised asset prices and boosted stock market demand for assets, thereby promoting global outward FDI. As the impact of COVID-19 waned and inflation increased, tighter monetary policies were implemented, which led to changes in FDI. Developing countries should focus on policies to attract FDI to reduce the negative impact of tight monetary policies on national finance.[6]

Hunjra, Kijkasiwat, Arunachalam, and Hammami (2021) examined how different health policy measures affect investor behavior and lead to stock market volatility, and analyzed capital volatility in different countries of the Asian market. It was concluded that stock index volatility is related to individual health policies; public health measures and virus protection policies implemented in specific countries have different effects on capital markets.[5]

Aharon and Siev (2021) examine the impact of different government interventions on capital markets in emerging countries and their magnitude. The response of emerging markets to intrusive measures in three areas: public shutdown, health, and economy, and the more far-reaching effects on capital markets are examined. Also, the impact of each intervention is assessed. It is concluded that public shutdowns have the greatest negative impact on emerging capital markets; health interventions have no significant impact, except for public awareness campaigns; and market responses to economic measures depend on the type of support provided.[1]

All these pieces of literature have discussed the impact of various interventions implemented by countries during the epidemic on the capital market. However, the policy measures discussed in this paper are more general, and the object of the study is different from the other literature. This paper focuses on foreign direct investment, exports, and imports. Different government measures can lead to changes in international economic interactions. We make the following three assumptions: A higher stringency index leads to a decrease in foreign direct investment, imports, and exports because labor shortages resulting from "lockdown-style" policies can directly undermine a country's productive capacity. A higher overall government response index indicates that the market is more volatile because of COVID-19, and the stronger the government's response, the more it leads to a decline in foreign direct investment, imports, and exports. Due to increased investment in healthcare, a higher containment and health index facilitate international economic interaction to more quickly minimize the negative impact

of the pandemic on the world economy, leading to an increase in foreign direct invest-ment, imports, and exports.

3   Data and Methodology

In this section, we empirically test the impact of the general government response, con-tainment and health index, stringency index, and economic support index on the econ-omies of large economy volume countries across continents before and during COVID-19. The impact of these policy indices on the economies of large economy volume countries will be determined by changes in financial indicators such as FDI, imports, and exports. Therefore, we will attempt to empirically explain the impact of policy in-dices on the economies of large economy volume countries through international data for seven countries: Australia, Brazil, Canada, China, India, the United Kingdom, and the United States for the period 2018-2021. Because there is no clear relationship be-tween our independent and dependent variables, we choose to use multiple linear re-gression to find the mathematical expressions that best express the relationship between them by using their best-fit models.

Data from seven countries, representing the world's large economic volume coun-tries, are used in the study. In this context, data from Australia, Brazil, Canada, China, India, the United Kingdom, and the United States were included in the analysis, repre-senting Australia, Latin America, North America, Asia, and Europe, respectively. These countries all have enormous economic clout on different continents. The study period covers the years 2018 to 2021. The policy adjustments introduced during this period led to significant changes in global financial markets. The policy data is col-lected from the Oxford Covid-19 Government Response Tracker.

In the study, the impact of policy indicators of general government response, con-tainment and health index, stringency index, and economic support index on FDI is basically estimated within the framework of Model-1, as shown in equation (1).

$$FDI = \beta_0 + \beta_1 Stringency + \beta_2 Gov_{res} + \beta_3 Cont_{health} + u_1 \tag{1}$$

The dependent variable in the model is FDI, while the independent variables consist of the stringency index, the general government response, and the containment and health index, while u1 is the error term.

The effects of the policy indicators of general government response, containment and health index, stringency index, and economic support index on exports are basically estimated within the framework of Model 2, as shown in equation (2).

$$Export = \beta_0 + \beta_1 Stringency + \beta_2 Gov_{res} + \beta_3 Cont_{health} + u_1 \tag{2}$$

The dependent *variable in the model is export, while the independent variables con-sist of the stringency index, the general government response, and the containment and health indices, and u1 is the error term.*

The effects of the policy indicators of the general government response, the contain-ment and health index, the stringency index, and the economic support index on imports are basically estimated within the framework of Model 3, as shown in equation (3).

$$Import = \beta_0 + \beta_1 Stringency + \beta_2 Gov_{res} + \beta_3 Cont_{health} + u_1 \qquad (3)$$

The dependent variable in the model is import, while the independent variables consist of the stringency index, the general government response, and the containment and health indices, while u1 is the error term.

In the estimation of Model 1 to Model 3, quarterly frequency datasets between 2018:Q1-2021:Q4 for the pre-pandemic period are used. The FDI variable is the cross-border transactions between related parties recorded in the reference period quarter. The FDI variable data for Brazil, Canada, China, India, the UK, and the US are obtained from the Organization for Economic Cooperation and Development (OECD) database, and the FDI variable data for Australia are obtained from the CEIC database. The export variable is the total amount of goods or services produced in a country but sold to foreign buyers. The import variable is the total amount of goods or services purchased in one country/region and produced in another country/region. Data on the import and export variables for each country are obtained from the IMF database. The overall government response index records how the response of governments has varied over the overall indicators in the database, becoming stronger or weaker over the course of the outbreak. The containment and health index combines 'lockdown' restrictions and closures with measures such as testing policy and contact tracing, short-term investment in healthcare, as well as investments in vaccines. The stringency index records the strictness of 'lockdown-style' policies that primarily restrict people's behavior. Data on the overall government response index, containment and health index, and stringency index for each country are obtained from the Oxford Covid-19 Government Response Tracker.[8]

The study sample includes Australia, Brazil, Canada, China, India, the United Kingdom, and the United States. The countries examined were selected to represent countries with large economic volumes on different continents of the world based on the availability of data.

4   Empirical Results

Table 1. The relationship between foreign direct investment and government actions

	Table 1: Foreign Direct Investment				
	Estimate	Standard Error	T-value	P-value	Significance level
Stringency	-2442.6	811.5	-3.010	0.003	**
Gov_res	-4097.9	985.8	-4.157	0.003	***
Cont_health	69613.2	1180.9	5.896	0.000	***
Adj. R-squared	0.225				
F-statistic	11.74				

The estimation results of Table 1 show that the estimates of the relationship between the stringency index, the general government response index, the containment and health index, and FDI in each country are statistically significant, according to the p-values for each coefficient. Also, this model has an F-statistic of 11.74, which means

the independent variables are jointly significant. Among them, the stringency index and general government response index have a negative effect on FDI, while the containment and health indexes have a positive effect on FDI. A 1-unit increase in the containment and health index is associated with a 6963.2-unit increase in FDI. However, a 1-unit increase in the stringency index and government response index is associated with a 2442.6 and 4097.9-unit decrease in FDI, respectively.

Table 2. The relationship between exports and government actions

	Table 2: Exports				
	Estimate	Standard Error	T-value	P-value	Significance level
Stringency	-23218	5437	-4.271	0.000	***
Gov_res	-37124	6604	-5.621	0.000	***
Cont_health	65096	7911	8.228	0.000	***
Adj. R-squared	0.379				
F-statistic	23.54				

The estimation results of Table 2 show that the estimates of the relationship between the overall government response index, the containment and health indices, and the exports of each country are statistically significant, according to the p-values for each coefficient. Also, this model has an F-statistic of 23.54, which means the independent variables are jointly significant. Among them, the stringency and general government response indices have a negative impact on exports, while the containment and health indices and economic support indices have a positive impact on exports. A 1-unit increase in the stringency and government response index is associated with a 23,218 and 37,124-unit decrease in the exports of each country, respectively. However, a 1-unit increase in the containment and health index is associated with a 65,096-unit increase in the exports of each country.

Table 3. The relationship between imports and government actions

	Table 3: Imports				
	Estimate	Standard Error	T-value	P-value	Significance level
Stringency	-23101	6235	-3.705	0.000	***
Gov_res	-24239	7574	-3.200	0.002	**
Cont_health	51467	9073	5.672	0.000	***
Adj. R-squared	0.216				
F-statistic	11.21				

The estimation results of Table 3 show that the estimates of the relationship between the overall government response index, the containment and health indices, and the imports of each country are statistically significant, according to the p-values for each coefficient. Also, this model has an F-statistic of 11.21, which means the independent variables are jointly significant. Among them, the stringency index and the general government response index have a negative impact on imports, while the containment and health index and the economic support index have a positive impact on imports. The estimated results of the relationship between the economic support index and imports

of each country are not statistically significant. A 1-unit increase in the stringency and government response index is associated with a 23,101 and 24,239-unit decrease in the imports of each country, respectively. However, a 1-unit increase in the containment and health index is associated with a 51,467-unit increase in the imports of each country.

5   Conclusion

The results of the three models support our hypothesis about how government actions would affect economic indicators, such as foreign direct investment, exports, and imports. An increase in the stringency index and government response index leads to a decrease in foreign direct investment, exports, and imports. However, an increase in the containment and health index has the opposite impact, leading to an increase in foreign direct investment, exports, and imports. Among the three government action indexes, the containment and health index has the greatest effects on foreign direct investment, exports, and imports.

In addition, the overall government response index includes the economic support index in addition to the stringency index and the containment and health index, but since the economic support index does not have a significant effect on the three economic indicators, we removed it from the model.

6   Discussion

Overall, different policies will have different economic impacts and extents of those impacts. The evidence from the time series analysis suggests that the general government response index and the containment and health index played a significant role in FDI, exports, and imports for the seven countries before and during COVID-19. As for the Stringency Index, its importance lies mainly in its effects on FDI, exports, and imports for the seven countries. Among FDI, exports, and imports, the change in the containment and health index has the greatest impact on them. In the event of a future event similar to COVID-19, fiscal authorities can intervene by choosing the appropriate policy based on the economic situation, and this paper will provide support.

There are some shortcomings in our study. Due to the limited data in the database, we were unable to obtain data for a broader time horizon. The paper includes government action indices for only seven countries. Incomplete data can lead to inaccurate results. Additionally, due to the special nature of the COVID-19 event, the impact of these policies applied in daily life may be inconsistent with the results of this study.

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