THE IMPACT OF COVID-19 ON TAIWAN'S INTERNATIONAL TRADE: AN APPLICATION OF DIFFERENCE IN DIFFERENCE ANALYSIS

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ABSTRACT

The onset of the COVID-19 pandemic has unexpectedly changed the usual shape of the world routine. Precisely, its spread has had an enormous impact on the businesses and economies of countries across the globe. To curb the further spread of the virus, countries across the globe imposed an array of non-pharmaceutical measures such as lockdowns, travel restrictions, social distancing, mandatory mask-wearing, hand sanitizing, curfews, hygiene, public health emergency concern, school closures, and many more. While anecdotal evidence indicates that these government stringency measures worsened the impact of COVID-19 on international trade, this study attempted to systematically explore this phenomenon by employing the Difference in Differences (DID) technique to assess the impact of COVID-19 on Taiwan's net export using secondary data. To estimate the unobserved counterfactual level of Taiwan's net exports had the country imposed stringent COVID-19 measures, we employed five other Asian trading partners (all of which imposed lockdowns in 2020) to constitute the pool of treatment units. The study used data collected from the Our World in Data website for the period from dating January 2018 to June 2021. Stata 15 was used to analyze the data. By and large, the DID model results established that Taiwan's net exports significantly increased during the time that it did not implement stringent COVID-19 measures relative to the unobserved counterfactual scenario for those countries which adopted such stringent measures. More crucially, our baseline results remain robust to other sensitivity test, vindicating our identification strategy.

KEYWORDS: COVID-19, pandemic, lockdown, difference in difference model, international trade

INTRODUCTION

The year 2019 was the beginning of the world's greatest change. In December 2019, a new virus called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) also known as Coronavirus disease 2019 (COVID-19) was discovered. In January 2020, the virus outbreak was declared by the World Health Organization (WHO), which was presented as an international concern for a public health emergency. Later, on March 11, 2020, it was then declared a pandemic due to the spreading speed throughout the world. About 110 countries and territories in the world were already confirmed

COVID-19 cases and WHO reported a sustained risk of potential global spread. It was reported that the pandemic reached 106.44 million cases up to February 8, 2021 (Fang et al., 2021). Several countries have adopted an array of non-pharmaceutical measures to fight against COVID-19 such as imposing lockdowns, travel restrictions, social distancing, mandatory mask-wearing and hand sanitizing, curfews, hygiene, public health emergency concern, school closures, and many more. Due to these restrictions, the economic activities across countries were and are enormously affected, which took away a significant economic loss. From 2020 and 2021, the cumulative loss of global GDP due to the pandemic crisis was evaluated to be around $9 trillion. However, East Asia had a positive outcome in exports (Gopinath, 2020). The beginning of COVID-19 has brought huge significant changes to the world which has affected the world's economic activities such as travel, health, human activity, production, finance, consumption, employment, agriculture, education, cross-border activities, industries, and trade of services and goods. Past pandemics that the world has experienced show that quarantines and panic have an impact on human activities and economic growth (Arndt & Lewis, 2001; Hanashima & Tomobe, 2012). One of the most affected areas is international trade whereas some borders are shut down, and there are restrictions on imported and exported goods. In the Asian market, there are some areas where trade is increasing such as Korean exports increased by 5.4% in June, 2020 according to OCED (Fang et al., 2021). It should be noted that Taiwan is one of the countries which did not impose a lockdown, hence this research would determine whether Taiwan had the advantage of continuous trading relative to other countries that imposed a lockdown or not. The main purpose of this study is to analyze the impact of COVID-19 on international trade, especially in Asia (Taiwan). This study will analyze the economic performance and trading impact (exports and imports) before COVID-19 and during COVID-19 in Taiwan. The main time frame for this study is from July 2018 to June 2021. This covers almost three quarters which includes a full year (2020) since COVID-19 started.

LITERATURE REVIEW
International Trade and Its Response Due to Pandemics
International trade has long become important to the growth of world economy. However, several factors can negatively influence international trade. Some of the more significant factors include wars, demand, and supply, communication and transportation, government and policy, trade barriers, the political climate of a country, pandemics, and others. For the pandemics, its occurrence is characterized by serious impacts, which can be extended throughout the world. Gruszczynski (2020) analyzed the short- and long-term impacts of COVID-19 on international trade. He pointed out that the short-term changes include measures on trade policy, export bans, having security on food supply, and trade agreements on some products between many nations. Apart from the short-term changes, there are also long-term changes involved which consist of disruptions in the supply chain, immigration rules, barriers in trade and investment, technological decoupling, and global trade

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restrictions. The author also concluded that the process of economic globalization could convey structural changes from the pandemic impact that would be more serious than it was visualized.

Fernandes et al., (2020) studied the impact of the Severe Acute Respiratory Syndrome (SARS) epidemic on China's trade. In the research, the Difference in Differences (DID) model was used to understand the response of different companies due to SARS in different regions. The difference in differences model concentrates on two groups, which are the treatment and the control that focus on the outcomes of what happens between two time periods, the "pre" and "post" outbreaks. The treatment group determines the action which is taken to contain a certain situation while the control group consists of areas that have been left untreated (Goodman-Bacon, 2021).

Moreover, the GDP globally is directed toward the negatives in 2020, which has a high downturn speed and magnitude that has never been experienced before (Abiad et al., 2020; Hutt, 2020). Table 1 shows COVID-19's global impact on GDP in three different cases namely best, moderate and worse case scenarios. The analyzed GDP impact accounts for the People's Republic of China (PRC), developing Asia, and the rest of the world showing losses of 0.1% to 0.4% in ($) millions from the best to the worst-case scenario.

Table 1 COVID-19 Estimated Economic Impact

	Best case		Moderate case		Worse case	
	as % of GDP	losses in $ millions	as % of GDP	losses in $ millions	as % of GDP	losses in $ millions
World	-0.089	$76,693	-0.182	$155,948	-0.404	$346,975
People's Republic of China	-0.323	$43,890	-0.757	$103,056	-1.740	$236,793
Developing Asia excluding the People's Republic of China	-0.171	$15,658	-0.244	$22,284	-0.463	$42,243
Rest of the World	-0.011	$17,145	-0.020	$30,608	-0.044	$67,938

Source: Asian Development Bank staff estimates.

Source: Abiad et al., (2020), Asian Development Bank

COVID-19 has forced many countries to impose restrictions on trade such as medical supplies and food. A combined study by Baldwin et al. (2020) stated that policies imposed by governments have been called "The Great Lockdown" by the International Momentary Funds (IMF), where the world has changed in many ways due to the pandemic. Furthermore, governments are considering turning inward due to the crisis caused by the pandemic. However, studies have shown that fighting against COVID-19 will not be successful by turning inward signifying that trade is the solution and not the problem. Many countries worldwide have crucially joined together to fight COVID-19 through

international trade, where imports and exports of essential goods such as masks, and other personal protective equipment (PPE) have been in high demand. They have mostly been imported from Asian countries recovering from the outbreaks and lockdowns (Bown, 2020; Fiorini et al., 2020). After the lockdown, workers returned to factories boosting the mask production by 12 times in comparison to 2019 even though there was a 19% decrease in Chinese exports of PPE to the U.S., which was not good for China since it is one of the main sources of PPE products (Bown, 2020). Consequently, irregular exporter countries such as Thailand, Dominican Republic, Sri Lanka, Vietnam, and Honduras have been exporting to the West (Bamber et al., 2020).

According to Fernandes (2020), the second wave of COVID-19 had more impact than the first wave. He stated that since 16% of the global economy is from China, the impact on the world will be worse. In addition to that, the author also referred to the lockdowns, quarantines, travel restrictions, and trade restrictions imposed in many countries, as having negative effects that proved that the second wave will be worse than the first wave of COVID-19. A recent proposal from World Trade Organization (WTO) members state that there was a decline in world trade in 2020 compared to 2019 of 9.2% and the GDP narrowed to 8% in 2020. Furthermore, members of the WTO have been asked to work on a Trade and Health Initiative to make international trade a compelling apparatus to assist in accommodating the pandemic and economic improvement. To fight the pandemic, members of the WTO have been asked to quickly analyze and remove restrictions, which were put on medical supplies.

COVID-19 in Taiwan

Taiwan with its high-income is one of the countries that did not experience a lockdown until May 11, 2021 where it imposed a soft lockdown. It has minimal mortality hindrance and had no local transmitted cases in April 2020 (Cutler & Summers, 2020). Taiwan took drastic measures to contain the virus resulting in low mortality and low reported cases. To prove this, Cutler & Summers (2020) compared and analyzed responses to the pandemic from Taiwan and New Zealand in which both countries performed well. The two countries had a slight difference, showing that Taiwan had a low rate in cases of 20.7 per million while New Zealand had 278.0 per million giving Taiwan an advantage to effectively react to COVID-19. Furthermore, Taiwan was secure economically because it did not enforce a lockdown before May 2021 while New Zealand enforced seven weeks of national lockdown. Figure 1 shows the performance of these two countries. As depicted from that figure, among the considered countries in this study, Taiwan has a lower number of confirmed cases of COVID-19 up to the end of August 2020.
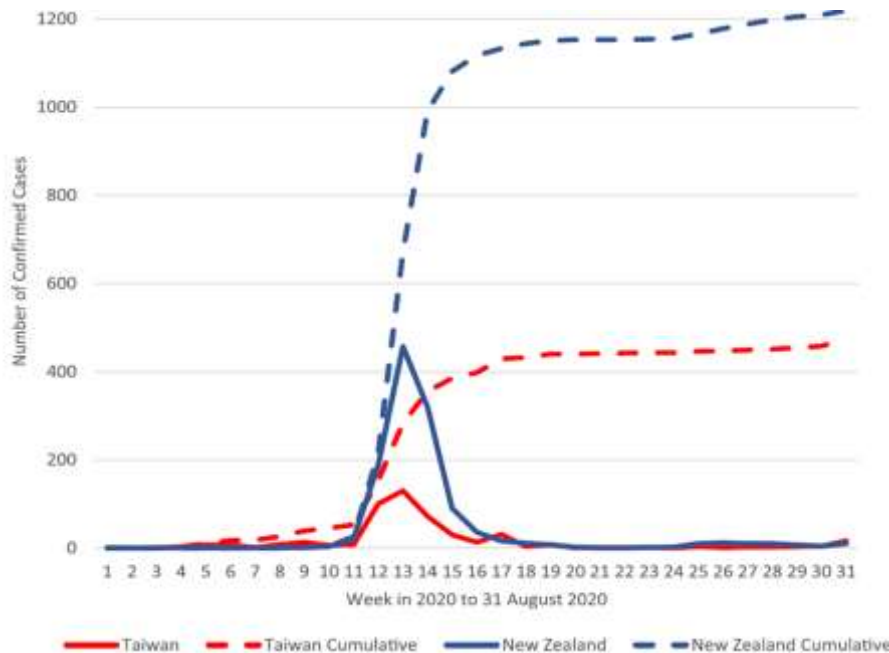
Figure 1 COVID-19 cases for Taiwan and New Zealand up to August 2020.
Source: Cutler & Summers (2020) Jama

Despite the positive outcomes from Taiwan during the early stage of the pandemic, it can be asserted that COVID-19 has had an impact on Taiwan's international trade. Hence, this study will determine the impact of COVID-19 on international trade in Taiwan compared to other countries. As already used by Fernandes (2020) in the study of SARS in China, this study will also adopt the DID model to understand the impact of COVID-19 on international trade in Taiwan in 2020.

Governments' Stringency Index

The Government Response Stringency Index (GRSI), is a measure used to quantify the government's measures put in place to deal with COVID-19 (Kaçak & Yildiz, 2020). According to the Coronavirus Government Response Tracker (OxCGRT), published by the Blavatnik School of Government at the University of Oxford, the stringency index is a composite measure based on nine response indicators. These indicators are school closing, workplace closing, cancel public events, restrictions on gatherings, closed public transport, stay at home requirements, restrictions on internal movement, and international travel (Roser et al., 2020).

Each of the aforementioned indicators is converted into a value ranging from 0 to 100 according to

the degree of response. Thus, the value of the stringency index is the daily average of the total nine indicators. The interpretation is that the higher the stringency index score, the stricter the response, by implication, the value of 100 implies the strictest response. A higher index indicates a higher overall response level (Roser et al., 2020). On the other hand, a lower score of GRSI implies lower stringency of measures adopted by the government. Indeed, the strictness of these measures varied across countries as is evident in Figures 2. Moreover, as can be seen, Taiwan lagged in terms of its stringency measures, justifying our identification technique as the control country while all other countries as the treatment group.
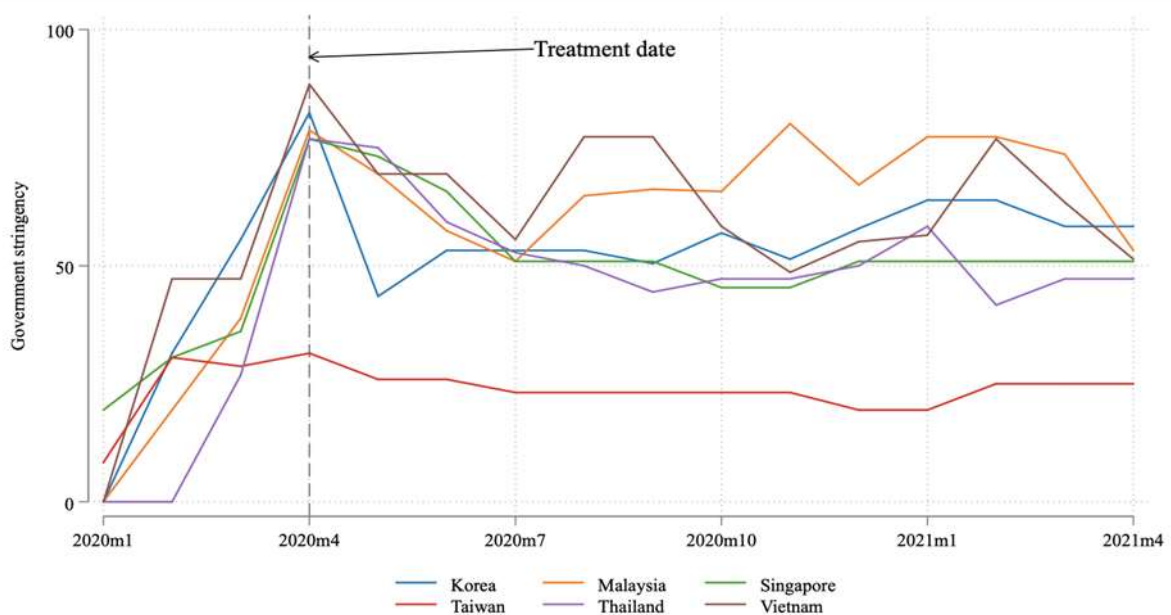

Figure 2 Overview of government stringency measures
Source: Author's computation

Impact of Governments' Stringency Measure on International Trade
To curb the further spread of lockdown, governments across the world imposed several measures. Amongst such measures is a lockdown. Baldwin & Tomiur (2020) found that lockdown has had a significant and negative impact on the supply chain that consequently led to a negative supply shock. Furthermore, measures that were imposed including, but not limited to border closure, and international travel restrictions have impacted international trade by swelling the trade cost, and most importantly deferring or utterly barring border clearance (Banga et al., 2020). This, therefore, has had a significant impact on international trade. Several studies have revealed that governments' stringency measures have had an impact on international trade. For instance, Pei, et al. (2021) investigated the

impact of COVID-19 on international trade in China. These scholars specifically investigated the impact of COVID-19 lockdowns on Chinese cities by comparing cities that were on lockdown and those that were not on lockdown. Using the difference in difference analysis, Pei et al. (2021) found that Chinese cities that were on lockdown experienced a significant reduction in the year-on-year growth rate of exports. Contrariwise, the study revealed that cities that did not impose lockdown experienced a significant increase in export. This is apparent in Figure 3 where there was an immediate negative shock in April 2020 in all the treatment countries' net exports whereas Taiwan's net exports showed unusual resilience, indicating heterogeneity of the COVID-19 pandemic depending on the strictness of measures.
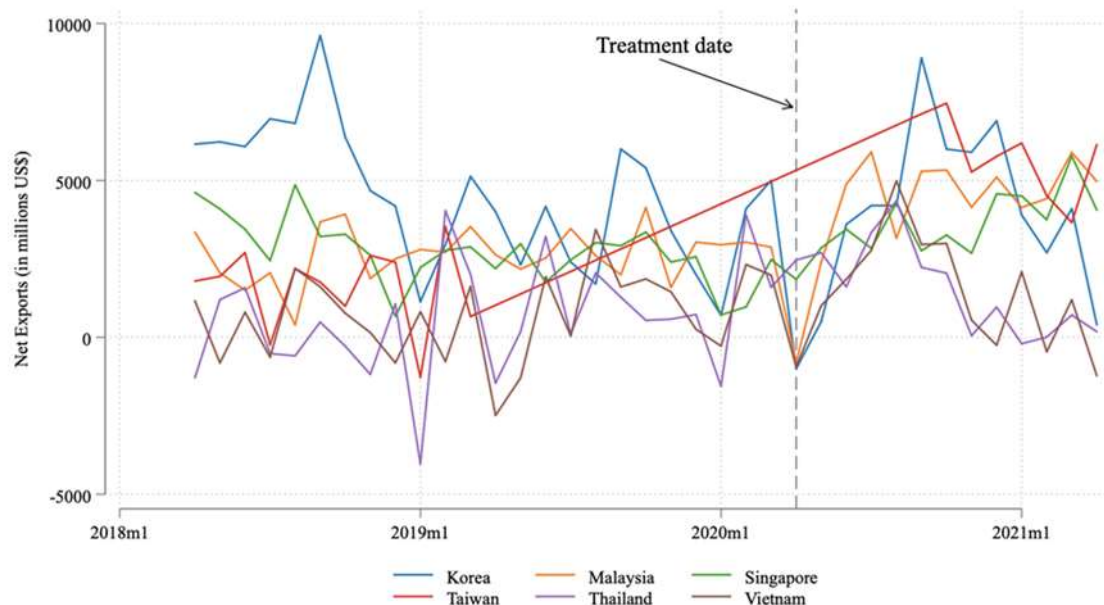

Figure 3 Overview of net exports in the control (Taiwan) and the treatment group
Source: Author's computation

METHODOLOGY
Research Hypothesis

From the beginning of January 2020, many countries were affected by the start of the virus. Thus, many countries have implemented COVID-19 measures to prevent it from spreading, such as lockdowns, travel bans, and social distancing, just to mention but a few. However, these measures have negatively impacted consumption and exports, especially businesses in China, which is the hub of manufacturing (Fiorini et al., 2020). Verschuur et al., (2021) observed the impacts of the pandemic on global trade by using supply chains in different countries to understand how it can help in the allocation of international aid and economic stimuli. Socrates (2020) employed DID model to

investigate the impact of lockdown policies during the COVID-19 crisis on the flow of international trade in Kenya, one of the developing nations. In his study, found that the imposition of lockdown on Kenya's trading partners increased by about 12% of Kenya's export. The results substantiate Pei, et al. (2021) investigation on the impact of COVID-19 on international trade in China. Therefore, from the evidence from literature, this study anticipated through DID analysis, the net export of Taiwan would significantly increase compared to her trading partners specifically during the time her trading partners had imposed a lockdown. Hence, the study proposed the following research hypotheses.

Hypotheses 1:
Lenient stringent measures (absence of COVID-19 lockdown) have a significant and positive effect on Taiwan's net export.

Hypotheses 2:
Strict stringent measures (imposition of COVID-19 lockdown) have a significant and negative effect on Taiwanese trading partners (Vietnam, South Korea, Malaysia, Singapore, and Thailand) net export.
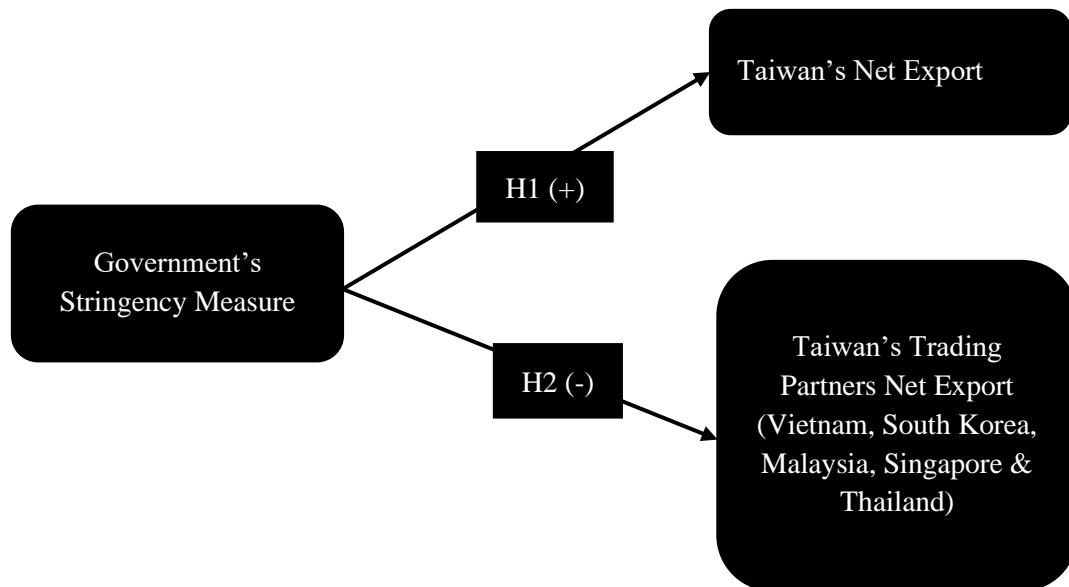

Figure 4 Research Framework

Difference in Differences Model
The Difference in Differences model is the oldest "Quasi-experiment research design" or the "natural

experiments". This model is one of the most common research designs used in econometrics. It is a trustworthy procedure of statistics designed in quantitative research. It focuses on two groups (treatment and control group) and two periods (pre- and post-period). When a particular policy has been changed, that is when the treatment parameter is identified (Conley & Taber, 2011). Apart from the treatment group, there is the control group, which does not receive any treatment in any of the periods. Thus, when researchers use this method, they check how both groups respond before, during, and after these periods and particular situations. To be able to identify the treatment effect from the treated groups, the DID model connects with regression analysis to estimate the potential outcome from assumptions made (Goodman-Bacon, 2021). The quasi-experiment research design focuses on building an origin and reaction relationship between a dependent and an independent variable. During this experiment, cases are allocated into groups stationed on criteria, which is not random. Researchers normally examine different treatments that are given to existing groups (Goodman-Bacon, 2021). However, they cannot control what happens during the treatment because some cases can pop up during the uncontrollable treatment. Researchers also try to identify from the results whether the treatment was successful by looking at the performance of the treatment groups before, during, and after the treatment. Figure 5 is a big picture of the concept. As it can be seen, in the first period, the considered control group and the treatment group show a parallel trend. In the second period, the trend of the treatment group shifts while the trend of the control group follows the same from the first period.
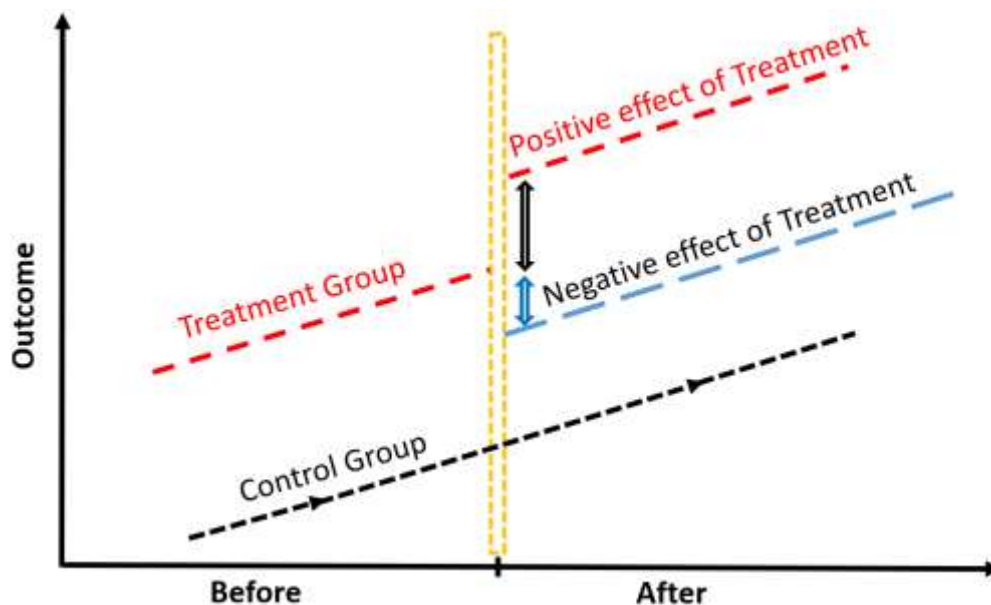

Figure 5 The concept of the difference in differences (DID)
Source: Author's computation

Several researchers have used the Difference in Differences model (DID) to study different situations and scenarios. Anderson and Meyer (2000) used DID model to investigate changes in several outcomes of unemployment insurance payroll in Washington State, which was the treatment group while the other states were the control groups. At the same time, further analysis was on policy change in Washington State compared to other states to determine whether the policy change correlates with the outcome of the cholera outbreak. The latest research that used the DID model examined the effect of SARS on Chinese Firms from 2003 to 2005, which were the periods before, during, and after SARS. This research determined how SARS affected the import and export growth of firms in affected regions and unaffected regions within China. It included firm and product characteristics using quarterly data to analyze the impact. As a result of this research, import and export growth was low at both the intensive and extensive margins in regions with SARS local transmission (Fernandes 2020).

Research Estimation Equations and Variables

The DID technique is a very common observational method that is used in such kinds of scenarios, especially where exchangeability cannot be estimated between the treatment and control groups. For this research, similar to Fernandes (2020), in the study for SARS referred to firms in China, we will assess the impact of COVID-19 on Taiwanese international trade. With that being said, this study will compare Taiwan's trade with other trading partners. As we know, almost every country had experienced a lockdown while Taiwan did not impose a lockdown to compare the differences, we will look at partner countries that experienced a lockdown. Hence, the treatment and control groups will be defined as:

Treatment group: Countries, which experienced a lockdown (Vietnam, South Korea, Malaysia, Singapore, and Thailand).

Control group: Taiwan (no lockdown).

Thus, we follow equation- (1) to estimate the impact of COVID-19 on Taiwan and the trading partner countries.

$$Y_{ct} = \beta_0 + \beta_1 \text{Covid}_{ct} + \beta_2 P_{covid} + \beta_3 (\text{Covid}_{ct} \times P_{covid}) + \beta_4 X_{ct} + \beta_5 Y_{ct-12} + d_t + \epsilon_{ct} \qquad (1)$$

β_0: a constant
$\beta_1 Covid_{ct}$: treatment indicato*r*
P_{covid}: time indicator
$Covid_{ct} \times P_{covid}$: interaction DID term variable of interest
β_3: estimates the effect of the treatment on the outcome $\beta_4 X_{ct}$: vector of exogenous covariates
Y_{ct-12}: lagged endogenous variable as a regressor

d_t shows the time

ϵ_{ct} is the disturbance term

Pre-lockdown= 1

Post-lockdown= 0

Treatment status = 1

Control status = 0

Pre-treatment period = 1

Post-treatment period = 0

Where β_0 is a constant. $Covid_{ct}$ is the treatment indicator and equal to 1 for treated units and zero otherwise. P_{covid} is the time indicator with 0 before COVID-19 lockdown and 1 in the post-COVID-19 lockdown regime, and the interaction term, $Covid_{ct} \times P_{covid}$ is the DID term variable of interest, which interacts with the treatment status = 1, control status = 0 with the pre-treatment period = 1 and post-treatment period = 0. However, β_3 estimates the effect of the treatment on the outcome from the interaction coefficient of the difference in differences term. $\beta_4 X_{ct}$ is the vector of exogenous covariates, particularly the Covid-19 stringency index. To control for possible ex-ante differences, we include a vector of the lagged endogenous variable Y_{ct-12} as a regressor (Gobillon & Magnac, 2016). Furthermore, as Pesaran and Smith (2016) caution, we refrain from including other exogenous economic predictors which are themselves directly explained by the policy being studied. d_t shows the time and ϵ_{ct} is the disturbance term.

To obtain DID estimates across countries, we will identify how COVID-19 measures influenced trade. In our empirical specifications, is the treatment variable, which takes value 1 from the phase (t) and zero otherwise.

Data Sampling

This study used secondary data. Specifically, data were collected from the Our World in Data website covering the period dating from January 2018 to June 2021. Data were collected and analyzed for the following countries: Vietnam, South Korea, Malaysia, Singapore, and Thailand which were the treatment group, and Taiwan which was the control group. We cut off the data until April 2021 because as is evident from the figure, starting May 2021 (particularly until at least October 2021), Taiwan's stringency index leveled up with that of all other countries. Indeed, between this period, Taiwan's index cannot be distinguished from the other countries' and we are unable to designate any of these countries as treated or control because the level of stringency is the same. Hence, if we go on to do the estimation for the entire period, we will get biased estimates.

RESULTS & DISCUSSION

Descriptive Statistics

The data used for this study were collected from the Our World in Data website. This covers the period dating from January 2018 to June 2021. Table 2 provides descriptive statistics for net exports of the

five treatment nations (Malaysia, Vietnam, Thailand, South Korea, and Singapore) that imposed a lockdown and the control group (Taiwan) which did not impose a lockdown.

Table 2 Descriptive Statistics

	Variable	Obs	Mean	Std. Dev.	Min	Max
Vietnam	Net Export	37	931.8	1563.458	-2487	4985
	Government Stringency Index	37	25.46243	32.29025	0	88.43
S.Korea	Net Export	37	4265.027	2365.649	-1000	9617
	Government Stringency Index	35	23.82257	28.7743	0	82.41
Malaysia	Net Export	37	3195.243	1465.389	-803	5908
	Government Stringency Index	37	25.41216	32.88613	0	80.09
Singapore	Net Export	37	3015.27	1111.21	675	5778
	Government Stringency Index	37	21.62243	26.75171	0	76.85
Taiwan	Net Export	37	3550.319	2179.657	-1272.5	7459.6
	Government Stringency Index	37	10.28541	12.42638	0	31.48
Thailand	Net Export	37	921.9459	1751.689	-4032	4349
	Government Stringency Index	37	19.56919	26.56891	0	76.85

Baseline Results

By using difference-in-difference model, this section examines the impact of COVID-19 on international trade: the net exports of Taiwan. The baseline results include results for all the five countries that are categorized as the treatment group, and the control group, Taiwan. Results in Table 3 present estimates for the impact of COVID-19 on Taiwan's net export. The estimated coefficient on the interaction term Covid date and lockdown is positive and statistically significant at a 1% significance level. This implies that there was a significant increase in Taiwan's net exports. The DID reckons that Taiwan's net exports increased by $2321.92 billion in comparison to the treatment group which implemented stringent COVID-19 measures. The results suggest that Taiwan experienced a significant increase during the period when her trading partners implemented stringent measures on COVID-19, specifically when the countries-imposed lockdown. Furthermore, the adjusted R^2 indicates that about 68% of the variance in the dependent variable can be explained by the independent variable. Thus, the model is a good fit.

Table 3 Baseline Results

Net Export	Coefficients
Government stringent Index	27.713*
	(11.726)
Net Export x Lockdown	0.418***
	(0.041)
DID	2321.923**
	(802.7568)
COVID date	453.752
	(733.084)
Lockdown	1101.986**
	(387.127)
Observation	208
Adjusted R^2	0.6847

Note: *$p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Leave-one-out Technique

Furthermore, the leave-one-out technique was employed to further check the reliability of baseline results. The intuition for this robustness check is to test if our baseline estimates are exclusively driven by a particular treatment unit. So technically, we iteratively re-calibrated the baseline estimations while removing one treatment unit at a time. That is, we used the same date as in the baseline specification and estimated without, for example, Thailand, then we checked the results and compared with the baseline estimates. Then we put Thailand back and removed another country, for example, South Korea, and re-estimated and compared with the baseline estimates again. This was done for all countries in the treatment group. For visual comparison, Figure 6 plots these results.
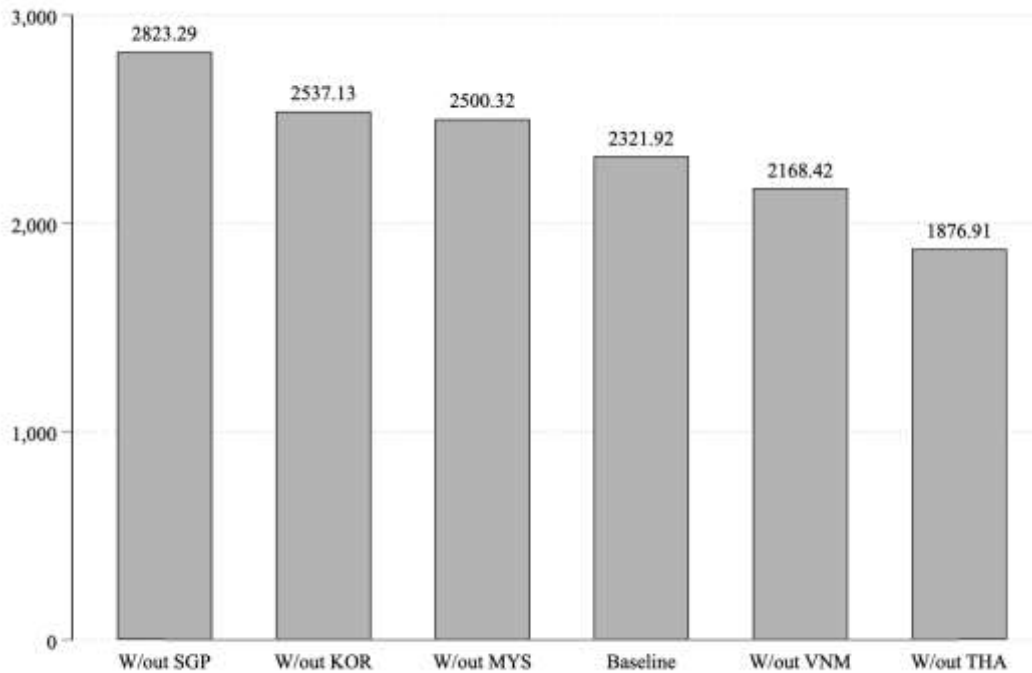
Figure 6 leave-one-out technique
Source: Author's computation

It is apparent from this graph that the exclusion of anyone in the treatment unit does not particularly alter the baseline results qualitatively nor is there a significant quantitative difference. This is evidenced by the fact that the baseline results lie between the iterations. This is intuitive because our baseline estimates are derived as a weighted average of the treatment units. Overall, baseline and robustness results indicate that due to government's stringent policies against COVID-19 had an impact on the country's international trade. More specifically, countries that imposed lockdown experienced a reduction in export to other countries. The study has revealed that Vietnam, South Korea, Malaysia, Singapore, and Thailand all experienced a significant decrease in net export during which their governments imposed a lockdown. Contrariwise, Taiwan experienced a significant increase in net export during the same time. Table 4 summarizes the results for hypotheses testing.

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Table 4 Hypotheses Testing Results

Hypotheses	Result
Lenient stringent measures (absence of COVID-19 lockdown) have a significant and positive effect on Taiwan's net export.	**Supported**
Strict stringent measures (imposition of COVID-19 lockdown) have a significant and negative effect on Taiwanese trading partners (Vietnam, South Korea, Malaysia, Singapore, and Thailand) net export.	**Supported**

CONCLUSION

The onset of COVID-19 has had worldwide ramifications. There is an ongoing impact of the pandemic on the world in different aspects like mortality, health, trade and economic growth. Most of the impacts are results from government stringency measures that have been implemented worldwide. These stringency measures have had an impact on international trade. It was from this background that this study attempted to investigate the impacts of COVID-19 on Taiwan's international trade by applying the difference in difference analysis. This study used monthly trade data collected from the Our World in Data website for the period from dating January 2018 to June 2021 to examine the impact of government stringency measures with the main focus on the lockdown which has been implemented in most countries. The DID model results revealed positively correlated statistics proving that Taiwan's net exports increased during the time that it did not undergo COVID-19 stringencies. The findings of this study show substantial heterogeneity in the relationship between net exports and lockdowns. The treatment group experienced a decline in net exports compared to Taiwan which is considered the control group in this study. It is undisputed fact that COVID-19 has affected international trade. This study demonstrates this impact. The positively correlated statistics from DID model suggest that Taiwan's net exports increased during the time as it did not undergo COVID-19 strict stringencies. The findings from this study are in line with those of Pei, et al., (2021) who found that the stringent measures that the Chinese government imposed on their countries came at a heavy price. As a result of the lockdown that was imposed on China, here exports had significantly fallen by about 41% in February 2020. However, when the lockdown was lifted by July 2020 the volume of export went back to the levels last observed in December 2019. It was further reported that Chinese cities that were on lockdown experienced a significant points reduction of about 34% in the year-on-year growth rate of export (Pei et al., 2021). Just as it was in the aforementioned case of China, Taiwan enjoyed growth in net export during the time other countries were in lockdown, countries such as Singapore, Japan, South Korea, Vietnam, and Thailand experienced a decline in net exports. In as much as it is argued that lockdown is effective in reducing the spread of COVID-19, it has to be stressed that lockdown has had an enormous effect on international trade.

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