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Does the stringency of government interventions for COVID19 reduce the negative impact on market growth? Evidence from Pacific and South Asia

Bo Jiang[a], Dan Gu[b], Ramla Sadiq[c], Tahseen Mohsan Khan[c] and Hsu-Ling Chang[d]

[a]School of Business, Wuchang University of Technology, Wuhan, Hubei, China; [b]School of Computer Science, Wuhan University, Wuhan, Hubei, China; [c]School of Business and Economics, University of Management and Technology, Lahore, Pakistan; [d]Department of Accounting, Ling Tung University, Taichung City, Taiwan

ABSTRACT

The objective of this study is to empirically assess the effect of government decisions on market growth in response to social distancing initiatives, government reactions, economic support provision, and containment and health responses, to name a few. A panel dataset of daily stock market returns is analysed in this study, changes in COVID-19 cases, and government responses to 17 countries in the Pacific and South Asia from 1st January 2020 to 31st December 2020. Findings indicate that social distancing policies have a significant negative effect on stock returns but a substantial positive impact on market growth when new cases' growth rate declines after accounting for country characteristics and systematic risk due to foreign factors. A direct negative effect is seen almost immediately, and a subsequently indirect positive effect is noted. As expected, policies regarding social distancing have an immediate negative impact, attributed mainly to the expected negative effect on economic activity. Subsequently, we see an indirect positive effect on market return because social distancing measures reduced the growth of confirmed COVID-19 cases. Both awareness, containment, and health index (ACHI) and Income Support and Debt Relief Index (ISDRI) positively affect market growth, as they are perceived to support individuals' socio-economic well-being and mainly result in positive market returns.

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1. Introduction

Pandemics represent a rare and unique occurrence, ideal for determining the reaction of markets from a financial and economic perspective. The year 2020 is marked by the outbreak of the highly contagious coronavirus disease of 2019 (hereon referred to as COVID-19) pandemic, which changed individuals and governments' risk

CONTACT Hsu-Ling Chang hsulingchang@yahoo.com.tw

perceptions worldwide as it set records for speed of spread and increase in uncertainty. Governments worldwide' natural response was to implement emergency policies to slow the spread and off-setting risk exposures. Economic assistance packages, emergency actions (such as lockdowns), and travel controls (containment policies) are the three major categories of government policies. Surprisingly, these acts raised population anxiety as people feared the potential effects of the abrupt changes. Although the long-term consequences of these measures are still being calculated, the ripple effect has resulted in fewer new diseases, as well as work losses and cost-cutting.

The financial contagion model is highlighted in this article to understand better the virus's spread and effects on the economy. The objective of this study is to empirically assess the effect of government decisions on market growth in response to social distancing initiatives, government reactions, economic support provision, and containment and health responses, to name a few. Social distancing steps include closing classrooms, offices, parks and public transportation in terms of the scheme. Government public awareness measures, testing, and quarantining policies are the mainstays of containment and health response. Government financial aid to families in direct cash transfers or mortgage or service payment relief is included in income support packages. Financial contagion is analogised with financial crises to observe the strong correlation and causation between these two variables. Emergence and re-emergence characteristics of the infection helped researchers shape the financial contagion theory, which initially took place from South Asia's emerging markets. Despite the different views over contagion's definition, all the researchers, more or less, believe that contagion plays a vital role in the transmission of the spread, and thus, financial crises (Favero & Giavazzi, 2002).

This study proposes that each of the government's actions would directly or indirectly affect stock market returns. Direct effects include a positive impact of health responses and containment and economic support packages on market growth by decreasing future adverse economic effects. A negative impact is expected of social distancing policies on market growth due to decreased subsequent economic activity. Indirect effects come from the ripple effects of the initial response. Stricter government responses in the form of aggressive testing and quarantining would logically lead to slower spread. A slower spread would result in an immediate negative effect on market growth but would decrease the intensity of the impact as the market would recover faster. Building on existing literature, which indicates that there is, in fact, an immediate negative impact of COVID-19 on market growth According to Su, Huang, et al. (2021), Su, Su et al. (2021) and Zhang et al. (2021) the more stringent the government response, the lower the negative effect on market growth from COVID-19 events.

From January 1, 2020, to December 31, 2020, a panel dataset of daily stock market returns, shifts in COVID-19 events, and government responses in 17 Pacific and South Asian countries was used. This subgroup of economies was considered suitable as it represents countries in three stages of development in close geographical proximity. As an analysis of government policy during a pandemic, governments of different regions created policies according to the rate of spread. This can better guide our

analysis and findings as comparisons can be drawn regarding responses between economies. We find that, after adjusting for country characteristics and institutional influences, social distancing policies have a significant negative effect on stock returns but a significant positive impact on market growth when the growth rate of new cases declines. Both containment health and economic support packages directly affect business development in terms of particular policy responses. Surprisingly, as growth in COVID-19 cases slows down, this effect is not exacerbated.

This study contributes to the existing literature in three ways. Firstly, we connect the contagion theory to the economic impact of COVID-19 in South Asia and the Pacific. Second, we add to recent research that looks at the effect of COVID-19 on financial markets (Al-Awadhi et al., 2020; Ali et al., 2020; Ashraf, 2020; Haroon & Rizvi, 2020; Schell et al., 2020; Umar, Ji et al., 2021; Umar, Mirza et al., 2021; Umar, Su et al., 2021; Zhang et al., 2020). Third, this study determines the impact of government actions in two comparisons – the impact of policies in the first wave and second wave and differences in impact depending on the country's stage of development.

The rest of the paper proceeds as follows: Section 2 discusses the background literature on contagion economies and financial contagion related to COVID-19 and explains the testable hypotheses' foundations. Section 3 explains the data and methodology, while Section 4 reports empirical results. The final section concludes the study and presents policy implications, limitations, and future direction.

2. Literature review

2.1. Economic impact of COVID-19

Existing studies have comprehensively analysed various facets of performance in financial markets– while some areas focus on resource-based performance (Su, Khan et al., 2020; Su, Qin et al., 2020a, 2020b; Wang et al., 2021), others focus on the level of advancement (Nosheen et al., 2016). Prior research on pandemics of this scale is limited as this global health crisis has not been witnessed in this speed and scale of spread in over 100 years. Given the widespread impact of Covid-19, this unfortunate outbreak has become akin to an economic crisis (Sharif et al., 2020). A natural recourse for investments during market instability is treasury securities (Sadiq et al., 2018; Umar et al., 2020; Umar, Rizvi et al., 2021). However, COVID-19′s pressure on public finances has also resulted in a decline in yields on treasury instruments. The ripple effect of this can also be seen in commodities and cryptocurrencies (Corbet et al., 2021).

The economic impact of COVID-19 has been the subject of several recent studies as the influence of this disease extends beyond mortality and morbidity. The extent of the impact is profound, from the disruption of global supply chains to limited transportation and the resulting sluggishness of national and international economic activities. These dynamics were also reflected in changes in consumer behaviour which subsequently created a series of market anomalies. From a market perspective, COVID-19 is the first contagious disease to affect the market so rapidly (McKibbin & Fernando, 2020). Prior research determines the link between funds' performance

during the first wave of COVID-19. (Rizvi et al., 2020) find that social entrepreneurship funds consistently outperform other categories and that fund managers consistently switch from a high-risk strategy to a low-risk strategy. Furthermore, as these funds differ in their investment composition, assessing funds' returns could also help shed light on the impact of a pandemic across various investment categories (Naqvi et al., 2018).

Resource availability within any economy is also a key determinant of the level of shock it can sustain (Zhang et al., 2020). Mirza et al. (2020) assess the performance and volatility of European investment funds during the first six months of the pandemic. They find that the performance of social entrepreneurship funds was not adversely affected by the pandemic, while all other types of funds experienced a spike in volatility. Fund performance during COVID-19 is also closely linked to human capital efficiency. During the pandemic, open-ended equity funds across five EU countries ranked higher in terms of human capital efficiency performed better than their counterparts (Yarovaya et al., 2021). This stands true for mutual funds in Latin American countries as well (Mirza et al., 2020).

When considering the impact of COVID-19 on financial markets, it is essential to establish the likelihood of default. (Mirza et al., 2020) establish that the mining, construction, and retail sectors are the most susceptible sectors in the event of market shock. From a policy perspective, they also find that government policies regarding tax deferral are sufficient to cushion the adverse effect if the market shock is mild or moderate. Haroon and Rizvi (2020) examine the impact of growth in COVID-19 cases on liquidity in financial markets. They find that an increase in COVID-19 cases is linked to deteriorating market liquidity. In addition, they find that government policy plays a significant role in resulting market liquidity – specifically, more stringent policy interventions regarding containment and awareness had a positive impact on market liquidity.

Maital and Barzani (2020) identify that while solutions to the pandemic are created addressing the global economy's demand side, the reality is that the pandemic essentially affected the supply side. Therefore, policies should be reconsidered accordingly. Anderson et al. (2020) identify that while the pandemic's spread is almost inevitable, government policies should focus on providing enough protection to high-risk individuals in the population while reducing the negative impact of economic downturn. The main socio-economic impacts in the first wave of COVID-19 are discussed by Nicola et al. (2020) and show that a reduced workforce, drastic changes in food demand, and economic disruptions will negatively affect market growth.

2.2. Theoretical framework for hypothesis testing

This section uses existing literature to determine the direct and indirect effect of government responses to growth in COVID-19 cases on market growth. The logical argument presented here indicates that policies present a double-edged sword- on the one hand, they benefit the masses by reducing the speed of spread, allowing the healthcare sectors to support patients adequately. On the other hand, the restricted

social activity also reduces economic activity, which is subsequently expected to affect market growth.

When looking at the direct effect of government response policies, analysis reveals that a 10 percent rise in state-level labour controls in the United States only resulted in a 3 percent reduction in jobs and a 1.87 percent drop in firm market value in April 2020 Therefore, it is reasonable to argue that the greater the strictness of government responses regarding social distancing measures, the more pronounced the negative effect on market growth. The first hypothesis of this study is:

H1a: The announcement of government responses, specifically social distancing policies, will result in a negative impact on market growth.

On the other hand, research also shows that social distancing measures will decrease mortality, which will have a positive economic effect (Greenstone & Nigam, 2020; Thunström et al., 2020). In terms of stringency, it is estimated that moderately strict measures implemented at the end of March 2020 would save approximately 2 million lives by October 2020 in the USA alone. This reduction in mortality is attributed to access to adequate healthcare because hospitals and health care centres are not overwhelmed. While this may not avert the disease, the slow spread will allow economies to better cope with the impact.

Prior studies show that the implementation of social distancing policies will statistically reduce the mortality rate in economies as the level of exposure diminishes (Hussain, 2020; Thunström et al., 2020). Therefore, this policy implementation channels the main benefits by reducing new exposure to the virus. Prior research indicates that the market responds negatively to increases in COVID-19 cases. The more stringent the government regulations, the more likely the people are to practice social distancing. Therefore the negative impact on the stock market will be reduced (Al-Awadhi et al., 2020). The specific hypothesis we identify is as follows:

H1b: The announcements of stringent government social distancing measures are likely to weaken the stock markets' adverse reaction to the growth in COVID-19 confirmed cases.

Based on prior research, markets will likely react favourably to the announcement of government support programs. This is because economic support programs can alleviate some of the negative impacts of economic downturn, job loss, etc. Also, if economic support is announced in cash transfers, individuals will buy essentials even during the lockdown. Thus, the market is expected to respond favourably to such policies. The specific hypothesis we identify is as follows:

H2a: The announcements of government economic support programs lead to increase stock market returns.

Furthermore, income support programs and debt relief programs would encourage the masses to adhere to social distancing policies. This will subsequently reduce the infection rate. Recent literature indicates that the level of compliance with social distancing measures is highly dependent upon income – high-income groups are more likely to comply, while low-income groups are less likely to comply (Lou et al., 2020; Wright et al., 2020). Because income support programs and debt relief policies would largely be targeted towards lower-income strata of the population, it would

automatically increase adherence to social distancing policy measures, reducing the infection rate, and reducing the negative impact of COVID-19 on the market growth. The specific hypothesis we identify is as follows:

> H2b: The announcements of government income support packages are likely to weaken the stock markets' adverse reaction to COVID-19 confirmed cases' growth.

3. Methodology

3.1. Data and variables

3.1.1. Sample

From 1 January 2020 to 31 December 2020, a panel dataset of daily stock market returns, shifts in COVID-19 events, and government responses in 17 Pacific and South Asian countries was used. This subgroup of economies was considered suitable as it represents countries in three stages of development in close geographical proximity. As an analysis of government policy during a pandemic, governments of different regions created policies according to the rate of spread. This can better guide our analysis and findings as comparisons can be drawn regarding responses between economies.

3.1.2. Variables

3.1.2.1. Market growth (MG). Market growth (MG) is described as the shift in a country's primary stock index, representing the main market movement. The daily growth rate of COVID-19 confirmed cases in selected countries is defined as growth in COVID-19 cases (GC19). The Johns Hopkins University Coronavirus Resource Centre provided data for confirmed cases (JHU-CRC).

3.1.2.2. Government Response Index (GRI). The Government Response Index (GRI) is measured using the Oxford COVID-19 Government Response Tracker (OxCGRT) database and is the number of SDPI, ACHI and ISDR (Hale et al., 2020).

3.1.2.3. Social Distancing Policies Index (SDPI). The Social Distancing Policies Index (SDPI) collects data on social distancing policies. It is coded using eight metrics, including school closures, office closures, public event cancellations, gathering size limits, public transportation closures, stay-at-home requirements, internal movement restrictions and international travel restrictions. The index is a rescaled version of the underlying indicators' basic additive score that ranges from 0 to 100. SDPI is calculated using data from the Oxford COVID-19 Government Response Tracker (OxCGRT) database by the author (Hale et al., 2020).

3.1.2.4. Awareness, Containment and Health Index (ACHI). The Awareness, Containment and Health Index (ACHI) is based on three indicators: public awareness programs, testing policy, and communication tracing. The regular change in this index is used in this study.

3.1.2.5. Income Support and Debt Relief Index (ISDRI). The Income Support and Debt Relief Index (ISDRI) comprises two indicators: government income assistance and debt/contract relief for household services. The index ranges between 0 and 100. We use the formula (Income support and debt relief index$_t$-Income support and debt relief index$_{t-1}$) to determine the variable's daily change.

3.1.3. Control variables

3.1.3.1. Gross domestic product per capita (GDP). The annual gross domestic product (GDP) per capita of each nation as stated by the World Bank's World Development Indicators database.

3.1.3.2. Voice & Accountability Index (VAI). The International Country Risk Guide (ICRG) database's Voice & Accountability index. The Voice & Accountability index measures the effectiveness of democratic institutions, with higher values indicating greater effectiveness and vice versa.

3.1.3.3. Investment freedom (InvF). Investment freedom (InvF) is a metric that tests how free people are to invest in financial markets. It is measured precisely with the volume of capital movement (both inward and outward), capital controls on benefit repatriation, prohibitions on investing in particular markets, the way foreign investment is handled, and the availability of a consistent foreign investment code. The index ranges from 0 to 100, with higher values indicating greater investment freedom and lower values indicating less investment freedom.

3.1.3.4. Risk Profile (RiskP). The Risk Profile (RiskP) is a risk profile index focussed on Hofstede's national culture system. The index values range from 0 to 100, with higher values suggesting a higher risk profile at the national level and vice versa (Hofstede et al., 2005).

3.1.4. Model and method

Panel data analysis is integral to this data's characteristic. Fundamentally, this method can model both the common and individual behaviours of groups, which is necessary to determine the differences in policy impact across regions and waves. Panel data contains more information, more variability and more efficiency than pure time-series data or cross-sectional data. This will allow a better interpretation of the information that can be generated from the data set. It will also help to detect and measure more complex statistical effects. While more advanced methods exist, this method is best suited to fulfilling the objective of this paper and determining the acceptability of hypotheses.

Following Ashraf (2020) we specify the following pooled panel ordinary least squares regression model to examine the direct impact of government actions on Market growth.

$$MG_{it} = \alpha_i + \beta_1 GC19_{it-1} + \beta_2 GRI_{it} + \varepsilon_{it}$$

Here, MG is the dependent variable and measures Market growth in each country i on day t. to measure market growth, we find the change in each country's primary listed index's value, which essentially represents the market. α_i is a constant term. $GC19_{it-1}$ represents the growth in COVID-19 cases. GRI_{it} represents the overall Government Response Index, as identified from the OxCGRT dataset (Hale et al., 2020). This dataset consists of three subindices, specifically SDPI (social distancing policy index), ACHI (awareness, containment and health index) and ISDRI (income support and debt relief index). Investors' reactions to similar events can differ across countries due to differences in institutional and cultural contexts (Ashraf, 2020). Since our study sample is small, most country-level variables remain constant. $\varepsilon_{c,t}$ is an error term. Initial tests indicate that we need to adjust the heteroscedasticity method in the data. Therefore, all estimates are based on robust standard errors.

To test the second hypothesis, we modify Equation (1) to determine the indirect impact of government response on market growth. The equation is given below:

$$MG_{it} = \propto_i + \beta_1 GC19_{it-1} + \beta_2 GRI_{it} + \beta_3 GRI_{it} * CCG_{it-1} + \varepsilon_{it}$$

The interaction term, GRI_{it}*$GC19_{it-1}$, allows us to determine if the market reaction to increase or decrease in COVID-19 cases is indirectly affected by the stringency of government policy. To identify which aspect of government policy is most likely to affect In the COVID-19 examples, we use interaction words for each of the three government response indexes. The rest of the variables are the same as they were in Equation (1).

Model 1 determines if there is any effect of growth in COVID-19 cases on market growth and is considered the baseline specification. Model 2 moves one step further to determine if there is any impact of GC19 and GRI on market growth. Model 3, 4 and 5 further develop this to determine if there is any impact of GC19 and the three sub-indices of GRI on market growth.

4. Results and discussion

This section first presents summary statistics of the main variables (Table 1). The results confirm the random walk property of market growth with a mean of 0.00 and a standard deviation of 0.015. GC19 of 0.3193 indicates that, on average, there is a 31.93% increase in COVID-19 confirmed cases. As seen in minimum and maximum

Table 1. Summary statistics.

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
MG	4190	0.00057	0.015614	−0.1334	0.1019
SDPI	4190	50.57606	25.68905	0	100
GRI	4190	48.88027	21.48933	0	89.17
ACHI	4190	49.27258	21.94092	0	91.35
ISDRI	4190	46.33055	32.22644	0	100
GC19	3747	0.319334	16.03491	−1	981.3542
GDP	3697	6115699	1.32E + 07	44490.27	4.05E + 07
VAI	4190	0.680957	0.186657	0.375	1
InvFree	4190	58.56683	13.67327	40	80
RiskP	4190	52.39618	21.70388	0	92

Source: Authors Estimations.

Table 2. Correlation coefficients.

	MG	SDPI	GRI	ACHI	ISDRI	CG19	GDP	VAI	InvFree	RiskP
MG	1									
SDPI	0.0666	1								
GRI	0.0766	0.9043	1							
ACHI	0.065	0.9652	0.9651	1						
ISDRI	0.0516	−0.1208	0.245	−0.0176	1					
GC19	0.0286	0.0035	0.0017	0.0039	−0.0078	1				
GDP	0.0173	−0.0173	−0.1415	−0.0608	−0.315	−0.0075	1			
VAI	−0.0222	−0.177	−0.1205	−0.1631	0.1436	−0.0129	−0.2761	1		
InvFree	−0.0387	−0.3046	−0.204	−0.3218	0.4126	−0.0193	−0.2987	0.5487	1	
RiskP	−0.002	−0.3749	−0.3573	−0.4097	0.1526	0.0103	−0.0676	0.0466	0.1021	1

Source: Authors Estimations.

Table 3. Results for Hypothesis 1 and Hypothesis 2.

	Model 1 MG	Model 2 MG	Model 3 MG	Model 4 MG	Model 5 MG
GC19	0.000***	0.000***	0.000***	−0.013***	−0.013***
	0	0	0	−0.004	−0.002
GRI		0.000***		0.000***	
		0		0	
SDPI			0		0
			0		0
ACHI			−0.105*		0
			−0.062		0
ISDRI			−0.016*		0.000**
			−0.009		0
CCG_GRI				0.000***	
				0	
CCG_SDPI					0
					0
CCG_CHI					0
					0
CCG_ISDRI					0
					0
_cons	0.001***	−0.005***	−0.005***	−0.004***	−0.004***
	0	−0.001	−0.001	−0.001	−0.001
N	3747	3747	3747	3747	3747

Note: *, ** and *** denote level of significance of 1%, 5% and 10%.
Source: Authors Estimations.

values, the variation in GRI indicates that policies were implemented and modified over time (Table 2).

The key empirical findings for the first hypothesis are presented in Table 3. Model 1 is the baseline specification for determining whether growth in COVID-19 cases affects business growth. The growth in the COVID-19 cases variable has a zero but significant effect on market growth, suggesting that while growth in COVID-19 cases is a significant determinant of market movement, the impact is minor. This finding contradicts the previous study, such as Ashraf (2020) and Al-Awadhi et al. (2020), which found that an increase in COVID-19 reported cases had a negative effect on major stock market indices. We break down this model for further study by adding a government response index in Model 2, which shows that both growth in COVID-19 cases and overall government responses to market growth have a negligible but important effect.

In model 3, we further analyse which type of government responses affect market growth. The Social distancing policies index is insignificant and shows that stock

markets are not affected by government actions regarding an increase in social distancing measures in this region. On the other hand, both awareness, containment, health index, and income support and debt relief index have a significant negative impact on market growth. These findings show that corporate valuations decline due to more stringent policies in both ACHI and ISDRI. This can be attributed to the fact that awareness, containment, and health policies were readily accepted and implemented in some economies, but not in all. Similarly, while all these economies announced income support and debt relief for households and businesses during this time, implementation and distribution took some time, during which discretionary spending and economic activity decreased, causing a negative market growth. These results support our hypothesis H1a regarding ACHI and ISDRI but reject it in the case of GRI and SDPI.

To test our second hypothesis, we use Model 4 and Model 5. Model 4 incorporates an interaction term to determine the mediating effect of government policy and COVID-19 cases on market growth. The impact is nil but highly significant. To further understand which policies have contributed to real impact in the market, we use GRI sub-indices as interaction terms in Model 5. The interaction term, growth in confirmed cases Social distancing policies index, enters positive and important in Model 5, meaning that the negative effect of growth in confirmed cases on Market growth weakens in countries with tighter social distancing steps. Because of its success in reducing the number of COVID-19 reported cases, this finding suggests that markets value social distancing. These findings are consistent with previous studies by Ashraf (2020) and others.

GC19*ACHI and GC19*ISDRI, the other two interaction names, are not statistically relevant. This suggests that improvements in reported COVID-19 cases have little effect on health and economic assistance policies. These findings indicate that investors believe government social distancing programs will be the most efficient means of containing the epidemic, while public awareness, monitoring, and quarantining strategies will be less effective.

To confirm the consistency of the above results, we perform a series of robustness tests. Firstly, we incorporate country-level macroeconomic variables and institutional variables, including GDP, voice and accountability, investment freedom and risk profile. This allows us to determine if the country or institutional characteristics would create any differences in results. The results reported in Table 4 remain mostly similar to our core analysis. Some exceptions, notably the significance of controls, indicate that further investigation is necessary.

To further understand these results, we divide the sample into two timelines – the first wave and the second wave of COVID-19 cases. The first timeline constitutes the first wave, starting from the first reported case in the country. We create an end to the first wave on 30th September 2020, as most countries reported the beginnings of the second wave of COVID-19 cases in October 2020. The second timeline constitutes the second wave, starting from 1st October 2020 and ending on our last data point, 31st December 2020. This is a unique contribution of this study as prior research focuses only on first wave analysis rather than comparing the two timelines. Tables 5 and 6 results indicate that the negative effect of COVID-19 cases on market growth was not as pronounced as the second wave.

Table 4. Results of Robustness 1.

	MG	MG	MG	MG	MG
GC19	0.000***	0.000***	0.000***	−0.014***	−0.014***
	0	0	0	−0.004	−0.002
GDP	0	0.000**	0.000***	0.000**	0.000***
	0	0	0	0	0
VAI	0	0	0.002	0	0.001
	−0.001	−0.001	−0.002	−0.001	−0.002
InvFree	−0.000**	0	0	0	0
	0	0	0	0	0
RiskP	0	0.000*	0	0.000**	0
	0	0	0	0	0
GRI		0.000***		0.000***	
		0		0	
SDPI			0.000*		0.000***
			0		0
ACHI			0		−0.000*
			0		0
ISDRI			0.000***		0.000***
			0		0
CCG_GRI				0.000***	
				0	
CCG_SDPI					0
					0
CCG_ACHI					0.001
					0
CCG_ISDRI					0
					0
_cons	0.002***	−0.009***	−0.003	−0.007***	−0.002
	−0.001	−0.002	−0.003	−0.002	−0.002
N	3281	3281	3281	3281	3281

Note: *, ** and *** denote level of significance of 1%, 5% and 10%.
Source: Authors Estimations.

Furthermore, the first wave indicates a significant negative impact of social distancing policies, which turns into a positive effect during the second wave, reaffirming our hypothesis. Awareness, containment, and health index negatively impact the first wave but become insignificant in the second wave. This indicates that investors responded negatively to more stringent social distancing policies and containment policies, but as more information was disseminated, the impact became insignificant.

Table 6 results indicate that our hypotheses are proven perfectly for high-income and middle-income economies. They are different in lower-middle-income economies. This is attributed to these economies' social and cultural aspects, specifically the desire to adhere to government policies. Subsequently, we divide the sample into three subcategories based on development (Tables 7 and 8). This classification is taken directly from the World Bank classification to ensure replicability and validity. The sample countries are divided into high-income, middle-income and lower-middle-income economies.

5. Conclusion and policy recommendations

This study proposes that each of the government's actions would directly or indirectly affect stock market returns. Direct effects include a positive impact of containment and health responses and economic support packages on market growth by decreasing the extent of future adverse economic effects. A negative impact is expected of

Table 5. Regression results – Wave 1.

Wave 1	Model 1 MG	Model 2 MG	Model 3 MG	Model 4 MG	Model 5 MG	Model 1 MG	Model 2 MG	Model 3 MG	Model 4 MG	Model 5 MG
CG19	0.000***	0.000***	0.000***	−0.006	−0.02	0.000***	0.000***	0.000***	−0.003	−0.015
	0	0	0	−0.007	−0.018	0	0	0	−0.007	−0.018
GRI		0.000**		0.000*			0.000**		0.000**	
		0		0			0		0	
SDPI			0		−0.000**			0		0.000***
			0		0			0		0
ACHI			0		−0.000**			0		0
			0		0			0		0
ISDRI			0		0			0		0
			0		0			0		0
CCG_GRI				0					0	
				0					0	
CCG_SDPI					−0.001**					−0.001***
					0					0
CCG_ACHI					0.001***					0.001***
					0					0
CCG_ISDRI					0					0
					0					0
GDP						0	0	0	0	0
						0	0	0	0	0
VAI						−0.001	0	0	0	0
						−0.001	−0.002	−0.002	−0.002	−0.002
InvFree						0	0	0	0	0
						0	0	0	0	0
RiskP						0.000**	0.000**	0	0.000**	0
						0	0	0	0	0
_cons	0.001***	−0.002	0	−0.002	0.002	0.002*	−0.009	−0.004	−0.008	0
	0	−0.002	−0.003	−0.002	−0.003	−0.001	−0.006	−0.008	−0.006	−0.009
N	2172	2172	2172	2172	2172	1894	1894	1894	1894	1894

Source: Authors Estimations.

Table 6. Regression results – Wave 2.

Wave 2	Model 1 MG	Model 2 MG	Model 3 MG	Model 4 MG	Model 5 MG	Model 1 MG	Model 2 MG	Model 3 MG	Model 4 MG	Model 5 MG
GC19	−0.057*	−0.057*	−0.057*	0.001	0.163	−0.064**	−0.064**	−0.062**	−0.036	0.162
	−0.03	−0.03	−0.03	−0.094	−0.273	−0.032	−0.032	−0.032	−0.084	−0.348
GRI		0		0			0		0	
		0		0			0		0	
SDPI			0		0			0		0
			0		0			0		0
ACHI			0		0			0		0
			0		0			0		0
ISDRI			0		0			0		0
			0		0			0		0
CCG_GRI				−0.001					0	
				−0.002					−0.002	
CCG_SDPI					0.005					0.005
					−0.008					−0.01
CCG_ACHI					−0.005					−0.004
					−0.012					−0.015
CCG_ISDRI					−0.004***					−0.004***
					−0.001					−0.001
GDP						0.000**	0.000**	0.000**	0.000**	0
						0	0	0	0	0
VAI						0	0	0.001	0	0
						−0.001	−0.001	−0.002	−0.001	−0.002
InvFree						−0.000*	−0.000*	−0.000*	−0.000*	−0.000**
						0	0	0	0	0
RiskP						0	0	0	0	0
						0	0	0	0	0
_cons	0.003***	0.003*	0.004**	0.003	0.002	0.005***	0.005*	0.005*	0.004	0.005
	0	−0.002	−0.002	−0.002	−0.003	−0.001	−0.003	−0.003	−0.003	−0.003
N	1069	1069	1069	1069	1069	945	945	945	945	945

Source: Authors Estimations.

Table 7. Regression results based on development (main hypotheses).

	High Income					Middle Income				Lower Middle Income				
	Model 1 MG	Model 2 MG	Model 3 MG	Model 4 MG	Model 5 MG	Model 1 MG	Model 2 MG	Model 3 MG	Model 4 MG	Model 1 MG	Model 2 MG	Model 3 MG	Model 4 MG	Model 5 MG
GC19	−0.010***	−0.009***	−0.008***	−0.007***	−0.005*	−0.017***	−0.015***	−0.017***	−0.017***	0.000***	0.000***	0.000***	−0.009	−0.012***
	−0.002	−0.002	−0.002	−0.003	−0.003	−0.006	−0.006	−0.006	−0.002	0	0	0	−0.006	−0.003
GRI		0.000***		0.000***			0.000***		0.000***		0.000***		0.000***	
		0		0			0		0		0		0	
SDPI			0		0			0.000***				0		0
			0		0			0				0		0
ACHI			0		0			−0.000***				0		0
			0		0			0				0		0
ISDRI			0.000*		0.000**			0.000***				0.000**		0
			0		0			0				0		0
CCG_GRI				0					0				0	
				0					0				0	
CCG_SDPI					0.001									0
					−0.001									0
CCG_ACHI					−0.001									0.001
					−0.001									0
CCG_ISDRI					0									0
					0									0
_cons	0.001***	−0.003**	−0.004***	−0.003**	−0.004**	0.001***	−0.004***	−0.003***	−0.004***	0.001***	−0.007***	−0.006***	−0.006***	−0.005**
N	1429	1429	1429	1429	1429	857	857	857	857	1461	1461	1461	1461	1461

Source: Authors Estimations.

Table 8. Regression results based on development (robustness).

	High Income					Middle Income					Lower Middle Income				
	Model 1 MG	Model 2 MG	Model 3 MG	Model 4 MG	Model 5 MG	Model 1 MG	Model 2 MG	Model 3 MG	Model 4 MG	Model 5 MG	Model 1 MG	Model 2 MG	Model 3 MG	Model 4 MG	Model 5 MG
GC19	−0.010**	−0.009**	−0.007*	−0.009*	−0.006**	−0.017**	−0.016***	−0.017***	−0.017***	−0.010*	0.000***	0.000***	0.000***	−0.009	−0.012***
	−0.005	−0.004	−0.004	−0.006	−0.003	−0.007	−0.006	−0.006	−0.002	−0.005	0	0	0	−0.007	−0.003
GDP	0.000***	0.000***	0	0.000***	0.000***	0.000***	0.000**	0	0	−0.000**	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VAI	0.023***	0.092***	0.029**	0.091***	0.021***	−0.003***	0.002***	0.014***	0.002**	0.015***	−0.003***	−0.006***	−0.007***	−0.005***	−0.007***
	0	−0.009	−0.015	−0.009	−0.004	0	0	−0.004	−0.001	−0.005	−0.001	−0.001	−0.001	−0.001	−0.002
InvFree	−0.000***	−0.000***	−0.000***	−0.000***	−0.000***	0.000***	−0.000***	−0.000***	−0.000***	−0.000***	−0.000**	−0.000***	−0.000***	−0.000***	−0.000***
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RiskP	−0.000***	−0.001***	0	−0.001***	−0.000***	−0.000***	0	0.000**	0	0.000***	−0.000**	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GRI		0.000***		0.000***			0.000***		0.000***			0.000***		0.000***	
		0		0			0		0			0		0	
SDPI			0.000*		0.000**			0.001***		0.000*			0		0
			0		0			0		0			0		0
ACHI			0		−0.000*			−0.001**		0			0		0
			0		0			0		0			0		0
ISDRI			0.000***		0.000***			0		0			0.000**		0.000**
			0		0			0		0			0		0
CCG_GRI				0					0					0	
				0					0					0	
CCG_SDPI					0.001					0					0
					−0.001					0					0
CCG_CHI					−0.001					−0.001*					0.001
					−0.001					0					0
CCG_ISDRI					0					0.001**					0
					0					0					0
_cons	0	0	0	0	0	0	0	0	0	0	0.006***	0	0.004	0.001	0.006
N	963	963	963	963	963	857	857	857	857	857	1461	1461	1461	1461	1461

Source: Authors Estimations.

social distancing policies on market growth due to decreased subsequent economic activity. Indirect effects come from the ripple effects of the initial response. Stricter government responses in the form of aggressive testing and quarantining would logically lead to slower spread. A slower spread would result in an immediate negative effect on market growth but would decrease the intensity of the impact as the market would recover faster. Building on existing literature, which indicates that there is, in fact, an immediate negative impact of COVID-19 on market growth (Al-Awadhi et al., 2020; Baker et al., 2020; Ramelli & Wagner, 2020; Zhang et al., 2020), this study proposes that the more strict the government response, the lower the negative impact on market growth from COVID-19 cases.

The objective of this study is to empirically assess the effect of government decisions on market growth in response to social distancing initiatives, government reactions, economic support provision, and containment and health responses, to name a few. This study utilises a panel dataset of daily stock market returns from 1 January 2020 to 31 December 2020, shifts in COVID-19 events, and government responses in 17 Pacific and South Asian countries. We find that social distancing policies have a significant negative effect on stock returns but a significant positive impact on market growth when new cases' growth rate decreases after adjusting for country characteristics and systematic risk due to foreign factors. Both containment health and economic support packages directly affect business development in terms of particular policy responses. Surprisingly, as growth in COVID-19 cases slows down, this effect is not exacerbated.

This study contributes to the existing literature in three ways. Firstly, we connect the contagion theory to the economic impact of COVID-19 in South Asia and the Pacific. Second, this study supplements recent research which determines the economic impact of COVID-19 on market growth (Al-Awadhi et al., 2020; Baker et al., 2020; Ramelli & Wagner, 2020). Third, this study determines the impact of government actions in two comparisons – the impact of policies in the first wave and second wave and differences in impact depending on the development of a country which is a unique perspective. According to this study, government announcements about introducing social distancing initiatives have a dual effect on market growth. A direct negative effect is seen almost immediately, and a subsequently indirect positive effect is noted. As expected, policies regarding social distancing have an immediate negative impact, attributed mainly to the expected negative effect on economic activity. Subsequently, we see an indirect positive effect on market return because social distancing measures reduced the growth of confirmed COVID-19 cases. Both ACHI and ISDRI have a positive effect on market growth, as they are perceived to support individuals' socio-economic well-being and mainly result in positive market returns. The results are tested in the first wave and second wave, showing that policies' positive impact is more pronounced during the second wave for this region. Also, the intensity reduction is apparent in developed economies, whereas lower-middle-income economies show an opposite result. We attribute this difference to socio-cultural characteristics in these economies and their willingness to adhere to government policies and existing healthcare services availability.

5.1. Policy recommendations

The findings of this study have essential implications. This study establishes that there are indirect benefits of more stringent responses. This counter the findings of studies that emphasise social distancing measures' counter-productiveness. The findings of this study have unique policy implications. From a policy perspective, this study aligns with past research indicating that it may be impossible to negate the short-run negative impact of government interventions on market growth. However, as was seen during the 1918 Flu pandemic, the negative effect is significantly reduced in the medium run (Correia et al., 1918). Subsequently, this will allow economies to recover faster from the economic impacts of COVID-19. This study also indicates that market response during the second wave was better than the first. This shows that experience is key. The public is more likely to follow government mandates and less likely to panic. Lastly, as this study is unique in determining the impact based on the level of development, it indicates that policies should be adapted based on the population's socio-economic tendencies.

5.2. Future research

As new data becomes rapidly available, future research should target three perspectives. From a sampling perspective, it is possible to expand the geographical region or take more economies to make the findings more generalisable. In addition, as data is updated regarding vaccinations and further spread, it is possible to determine the effect of the third wave on economies. It will also be possible to determine if the speed of vaccinations can adequately off-set the adverse economic impact of the third wave.

Disclosure statement

No potential conflict of interest was reported by the authors.

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