Examining the relationship between Gold and Stock prices during COVID-19 evidence from South Asian Stock Market

Zill e Huma Shahid   *01-321211-028*

MBA

Supervisor:

Dr. Sajid Ali

Department of Business Studies
Bahria University Islamabad

Spring-2022

Examining the relationship between Gold and Stock Prices during COVID-19 evidence from South Asian Stock Market

By:

Zill e Huma Shahid   *01-321211-028*

Supervisor:

Dr. Sajid Ali

Department of Business Studies
Bahria University Islamabad

Spring-2022

FINAL PROJECT/THESIS APPROVAL SHEET
Viva-Voce Examination

Viva Date <u>01/08/2022</u>

Topic of Research: Examining the relationship between Gold and Stock prices during COVID-19 evidence from South Asian Stock Market

Names of Student(s):   Enroll #

- Zill e Huma Shahid   01-321211-028

Class: MBA 1.5

Approved by:

_____

Dr. Sajid Ali

Supervisor

_____

Osman Bin Saif

Internal Examiner

_____

Dr. Shujaat Ahmed Hashmi

External Examiner

_____

Dr.Syed Haider Ali Shah

Research Coordinator

_____

Dr.Khalil Ullah Mohammad

Head of Department

Business Studies

Table of Content:

List of Figures and Tables:

Abstract

This research inspects the role of gold during the COVID-19 epidemic as a harmless haven and a form of insurance against thirteen Asian stock marketplaces. Gold is demonstrated to be a powerful hedge (diversifier) for the majority (minority) of Asian stock markets during the COVID-19 sub-period; it represents the assets of a strong safe-haven in Thailand and a weak safe-haven in Pakistan, respectively. Before discussing likely ways that an individual may profit from a market that is impacted by a major viral pandemic, we investigate the potential stock market effects that the coronavirus "COVID-19" may have. The hedging effectiveness of most Asian stock markets is higher during the COVID-19 sub-period. Additional analysis reveals that inflation expectations and implied volatility for gold in both sub-periods frequently account for the majority of the returns on hedging portfolios. For market participants who hold assets in Asian companies during trying times, our findings have practical consequences. This research can help purchase the gold ETFs SPDR Gold Shares (NYSE: GLD) and Ishares Gold Trust (NYSE: IAU) and then hold them until the price of gold reaches its high.

Keywords: COVID-19, Gold, Stock, Stock Market.

CHAPTER 1

INTRODUCTION

1.1 Background of the study

A specific outbreak known as Covid-19 Coronavirus (2019-nCoV) initially surfaced in December 2019 in Wuhan City, Hubei Province, China. On March 12, 2020, the World Health Organization (WHO) proclaimed it to be a pandemic. As of March 26, 2020, this disease has caused more than 22,000 deaths and is still having an impact on the entire world. There have been significant rises in the number of cases and fatalities outside of China, particularly in Italy and Iran. These changes began to have an impact on social and cultural activity taking place everywhere because of the virus international travel between numerous nations has cancelled, and dangerous border crossings Nations have been separated. The State of Emergency been proclaimed in certain nations. Another illustration of how Covid-19 influences life is delaying education for a while or transitioning to an online course structure, particularly in China, Japan, France, Iran, Italy, Turkey, and many other nations. (Zeren, 2020)

Unfortunately, a pandemic is a natural occurrence that can cause ridiculous shocks to the financial and economic system. A rare example of this sort of pandemic, which began spreading around the end of December 2020, is the new coronavirus. The initial COVID-19 instance in China was the World Health Organization reported on 3 January 2020 and on 30 January 2020 (WHO) issued a worldwide warning. The protracted and strict lockdown has an impact on people's social and economic circumstances as well as the viability of nations' economies. COVID has been perceived as being exceptional because of its various signs and higher spread rate. This economic disaster caused by the recent pandemic differs from the earlier ones, for instance the Great Depression of 1930s and the Great Recession of 2007–2009, because it consists of many ambiguous

socioeconomic ties. This virus was initiated in large part by matters associated to the increase of the Coronavirus Disease 2019 (COVID-19) and the legislative policies directed at restricting person-to-person connection.

Worldwide, mankind has been through numerous epidemics and pandemics. COVID led to the most recent of the fatal diseases spreading in the world. COVID has been perceived as being exceptional because of its various signs and higher spread rate. This economic disaster caused by the recent pandemic differs from the earlier ones, for instance the Great Depression of 1930s and the Great Recession of 2007–2009, because it consists of many ambiguous socioeconomic ties. This virus was initiated in large part by matters associated to the increase of the Coronavirus Disease 2019 (COVID-19) and the legislative policies directed at restricting person-to-person connection.

1.2 **COVID-19 as a Global Pandemic**

One-fourth of the world's population lives in South Asia, one of the world's most populous areas, on less than 3.4 percent of its total land area. India, Pakistan, and Bangladesh are the three most notable nations in South Asia in terms of the number of new coronavirus infections, and since the World Health Organization proclaimed COVID-19 a worldwide pandemic, there has been a sharp increase in cases in these nations. Researchers are concerned about the effect of COVID-19 on the markets of South Asian nations due of the vast population and subpar healthcare infrastructure. As the chosen nations (India, Pakistan, and Bangladesh) are South Asia's developing markets in terms of domestic demand, this further inspired us to examine how the financial markets of the aforementioned South Asian nations will be impacted by this epidemic (Saleem, Shabbir, & Khan, 2020).

International trade, as well as social and cultural life, are all badly impacted by the Covid-19 outbreak. This epidemic has started to have a severe impact on several industries, most notably the tourist, commodities trade,

production, and transportation sectors. As a result, the credit rating agencies Moody's and Standard & Poor's have cut their prediction for China's growth in 2020 Honda, Toyota, Nissan, Renault, and Peugeot all made the decision to halt manufacturing in China. Many nations have made the decision to stop importing items from China or having their products made there. Given all these unfavorable outcomes, it would seem natural that stock markets, economic expansion, and currency rates would also play a role in these circumstances. The study sought to learn more about the connection between Covid19 and stock markets in the countries where the virus is most prevalent—China, South Korea, Italy, France, Germany, and Spain. Maki (2012) cointegration tests have been used to investigate these linkages. (Zeren, 2020)
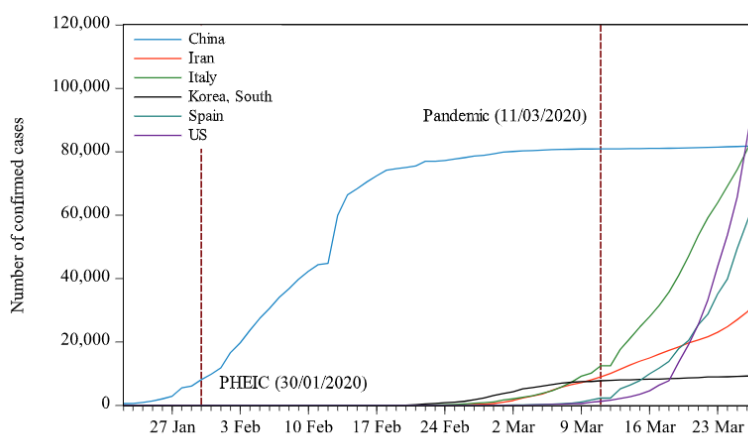
Fig. 1. Confirmed cases in major affected countries. (https://coronavirus.jhu.edu/)

Figure 1 Covid-19 effected countries (Zhang, 2020)

1.3 Gold

A valuable metal that is utilized in commerce is gold. People exchange their currency for gold because it has inherent worth as a hedge against changing currency prices when the stock market gets erratic. For instance, the SARS outbreak caused the price of gold to rise from 310 to 350. As a result, many investors view gold as

a "safe-haven investment" that may be held during times of economic uncertainty in order to lower risk. We advise purchasing gold as a hedging strategy during the COVID-19 outbreak since we anticipate significant market volatility. (Yan, 2020)

Studies on the safe-haven qualities of gold during the COVID-19 epidemic have shown conflicting results. The COVID-19 crisis reportedly had an impact on gold's function as a hedge and safe-haven asset. Our study focuses on the fact that there isn't widespread agreement among academics and professionals on gold's safe-haven asset qualities. The pandemic-driven economic catastrophe is covered by the intraday dataset used in this analysis through April 24, 2020. Financial market dynamics have altered dramatically since the mid-to-late March stimulus packages that were implemented globally; in particular, financial assets have moved synchronously since then. Therefore, empirical research is required to determine if gold has functioned as a safe-haven asset during various pandemic phases. (Akhtaruzzaman, 2021)

The CSPI's movement can be impacted by the price of gold, which tends to climb annually and carries very little risk. It was brought on by market participants who are considering shifting their investments towards gold-related commodities (Gumilang et al., 2014),

The danger is far reduced and produces better outcomes (2017) Gulos, Subiyantoro, and Tubing Earlier studies were carried out by Gumilang et al. (2014); Gulo et al. (2017), Robiyanto et al. (2017), and Robiyanto (2018b); Shabbir, Kousar, and Batool said in (2020) The rise in the price of gold benefits CSPI returns. As a result, the following hypothesis may be drawn. Because gold's price tends to rise, investing in it is seen to be lucrative. Due to the fact that it is accepted in many nations, gold is often listed as a particularly liquid investment vehicle. (Syahri, 2020)

The economic community pays a lot of attention to gold, which is often seen as an investment property, because of its capacity to hedge price increases and to generate an enticing risk-adjusted return. Gold prices are more stable than stock prices, and stock profits are typically right-tailed. Investors and portfolio managers regard gold in particular because it is (positively) weakly or unfavorably correlated with stock market indicators, making gold capable of offsetting stock market costs, especially during stressful periods. This

study, which mostly discusses processes based on conditional correlations and portfolio assessments, examines the title role of gold for the era of financial catastrophes and difficult market conditions.

Early in 2020, the COVID-19 epidemic unexpectedly began to spread, which caused the global economy to contract, unemployment rates to rise, and financial markets to decline. These problems first hit the financial markets in China and other Asian nations, and then they expanded to the rest of the world. For instance, during the first quarter of 2020, global gold prices swung in the other direction, rising by over 6 percent, while the stock market index numbers in China and Japan sank by approximately 15 and 25 percent, respectively. Stock investors became frightened as the coronavirus threat increased and started to separate some of their stock funds. Because of the gold market's well-established tendency to maintain value during times of market stress, investors searched for protection there. As risk-averse investors transfer from speculative assets like stocks to less hazardous investments like gold, which boosts demand for the metal and raises its price, stock prices decline during stressful times. Despite the fact that gold's function as a hedge and safe haven for Asian stock market indices during the disastrous COVID-19 outbreak has largely changed, investors are largely unaware of whether gold can appropriately balance the downside risk in Asian stock markets during an event that seems to be different from other economic and financial disasters.

This study looks at how the COVID-19 pandemic changed how gold served as a hedge, diversifier, and safe haven for Asian stock markets during the incredibly disastrous COVID-19 sub-period. From 28 March 2020 to 5 October 2021, a sample will be taken. First, I'll talk about how gold served as a hedge and safe haven asset during the exceptional COVID-19 outbreak in contrast to Asian stock markets. Secondly, I did not restrict my analysis on hedging success to a constant one other than I perform a time-varying assessment, which permits me to discover how the hedging usefulness of gold is influenced by the COVID-19 outbreak. Thirdly, in contrast to my earlier study, I identify the determining factor for hedge portfolio performance before and after the COVID-19 outbreak after taking into account a variety of economic and financial factors. By learning the significance of gold indicated instability and inflation forecasts for the hedge portfolio returns in the stock-gold that encompass Asian stock markets, this builds on earlier studies (e.g., Dutta et al. 2020b).

My major outcomes are outstanding. Gold serves as a significant hedge for the majority of Asian stock markets during the COVID-19 timeframe, of which I am aware in my study. Additionally, gold exhibits a strong safe-haven characteristic for Asian equity markets, but in the COVID-19 sub-period, gold acts as a weak safe-haven for Pakistani stock markets. Portfolio investors should increase their gold holdings during the COVID-19 sub-period, according to the conclusions based on the optimum stock-gold portfolio weightings. According to additional study, the majority of Asian stock markets' hedging effectiveness was higher during the COVID-19 sub-period than it was before the COVID-19 sub-period, showing that gold provided a higher hedging effectiveness for Asian stocks during the COVID-19 sub-period. According to the results of regression analysis, the implied volatility of gold and inflation expectations influenced the returns on the hedge portfolio in numerous occasions during both sub-periods.

For investors and portfolio managers holding Asian stocks, our key findings offer practical and useful insights about the best asset allocation and risk management strategies during the extraordinary COVID-19 epidemic.

1.4 Investigating the impact of COVID- 19 on the South Asian stock

The results indicated that the coronavirus-induced lockdown stages (1 and 2) have a large and adverse influence on the Indian stock market and oil prices, however the effect is beneficial in terms of gold prices. This was determined by evaluating mean variation using the Games-Howell test. The results also imply that when individuals became more cognizant of the virus's seriousness, the impact of the lockdown may have diminished. The first wave of COVID-19 dissemination data corroborates the findings that, in contrast to gold, stock markets and oil prices have a negative correlation with coronavirus illness. The results from the second wave are paradoxical, concluding that gold prices and COVID-19 spread have a negative link while oil prices and stocks have a positive relationship. Additionally, the findings of the comparative research of the stock market performance of South Asian nations show that COVID-19 has a considerable and adverse impact on the stock market performance of the particular South Asian nations throughout the pre- and post-lockdown stages. In the first wave of infection, there is a negative link between stock market shares and new coronavirus; however, in the second wave of infection, there is a positive correlation. (Ahmed, 2021).

1.5 Gold as Investment Asset and COVID-19 Impact on Stock

Notably, gold is treasured by investors and portfolio managers because to its (positively) low or negative correlation with stock market indexes, which allows for the offset of stock market losses, especially in difficult times. Academic literature is replete with studies looking at the hedging and safe-haven properties of gold for stock market indices. It uses methods based on conditional correlations and portfolio studies to examine how gold has fared in a number of financial crises and difficult market conditions. This was particularly true during the Asian Crisis of 1997, the Global Financial Crisis (GFC) of 2007–2008, and the European Sovereign Debt Crisis (ESDC) of 2010–2013, to name a few crisis situations. Stock market indexes dropped and volatility increased in each of these situations (risk). The COVID-19 virus emerged out of nowhere in the beginning of 2020, causing a global economic freeze, a rise in unemployment rates, and a collapse of the financial markets. Such issues first appeared in China and other Asian nations' stock exchanges before escalating to the rest of the world. For instance, the stock market index in China and Japan fell by almost 15 and 25 percent, respectively, during the first quarter of 2020, while the global gold price went the other way, rising by more than 6 percent. Stock investors began to fear and start selling some of their holdings as the coronavirus hysteria grew. They looked for safety in gold since it has historically been able to increase in value during times of market turbulence. (Kakinuma, 2021)

Early in 2020, the COVID-19 epidemic suddenly appeared, causing a worldwide economic freeze, an increase in unemployment rates, and a collapse of the financial markets. Such problems initially impacted the stock markets in China and other Asian countries before spreading to the rest of the world. For instance, the stock market index in China and Japan fell by almost 15 and 25 percent, respectively, during the first quarter of 2020, while the global gold price went the other way, rising by more than 6 percent. Stock investors began to fear and start selling some of their holdings as the coronavirus hysteria grew. Since gold has historically been able to gain in value during times of market volatility, they looked to it as a safe haven. (Beckmann, 2015)

1.6 COVID-19 Impact on Global Markets and Recovery

Since the start of 2020, there have been significant changes that have had a significant influence. These changes have caused a number of occurrences that have interfered with social and economic spheres as well as other areas of human existence. This effect is causing some economies to attempt recession recovery right now. Nearly every element of the economy was severely impacted by the epidemic, including commerce, supply networks, production, and financial practices. In order to combat these negative effects, extensive recovery strategies are required globally because to COVID-19 uncertainty outcomes for economies. (Li, 2021)

Internationally, a variety of techniques have been put forth, but the best recovery strategy is thought to be one that is based on viable post-COVID-19 strategies. Therefore, governments should prepare for several COVID-19 reaction phases, such as an emergency phase, an escape strategy, and the transition to the new normal. Additionally, all stage-specific regulations must be long-term. (Yoshino, 2021)

There hasn't been enough research on how COVID-19 fear affects people's awareness of stock market volatility. One of the earliest studies to examine the impact of COVID-19 dread on stock market volatility is this one. This serves as a pillar in its discussion of the expansion of the economy that satisfies a nation's demands for trade and energy. Shock and panic caused stock values to drop globally: The Dow Jones Industrial Average and FTSE 100 both saw quarterly declines of 23 percent and 25 percent, respectively, according to statistics provided by the British Broadcasting Corporation (BBC) on March 31, 2020. This was the worst quarterly fall since 1987. The Standard & Poor's 500 Index saw its worst decline since the 2008 financial crisis over the same time frame, falling by 20%. Regarding the economic slump, economists made horrible predictions. According to the "Global Economic Outlook" (June 2020), the pandemic will cause the greatest yearly per capita production decline since 1870 and send the majority of the world's economies into recession. The research also noted that a 5.2 percent real world GDP loss will occur. The growth rate for established nations would be 7.5%, while the growth rate for emerging and developing markets would be 2.5%. A rapid

increase in energy costs would hurt demand since multinational entities compete, which might lead to a worldwide economic slump. (Anser, 2020)

Foreign direct investment (FDI) is the primary predictor of foreign integration in both established and emerging countries, as evidenced by the strong negative effects of COVID-19 investment on the expansion of the stock market sector. The majority of scholars have emphasized how FDI affects economic growth. The COVID-19 outbreak caused enormous damages to the world economy. The topic of how to deal with the pandemic's impact on the world economy has therefore gained popularity in recent months. (Engelhardt, 2021)

1.7 Oil Price and Stock Market: South Asian Evidence

Due to the economy's heavy reliance on oil products, oil is a significant source of energy and is frequently used as a gauge of economic stability. Changes in the price of oil have been recognized in several studies as a key cause of economic fluctuations (both conceptually and empirically) and as a model of a global shock that is likely to concurrently affect several economies. Contrarily, the performance of any nation's economy is said to be reflected in the global stock market. For instance, a decline in stock prices may result in broad economic disruption on a global scale by lowering family income and making investors more frugal with their spending as a result of the money they lost in the stock market. Furthermore, given the decreased stock price, investors also find it challenging to increase investment by issuing new shares. (Alamgir, 2021)

The connection between oil prices and stock market values has recently drawn a lot of interest. For instance, according to the International Energy Agency (IEA), oil will account for 30% of the global energy mix in 2030. (IEA, 2017). The risk and uncertainty related to the unpredictability of oil prices upset investor portfolios as well, particularly portfolio managers trying to make the best allocations possible. According to the theory supporting the connection between oil prices and stock returns, oil prices can have a direct influence on stock market returns by affecting future cash flows or indirectly by having an effect on the interest rate used to discount future cash flows. Additionally, the stock price declines due to the uncertainty and the high-risk premium brought on by the increased oil price.

So, according to common wisdom, an increase in oil prices tends to push various economic stakeholders to spend more money on energy consumption, which lowers their profit margin and has a negative impact on the stock market.

A lot of attention has lately been paid to research on the correlation between changes in the price of oil and the stock market. However, the majority of those research are limited to examining how stock prices react to shocks in oil prices in developed economies like the USA, UK, Australia, Canada, and some other European nations. (Broadstock, 2014) One research, for example, looked at the connection between oil price volatility and stock returns in the G7 nations (Canada, France, Germany, Italy, Japan, the UK, and the US). They show that rising oil price volatility causes the stock markets of the affected nations to react negatively, indicating that the global oil price is more important to the stock market than the domestic oil price. (Diaz, 2017)

1.8 ASIAN Stock Market Comparison: COVID-19

The study of the relationship between the stock market and economy is particularly fascinating since stock markets serve as the source of funds that allow businesses to raise money for their operations. Operations in company and investing are both possible generate income from the marketplace. Asian nations have continued to expand their stock markets over the past few decades. This reflects the fact that many developing nations have seen significant economic expansion, especially in the 10 years ago. Additionally, international investment is now more convenient than in the past. Has decreased restrictions for both legal and transient problems. (TANTIPAIBOONWONG, 2021)

Along with political superpowers like China and the United States, developed economies in Asia like Japan, Hong Kong, South Korea, and Singapore are also significant global investors (UNCTAD, 2020).

The largest source is intra-ASEAN investment, which in 2015 had a value of 22 billion US dollars (18.4% of the overall value) (ASEAN, 2016). The investment from the European Union, Japan, and the United States are rated as the second, third, and fourth sources, respectively, and together they contributed 60% of the total. However, Japan, China, South Korea, Hong Kong, and Taiwan are among the ten economies in the Asian area

with the greatest investment inflows, not including ASEAN nations. These made up over one-third (32.2%) of the total, highlighting the significance of industrialized economies' investments in ASEAN nations. There is a clear connection between the Asian nations and this. (ASEAN, 2016)

The aforementioned illustration shows the connection between the more interconnected ASEAN financial markets and the transformation processes that should be investigated in academic research on this subject. To investigate the co-movement of Asian equities with US stocks, this study chooses US stock market return data. Additionally, the value of the stock market in a number of nations in the Asia-Pacific area and India is rather significant. Many variables influence the volatility or unpredictability of returns. The univariate GARCH model used for the data does not adequately explain the volatility without relying on additional variables. In this study, volatility is predicted using a multivariate GARCH model to get a more precise estimate of the co-movement. This has to do with how volatile the returns of the different securities included in the study were. (TANTIPAIBOONWONG, 2021)

Any security's price ambiguity may have an impact on income or the nation's financial stability. Because of this, policymakers may better plan hedging risks to the financial system or activities connected to finance by knowing the nature of volatility.

1.9 Objectives

- To find the influence on Asian Stock Markets caused by COVID 19
- To examine the consumers purchasing power during COVID
- During COVID 19, my goal is to assess the efficacy of gold as a hedge or safe haven for various equity markets.

1.10 Significance of the Study

Due to its capacity to manage inflation and generate an alluring risk-adjusted return, gold is a financial asset that is receiving a lot of attention (Gorton, 2006). It focuses on conditional correlations and portfolio

evaluations, and explores the significance of gold in a variety of financial crises and challenging market situations (Basher, 2016). Examples of crises where this has been particularly true include the Asian Crisis of 1997, the Global Financial Crisis (GFC) of 2007–2008, and the European Sovereign Debt Crisis (ESDC) of 2010–2013. In each of these situations, stock market indexes dropped and volatility increased (risk).

Early in 2020, the COVID-19 epidemic suddenly appeared, causing a worldwide economic freeze, an increase in unemployment rates, and a collapse of the financial markets. (Yousaf, 2020)

This study examines the thirteen Asian stock markets that are Hong Kong, Pakistan, Taiwan, South Korea, Singapore, Philippines, Thailand, Vietnam, and Malaysia. China, Japan, India, Indonesia, and Indonesia, Hong Kong, India, Indonesia, Pakistan, and Taiwan. The sample period is thereafter set up in this manner: I whole sample; (ii) pre-COVID; and (iii) post-COVID. The COVID sample spans the time period beginning in March 2020 and ending with the COVID-19 era outbreak. The impact of gold on various stock markets across various nations is covered throughout the entire sample.

Problem Statement

In contrast to Asian stock markets, my research will examine how gold served as a safe haven and a hedge during the COVID-19 pandemic. Gold has been demonstrated to be a strong hedge (diversifier) for the majority of Asian stock markets throughout COVID-19. In numerous Asian stock markets, including Pakistan, it also demonstrates the characteristic of a dependable safe haven. The peak impacts of the total stock-gold portfolios are lower during the COVID-19 sub-period compared to the pre-COVID-19 sub-period, indicating that portfolio investors should increase their gold holdings at this time. Hedging is more beneficial for the bulk of Asian stock markets during the COVID-19 era. Additional analyses suggest that gold-indicated instability and inflation probability in both sub-periods are what most often decide the hedge portfolio earnings. My findings have beneficial repercussions for investors who maintain holdings in Asian companies through difficult times.

Research Gap

In this research I will identify why Investors prefer hedging of Gold and the effect of Gold in different Asian Stock Markets.

Variables

- Gold prices during Covid (DV)

- Financial Stock Markets (DV)

- Investment of Investors (DV)

- COVID 19 (IV)

CHAPTER 2

Literature Review

The existing literature is a brief knowledge on Covid-19 and the effecting areas. It describes the effect caused by COVID-19 relating to stock markets is highly effecting.

2.1. Stock Markets and Gold

The use of gold as a haven amid exceptionally unfavorable market movements and financial crises as well as a diversifier and hedge against Asian equities has been thoroughly researched in the literature. In this article (Baur, 2010), we look at how gold served as a safe haven and a hedge for equity markets in developed and emerging nations (including India and China) during the Great Financial Crisis. The findings determine that gold, but not the Chinese stock market, exhibits a safe-haven property during times of global financial crisis. Additionally, the paper distinguishes between a weak and strong safe haven and argues that gold may contribute to the stability of the financial system by limiting losses in the event of exceptionally unfavorable market shocks. Looking at particular crisis situations, we see that throughout the height of the most recent financial crisis, gold was a solid safe haven for the majority of developed markets. (Arouri, 2015) demonstrate the VAR-GARCH model's superiority over alternative multivariate GARCH specifications, as well as evidence of strong return and volatility cross effects between gold prices and stock prices in China. When predicting future stock returns, it is especially important to take into consideration historical gold returns since they are key in explaining the dynamics of conditional return and volatility of the Chinese stock market.

The study (Raza, 2016) looks at the asymmetric effects of gold prices, oil prices, and their corresponding volatility on developing market stock markets. All developing economy stock markets are negatively impacted by oil prices. Stock markets in all developing nations suffer from the short- and long-term volatility of gold and oil. The findings show that stock markets in developing nations are more susceptible to unfavorable news and situations that lead to unstable economic conditions.

(Chkili, 2016) The changing linkages between the gold and stock markets were examined using data from BRICS countries. The empirical findings show that over the course of the study period, the dynamic

conditional correlations alternate between positive and negative values. These low to negative correlations during the most significant financial crises imply that gold can serve as a hedge against irrational market swings. Their analysis shows that adding gold to a stock portfolio boosts its risk-adjusted return. Similarly (Bekiros, 2017) focus on the BRICS equities markets to discover that gold is a diversified for BRICS stock market indexes in both bull and downturn markets. During the GFC, gold did not serve as a haven or hedge. The BRICS stock markets' and the gold market's long-term co-evolvement patterns, which include some significant areas of concentrated severe fluctuations and a robust structure of time-varying asymmetric reliance between those markets.

Furthermore, (Wen, 2018) found that the downside risk advantages offered by the US dollar for China and Thailand are particularly appealing and that both gold and the US currency might serve as safe havens for emerging equities. They did this by calculating the low-high tail dependence between markets via copulas and the downside risk gains of portfolios. (Ming, 2020) concludes when market returns fall below their 1 %, 5 %, and 10 % quantiles, as well as during the two crisis periods, gold operates as a safe haven. Most industrial sectors can benefit from the results as well. It also demonstrated how some changes in market policy can have a significant impact on gold's position.

The aforementioned debate makes it evident that gold's qualities as a shelter and hedge for Asian rising nations are still debatable because of the contradictory results. The ability of gold to act as a safe haven and a hedge against Asian stock markets must therefore be examined.

2.2 COVID-19 Outbreak's Impact on the Financial Markets and Gold

After adjusting for country-specific factors and systematic risk brought on by global causes, we analyse the relationship between the growth of COVID-19 confirmed cases and deaths and stock market returns using data from 64 countries collected daily between January 22, 2020 and April 17, 2020. Our analysis' findings indicate that while stock markets strongly respond to increases in confirmed cases with negative returns, they do not statistically significantly respond to increases in deaths. Findings (Ashraf, 2020) also demonstrate that

the stock market experiences a large response in the early days following a confirmed case and again 40 to 60 days later. By the beginning of March, financial markets had already reacted to COVID-19, even if the broader economic effects were not yet clear. From early January to late March, there were three phases that came to a conclusion soon before the Federal Reserve's "whatever it takes" statement. Additionally, according to recent studies, when COVID-19 expanded to more than 200 destinations in March, the risk level for all nations grew significantly. However, by the end of March, governments and central banks had implemented a wide range of economic measures to lessen the effects of the lockdown and the escalating dread brought on by the pandemic. (Topcu, 2020)

The stock indexes of nine MSCI developing Asian nations are examined in this study for the presence of long-range dependency and multifractal characteristics. According to the level of multifractality, Pakistan, Indonesia, and Thailand are the markets with the least long-range reliance, followed by China and South Korea. The stock markets in Malaysia and India, on the other hand, are shown to have the highest levels of dependency. This (Aslam, 2020) findings may be connected to potential market inefficiencies, suggesting that institutional investors may use active trading tactics to increase the profitability of their portfolios.

In addition to the Chinese stock market, the COVID-19 pandemic has also had a detrimental impact on almost all other Asian stock markets, according to (Yousaf, 2020). in their literature review. For all Asian markets, the average daily returns from 1 January 2020 to 5 April 2020 are negative

Financial markets in Asia are becoming more integrated, which is reducing the number of interregional investment opportunities. For instance, in the wake of the 1997 Asian financial crisis, report causal links among seven Asian equities markets. A considerable increase in returns correlation between India and the developed markets of Hong Kong, Japan, and Singapore is observed by (Gupta, 2012) (Hwang, 2012) during market downturns, suggesting limited benefits of diversification during these times. These findings are corroborated by (Hwang, 2012), who documents an increase in the amount of correlation among Asian equities markets during the 2008–2009 global financial crisis, highlighting the need for minimal diversification during such times as these. Rehman and Shahzad (2017) investigate the connections between EFA equity markets and report the existence of links between the returns of EFA equities over the short and long terms. (Narayan,

2017) come to the conclusion that there is integration between the returns of Asian and developed stock markets and that during the GFC, EFA equity markets were influenced by the DJIA index. This emphasizes the significance of the DJIA index as a predictor of EFA markets during bearish market conditions. Both DIJA and Nikkei 225 have some sway, but S&P500 is still a better predictor when there isn't a crisis. (Rehman, 2022)

Less focus has been placed on the function of gold and other assets, including cryptocurrencies, as safe havens or hedges for different asset classes during the COVID-19 outbreak. If you're utilising conditional correlations models, think about a sample period that encompasses the COVID-19 epidemic. The authors (Dutta, 2020) claim that gold is a wise investment to have in case the price of crude oil unexpectedly decreases.. Notably, the literature offers no proof of gold's ability to protect or serve as a refuge during the COVID-19 pandemic against any Asian stock markets. Importantly, it ignores the factors that influence the profits from hedge funds. A wildlife market in the Chinese city of Wuhan is where the current coronavirus (COVID-19) outbreak originated. The market was shut down because of its rapid spread and potential risks to people. The entire city, country, and foreign nations are then quarantined in order to carefully segregate and isolate the infected from the uninfected. Numerous, if not all, of the world's nations have seen this outbreak's rapid spread from China, and at the same time, many confirmed positive test results and fatalities have been reported. An efficient concept for reducing and regulating the effects of the COVID-19 on an economy entails a complete lockdown and remain at home strategy in the absence of a functioning vaccine. (Okorie, 2021)

The usage of gold as a hedge, diversifier, and safe haven against Asian stocks during extremely adverse market fluctuations and financial crises is a topic of much dispute. In contrast to the equity market of India, but not the Chinese stock market, gold exhibits a safe-haven quality throughout the COVID outbreak, according to research on the safe-haven and hedging characteristics of gold for established and emerging nations. Some researchers who have researched the hedge and safe-haven features of gold for developed and developing stock markets claim that gold is a helpless hedge for the stock markets of Peru, Jordan, Israel, Thailand, Colombia, and Morocco. Additionally, gold shown to be a safe haven asset for international investors in Jordan, Vietnam, Romania, Egypt, and Thailand during the sharp market falls in COVID 19.

Additionally, the experts explore the COVID's interaction between Chinese equities markets and global gold prices. They find that diversifying their portfolio of Chinese stocks with gold can increase risk-adjusted revenues. They investigate if gold serves as a safe haven or hedge in relation to different equity markets. According to their definition, gold is a potent hedge for Turkey, Indonesia, and Russia but not for other Asian nations like Germany, China, or the global index. Gold turns out to be a safe-haven investment for both England and India. Their international decisions show that the hedging and safe-haven functions of gold for stock markets are different in developing and well-known countries. A completely significant positive effect of gold prices on stock prices is identified by researchers who measure the influence of gold prices on stock prices. Additionally, estimates for gold have a significant and negative impact on the pricing of stocks in Mexico, Chile, Indonesia, Malaysia, and Thailand. A study discovers that throughout the subprime crisis, gold had a significant safe-haven role for various stock markets. They compare gold's functions as a safe haven and hedge to those of other stock exchanges in the US, UK, Indonesia, Malaysia, Japan, Singapore, and Thailand. Additionally, they note that gold has a safe-haven function during market booms for the equities markets of the various Asian Stock Markets. Other academics place a stronger emphasis on equity markets and find that gold is a market diversifier for stock market indicators. However, during the Global Financial Crisis, gold did not serve as a hedge or safe haven. They represent the fact that gold served as a safe haven for the Chinese stock market during the 2007–2009 Global Financial Crisis and the 2011 US credit downgrade. They show, through empirical evidence, that gold serves as a haven for emerging markets like China, Malaysia, India, and Thailand. They look at gold's position as a safe haven and hedge for Asian markets and take into account that gold diversifies Asian equities markets, with the exception of South Korea, Thailand, and Singapore.

According to scholarly research, gold acted as a safe haven for the Chinese equity market amid dangerous market conditions and both financial crises (the GFC of 2007–2008 and the 2015 equity market crash). The overheard talk makes it evident that there is ongoing disagreement regarding the advantages of gold as a safe haven and hedge for Asian rising countries due to the contradictory findings. Understanding gold's roles as a hedge and safe haven alongside Asian stock markets is crucial.

The outbreak of COVID-19 has significantly disrupted other financial markets, US stock markets, and business solvency. The increased volume of their mutual commerce and China's foreign direct investment in Asian markets make this applicable to the regional and global stock markets in Asia that are closely linked to China. Researchers also find evidence of a long-term requirement in growing Asian stock markets. The COVID-19 outbreak has adversely affected the Chinese stock market and, as a result, nearly all other Asian financial markets. I conducted research and found that the following metrics highlight the severity of the COVID-19 situation.

For all Asian markets, the average daily earnings from 1 January 2020 to 5 April 2020 are negative.

- The Asia Apex 50 Index dropped by extra 26% from 13 January 2020 to 19 March 2020

- The China Industrial Buying Manager's Index (PMI) dropped by 33% in February 2020

- The COVID-19 outbreak has negatively impacted non-Asian stock, commodity, and energy markets across the globe.

- As of 2018, the supply market capitalization of Asian nations is approximately 30% of the global total.

- The Chinese equity market is the second-largest on the planet, after the United States, in terms of market capitalization ($6.324 trillion).

- The world's top three gold consumers are China, India, and the USA. Additionally, China accounts for 36% of the world's production of primary minerals and 44% of the world's demand for these materials.

These Asian marketplaces often account for a sizable share of the world's stock and metal markets. In particular, Asia has developed and mature economies that draw significant foreign investment because of their growth potential. This is an important factor because past research has questioned whether gold hedging for stock markets differs across emerging and industrialised countries.

Studies look at how gold and other assets, like digital currencies, served as safe havens or hedges for different asset classes during the COVID-19 outbreak. Researchers investigate a sample period that includes the COVID-19 occurrence and put conditional correlation models into practise. The journalists learn that gold is

a safe-haven asset for the stock market's downside danger. In particular, the article gives no indication of how gold would have served as a hedge or safe haven alongside any Asian stock markets during the COVID-19 epidemic.

2.3 Consumers Behavior during COVID-19

(Peighambari, 2016) examined 12 years' worth of academic studies on consumer behaviour that were published in the five top international publications in this area. The findings in this work have broad ramifications for the field of consumer behaviour research as well as for academics, journal editors, reviewers, and practitioners. In this regard, this article serves to assess the composition and development of the literature in the field of consumer behaviour, and it also gives some hypotheses regarding potential future developments in this literature.

(K.Ratnamadhuri, 2018) came to the conclusion that there are minor variances in income levels, which suggests that the preferences or opinions of the various groups differ with regard to consumer purchasing behaviour. It sparked interest about which group's ideas were genuinely divergent. Every individual plays a variety of roles in their everyday activities, careers, and social lives. Each of these jobs affects customers' purchasing decisions in a different way. Every function in society has a specific status, and the status element has a significant impact on consumer behaviour. Sales can be significantly increased if marketers are aware of the primary elements influencing consumers' purchasing decisions.

According to (Rastogi, 2010), online purchasing in India has a very promising future. In India, attitudes regarding online purchasing are improving. Customers can shop online anytime, anywhere, and with a variety of simple and secure payment methods. Customers can compare prices between products and internet retailers.

According to (Manu Nanda et al, 2019), in addition to "income," "friends," "variety of models/range," "ease of returns," "delivery services," "shelf display factors," and "in-store advertisements" were also found to have a significant impact on changing consumers' perspectives on buying computer peripherals from brick and

mortar stores. When a product's price, brand, and specs are comparable or nearly identical, Indian buyers choose to select the item based on their level of income and affordability.

According to (Yang, 2020) admitted hospital patients had been recognised as having 2019-nCoV (COVID19) infection as of 2 January 2020. Less than half of the infected patients had underlying illnesses such diabetes, hypertension, or cardiovascular disease; the majority were male. The median age was 49.00. 27 out of 41 patients had access to the seafood market in Wuhan. On a chest CT, all 41 individuals showed pneumonia and abnormal findings. Acute heart damage, secondary infection, and acute respiratory distress syndrome were among the complications.

Traders and service providers have also had to change with the times and provide what customers want. The opportunity for dealers to greet their clients has been limited recently. However, when they reopened, they encountered greater expenditures for maintaining and disinfecting their property. Consumers frequently feel uneasy to attend stores because of the risk of illness, so they simply make required purchases and buy quickly products. Due to the proliferation of internet merchants, conventional "brick and mortar" establishments are now in the background. Additionally, they have concentrated on the complexity and diversity of the items available, intuitive shopping, streamlining the purchase process, and reducing the time needed for consumers to make decisions. (Valaskova, 2021)

The act of advertising a good or service online is known as digital marketing. Facebook promotion, Instagram promotion, and SEO are all included in interactive marketing. People are not permitted to leave their homes during the epidemic for recreational activities, which allows them to spend most of their time at home and use internet marketplaces. Social media platforms are condemned for disseminating false information about products, which harms the products' reputation. (Ali S. A., 2022)
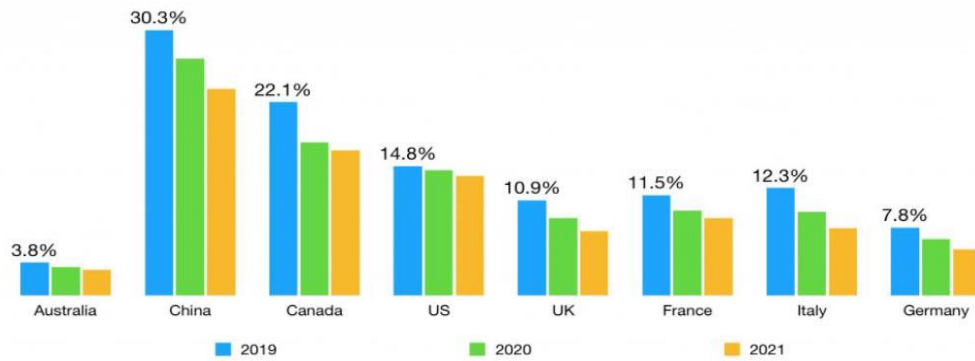
Figure 2 Retail E-commerce sales growth estimastes Source; eMarker (Ali S. A., 2022).

The COVID-19 pandemic has affected severe harm to not only human wellbeing but also business markets. Logically, investors internationally were looking for an investment plan to safeguard themselves from the disadvantages of this epidemic. My reserach is a unique attempt to use documents to observe if gold is a hedge or safe-haven throughout distinctive phases of the COVIDs-19 crisis. I observe financial investment and risk management procedures at greater frequencies than day-to-day data to achieve a more helpful and realistic picture. I discover numerous consequences that shed light on single and institutional investors, and guidance to policymakers, regulators, and various stakeholders.

In specific, I find that the results amongst gold and equity revenues are adverse throughout Phase I of the COVID-19 pandemic (December 31, 2019–March 16, 2020), representing that gold was a safe-haven asset for equity indices in this phase. Though, in Phase II (March 17, 2020–April 24, 2020), when governments interfered with monetary and fiscal packages, gold misplaced its safe-haven asset role for equity indices. The optimal weights of gold improved throughout Phase II, displaying that investors transferred to gold, representing a "flight-to-safety assets" phenomenon throughout the pandemic. These outcomes designate that gold was a good hedging strategy for different Asian stock markets including CHINA during Phase I. Hedging costs drastically increased through Phase II, as shown by the results between gold and financial assets. The results displays that the hedge is successful for the investment of gold with other main assets and increases risk-adjusted implementation during crisis and no crisis phases. My results are focused on individual and institutional investors concerning the use of gold as a safe-haven asset or hedge to plan portfolios throughout

29

a pandemic. The consequences also guide policymakers and controllers in understanding the effect of COVID-19 on financial marketplaces.

Initial, gold executed comparatively improved than several other assets in the initial pandemic stages. Though its price dropped in March, the decline was milder than global impartialities and other commodities such as oil. This displays gold's function as a safe-haven asset and portfolio diversifier at the very initial stages of shocks that can disturb the worldwide economy and financial marketplaces. Succeeding, the fast and fundamental answer by the Federal Reserve (and later other central banks) offered widespread liquidity to financial marketplaces, which, in return, rapidly reestablished investor confidence and improved the appetite for risky assets, in accumulation to demand for safe havens. Consequently, correlations among gold and other business assets boosted, leading to advanced hedging costs. Consequently, investors should be mindful of politicians' potential to take significant actions and implement successful measures throughout economic recessions and thoroughly monitor marketplaces to vigorously modify their portfolio settings. Third, my investigation illustrates that following the economic incentive packages and the resulting optimism, numerous assets have practiced record high price levels, growing the potential financial market bubbles. Therefore, politicians should survey the markets closely to prevent a new boom–bust cycle in the aftershock of the COVID-19 pandemic.

Investigation on the effects of the COVID-19 pandemic on strategic distribution of assets is still emerging. Further research is required to assess the role of government stimulus packages in lessening COVID-19 and their consequences on portfolio optimization.

Due to its capacity to manage inflation and produce an alluring risk adjusted return, gold attracts a lot of attention as a financing asset in the financial world. Compared to stocks, gold rates are safer, and their earnings typically right-tail. Because gold is (positively) weakly or unfavourably related with stock market indices, investors and portfolio managers value it in particular because it can counterbalance stock market losses, especially during stressful times. The academic literature is replete with studies examining gold's role as a hedge and safe haven for stock market indices. It uses primarily techniques based on conditional correlations and portfolio studies and fully examines the function of gold during various financial crises and challenging

market situations. The Asian Crisis of 1997, the Global Financial Crisis (GFC) of 2007–2008, and the European Sovereign Debt Crisis (ESDC) of 2010–2013, all of which saw a decrease in stock market indices and an increase in stock market volatility (risk), are examples of crisis events when this is particularly true.

The rapid emergence of the COVID-19 pandemic in early 2020 resulted in a global economic freeze, an increase in the unemployment rate, and a decline in financial markets. These issues first disrupted the stock markets in China, then spread to the rest of Asia and the rest of the world. For instance, in the first quarter of 2020, global gold rates went in the other way, rising by about 6%, while the stock market index in China and Japan fell by approximately 15% and 25%, respectively. Investors in stocks became increasingly fearful of the coronavirus and began to separate their various stock holdings. They anticipated that the gold market would provide shelter because of its long-term capacity to appreciate during times of market turmoil. Additionally, during stressful times, stock rates decline as risk-averse investors switch from hazardous investments like stocks to less risky ones like gold, which increases demand for gold and drives up the price of the metal. The role of gold as a hedge and safe haven for Asian stock market indices during the devastating COVID-19 epidemic, however, is still largely unexplored. As a result, stockholders are largely unaware of the extent to which gold can be used to counteract downside risk in Asian stock markets during a situation that seems to be distinct from other monetary and financial catastrophes. Additionally, past research have shown that the role of gold in stock markets is market-specific and varies across emerging and developed economies, which suggests the necessity to investigate a broad range of Asian stock markets that include both emerging and developed economies.

2.4 Stock Market During COVID-19

Financial integration has enhanced the nations' susceptibility to financial problems that originate abroad, as shown during the most recent global pandemic crisis. In East Asia, the real economy saw a record-breaking rate of financial distress transmission as a result of tightened credit conditions and declining consumer confidence that had an adverse impact on household demand and company investment. The COVID-19 shock

caused a period of extreme volatility in the US stock market and appeared to be connected to unrest in East Asian nations. A fascinating study (Zehri, 2021) with many practical applications would be to look at the possibility of the US stock market's recovery spreading to East Asian markets.

Using a dynamic conditional-correlation model, (Chiang, 2007) examined the dynamic correlation of Asian financial crisis in two periods from 1993 to 2003. They noted a high correlation during the herding phase and a rise in the correlation of financial hardship during the first phase. In a related research, (Syllignakis, 2011) used the Dynamic Conditional Correlation multivariate GARCH model to evaluate the financial contagion and discovered a strong positive conditional correlation between US and German stock returns during the financial crisis of 2007–2009. In a related research, (Morales, 2012) investigated the contagion and dependency of the financial crisis on Asian stock markets. They stated that although the financial crisis in these economies is caused by interconnections rather than contagion effects, the US financial crisis may be the catalyst for the financial crisis in other Asian nations.

Crashing stock prices cause a great deal of volatility. (Mazur, 2021) find that high asymmetric volatility is inversely correlated with realised stock returns for S&P1500 companies. The equities in the crude oil sector, whose prices fall the most, experience the highest amount of volatility. For instance, Gulfport Energy exhibits the largest daily amplitude of price movement, which is approximately 130%. The hotel and entertainment sectors experience considerable volatility on average of over 20%. It is important to note that daily volatility is significantly lower during regular times.

Financial stock Markets and Gold:

The COVID-19 Period

We examine the findings in this section to determine whether gold served as a haven, hedge, and diversifier for Asian equity markets during the COVID-19 sub-period. Next, the estimated outcomes are

computed. The estimated results show that the coefficient is negatively significant for the equity markets of China, Japan, India, Hong Kong, Pakistan, Taiwan, South Korea, and Singapore for the hedge and diversification characteristics of gold, indicating that gold is a potent hedge for the majority of Asian equity markets during the COVID-19 sub-period. For the equity markets of Indonesia, Philippines, Thailand, Vietnam, and Malaysia, however, the coefficient is positively significant, suggesting that gold is only a diversifier against these five Asian equity markets. As a result, the overall findings suggest that there is no difference between the complete sample period and the COVID-19 sub-period in the hedging and diversification functions of gold against Asian equities.

Gold's ability to act as a hedge and safe haven against Asian equities during the COVID-19 sub-period was estimated.

Second, we concentrate on gold's COVID-19 sub-period safe-haven features, both strong and weak. The findings indicate that for China, Indonesia, Singapore, and Vietnam is negative and significant, demonstrating gold's potency as a safe haven against price fluctuations in these four Asian stock market indexes during the COVID-19 outbreak. This result suggests that holders of gold during the COVID-19 sub-period benefit from gains in the gold market to offset losses in the stock markets of China, Indonesia, Singapore, and Vietnam. According to Arouri et al. (2015), gold served as a sanctuary during the GFC in China. Our findings suggest that during the COVID-19 epidemic, gold acts as a potent safe haven against Chinese stocks. Gold functions as a weak safe-haven as compared to Pakistani and Thai stocks, as seen by its negligible and negative coefficients of. These findings imply that by including gold in stock portfolios for Pakistan and Thailand during the COVID-19 sub-period, portfolio performance can be enhanced.

Results of Hedging Effectiveness

It shows time-variation in hedging effectiveness. Notably, the hedging efficiency of gold for Asian stock markets increases noticeably in the majority of cases during the COVID-19 sub-period, reaching levels unseen prior to the COVID-19 outbreak. India, Indonesia, Pakistan, Taiwan, Singapore, Philippines, Thailand, Vietnam, and Malaysia are particularly affected by this. These results are quite comparable to the time-variation in gold's ability to hedge stock indices that has been documented in other studies.

Overall, the findings show that building a gold-stock portfolio throughout both sub-periods significantly lowers the risk of Asian stock markets. In fact, during the pre-COVID-19 sub-period and the COVID-19 sub-period, gold offers a stronger hedging effectiveness for the Japanese stock market than other Asian stocks. Overall, compared to the pre-COVID-19 period, the hedging effectiveness was higher for practically all Asian stock markets during the COVID-19 sub-period, demonstrating gold's superior capacity to protect Asian stock markets from risky events like the COVID-19 outbreak.

2.5 Empirical Insights from Asian Markets

The COVID-19 epidemic has affected stock markets' whole worldwide supply chains. Economic crisis brought on by COVID-19 causes supply chain disruptions in sustainable stock market management. A lot of international nations strive for financial stability and economic excellence. International stock markets are contributing to this through fostering national-level financial integration and economic growth structures. (Sadiq, 2021)

Many academics looked at stock market co-movement as a gauge of financial integration (Ashraf., 2020). There are negative effects on financial systems, including stock markets, which are brought on by various crises. This influence of crises negatively moves by reducing market activities (Ali et al., 2020). A recent study compares the volatility of global stock markets with the COVID-19 Global Fear Index as a way to assess the economic contribution. A recent study compares the volatility of global stock markets with the COVID-19 Global Fear Index as a way to assess the economic contribution. In other words, the study examines the integration and movement of various stock market indices with the COVID-19 global fear index. According to published literature, stock index co-movement has a considerable impact on stock volatility. According to (Iqbal, 2021), research on general stock market movements is crucial for successful portfolio diversification and may serve as a good starting point for examining how the global financial system performs in times of crisis.

In order to uncover viable remedies, it is crucial to connect stock markets with the effects of crises like the COVID-19 outbreak. It is also crucial to discuss how the movement of crises anxiety relates to financial variables (Okorie., 2021). The co-movement of international equities markets is frequently employed as a gauge of economic globalisation and financial integration, as is claimed. The co-movement of international equities markets is frequently employed as a gauge of economic globalisation and financial integration, as is claimed. Co-movement in the global stock markets was examined in several research (Corbet, 2020) and (Zaremba, 2020) the results showed a considerable impact on global stock returns, volatility, portfolio diversification, and intertemporal stability. Financial crises have a major impact on the performance of the global stock market, according to studies. However, these studies provide a theoretical explanation of the idea that the co-movement of crises, such as the COVID-19 epidemic, accounts for the interaction between financial variables (Topcu., 2020) of global stock markets, such as stock volatility. The study's main hypothesis was that there is a substantial correlation between the stock market volatility index and the worldwide fear index of the COVID-19 outbreak.

Financial institutions were more liquid and more funded than during prior crises; numerous regulatory measures were put in place to prevent pro-cyclical effects, like relaxing capital requirements and giving defaulted loans greater leeway under the Covid-19 (Cavallino, 2020). As a result, we anticipate that during the 2008 global financial crisis, the attention paid to corporate sectors including health care, consumer goods/services, and technology would be greater than that paid to the banking sector (Alemzero, 2021). We contend that a sectoral analysis is necessary in order to assess the Covid-19 financial crisis' effects more effectively. By examining the sectoral effects of the Covid-19 financial crisis, our analysis closes this knowledge gap. By a percentage point, productivity will suffer, costing close to $900 billion. The cost of the pandemic virus is predicted to increase by 1.7 percent, or roughly $2 trillion. There are three ways that the pandemic virus affects the economy. (Sadiq, 2021)

CHAPTER 3

METHODOLOGY

3.1 Introduction

The research's framework—its methods and foundation—is described in the methodology. We briefly discussed the research's goals, objectives, and conclusion before beginning to write the chapter's methodology. The study's main question was, "What is the basis of the research?" As opposed to conducting a survey or gathering data from people who are not experts in the field, a secondary research design was chosen over a primary research strategy since it would aid to obtain a deeper grasp of the topic. The research technique is what comes next, and it entails both deductive and inductive procedures. Deductive method was considered to be better because it seeks to defend an already-held belief that is precisely what the study needs. We decide on Case Study and Secondary research as our research strategies and the Mono method as our research technique since selecting the appropriate research strategy and methodology is crucial. Since it may be applied to primary or secondary research, the Mono approach was chosen.

Research articles and case studies were the initial sources we looked through in order to gather data, with case studies being the more prevalent source due to their extensive coverage of the subject. The data was gathered by simply comparing the research articles and the case studies, as was previously noted, with the research kind being secondary. For the consolidated findings, the study was compared. Benefits from both secondary and primary research are incorporated into the process. Because it offers a thorough look into prior research and makes data collection and analysis simple, qualitative analysis was chosen for the examination of the data that had been gathered.

The study aims to find the impact of the pandemic (COVID-19) on the Asian stock markets. It gives an examination of gold as safe-haven during the outbreak in south Asian stock market. The objective of the study

is to evaluate the effectiveness gold to examine the consumers purchasing activity during COVID-19. The nature of the study is descriptive and based on secondary analysis. Thus, the study is qualitative and quantitative.

In accordance with my study objectives, my data for stock markets of different countries and gold prices cover pre COVID-19 and Sub-COVID-19 period. The sample period is then designed this way (i) full sample, (ii) pre-COVID, and (ii) Sub-COVID. The COVID sample covers the phase since the epidemic of the COVID-19 era, that has been started from March 2020. The full sample covers the impact of Gold against different stock markets of various countries.
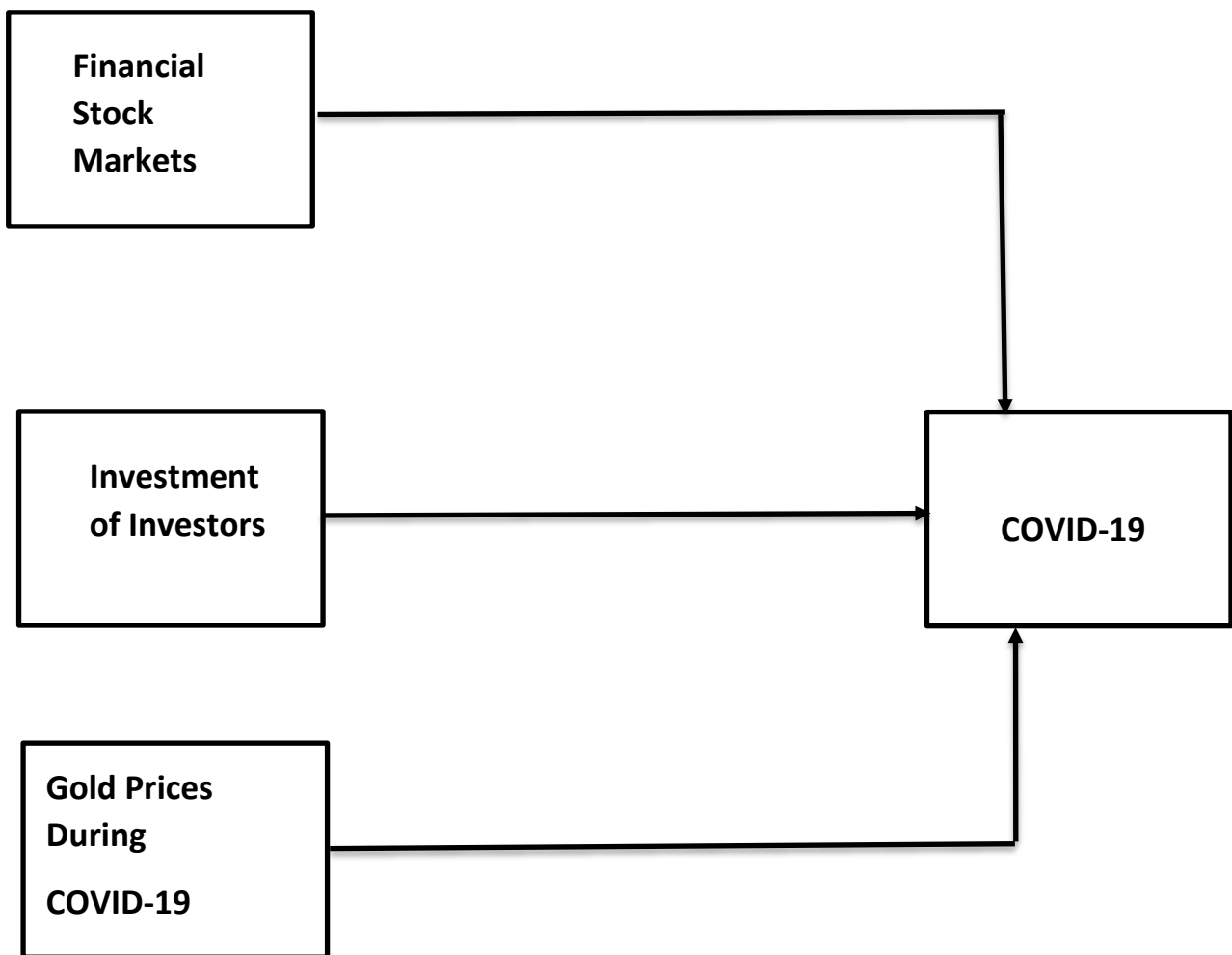
3.2 Theoretical Framework:

Figure 3 Research Variables

3.3 Research Approach

Type of research is qualitative and quantitative. The nature of this study is both as the data was collected from online literature study available. Data analysis is done for better understanding and findings for our research. Fully potential articles were studied and evaluated for research study. The data obtained from these articles is used in our analysis. Qualitative and quantitative research based on secondary data is classified in this research study.

Research articles and case studies were the initial sources we looked through in order to gather data, with case studies being the more prevalent source due to their extensive coverage of the subject. As previously stated, the research approach was incidental; the data was gathered by simply comparing the research papers and the case studies. For the consolidated findings, the study was compared. Benefits from both secondary and primary research are incorporated into the process. Because it offers a thorough look into prior research and makes data collection and analysis simple, qualitative analysis was chosen for the examination of the data that had been gathered. After that, the research conclusion and limits were written together with the research ethics.

3.4 Research Strategy

The effectiveness and caliber of the research are ultimately determined by the research plan. Whether data is obtained sequentially, simultaneously, or using a transformative lens is the basis for the six techniques. While there are benefits and drawbacks to each model, the sequential strategy is the easiest to put into practice. Specific procedures can be linked to the graphic to further aid the reader in understanding the project's activity flow. These include the techniques for gathering quantitative and qualitative data as well as the data itself. Usually, data analysis involves the translation of data, the investigation of outliers, the investigation of several levels, or the development of matrices that integrate quantitative and qualitative outcomes. There must be a clear description of the validation processes (Creswell, 2003). Our research strategy determined the quantitative as well but most preferred qualitative analysis on the basis of secondary research.

In accordance with my study objectives, my data for stock markets of different countries and gold prices cover the period March 15, 2020 to Dec 27, 2020. The sample period is then designed this way (i) full sample, (ii) pre-COVID, and (ii) post-COVID. The COVID sample covers the phase since the epidemic of the COVID-19 era, that has been started from March 2020. The full sample covers the impact of Gold against different stock markets of various countries.

The country vice stocks are extracted by using the Standard and Poor's (S&P) 500 sectoral stock indices, that contains different primary stock sectors. All of the indices measure the stock performance of different Asian stock companies.

3.5 Data Collection

There are two ways to get data: primary data collection and secondary data collection. Information gathered directly from sources is referred to as primary research. Data for secondary research is gathered from secondary sources. While secondary data is gathered by a research organisation, primary data are specific data, demand data, and competitive supply (Rabianski, 2003).

Secondary data analysis and the use of already-existing data in research are both growing more popular. While secondary analysis is flexible and has many applications, it is also an empirical exercise and a process with procedural and evaluative elements, just like gathering and analysing primary data. (Windle, 2010)

This study is based on secondary data and data is collected through Google scholar. The study is based on the stock markets affected by covid-19 therefore our data is collected from relevant articles and research papers.

The study examined various work from literature because the theoretical framework needed to address the second and third objectives-of the study. The methodology is based on the secondary analysis from the literature.

3.6 Data Analysis

There are two analysis method: quantitative and qualitative, for our research we conducted

(secondary) qualitative data. This analysis was more appropriate and suitable for our research. In the data analysis papers were collected with relevant information. The study allowed true estimate of overall papers searched and selected papers. A random effect was applied on the data in excel sheet. The statistical representation reported the percentage of the data. The analysis of study was used to quantify the degree to which the calculated covariates (design of the study, context and evaluation of the study, inclusion and exclusion criteria, year of study, classification used, and region in which the study was conducted,) represent the mean difference in the proportion of prevalence. Using excel sheet, version 2016, all the analyses were conducted.

In my study, I will examine how gold has functioned for various Asian stock markets (China, Japan, India, Indonesia, Hong Kong, Pakistan, Taiwan, South Korea, Singapore, Philippines, Thailand, Vietnam, and Malaysia) during the excitingly turbulent negative market conditions of the COVID-19 sub-period. 15 March 2020 through 15 December 2020 comprise the sample period. In order to identify gold's desirable features in conjunction with negative fluctuations in stock markets, I first calculate the time-varying correlations between gold and each of the stock markets under consideration and employ them in a quantile-regression. Then, using data from these nations and the effectiveness of stock-gold portfolio hedging during the pre-COVID-19 sub-period and the COVID-19 sub-period, I determine the ideal weights. In conclusion, I thoroughly investigated the factors that affect the profitability of hedged investments.

By looking at various earlier papers, I present the pertinent literature. I start by looking at how gold performed during the unprecedented COVID-19 outbreak as a hedge and safe haven asset against Asian stock markets, building on an earlier hypothesis about how gold performed well at stressful times related to global health issues. Second, I did not confine my investigation into hedging effectiveness to a static but instead conducted a time-varying study, allowing me to learn how the COVID-19 outbreak shapes the hedging efficiency of gold. Thirdly, in contrast to the other studies, I examine a number of economic and monetary variables to identify the elements that contributed to hedge portfolio profits before and after the COVID-19

outbreak. This adds to earlier research showing the significance of inflation expectations and implied volatility for gold for hedge portfolio returns in the stock-gold nexus including Asian stock markets.

Our major findings are interesting. We discover that gold serves as a significant hedge (diversifier) for the majority (minority) of the Asian stock markets for the COVID-19 sub-period. Additionally, during the COVID-19 sub-period, gold acts as a poor safe-haven for the stock markets in Pakistan and Thailand while acting as a strong safe-haven for the equity markets in China, Indonesia, Singapore, and Vietnam. According to the findings based on the ideal stock-gold portfolio weightings, portfolio investors should raise their gold holdings during the COVID-19 sub-period. Further research reveals that for the bulk of Asian stock markets during the COVID-19 sub-period compared to the ante COVID-19 sub-period, hedging effectiveness is higher, indicating that gold offers a stronger hedging efficacy for Asian equities during the COVID-19 sub-period. In many instances during both sub-periods, the hedge portfolio returns were influenced by inflation expectations and gold implied volatility, according to the results of regression analysis.

For investors and portfolio managers holding Asian stocks, our key findings offer helpful and practical insights about the best asset allocation and risk management strategies during the extraordinary COVID-19 epidemic.

3.7 Qualitative Analysis

A set of molds on qualitative examination were calculated (Mayring, 2004)

1. Resources are very diverse: deliver indispensable data for social research.

2. By likening both qualitative and quantitative study the approaches for qualitative

analysis is basic.

3. Essential of real theory, at various levels based on qualitative statistics analysis.

3.8 Secondary Data Analysis

Secondary analysis is the re-use of previously collected qualitative data from previous research studies. These data include semi-structured interviews, questionnaire responses to open-ended questions, field notes, and research diaries. Secondary analysis varies from meta-analysis and systematic reviews of quantitative and qualitative research since these techniques often involve reviewing previously published findings rather than reexamining the data and revising the data. (Heaton, 2008)

In our research we have chosen secondary data as the data we got is raw and we mentioned it in our research as it is relating to each other. Relevant articles were studied for this purpose and the data providing articles were preferred.

Advantages of the Secondary Analysis

- Information gathered initially for one reason but afterwards used for another.
- Taken from the primary research
- A majority of it is based on quantitative analysis, although it is also presented as qualitative analysis.
- Easy, quick access to a variety of information sources
- Discloses information without referring specifically to the originating information

3.9 Variables

- Gold prices during Covid (DV)
- Financial Stock Markets (DV)
- Investment of Investors (DV)
- COVID 19 (IV)

CHAPTER 4

Findings and Results

4.1 Introduction

The name of the chapter suggests it is all about analyzing the data's findings and results of all the papers searched, reliability of the collected data and finally the results of the relationship between dependent and independent variables.

4.2 Data

Our data covers the both pre Covid-19 and during Covid-19 period. We choose December 31, 2019, the day on which China reported the first COVID-19 case to the World Health Organization (WHO), as the beginning date of the COVID-19 period (WHO, 2020b). On the other hand, we chose January 1, 2013, as the beginning of the pre-COVID-19 era to avoid conflicting with the world financial crisis (2007–2009) and the European sovereign debt crisis (2010–2012). We selected China and the G7 nations as part of our sample in order to examine the financial contagion caused by the COVID-19 outbreak. The first source of COVID-19 is China. Second, 68.19% of all confirmed cases as of 20 March 2020 were in south Asian counties, making them two of the most impacted nations (WHO, 2020c). Third, as of 2018, 61.11 % of the world's GDP is made up of China and the G7 countries (World Bank, 2020). For robustness, we additionally compare our findings to those from the G7 nations using global financial and nonfinancial stock returns.

4.3 Statistical Analysis

	N	Minimum	Maximum	Mean
Gold	116	-0.0462	0.0764	0.0009
USD	116	-0.0379	0.0468	0.0011

Table 1 Descriptive analysis of Gold and USD (Syahri, 2020)

	CHN	JPN	IND	INDO	HK	PK	TAIW	KOR	SING	PHIL	THAI	VEIT	MYS
Pre Covid-19	-0.003	-0.086	-0.033	0.003	0.003	-0.015	-0.027	-0.020	-0.016	0.050	0.010	0.005	0.010
During Covid-19	-0.010	-0.048	-0.029	-0.014	-0.014	-0.013	0.022	0.027	-0.037	0.069	0.009	0.018	0.009

Table 2 Dynamic conditional correlations of Asian Countries Gold and stock index

	China	Canada	France	Germany	UK	Italy	Japan
Pre-covid 19	0.0003	0.0003	0.0003	0.0003	0.0001	0.0002	0.0001
Sub-covid19	-0.0027	-0.0077	-0.0100	-0.0082	-0.0085	-0.0088	-0.0060

Table 3 Stock Index and gold G7 Countries

4.4 COVID-19 Period

To determine if gold served as a safe haven, hedge, and diversifier for the Asian equities markets during the COVID-19 sub-period, we first perform the regression. Regarding the qualities of diversity and hedging according to the calculated data, the coefficient 0 is adversely significant for the price of gold the stock exchanges of Taiwan, South Korea, Hong Kong, Pakistan, and China Singapore, indicating that the vast majority of Asian equities markets consider gold to be a reliable hedge between COVID-19 and now. The coefficient 0 is, nonetheless, positively significant for the Indonesian, Philippine, Thai, Vietnamese, and Malaysian equities markets, suggesting that only as a hedge against these five Asian equities markets does gold exist. As a consequence, the overall findings suggest that there is no difference between the complete sample period and the COVID-19 sub-period in the hedging and diversification functions of gold versus Asian stocks.

Hedge ratio	CHN	JAP	IND	INDO	HK	PAK	TAIW	KOR	SING	PHIL	THAI	VIET	MYS
Pre Covid-19	-0.005	-0.102	-0.029	0.003	-0.029	-0.016	-0.024	-0.017	-0.013	0.053	0.009	0.006	0.007
Sub Covid-19	-0.014	-0.071	-0.047	-0.026	0.036	0.021	0.029	0.047	-0.043	0.110	0.013	0.030	0.030

Table 4 Hedge ratio of Gold of south Asian countries

Hedge ratio	US	Canada	France	Germany	UK	Italy	Japan
Pre covid-19	0.2563	0.2736	0.2003	0.2431	0.3213	0.1151	0.3741
Sub covid-19	0.3819	0.4048	0.2803	0.2334	0.3056	0.1355	0.2716

Table 5 Hedge ratio of Gold in G7 countries

4.5 Results of Optimal Hedge ratios between South Asian Countries and G7 Countries

The hedging ratio between the pre-COVID-19 and post-COVID-19 periods is shown in the table. Figure 3 displays the ideal hedge ratios as well as the time-varying hedge ratios for the pre-COVID-19 and COVID-19 sub-periods. Figure 3 demonstrates that the hedging ratios are significantly more variable during the COVID-19 sub-period as compared to the pre-COVID-19 sub-period. According to the summary of hedge ratios (Table 4), the ideal hedge ratio for the pre-COVID-19 sub-period ranges from 0.053 for the Philippine equity market to -0.102 for the Japanese equity market. This means that a $1 long position in the Philippine equity market

can be hedged with a 5.3 cent short position in the gold market. Different G7 nations have different ideal hedging ratios. Figure 3 displays the ideal hedge ratios as well as the time-varying hedge ratios for the pre-COVID-19 and COVID-19 sub-periods. Figure 3 demonstrates that the hedging ratios are significantly more variable during the COVID-19 sub-period as compared to the pre-COVID-19 sub-period. According to the summary of hedge ratios (Table 4), the ideal hedge ratio for the pre-COVID-19 sub-period ranges from 0.053 for the PHIL/GOLD to 0.102 for the JAP/GOLD. This means that a $1 long position in the Philippine equities market can be hedged with a 5.3 cent short position in the gold market.(Antonakakis, 2018)

While the EU regional index exhibited the maximum volatility during the US phase, Asia registered the lowest volatility. The increased negative returns in Phases 2 and 3 for Bitcoin point to a possible contagion impact with equities markets during turbulent economic times. Similar to what we previously said, gold and the Chinese stock market had less volatility during the US phase. As COVID-19 spreads to the US yet is still deemed to be the least volatile, the situation has gotten worse as the worldwide spread has crossed geographical and continental boundaries. Even safety commodities like gold returns are now becoming negative. Due to prompt government intervention, Chinese stock markets rebounded during the US period. (Ali, 2020)

CHAPTER 5

Summary Reflection and Way Forward

5.1 Introduction

This chapter indicates the empirical findings based on our topic of the research. This chapter includes theoretical data implemented from the results chapter. Furthermore, this chapter gives future research and mentioned the limitation of this study. This chapter will give a brief initiative to be taken by the future researchers.

5.2 Discussion on Findings

All the theoretical data and figures were taken from the literature related to our topic. The theoretical data explained diversifier, hedge and gold as safe-haven. The data was compared between the two relevant papers in which the data was taken from south Asian countries and G7 countries. The financial firm of the south Asian countries was compared and also the hedge of gold. Mean data was compared between the two variables. For the comparison and mean calculation, the data was run on Microsoft excel sheet.

5.3 Knowledge and Perception of the study

According to the study, gold can serve as an effective hedge in a number of situations as well as lowering the negative risk of several Asian stock markets over the COVID-19 period. Our primary findings are qualitative and grounded in theory.

The China hedge ratios there are more financial and non-financial industries globally than in developed nations (G7). This suggests that, while shorting Chinese financial and non-financial sectors, the global financial and

non-financial sectors will incur higher hedging costs than G7 nations. These findings indicate that managing financial risk has become more difficult throughout the COVID-19 era and demonstrate that hedging financial business shares poses particular difficulties.

5.4 Awareness

Although it also examined the economies of the G7 nations, the analysis is constrained by the Asian nations. Future research can include a bigger sampling after a survey. For market participants holding assets in Asian stocks during the pandemic or other stressful circumstance, our research has practical consequences.

5.5 Contribution of Study

In this study, the stock-gold literature during the COVID-19 subperiod was analysed. Strong supporting evidence for the hedge and safe-haven qualities of gold during the stress period is provided by the study in pertinent literature. Globally, the COVID-19 outbreak has had a negative impact on both health and economic uncertainty. The study gives initiatives for adaptation of future situations effecting the economy. The study is useful in providing relevant information for the investors. The study has given theoretical explanation from a tabulated data.

5.6 Implication of the Study

The study uses primary sources to provide the data. The data has undergone comparison analysis and is in its raw form. Dynamic correlation analysis is provided by the scientific interpretation of the data. For our secondary analysis, the data for the pre-COVID-19 and COVID-19 sub-periods are obtained in raw form. We then employ dynamic correlation models improved with regression analyses to calculate the time-varying optimum weights, hedge ratios, and hedging efficacy. The analysis offers reliable stock indexes for next research.

5.7 Limitation of the Research

The study is limited to relevant papers out of few papers two papers were our major data collecting source. No changes have been done in Secondary data it has been just compared. All the papers studied for this research were searched on google scholar and secondary analysis was done in raw form.

5.8 Future Research

In order to determine the time-varying ideal weights, hedge ratios, and gold's efficacy as a hedge, our study uses analyses for the pre COVID-19 sub-period and the COVID-19 sub-period. Our major findings provide useful and practical advice about the optimal asset allocation and risk management techniques for investors and portfolio managers holding Asian equities during the unprecedented COVID-19 outbreak. The main findings, which show that gold has a higher hedging efficacy in south Asian countries during the Covid-19 sub-period, were gathered from primary data and sourced from our secondary data for future awareness.

5.9 Conclusion

Gold's utility as a hedge and safe haven against stock market indices in trying times is strongly supported by past research. Fresh evidence that the COVID-19 pandemic has a bigger impact on stock markets than previous epidemic outbreaks of illness has made financial markets unpredictable worldwide, having a negative impact on people's health and causing an economic lockdown.

The key findings are as follows: Gold is a strong hedge over the entire sample period (5 May 2020) in China, Japan, India, Hong Kong, Pakistan, Taiwan, South Korea, and Singapore as well as a diversifier in Indonesia, Philippines, Thailand, Vietnam, and Malaysia. Gold is a trustworthy safe haven in Indonesia, Singapore, and Thailand, but less so in China, Japan, Hong Kong, India, Pakistan, Taiwan, South Korea, Thailand, and Vietnam. These results on safe-haven strength suggest that gold appears to give protection against losses in

most Asian stock markets during very sharp market movements. Second, throughout the COVID-19 sub-period, there is a largely negative time-varying connection between gold and the stock markets in China, Japan, India, Indonesia, Hong Kong, Pakistan, Singapore, and Malaysia, indicating that gold may still lower risk even during this tragic event. The mean financial and non-financial stock returns of China, the G7, and worldwide indexes are negative during the COVID-19 timeframe, in contrast to the pre-COVID-19 period's positive daily returns. Italian financial businesses experienced the most negative return during the COVID-19 era, whilst UK non-financial businesses experienced the greatest negative return. There is a negative correlation between the number of confirmed cases in China and the G7 countries. Between December 31, 2019, and March 20, 2020, the return on the UK market fell by 40%. Other G7 countries experienced such steep drops in market indexes during the COVID-19 period. Thirdly, considering that the optimal weights of all stock-gold portfolios were higher during the pre-COVID-19 sub-period than during the COVID-19 sub-period, it is advised that portfolio owners increase their investment in gold during the COVID-19 sub-period. The optimal hedge ratios indicate that gold is a good hedge during the COVID-19 sub-period in Indonesia, Taiwan, and South Korea. With the exception of China and Hong Kong, the majority of Asian stock markets had stronger hedging efficacy during the COVID-19 sub-period than during the pre-COVID-19 sub-period, which further supports the critical role gold played in boosting Asian equities during this tragic event.

This research can help provide purchase the gold ETFs SPDR Gold Shares (NYSE: GLD) and Ishares Gold Trust (NYSE: IAU) and then hold them until the price of gold reaches its high. Regarding the two ETFs' performance from February 21 to May 1, they both had relatively modest gains of about 3.25 % (Exhibit 19). From February 27 to February 28 and from March 10 to March 16, it is discovered that the price of gold fell sharply (Exhibit 20). These and the US stock market have a correlation. Due to the significant drops in the US stock market from February 25 to February 28 and from March 4 to March 9, many investors had to sell their gold in order to retain their investment. However, starting March 19 the price of gold has begun to rise. We suggest shorting sectors that will be directly impacted by the virus in the short term in order to benefit from such a market, then subsequently purchasing back into such industries once their price has drastically fallen. Specifically in gold industry a great profit can be made.

References

"Digital Marketing Communication and Consumer Buying Decision Process: An Empirical Study in the Indian Passenger Bike Market", 2018 *International Journal of Management, Technology and Engineering, Volume 8, Issue XII,*

Asymmetric impact of gold, oil prices and their volatilities on stock prices of emerging markets. 2016*Resources Policy, 49, 290-301.*

Clinical course and outcomes of critically ill patients with SARS-CoV-2 pneumonia in Wuhan, China: a single-centered, retrospective, observational study. 2020*The Lancet Respiratory Medicine*

Cointegration relationship and time varying co-movements among Indian and Asian developed stock markets.2012 *International Review of Financial Analysis, 21, 10-22.*

Consumer behavior research: A synthesis of the recent literature. 2016*Sage Open, 6(2), 2158244016645638.*

Dependence dynamics of stock markets during COVID-19.2022 *Emerging Markets Review, 51, 100894.*

Dynamic correlations and hedging effectiveness between gold and stock markets: Evidence for BRICS countries. 2016*Research in International Business and Finance, 38, 22-34.*

Empirical Evidence of Dynamic Conditional Correlation between Asian Stock Markets and US Stock Indexes during COVID-19 Pandemic.2021 *the Journal of Asian Finance, Economics and Business, 8(9), 143-*

Financial Analysts Journal, 62(2), 47-68.2006*Facts and fantasies about commodity futures.*

Is gold a hedge or a safe-haven asset in the COVID–19 crisis? 2021*Economic Modelling, 102, 105588.*

Oil price shocks and stock returns of oil and gas corporations. 2017*Finance Research Letters, 20, 75-80.*

Oil volatility, oil and gas firms and portfolio diversification. 2018*Energy Economics, 70, 499-515.*

Stock market comovements: Evidence from the COVID-19 pandemic. 2021*The Journal of Economic Asymmetries, 24, e00228.*

. COVID-19 fear and volatility index movements: empirical insights from ASEAN stock markets.2021 *Environmental Science and Pollution Research, 28(47), 67167-67184.*

"A Study of Indian Online Consumers & their Buying Behavior'', 2010*International Research Journal, Vol I, Issue 10, pp 80-82*

"Consumer Buying Behavior in Computer Peripherals Brick & Mortar Stores in India", 2019International *Journal of Recent Technology and Engineering, Volume-7, Issue-6S3, pp 1531-1542*

A revisit to the hedge and safe haven properties of gold: New evidence from China.2020 *Journal of Futures Markets, 40(9), 1442-1456.*

Ali et al.2020Coronavirus (COVID-19)—An epidemic or pandemic for financial markets. *Journal of Behavioral and Experimental Finance, 27, 100341.*

Analysis of the Effect of COVID-19 on the Stock Market and Investing Strategies.2020 *Available at SSRN 3563380.*

ASEAN.2016 *Top ten sources of foreign direct investment inflows in ASEAN.* ASEAN.

Ashraf.2020Stock markets' reaction to COVID-19: Cases or fatalities? *Research in International Business and Finance,* 54, 101249.

Assessing the impact of COVID-19 pandemic on the stock and commodity markets performance and sustainability: A comparative analysis of South Asian Countries 2021*Sustainibility*

Assessing the perceived impact of exploration and production of hydrocarbons on households perspective of environmental regulation in Ghana.2021 *Environmental Science and pollution research*

Assessing the role of the green finance index in environmental pollution reduction. 2021*Studies of Applied Economics, 39(3).*

Black swan events and safe havens: The role of gold in globally integrated emerging markets.2017 *Journal of International Money and Finance, 73, 317-334.*

Central banks' response to Covid-19 in advanced economies. 2020*BIS Bulletin, 21(June).*

Changes in consumers' purchase patterns as a consequence of the COVID-19 pandemic. 2021*Mathematics, 9(15), 1788.*

Coronavirus (COVID-19)—An epidemic or pandemic for financial markets.2020 *Journal of Behavioral and Experimental Finance, 27, 100341.*

COVID-19 and oil market crash: Revisiting the safe haven property of gold and Bitcoin. 2020*Resources Policy, 69, 101816.*

Covid-19 and optimal portfolio selection for investment in sustainable development goals.2021 *Finance Research Letters, 38 101695.*

COVID-19 and the March 2020 stock market crash. 2021*Evidence from S&P1500. Finance research letters, 38, and 101690.*

Diversification opportunities between emerging and frontier Asian (EFA) and developed stock markets. 2017*Finance Research Letters, 23, 223-232.*

Does gold act as a hedge or a safe haven for stocks? A smooth transition approach.2015 *Economic Modelling 48: 16–24.*

Dynamic correlation analysis of Asian stock markets. 2012*International Advances in Economic Research, 18(2), 227-237.*

Dynamic correlation analysis of financial contagion: Evidence from Asian markets. 2007*Journal of International Money and finance, 26(7), 1206-1228.*

Dynamic correlation analysis of financial contagion: Evidence from the Central and Eastern European markets.2011 *International Review of Economics & Finance, 20(4), 717-732.*

Financial markets under the global pandemic of COVID-19.2020 *Finance research letters, 36, and 101528.*

Hedging emerging market stock prices with oil, gold, VIX, and bonds: A comparison between DCC, ADCC and GO-GARCH.2016 *Energy Economics, 54, 235-247.*

Infected markets: Novel coronavirus, government interventions, and stock return volatility around the globe. 2020*Finance Research Letters, 35, 101597.*

Investigating long-range dependence of emerging Asian stock markets using multifractal detrended fluctuation analysis. 2020*Symmetry, 12(7), 1157.*

Is gold a safe haven? International evidence. 2010*Journal of Banking & Finance, 34(8), 1886-1898.*

Nexus between Southeast Asian stock markets, bitcoin and gold: spillover effect before and during the COVID-19 pandemic.2021 *Journal of Asia Business Studies.*

Oil price shocks and stock market returns: New evidence from the United States and China. 2014*Journal of International Financial Markets, Institutions and Money, 33, 417-433.*

Role of Digital Marketing in Covid-19. 2022*Informative Journal of Management Sciences (IJMS), 1(1), 1-7.*

Stock markets and the COVID-19 fractal contagion effects. 2021*Finance Research Letters, 38, 101640.*

Stock markets and the COVID-19 fractal contagion effects.2021*Finance Research Letters, 38, 101640.*

Stock markets' reaction to COVID-19: Cases or fatalities? 2020*Research in International Business and Finance, 54, 101249.*

Strategic business performance through network capability and structural flexibility.2020 *Management Decision, 59(2), 426-445.*

The contagion effects of the COVID-19 pandemic: Evidence from gold and cryptocurrencies.2020 *Finance Research Letters, 35, 101554.*

The correlation of gold, exchange rate, and stock market on Covid-19 pandemic period2020 *Journal Keuangan dan Perbankan, 24(3), 350-362.*

The COVID-19 outbreak and high frequency information transmission between major cryptocurrencies: Evidence from the VAR-DCC-GARCH approach. 2020*Borsa Istanbul Review, 20, S1-S10.*

The current global financial crisis: Do Asian stock markets show contagion or interdependence effects? 2012 *Journal of Asian Economics, 23(6), 616-626.*

The impact of COVID-19 coronavirus on stock markets: evidence from selected countries. 2020*Muhasebe ve Finans İncelemeleri Dergisi, 3(1), 78-84.*

The impact of COVID-19 on emerging stock markets.2020 *Finance Research Letters, 36, 101691.*

The impact of COVID-19 on emerging stock markets.2020*Finance Research Letters, 36, 101691.*

The nexus between COVID-19 fear and stock market volatility.2021 *Economic Research-Ekonomska Istraživanja, 1-22.*

The nexus between oil price and stock market: Evidence from South Asia.2021 *Energy Reports, 7, 693-703.*

The short-run and long-run dynamics among FDI, trade openness and economic growth: Using a bootstrap ARDL test for co-integration in selected South Asian countries. 2020*South Asian J. Bus. Stud 9, 279–295*

Trust and stock market volatility during the COVID-19 crisis. 2021*Finance Research Letters, 38, 101873.*

Which is the safe haven for emerging stock markets, gold or the US dollar? 2018*Emerging Markets Review, 35, 69-90.*

World gold prices and stock returns in China: Insights for hedging and diversification strategies.2015 *Economic Modelling, 44, 273-282.*