CALIFORNIA BAPTIST UNIVERSITY

Riverside, California

Effects of COVID-19 on the U.S. Stock Market:

Evidence from S&P 100 Index

A Dissertation Submitted in partial fulfillment of the
Requirements for the degree
Doctor of Business Administration

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Dr. Robert K. Jabs School of Business

August 2023

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ABSTRACT

This research evaluated the correlation between COVID-19 and economic variables with the stock market performance, the changing trends in industry sectors, and individual company performance for investment decisions. COVID-19, economic policies, and variables were cointegrated and moved in a unidirectional way that affected the volatility and severely damaged the efficiency of the U.S. stock market. Moreover, COVID-19 and the subsequent government policies affected some industries and companies more than others. This research adopted quantitative method to test the correlation between COVID-19 and economic variables with the index return through a hierarchical regression model and Pearson correlation test. The research also used qualitative method with document and case analysis to study the stock market reaction to COVID-19 at the industry and company levels. The research comprised an economic analysis by collecting data on COVID-19 case numbers, interest rates, and other economic variables to test their correlation, an industry analysis by studying the annual reports of S&P 100 index companies to explore how COVID-19 affected industries differently, and a company analysis of the qualitative and quantitative factors to evaluate investment decision. The research had implications for both investors and policymakers.

Keywords: COVID-19, stock market, S&P 100 index, economic policy uncertainty, economic variables

ACKNOWLEDGEMENTS

The dissertation journey was an exciting and enriching experience because of the support from professors and tutors along the way. The prayers for my writing and defense have kept my spirits and motivation high during this process. I was enlightened by what the university motto encourages to “live your purpose” through the academic research.

I would like to take the opportunity to express my deepest appreciation to Prof. Kenneth George, my dissertation advisor and chair of committee, for his invaluable guidance and feedback. I was also encouraged by Prof. Adele Harrison and Prof. Kenneth Minesinger, the defense committee members, who generously provided expertise and recognition. Additionally, this endeavor would not have been possible without the patient support from Prof. Henry Petersen, the director of the DBA program. I am also grateful to the tutors in the university writing centers and professional editors for their efforts in every detail of my dissertation to upgrade my writing to professional standard.

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CHAPTER 1: INTRODUCTION

Background

The breakout of COVID-19 led to an unprecedented disruption to the U.S. economy and an unparalleled slump in the U.S. stock market (Hong et al., 2021). Baker et al. (2020) found that no previous infectious disease outbreak, including the Spanish Flu, had affected the stock market as forcefully as the COVID-19 pandemic. To fight this recession, policymakers in central banks engaged in expansionary monetary policy and fiscal stimulus packages (Feldkircher et al., 2021). Significant increases in total risk were observed across all industries, and changes in idiosyncratic risks varied across industries and firms (Baek et al., 2020). Stock markets experienced significant fluctuation, suggesting that the pandemic was associated with market inefficiency (Hong et al., 2021). Although economic variables like interest rate, gross domestic product (GDP), consumer price index (CPI), unemployment, and oil price influenced the stock market through its inherent mechanism, the variables should be studied with COVID-19 as a critical element (Dreger & Gros, 2021; Jordà et al., 2021; Makridis & Hartley, 2020; Managi, 2022). The combined research of the economic, industry, and company analysis provided a framework to analyze the U.S. stock market investment impacted by COVID-19.

Statement of the Research Problem

The problem was that COVID-19, economic policy uncertainty (EPU), and economic variables were cointegrated and moved in a unidirectional way during COVID-19 (Chowdhury et al., 2022), causing U.S. stock market volatility and inefficiency. Studying how the variables correlated to influence stock market performance was necessary. The nature of the crisis and the subsequent policy reaction, such as lockdowns

and Federal Reserve (FED) relief policies, also affected some industry sectors and companies more than others (Lalwani & Meshram, 2020), which required research on the industry and firm-level exposures to COVID-19.

Purpose Statement

The purpose of this study was to analyze the U.S. stock performance impacted by COVID-19 under the fundamental analysis framework by evaluating the correlation between COVID-19 and economic variables with the stock market performance, the changing trends in industry development, and the individual company for an investment decision. Quantitative and qualitative data were collected, studied separately, and combined to analyze the results. The daily stock market index, COVID-19 case numbers, and economic variables were collected to test their correlation and understand the overall state economy through quantitative analysis. The factors like risk and opportunities explored the distinctive features of changing trends at the industry level through document analysis. The management practice and financial ratios were used to test the theory of investment based on company value that predicted the long-term growth potential through case analysis.

Research Questions

I used qualitative research to study the stock market reaction to COVID-19 at the industry and company levels to answer the following questions:

1. How did differentiated industry sectors react differently to COVID-19?
2. How did investors evaluate company performance impacted by COVID-19?
3. What is the implication for investors and policymakers in studying the U.S. stock market impacted by COVID-19?

Before exploring the research questions, I adopted quantitative research to test the correlation between COVID-19 and economic variables with stock market index return at the macroeconomic level. The alternate hypotheses were

H1: COVID-19 case numbers negatively affected the stock market index return.

H2: A positive correlation existed between GDP, CPI, and oil price with the S&P 100 index return.

H3: A negative correlation existed between unemployment and the S&P 100 index return.

Significance of the Problem

Past facts have proved that crises induced risks and created investment opportunities (Hong et al., 2021). A study on the impact of COVID-19 on the stock market served the interests of investors when making investment decisions during difficult times. Politicians and academics must also find a way to balance public health and the preservation of the business fabric to ensure a solid recovery (Lacalle, 2021). As COVID-19 presented a new normal for investors (Goodell, 2020), the effect of COVID-19 on stock market performance had significant implications for both financial theory and practice (Hong et al., 2021).

Definitions

Amihud measure. Lou and Shu (2017) introduced that the Amihud measure is one of the most widely used liquidity proxies in the finance literature. It has a simple construction that uses the absolute value of the daily return-to-volume ratio to capture price impact and therefore provides a more extended time series relative to intra-daily

proxies based on trade and quote data. The measure has a strong positive relation with expected stock return.

Buffett indicator. According to the Corporate Finance Institute (2023), the Buffett Indicator is the market capitalization to GDP ratio, which measures the total value of all publicly traded stocks in a country divided by that country's GDP. It assesses whether the country's stock market is overvalued or undervalued compared to a historical average. It is a form of price/sales valuation multiple for an entire country.

Consumer price index (CPI). According to Corporate Finance Institute (2023), CPI measures the aggregate price level in an economy. The CPI consists of a bundle of commonly purchased goods and services and measures the changes in the purchasing power of a country's currency and the price level of a basket of goods and services.

DuPont analysis. According to Elearnmarkets (2023), DuPont analysis is an extended examination of a company's return on equity (ROE) that analyzes net profit margin, asset turnover, and financial leverage. The ROE decomposition helps investors concentrate separately on critical indicators of financial success to define strengths and weaknesses.

Economic policy uncertainty (EPU). Al-Thaqeb et al. (2022) denoted EPU as the unanticipated changes that affect the economic system that can lead to changes in governmental policies. In other words, it reflects the economy's fluctuations because of the unpredictability of fiscal, political, regulatory, and monetary policies.

Fundamental analysis. From Elearnmarkets (2023), the fundamental analysis begins with understanding the state of the overall economy, the specific industry, and the

individual company's performance, which is a top-down approach, and the bottom-up approach is vice versa.

Growth stocks. According to Corporate Finance Institute (2023), growth stocks come with a substantially higher growth rate than the mean growth rate prevailing in the market. It means that the stock price grows faster than the average stock in the market, consequently generating earnings faster.

Idiosyncratic risk. According to J. Chen (2022), it is a type of investment risk that is endemic to an individual asset (like a particular company's stock), a group of assets (like a particular sector), or in some cases, a very specific asset class (like collateralized mortgage obligations). Idiosyncratic risk is also referred to as a specific risk or unsystematic risk.

Labor force participation rate. According to Hayes (2023), the labor force participation rate estimates an economy's active workforce. The formula is the number of people ages 16 and older who are employed or actively seeking employment divided by the total noninstitutionalized civilian working-age population.

Market efficiency. According to Corporate Finance Institute (2023), market efficiency is a perfect, complete, costless, and instant transmission of information. Asset prices in an efficient market fully reflect all information available to market participants. It is impossible for an investor to consistently make money in an efficient market by trading financial assets (Corporate Finance Institute, 2023). With an inefficient market, in contrast, all the publicly available information is not reflected in the price, suggesting that bargains are available or that prices could be overvalued (Hayes, 2022).

Qualitative factors. According to Elearnmarkets (2023), qualitative factors are nonnumeric aspects of the company that are more intangible but affect the potential value of a company, such as quality of management, competitive advantage, and corporate governance.

Quantitative easing (QE). From Corporate Finance Institute (2023), QE is a monetary policy of printing money, which the Central Bank implements to energize the economy. The Central Bank creates money to buy government securities from the market to lower interest rates and increase the money supply. These economic conditions trigger financial institutions to promote increased lending and make the money supply more liquid.

Quantitative factors. According to Elearnmarkets (2023), quantitative factors are financial numbers that reflect the health and profitability of a company, such as the company's assets, liabilities, revenue, and price-to-earnings (P/E) ratio.

Quantitative tightening (QT). According to Corporate Finance Institute (2023), QT, also known as balance sheet normalization, means that a central bank reduces the pace of reinvestment of proceeds from maturing government bonds and may increase interest rates to curb the money supply in the economy.

Value stocks. According to Corporate Finance Institute (2023), value stocks are traded at a value lower than their intrinsic value. It means that such stocks are undervalued and traded at a lower price than their actual value.

CHAPTER 2: LITERATURE REVIEW

Overview

To improve the knowledge base, COVID economics emerged to bring together formal investigations on the economic issues emanating from the COVID outbreak based on explicit theory and empirical evidence (Wyplosz, 2020). There was rising academic interest in all aspects and implications of the COVID crisis (Goodell, 2020). Bing and Ma (2021) categorized the large and growing body of literature across four groups: the impacts of COVID-19 on firms and industry, stock return volatility, fear sentiments, and risk contagion.

This study comprised a literature review based on three themes. The first was how the U.S. stock market was impacted by COVID-19: its volatility, illiquidity, inefficiency, across-market linkage, and industry and firm exposures. The second theme was what factors drove or predicted the stock market performance. Economic factors such as GDP, CPI, and unemployment could predict the stock market (Jareño & Negrut, 2016) but were studied under the lens of COVID-19, not only for its large number of daily infections and death but also the lockdown and restrictive measures in every aspect life and with the EPU effect as well. Finally, a framework of stock market analysis was reviewed to be applied in the context of COVID-19.

Stock Market Reaction to COVID-19

Stock market indices react rapidly to new events (Chowdhury et al., 2022). The stock market experienced volatility, illiquidity, and inefficiency with a contagion effect across countries during COVID-19 (Chebbi et al., 2021; Chowdhury et al., 2022; Ozkan, 2021). COVID-19 was not equally detrimental to all firms and industries. Whereas most

sectors suffered and their stock prices collapsed, others benefited from the pandemic and the resulting lockdown (Mazur et al., 2021).

Market Volatility

Volatility was critical to the operation of financial markets and acted as a barometer of financial risk or uncertainty concerning investments in assets and, therefore, was of genuine interest to individual investors, mutual fund managers, financial industry regulators, and policymakers (Baek et al., 2020). Attempts to understand the effect of COVID-19 on market volatility included a study by Baker et al. (2020), who identified the current pandemic as having the most significant impact on stock market volatility in the history of pandemics. Chicago Board Options Exchange Volatility Index, also called *the fear gauge*, surged over 80 on March 16, 2020, surpassing its 2008 record (Baek et al., 2020; Hui & Chan, 2022). Lalwani and Meshram (2020) noted the sharp increase in volatility of returns from the pre-COVID to the COVID period with an over fivefold increase for many sectors. Chebbi et al. (2021) found that the volatility in the daily share price was 9.98% in 2020. In the first month of the crisis, the stock market experienced historically significant and rapid declines across all sectors, and the downside seemed unlimited (Bradley & Stumpner, 2021). The following shows the volatility of the U.S. stock market:

> It was the first time that four circuit breakers occurred within eight trading days. The most significant declines in the three major stock indexes (Dow Jones, NASDAQ, and S&P 500) were 37.1%, 30.1%, and 31.9%, respectively, which represented a decrease of more than 10 trillion US$, accounting for more than 45% of the US GDP in 2019. (Gao et al., 2022, p. 1687)

Many researchers identified that the significant impact of the reported deaths and cases caused the U.S. stock market volatility (Chowdhury et al., 2022; Gao et al., 2022). Hong and Stein (1999) proposed that investor underreactions and overreactions could also explain stock fluctuations caused by shocks and their reversion. Baker et al. (2020) attributed government restrictions on commercial activity and voluntary social distancing operating with powerful effects in a service-oriented economy as the main reasons the stock market reacted so much more forcefully to COVID-19 than previous pandemics. Nevertheless, Xiong et al. (2020) provided evidence that China had implemented a stringent household segregation policy, which negatively impacted the Chinese stock market; the impact was far less severe than on the U.S. stock market, meaning that the implementation of the prevention and control policy for this pandemic might not have been the core factor that led to the observed stock price volatility. Gao et al. (2022) underscored that different pandemic management modes caused differences in the financial market response.

The timing and magnitude of fluctuations in the market during this episode did not align with the fluctuations in economic fundamentals, leaving an essential role for rapidly fluctuating attitudes toward risk or investor sentiment in driving the pricing of stock market risk early in 2020 (Cox et al., 2020). It is important to note that the impact of EPU played a very significant role in increasing financial volatility (Chowdhury et al., 2022). The U.S. stock market tide started to turn after mid-March 2020 as governments began responding with record stimulus packages although the recovery was far from even between industries (Bradley & Stumpner, 2021). Cox et al. (2020) explored the possible role of the FED’s actions in response to the coronavirus in possibly shoring up risk

tolerance and contributing to a strong stock market rebound in late March and April of 2020 and found that not all announcements of FED actions to address the economic costs of COVID-19 were associated with a rise in the stock market. Cox et al. found no evidence that conventional monetary policy announcements promulgating decisions to lower the target range for the federal funds rate to near zero or to increase the FED's holdings of treasury securities and agency mortgage-backed securities were contributing to the market rebound. Cox et al. did find that unconventional policy announcements between March 17 and April 30 about new credit facilities collectively contributed to an approximately 8% higher value for the S&P 500 index and an approximately 12% higher value for the Russell 2000. Nevertheless, Zhang et al. (2020) regarded that a 0% interest rate and unlimited QE might introduce further uncertainties in global financial markets. With interest close to zero and the daily new cases remaining high after May 2020, it would be difficult for the U.S. FED to have enough monetary policy space to address a new potential financial market crash (Gao et al., 2022).

When COVID-19 initially broke out, the market reacted violently, but when it continued, it began to adapt to it, thus weakening the influence of the pandemic situation (Gao et al., 2022). Phan and Narayan (2020) responded that people would better understand the ramifications with more information. The market would correct itself, suggesting that the restabilization of the U.S. stock market in the second half of 2020 was not only the result of the applied loose monetary policy but also that of the adaptability of the stock market itself (Phan & Narayan, 2020). Moreover, global stock markets reacted positively when different phases of human clinical trials on COVID-19 vaccines began,

and the increase in the average abnormal stock return was threefold higher for leading vaccine candidates (Chan et al., 2022).

Market Illiquidity

Liquidity was considered a key concern during COVID-19 (Adrian & Natalucci, 2020). L. T. H. Tran et al. (2018) indicated that markets characterized by high liquidity were inclined to attract more attention from investors. Market deterioration could result from illiquidity (Amihud et al., 1990). Among the methods to measure liquidity, the value of the Amihud measure was its association with the volume of trading, which allowed the measure to consider price impact through its trading volume element (Lou & Shu, 2017). Another method proposed that the bid-ask spread widened at more significant uncertainty at risk (Hasbrouck & Schwarz, 1988), and a higher bid-ask spread implied lower liquidity. Chebbi et al. (2021) calculated the means of two liquidity measures, bid-ask spread and Amihud illiquidity, were 0.0849 and 0.0141, respectively, which were higher than those reported for the period 2015–2018, signifying that firm liquidity had decreased during the COVID-19 pandemic period. Baig et al. (2021) also indicated that the increase in market illiquidity and instability was related to the number of confirmed COVID-19 cases and deaths.

Chebbi et al. (2021) further found a significant difference in stock liquidity between sectors, and some industry sectors performed better than others throughout the spread and outbreak of COVID-19. Chebbi et al. introduced that the health care and communication sectors had better liquidity than the market overall, implying that these sectors benefited from the COVID-19 pandemic; the real estate sector's liquidity was insignificantly affected by the growth in the numbers of confirmed cases and deaths;

stock liquidity of the consumer staples and discretionary, financial, information technology, materials, energy, and industrial sectors was lower than that in the market overall. Among all sectors, banks served as a systemic stabilizer during this pandemic. They were put under tremendous liquidity pressure because of a massively rising demand for capital in deposit withdrawal and credit forms (D. V. Tran et al., 2023). As firms sought loans primarily for survival rather than business expansion during COVID-19 (Bartik et al., 2020, as cited in D. V. Tran et al., 2023), such lending posed a foreseeable consequence of nonperforming debts when the borrowers defaulted because of the prolonged crisis (Taylor, 2022, as cited in D. V. Tran et al., 2023).

The declining sentiment and the implementation of restrictions and lockdowns contributed to the deterioration of liquidity and stability of markets (Baig et al., 2021). There were at least three channels of how COVID-19-related policies impacted the stock market liquidity:

> The first channel could be described as the “infrastructure channel”: workplace closing may disturb decision-making processes in many financial institutions, which prevented swift reactions and quick trading; the second channel can be described as the “portfolio channel”: the policy responses signal changed in the future economic environment leading to portfolio restructuring as worsening economic conditions may result in changes in cashflow expectations for companies and, thus, portfolio reallocations and investors may be less willing to allocate their money to risky assets, such as stocks; third, investors could also be influenced by behavioral and psychological factors when a problem was loaded

> with information and was too hard to understand, an easy solution was doing nothing. (Zaremba et al., 2021, p. 2)

Thaler and Johnson (1990) echoed that people who experienced several consecutive periods of losses became more loss-averse and avoided taking additional gambles, leading to decreased trading activity.

The financial market uncertainty has triggered important defense movements, such as an increase in cash reserves from institutional investors (Lacalle, 2021) and a sharp and sudden increase in margin requirements for exchanges worldwide (Foley et al., 2022). Foley et al. (2022) found that increased capital requirements correlated with a decline in market liquidity, and stock liquidity decreased more for index stocks, which tended to have a higher proportion of liquidity provided by high-frequency market makers than nonindex stocks. Foley et al. argued that market structure changes, such as imposing positive obligations on appointed designated market makers or regulatory capital reserves to act as a *countercyclical buffer* in times of stress could potentially mitigate the liquidity crisis observed during such turbulent times. The findings helped shareholders to deal appropriately with the stock liquidity risk and variation of returns through the COVID-19 pandemic and consequently make the best financial decisions (Chebbi et al., 2021). Effective partnerships to reduce stock market illiquidity among governments, central banks, and securities regulators were necessary to deal with future pandemic challenges.

Market Inefficiency

Occurrences instigating widespread panics, such as wars, elections, terrorist events, exchange rate regimes, and natural disasters, often break the efficient market

hypothesis (EMH; Ozkan, 2021). Lalwani and Meshram (2020) observed that asset prices deviated from their fundamental values in times of panic or irrational exuberance, leading to a violation of EMH. Increasing the money supply and lowering interest rates also generated inefficiencies in financial markets by creating asset bubbles (Fernández, 2022). Naseer and Tariq (2015) conducted a critical review of EMH, suggesting that security prices that prevailed at any time in the market should be a fair reflection of all currently available information, and the return earned was consistent with their perceived risk. The theoretical and empirical literature on EMH offered mixed evidence instead, and some studies supported the hypothesis but others revealed some anomalies, i.e., deviations from the rules of EMH.

Ozkan (2021) was the first to investigate the impact of the COVID-19 outbreak on stock market efficiency based on daily data of the six most affected developed countries, namely, the United States, Spain, the United Kingdom, Italy, France, and Germany, from July 29, 2019, to January 25, 2021. Ozkan's analysis results demonstrated that the stock markets of these countries deviated from market efficiency in some periods during the COVID-19 pandemic. Ozkan's testing of a *p* value indicated the rejection of the null hypothesis of no return predictability at the 10% significance level, which was statistical evidence of significant return predictability. Ozkan's finding indicated that stock markets became more speculative during the COVID-19 pandemic, and policymakers should have been more proactive during this period. Lalwani and Meshram (2020) also compared the pre-COVID and COVID-19 periods with very little evidence for any predictability during the pre-COVID period but with the increasing

predictability of prices for stocks in some industries after COVID-19 was officially reported as an infectious disease.

Crises may be associated with opportunities (Hong et al., 2021), as COVID-19 was an essential cause of market inefficiency, creating profitable opportunities for traders, speculators, and rational investors seeking to maximize returns to pay close attention to insider trading before making any decisions in the stock market. Hong et al.'s (2021) study also showed that crises might induce income and wealth inequality as market participants with plenty of liquidity could seek profitability in the stock market. Ozkan (2021) found that mispricing of stocks during the COVID-19 pandemic increased the likelihood of abnormal returns, and financial models based on the assumption that returns were unpredictable were insufficient for explaining stock market behavior during the COVID-19 period. If authorities did not act upon market inefficiencies, it could seriously limit the ability of the stock markets to allocate funds to the most productive sectors of the economy and potentially hamper long-term growth (Kavussanos & Dockery, 2001).

Cross-Market Linkages

Financial shocks experienced in one market were often transferred to another (Alqaralleh & Canepa, 2021). Lento and Gradojevic (2021) suggested that information flew between the S&P index and other financial markets during the crash. Pritsker (2001) distinguished between two forms of contagion as follows:

> The first form was "interdependence" between economic systems, emphasizing spillovers resulting from market interactions. Here, the transmission mechanism of shocks was triggered by interdependence across countries concerning their

> fundamental and financial linkages. The second form of contagion was related to the cross-market linkages generated by shocks in financial markets not linked to the observed changes in macroeconomic fundamentals but primarily resulting from the investors' behavior. This form of contagion was "shift" or "pure" contagion. (pp. 67–68)

Alqaralleh and Canepa (2021) conducted an empirical analysis of six major stock markets, namely, the United States, Canada, United Kingdom, Hong Kong, China, and Japan, which revealed long-run interdependence between the markets under consideration before the COVID-19 pandemic in December 2019, and solid evidence of pure contagion among stock markets was detected after the health crisis. Zehri (2020) found that the indirect spillover effect of the U.S. stock market on the Chinese stock market was more significant than the direct spillover, because the Hong Kong stock market served as an intermediary. Zehri continued that the solid economic trade link between the U.S. and Asian economies could also explain possible reasons for contagion. As the largest stock market in the world, the United States was considered to be a significant player in transmitting marginal tail risk to other markets during the COVID-19 subperiod, affecting the benefits of stock portfolio diversification during stress periods (Alqaralleh & Canepa, 2021).

The contagion problem was more macroeconomic than financial, and the adverse contagion effect of COVID-19 was then aggravated through these solid economic relationships (Bauer et al., 2016). Bauer et al.'s findings raised important questions about managing such pandemic crises, which made it essential to consider how catalysts and

mechanisms related to contagion might be either exacerbated or dampened during COVID-19 or similar pandemics. Alqaralleh and Canepa (2021) emphasized that ignoring market risk because of contagion might underestimate the level of systematic risk and, thus, misled risk management strategies. Supervisory policies should prevent extreme risk shocks from spreading to global stock markets to maintain domestic financial stability, especially if future COVID-19 waves emerge (Alqaralleh & Canepa, 2021). In comparison with the Global Financial Crisis in 2008, the COVID-19 crisis elicited an unprecedented multilateral response by different central banks over a short period, which meant that the prior experience of successfully conducted rounds of QE in recent history lent credence to the possibility of a shared protagonist of central banks in response to the pandemic (Cortes et al., 2022). Cortes et al. (2022) continued that while the announcements of subprime QEs were associated with negative spillovers, the COVID-19 crisis interventions were characterized by positive spillovers, which were more sizeable for countries with higher levels of monetary independence, exchange rate stability, and financial openness. Along these lines, the evidence suggested that expectations of a shared protagonist in unconventional monetary policy responses to major crises could mitigate undesirable spillover effects.

Other aspects accounted for the performance of varied national markets, such as income, trust, and practice, were helpful for an international portfolio manager. Sharma (2020) observed that the significant effect on stock volatility by COVID-19 varied with the countries involved; the markets in higher income countries overreacted in the beginning and bounced back more rapidly than in lower income countries. On the other hand, Engelhardt et al. (2020) argued that the magnitude of market volatility in reaction

to COVID-19 depended on trust: volatility was significantly lower in high-trust countries, including societal trust and trust in the government. Hui and Chan (2022) regarded that the COVID-19 outbreak affected the Western economies more severely than the East Asian economies because East Asian citizens tended to follow restrictive controls more than the Western citizens. Firms with experience with SARS also had more positive expectations about their ability to deal with the coronavirus outbreak (Hassan et al., 2020).

Impact on Industry Sectors

Sectors are heterogeneous and likely to react to market shocks differently (Narayan & Sharma, 2011). Because very few traders traded in all assets and usually held undiversified portfolios in segmented markets, varied sectors could react at a different pace to the same information set; thus, the efficiency of stocks of varied sectors could be affected because their investors reacted differently to the same information (Lalwani & Meshram, 2020). Mazur et al. (2021) attempted to examine the differential stock price reactions to the rapid spread of COVID-19 and the abrupt government interventions that triggered the crash. Phan et al. (2015) also found strong evidence that return predictability had links to specific industry characteristics; therefore, the supply–demand relationship varied with the characteristics of the industry during the pandemic.

Sector Performance

Among sectors, advanced electronics, high technology, and medical technology were likewise already in the lead when the COVID-19 crisis gave them an additional jolt (Bradley & Stumpner, 2021). Bergakker (2020) recognized that the winning track was the digitalization trend, particularly fintech, cashless, and the connectivity needed to facilitate

working from home, and there would be spin-off advantages for cybersecurity, health care, and all forms of e-commerce, which were already on an upward trend. There was a prediction that the so-called FAANG (Facebook, Apple, Amazon, Netflix, and Google) stocks, as a group or a proxy for the broader technology sector representing an overvalued part of the equity market, would pop their bubbles during the next downturn. Interestingly, the technology space had been anything but fragile during the COVID-19 downdraft, and all five FAANG and the information technology sector outperformed the MSCI AC World index during the COVID-19 downdraft (Gezelius, 2020).

Industries most impacted by adverse aggregate demand shocks, such as petroleum and natural gas, restaurants, hotels, and lodgings, exhibited the most significant increases in risk (Baek et al., 2020). The weak performance of the banks, telecommunications, and energy industries has been exacerbated (Bradley & Stumpner, 2021). H. C. Chen and Yeh (2021) documented the five worst-performing industries, including precious metals, petroleum and natural gas, entertainment, aircraft, restaurants, and hotels, believing that QE policies were more significant for worst-performing industries that were severely affected by the pandemic than for the other industries.

Some sectors stayed the same or posted minor losses (Thorbecke, 2020). Baek et al. (2020) noted that industries such as food production, beer, and liquor with steady or increased demand exhibited more minor changes of risks because of the rigid needs of consumers. Thorbecke (2020) continued to state that sectoral returns on delivery service companies such as United Parcel Service and Federal Express were unchanged with their investment return on July 10 relative to February 19, 2020, because delivery services became essential when individuals could not leave home. Health care services and

financial data providers fell only 1% over this period because health care services offered care for those exposed to the virus, and financial data providers offered information for investors confronting pervasive uncertainty; entertainment and miscellaneous consumer services both lost only 2% because entertainment companies such as Netflix and consumer services firms such as eBay filled a niche for homebound individuals (Thorbecke, 2020).

Growth and Value Sectors

Over the past decade, with the rise of the technology sector, global growth stocks have outperformed their value peers (Fong, 2021). With the global economy in recession and the expansion of QE by central banks, growth sectors such as technology and consumer discretionary had double-digit returns, and the technology sector benefitted from consumers' greater reliance on it while working from home (Fong, 2021). The digital economy even took a giant leap forward by exposing new broad segments of consumers to its emergence (Gezelius, 2020). The high-growth companies that embodied the trends were likely to remain in favor long after the coronavirus crisis, making them ideal for investors with their eyes on the future (Bergakker, 2020).

In contrast, a common mantra in some corners of the value investing community over the past decade had been that beaten-down value stocks trading on low price-earnings or price-book metrics would be defensive because of the protection these depressed multiples provided (Gezelius, 2020), but the COVID-19 crisis effectively punctured this hypothesis. Comparing the returns of the two major global equity style indices, MSCI AC World Growth and MSCI AC World Value, during the market downturn clearly illustrated this point. Between February 12 and March 23, 2020, the

former declined by 30% while the latter fell by 37% (Gezelius, 2020). Fong (2021) also found that the more economically sensitive and value-oriented sectors, such as energy and financials, suffered losses. Fong continued to illustrate with an example: markets with greater exposure to value-orientated sectors, like Europe and Australia, lagged in performance. Australia, one of the developed countries that had controlled COVID-19 very well compared to other developed nations (Wyeth, 2020), experienced a significant loss in its market, about a 21.67% pullback (Alam et al., 2020). Value and growth firms' leveraged and unleveraged risks were differentially affected by market and financial factors, and operating and financial leverage significantly constrained value firms' ability to respond effectively during adverse economic conditions (Noroozabad et al., 2019).

Sector Risk Factors

Although all stocks/indices were affected by COVID-19, it was essential to assess whether differences were statistically significant, not merely by chance (Curto & Serrasqueiro, 2022). Although total and idiosyncratic risks had increased across all industries, the systematic risk appeared to have increased in defensive industries, such as telecom and utilities. It decreased in their aggressive counterparts, such as automobiles and business equipment (Baek et al., 2020). Baek et al. (2020) attributed the difference between industries to their respective price elasticities. Thorbecke (2020) analyzed the role of sector-specific and macroeconomic factors in industry sector performance and suggested that sectors like airlines, aerospace, tourism, and oil depended on controlling the pandemic rather than the macroeconomic environment for recovery. Sectors like production equipment and machinery required not only an end to the pandemic but also a macroeconomic recovery to revive capital goods spending.

Ongoing Trends

Bradley and Stumpner (2021) analyzed the market gyrations with three key themes emerging: a new group of exceptional outperformers was changing the rules of the game; COVID-19 had served as an accelerator of existing trends; companies primed to ride those trends were extending their leads on their peers. Bergakker (2020) reinforced that most of the current trends would either be accelerated or be reinforced by COVID-19 with three megatrends identified: transforming technology, changing social demographics, and preserving health. The highlight was the subtrends of the transforming technology: digital innovation for connectivity, the fourth industrial revolution to reduce dependency on human labor, and transformative life sciences to prevent new diseases (Bergakker, 2020). Bradley and Stumpner (2021) added that this acceleration was reflected in the market value that various sectors have generated.

Firm-Level Exposure to COVID-19

Although COVID-19 tended to be aggregated in nature and damaged the stock performance of all U.S.-listed firms (Y. X. Huang et al., 2021), its impact differed across firms (Tut, 2021). Ding et al. (2021) evaluated the connection between corporate characteristics and stock price reactions to COVID-19 case and found that the pandemic-induced drop in stock prices was milder among firms with stronger pre-2020 finances and less exposure to COVID-19 through global supply chains and customer locations. There were discrepant viewpoints on corporate social responsibility (CSR) activities, and Ding et al. believed them to be positively related, but Bae et al. (2021) regarded them as unrelated. Less entrenched executives were generally agreed to be facilitating stock performance (Ding et al., 2021; Hsu & Liao, 2022). Given the conflicting impact of

lockdowns and stimulus policies, firms faced differential levels of risk (Tut, 2021). It is interesting to study which firms reacted positively and negatively to COVID-19.

Corporate Governance, Culture, and Social Responsibility

Hsu and Liao (2022) suggested that good corporate governance could mitigate the impact of COVID-19 stock price volatility but might not have helped to enhance stock returns. Hsu and Liao further explained that board size, CEO duality, board independence, and foreign and institutional shareholders were significantly negatively associated with stock price volatility. However, higher values of large shareholders or managerial shareholders would increase volatility. In this COVID-19 crisis, the business environment changed rapidly, and the complexity of business operations also increased (Uddin et al., 2021). Large board sizes, with more experts, could help companies cope with complicated situations better (Coles et al., 2008). CEO duality could help to implement plans effectively and efficiently (Elsayed, 2007). Therefore, large board size and CEO duality, implying better responses to the pandemic, might have helped to reduce business risk and hence volatility.

The higher volatility during the pandemic might have resulted from more information associated with COVID-19 (Hoffmann et al., 2013) and increased information asymmetry. Higher board independence could more effectively monitor and reduce agency costs (H. H. Huang et al., 2011) and hence mitigate the effect of COVID-19 on volatility. Large shareholders forced management to make decisions that were good for themselves but bad for the entire company (Claessens et al., 2002) when investor sentiment associated with COVID-19 was robust, increasing volatility. Only the coefficient of board size x COVID-19 was significant in testing the stock return by all

interaction terms. However, it was negative, which meant a larger board size led to lower stock returns when COVID-19 was more severe because communication and coordination, which were important in the COVID-19 crisis, were more difficult on larger boards, resulting in less effective decision making (Hsu & Liao, 2022).

Corporate culture was an intangible asset designed to help firms prevail in unforeseen contingencies (Kreps, 1990). Despite the significant negative impact of COVID-19 on their operations, firms with a solid corporate culture outperformed their peers without a strong culture by experiencing a significantly smaller drop because these firms were more likely to support their community, embrace digital transformation, and develop new products (K. Li et al., 2021). K. Li et al. (2021) illustrated that firms with strong corporate cultures, as measured using conference calls, engaged with their communities more and, as a result, were more resilient to the pandemic. There was significant heterogeneity in how a strong culture helped firms with different exposures outperform their peers. For example, corporate culture was most effective in alleviating the negative impact on employees but least effective in alleviating the negative impact of the supply chain; a strong culture could mitigate the effect of COVID-19 on operating performance for a higher ROA by solid people culture and a higher profit margin by strong technology culture (K. Li et al., 2021).

COVID-19 has increased attention on firms' social and environmental engagement, allowing for precise identification of whether CSR was value-increasing during the pandemic-induced stock market crash (February 18–March 20, 2020). Bae et al. (2021) found no evidence that CSR affected stock return, which also held during the post-crash period and across industries. Y. X. Huang et al. (2021) also confirmed no

interaction between the CSR and brand equity effects during the COVID-19 crash. Bae et al. (2021) compared the performance of those member firms that unambiguously committed to serving stakeholders' interests just before the pandemic with nonmember firms, and no difference was found. Their findings suggested that precrisis CSR was ineffective at protecting shareholder wealth from the adverse effects of a crisis, suggesting a potential disconnect between firms' CSR ratings and actual actions. Bae et al. advised being cautious about drawing unambiguous or unconditional inferences about the value of CSR during a crisis.

Corporate Operation

Firm efficiency significantly explained stock returns during the COVID-19 pandemic (Neukirchen et al., 2022). Highly efficient firms outperformed inefficient firms by at least 9.44 percentage points in terms of cumulative returns, which indicated that investors valued firms that used resources more efficiently and had thus more promising future cash flows and a potentially lower risk of corporate default (Neukirchen et al., 2022). Using a large sample of firms in 61 economies, Ding et al. (2021) also found that specific firm characteristics, such as more cash, less debt, and less entrenched executives, resulted in a milder stock price decline during the COVID-19 crisis. Tut (2021) stated that the potential widespread of COVID-19 might have resulted in cash flow uncertainty, and firms might have been unable to meet their obligations if outlays exceeded revenues. Sufficient financial slacks reduced the likelihood of liquidating valuable assets and financing profitable investment opportunities in future states (Graham & Harvey, 2001).

Brand Equity

Brand equity played an essential role in firms' stock performance, especially during the stock market crash, but there was no interaction between CSR and brand equity effect during the COVID-19 crash (Y. X. Huang et al., 2021). Brexendorf et al. (2015) indicated that brand equity was positively associated with future cash flows because firms with brand equity enjoyed the advantages from the demand and supply sides, especially in economic downturns. Early studies found that brand equity positively impacted stock returns and negatively correlated with stock risks (Rego et al., 2009). Y. X. Huang et al. (2021) took the COVID-19 crash as an opportunity to reassess whether brand equity mitigated stock crashes.

After controlling firm characteristics, Y. X. Huang et al. (2021) conducted an empirical study showing that firms with top brands had a 0.178 higher raw return, the firm's buy-and-hold return, and a 0.054 higher abnormal return, the raw return minus the expected return. Huang et al. revealed that firms with top brands had a 0.236 lower systemic risk and a 0.002 lower idiosyncratic risk than firms without top brands during the COVID-19 crash, and the stock of an average firm during the COVID-19 crash had a -0.464 raw return, -0.087 abnormal return, 0.948 systemic risk, and 0.015 idiosyncratic risk. Huang et al.'s estimated results provided evidence that brand equity indicated a soft harbor in the stock crash. However, the firms with top brands had worse stock performance than firms without top brands after excluding the effect of COVID-19.

International Business

Although international exposure through foreign sales, foreign assets, imports, and exports was significantly and negatively associated with standardized cumulative

abnormal returns in the short run, internationalization contributed to multinational firms being more resilient to economic shocks caused by COVID-19 in the long run (Yong & Laing, 2021). Baldwin (2020) explained that COVID-19 and its containment policies had hit the global supply chains and labor supply significantly, leading to a massive reduction of outputs in the form of goods and services, all of which would lead to stock market uncertainty. Internationalization allowed firms to diversify their cash flow sources and, in the process, diversify their systematic risk compared to their domestic counterparts (Shapiro, 1978). Yong and Laing (2021) implied that the geographical diversification benefits were limited if firms had most of their operations in COVID-19-affected economies. However, the geographical diversification benefits had greater weight if firms had sales or assets in non-COVID-19 affected economies.

Volatile exchange rates could affect the dollar value of companies' assets and liabilities denominated in foreign currencies and severely impact operating profit (Lessard & Lightstone,1986). Using the local currency in an international subsidy, companies increased business costs when the U.S. dollar depreciated and decreased sales revenue when the U.S. dollar appreciated. The trade-weighted exchange rate appreciated by 8% between February 19 and March 23, 2020, and then depreciated by 6% between March 23 and July 10 (Thorbecke, 2020). Coca-Cola reported in their annual report of 2020 (Refinitiv, n.d.) how exchange rate fluctuation affected their financial reporting:

> The company earned revenues, paid expenses, owned assets, and incurred liabilities in countries using currencies other than the US dollar, presented the consolidated financial statements in US dollars, and must translate revenues, income, and expenses, as well as assets and liabilities, into US dollars at exchange

> rates in effect during or at the end of each reporting period. Thus, fluctuations in foreign currency exchange rates, particularly the strengthening of the US dollar against major currencies or the currencies of large developing countries, could materially affect the financial results. (p. 20)

Export-oriented sectors were also largely exposed to world stock market return and exchange rates (Thorbecke, 2020). For instance, several parts of the oil industry, which had recently become more export-oriented, and metals such as iron and steel, copper, and gold mining were exposed to exchange rate appreciations. These were typically priced in U.S. dollars, and when the dollar appreciated, the currencies of importing countries depreciated, and importers could not purchase as much (Thorbecke, 2020). The significant spillover effects among widely traded currencies during the COVID-19 outbreak could be partly explained by its disruptive impact on international trade, global supply chains, and capital flows (Hung et al., 2022).

Factors Driving and Predicting the Market

This literature review presented the relationship between the U.S. stock market and some relevant U.S. macroeconomic factors, such as GDP, CPI, unemployment rate, and oil prices. Other factors of COVID-19 included investment sentiment and EPU. Previous literature showed that the macroeconomic factors showed statistically significant relationships with the stock market, but oil prices had a mixed effect (Jareño & Negrut, 2016; Managi et al., 2022). COVID-19 provided an opportunity to reassess the economic variables' correlation with S&P 100 index performance.

Investor Sentiment

COVID-19 fear with stock market volatility was crucial for planning adequate portfolio diversification in international financial markets (W. Q. Li et al., 2021). Haroon and Rizvi (2020) demonstrated the effect of media on the market level during the COVID-19 pandemic, finding that the fear generated by news outlets had a considerable negative impact on investment and was associated with volatility in the equity markets. The stock market was more susceptible to the media in the digital age compared with the Spanish flu 100 years ago (Baker et al., 2020). W. Q. Li et al. (2021) measured stock market volatility associated with the COVID-19 pandemic, finding that public attention to the attitude toward buying or selling depended on the COVID-19 pandemic reported case index, death index, and global fear index. Hall (2023) shared that the most significant single day decrease in the Nasdaq Composite Index's history occurred on March 16, 2020. The market lost 970.28 points, over 12% of its value. Hall believed this move was attributed to COVID-19, which created much uncertainty about the future. Therefore, the market had many more sellers than buyers, driving the stock price down (Hall, 2023). During the early weeks of the coronavirus pandemic, FED communications influenced markets mainly by altering risk tolerance, even with some acts not substantial later. This reinforced the conclusion that market movements during COVID-19 had been more reactive to sentiment than substance (Cox et al., 2020).

Although COVID-19 negatively impacted investors' sentiment, vaccine inoculation positively affected the stock market (Rouatbi et al., 2021). Chan et al. (2022) also identified positive sentiment when human clinical trials for COVID-19 vaccine candidates began. Chan et al. proved with further evidence that upon the start of vaccine

clinical trials, the average abnormal return of global stock markets increased by 8.08 basis points, translating to an increase of $46.4 billion in U.S. dollars in total market capitalization, and this increase was both economically and statistically significant. Chan et al. revealed that the stock market reaction was stronger when clinical trials progressed to the final Phase III with an average day-one abnormal return of 16.55 bps and 40.33 bps for those first movers. Global stock markets conveyed important information about market-wide expectations on the economic value of the development of COVID-19 vaccines even before public vaccine inoculation began.

Macroeconomic Factors as Predictors of Stock Market

COVID-19 affected almost every aspect of the economy hard, including consumption, trade, manufacturing, supply chains, and financial behaviors (W. Q. Li et al., 2021). COVID-19 has led to more damage to a country's economy than natural and human-caused disasters such as climate change, global nuclear conflicts, and localized conflicts (Goodell, 2020). The U.S. GDP fell 8.9% in the second quarter of 2020, the most significant single-quarter contraction in more than 70 years (Bureau of Economic Analysis, n.d.). The economic recession triggered by COVID-19 caused a historically rapid and profound decline in economic activity and employment, and this decline was caused by reductions in the supply of goods and services and demand (Labonte & Weinstock, 2022).

Economic indicators provided signs along the road, but the best investors utilized many economic indicators to glean insight into patterns and verifications within multiple datasets (Barone, 2023). Barone (2023) further introduced those indicators included GDP, CPI, unemployment, and oil price. Jareño and Negrut (2016) analyzed these

relationships from a statistical perspective with the calculation of Pearson correlation coefficients, showing that the U.S. stock market exhibited a positive and significant relationship with the GDP and a negative and statistically significant relationship with unemployment, but the correlation with CPI was uncertain. Oil prices had mixed effects on the stock market depending on whether the country was an importer or exporter and whether the shock occurred on the demand or supply end (Managi et al., 2022).

Gross Domestic Product (GDP)

Miller (2020) advised considering COVID-19's effect on different aspects to understand COVID-19's hit on the economy. Consumption slumped as businesses closed; households held off on major purchases as they worried about their finances and jobs; businesses put off investment as they waited for clarity on the total cost of COVID-19; restaurants and movie theaters closed, and GDP in this business sector was closer to zero until the quarantines were lifted; factory closures obstructed global supply chains, and companies shut down factories in anticipation of reduced demand (Miller, 2020). Makridis and Hartley (2020) estimated the real GDP growth rate to decline by 5% each month during a partial economic shutdown; therefore, the economic cost of the first 2 months spent fighting COVID-19 was estimated to be $2.14 trillion. The amount was surprisingly close to the static fiscal cost of the Coronavirus Aid, Relief, and Economic Security Act (CARES) passed by Congress on March 25, 2022. The GDP growth rate of the United States in 2020 was only -3.64 (Quan, 2022), and the Congressional Budget Office estimated at the time that the initial fiscal policy response in March and April 2020 would increase real GDP by 4.7% in 2020 and 3.1% in 2021 (Labonte & Weinstock, 2022).

Jareño and Negrut (2016) tested the Pearson correlation coefficient between GDP and the Dow Jones Index, which was positive with a high value of 0.95; thus, there was a direct relationship between the two variables: when the stock market price increased, the GDP rose. W. Q. Li et al. (2021) demonstrated that stock market performance and GDP growth decreased significantly through average increases in COVID-19 cases during the pandemic: with a 1% increase in COVID-19 cases, the stock return and GDP decreased by 0.8% and 0.56%, respectively. Conversely, GDP growth showed a slight movement with the stock exchange (W. Q. Li et al., 2021). The Buffett Indicator indicates that when the ratio is between 75% and 90% of the total stock market value and the current GDP, it is a reasonable index; when it is 90%–120%, the stock market is overvalued; when it is over 120%, it means that the current stock price is seriously overvalued, and there are many bubbles in the stock market (Quan, 2022). The stock market was worth far more than the Buffett Indicator at that time, which meant many companies were valued at more than they were worth.

Consumer Price Index (CPI)

Consumer price index (CPI) measures the monthly change in prices paid by consumers and is one of the most popular measures of inflation and deflation. Consumer spending has been supported by fiscal and monetary policy (Labonte & Weinstock, 2022). The monetary stimulus had led to historically low-interest rates that made the financing of consumer durables more affordable, and part of the fiscal stimulus came in the form of transfer payments to individuals through a variety of COVID-19-relief income transfer programs, which by boosting household income had also boosted consumer spending (Labonte & Weinstock, 2022). An increase in the velocity of money

circulation could rapidly increase the CPI because the increase in money supply could be accompanied by an increase in consumption after several months of subdued demand (Fernández, 2022).

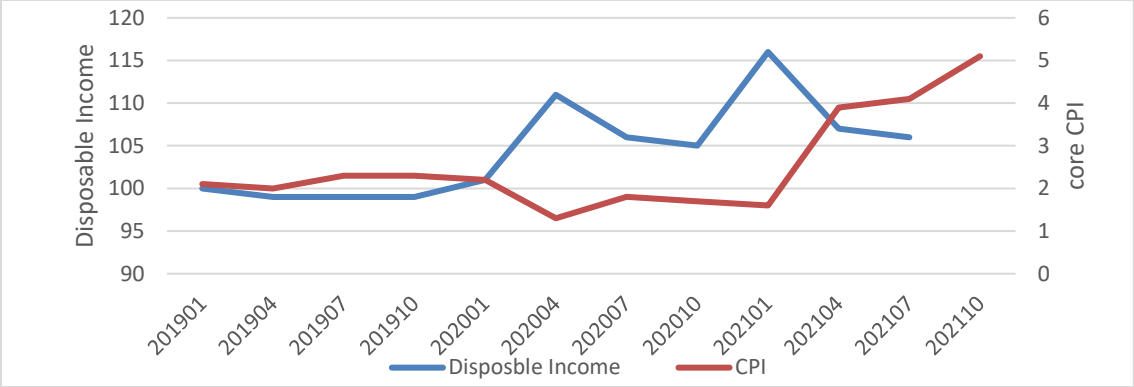
Jordà et al. (2021) traced the effect of a combination of direct fiscal support introduced to counteract the economic devastation caused by COVID-19 over time and found

> US inflation had risen more quickly from below 2% in early 2021 to above 4% and stayed elevated throughout 2021. The interplay between when assistance was delivered and how households responded to successive COVID waves created complicated economic dynamics. Building these dynamics into a simple model suggested they contributed to about 3% of the rise in US inflation through the end of 2021. Throughout 2020 and 2021, US households experienced significantly higher increases in their disposable income. (p. 2)

These relief payments contributed 12.3%, 7.7%, and 16.7% to personal income in April 2020, January 2021, and March 2021, respectively (Labonte & Weinstock, 2022). The two peaks in U.S. disposable personal income in Figure 1 reflected the CARES Act, signed into law on March 27, 2020, and the American Rescue Plan (ARP) Act of 2021, signed about a year later (Jordà et al., 2021). Both acts resulted in an unprecedented injection of direct assistance in a relatively short duration. Figure 1 shows the correlation between disposable income and the core CPI index, excluding food and energy prices because they are primarily volatile.

Figure 1

Disposable Income and Core CPI in the United States



Note. Adapted from "US Stock Market and Macroeconomic Factors, by F. Jareño and L. Negrut, 2016, *Journal of Applied Business Research*, *32*(1), 325–340. (https://doi.org/10.19030/jabr.v32i1.9541).

Jareño and Negrut (2016) studied the relationship between the CPI and the Dow Jones index, and the results revealed a high Pearson correlation coefficient, confirming a positive relationship. Jordà et al. (2021) believed the spending measures sustained economic activity and pushed up the core CPI index, presenting a positive stock market movement; without these measures, the economy might have tipped into outright deflation and slower economic growth, the consequences of which would have been harder to manage.

Elevated inflation was also driven by supply chain disruptions and pent-up consumer demand for goods following the reopening of the economy in 2021 (Quan, 2022). Labonte and Weinstock (2022) regarded that although demand might have roughly returned to its prepandemic trend in 2021, potential supply remained reduced until supply chain disruptions could be resolved and workers returned to the labor force. Labonte and Weinstock further stated that the nature of COVID-19 had changed the mix of demand by

that time in favor of goods instead of services, and some expenditures intended for service were spent on goods instead. A market imbalance with higher demand than supply could be resolved only by rising prices. The component that had risen the most was energy, a highly regulated sector affected by the costs of the ecological transition that many countries have developed (Wang et al., 2021).

The complexity of global supply chains has also led to unexpected problems (Labonte & Weinstock, 2022). For example, disruptions in semiconductor production led to a 2.3 million shortfall in new automobiles produced in 2021 in North America because each automobile contains an average of 298 semiconductors; as a result, demand for new automobiles outpaced supply, causing a spillover into the used auto market, and inflation in the 12 months ending in April 2022 was 13.2% for new automobiles and 22.7% for used automobiles. The Ukraine war also represented a massive cost, equivalent to 1% of global GDP in 2022 and added about 2% to global inflation in 2022 and 1% in 2023 (Liadze et al., 2023). The Organization for Economic Co-operation and Development (2022) projected that if these supply shocks lasted for 1 year, they would reduce growth by almost one percentage point and raise inflation by almost 1.5 percentage points in the first full year.

Unemployment

Labor was a critical input in production and, thus, a good proxy for the state of the economy, and employees were also the consumers of goods and services or investors in stock markets (Dreger & Gros, 2021). Supply shocks associated with the COVID-19 pandemic were amplified by changes in aggregate demand, especially shutdowns, layoffs, and the exit of firms (Guerrieri et al., 2020). As most governments reacted with

various measures of social distancing, such as mobility controls and business and school closures to slow down the spread of the virus, there was an impact of restrictive measures on unemployment as well as how the pandemic shifted the aggregate supply and demand curve of the labor force as described by Dreger and Gros (2021):

> As measured by the Oxford Stringency Index, changes in the restrictiveness of mandated social distancing substantially impacted unemployment. The bulk reaction of unemployment to a change in the social distancing restrictions did not arise immediately but with a delay of 2 to 4 weeks. The impact was also asymmetric. If the policies switched to tighter regulations, the increase in unemployment would be quicker and higher in absolute value than a decrease after relaxation. The state of the pandemic, proxied by the number of new infections and fatalities, constituted only a marginal factor.
>
> On the supply side, infections and lockdowns worsened labor supply and productivity, while on the demand side, layoffs and income losses lowered household consumption and firms' investment. Unemployment directly decreased production and led to less consumption due to their loss of income. It indirectly impacted the supply ends, which caused a lower and negative GDP and stock price growth. (p. 450)

An economy with less than full employment could not meet potential output in the short run (Labonte & Weinstock, 2022). Labonte and Weinstock (2022) explained that the difference between actual and potential output was known as the output gap, indicating that the economy did not produce at its total capacity. The fiscal and monetary stimulus helped expedite a return to full employment when unemployment was high in

2020 and 2021. The stock market rebounded when unemployment recovered from 14.7% in April 2020 to 3.8% in February 2022 (Bureau of Economic Analysis, n.d.).

COVID-19 also caused a substantial decline in the labor force participation rate (Labonte & Weinstock, 2022), a divergence between the unemployment rate and the employment/population ratio. The labor force participation rate plummeted by more than three percentage points during the first 2 months of the COVID-19 pandemic in 2020; although about half of the drop was quickly regained, participation had stagnated at about one percentage point below its prepandemic level (Abraham & Rendell, 2023). Economists have debated whether enhanced unemployment insurance benefits and other income support measures provided by COVID-19 relief bills constrained employment growth earlier in the pandemic (Whittaker & Isaacs, 2022). The relatively low supply of available workers and the high demand for labor by businesses had resulted in a tight labor market, which might have contributed to inflationary pressures (Labonte & Weinstock, 2022). Despite labor market tightness and low unemployment indicating the economy had been at—or close to—full employment since late 2021, much of the stimulus remained in place, and the stimulative policy was inconsistent with returning to price stability at full employment even though there were various reasons behind the inflation.

Price of Oil

COVID-19 has caused significant challenges to the energy industry because potential new practices and social forms being facilitated by COVID-19 have had impacts on energy demand and consumption (Jiang et al., 2021). Although previous research findings into the oil-stock nexus had been inconsistent and contradictory (Balcilar et al.,

2019), it could reveal the fact that exploring the pandemic-crude oil nexus and pandemic-stock nexus separately was not satisfactory (Liu et al., 2020). For example, it has been demonstrated that there exists a positive relationship between crude oil prices and stock prices (Zhu et al., 2014). By contrast, a negative association between crude oil prices and stock prices was also confirmed by Narayan and Gupta (2015). Hence, ignoring the relationship between the crude oil market and the stock market and investigating the effect of COVID-19 might have contributed to model misspecification problems and led to inaccurate results and conclusions (Liu et al., 2020). To this end, Liu et al. (2020) advised investigating the nexus among these three variables in a unified framework. The volatility of oil prices must affect business conditions, and business conditions must affect oil prices, especially in the COVID-19 era when the oil market experienced a demand shock because of the global quarantine (Chang et al., 2020).

The U.S. stock market, economic uncertainty, and geopolitical risk were all affected by the twin shocks of COVID-19 and falling oil prices (Sharif et al., 2020). Oil prices fell from $53 per barrel on February 19 to $20 per barrel on March 23, 2020, stayed constant until mid-April, and then fell to negative $38 on April 20; by July 10, they had recovered to $40 per barrel (Thorbecke, 2020). Sharif et al. (2020) reported that the oil slump had the most substantial impact on the U.S. stock markets compared to COVID-19 and EPU. Managi et al. (2022) considered an interesting dataset covering the pre-COVID-19 period and the first and the second waves of the COVID-19 outbreak (i.e., January 2018 to December 2020) to investigate the response of stock returns, oil price and volatility, U.S. business conditions, and associations between them, finding that the oil market reached the lowest prices, which was observed on average in the U.S. business

conditions, and the U.S. equity market experienced a significant drop related to the contagion effect and high dependence during the pandemic.

In the event of a rise in oil prices, the stock market might react positively, and this stock market sensitivity was detrimental to sustainable economic growth (Managi et al., 2022). The Ukraine War has further disrupted food, energy, and other commodity markets, causing a spike in their prices (Labonte & Weinstock, 2022). Surging oil prices increased inflation (Long et al., 2021). From a production cost perspective, higher oil prices would increase input production costs, reducing firms' profits and negatively impacting stock prices (Narayan & Sharma, 2011). Oil price volatility must also affect firms' cash flows as consumers would revise their saving-spending trade-off and expect unemployment, which would reduce firms' earnings and stock prices; furthermore, from the perspective of firm investment, oil price volatility would increase uncertainty and lead firms to reconsider their future investment strategy (Edelstein & Kilian, 2009). Thorbecke (2020) indicated that those who benefited from higher oil prices included oil refining and marketing, crude oil production, international oil and gas, pipelines, and several parts of the machinery sector, including engines, industrial machinery, and tools. Higher oil prices leading to greater investment by oil companies could thus benefit the machinery sector, and the industrial transport sector transporting oil also benefited from higher oil prices.

Although the oil volatility shocks might be sensed as a transitory risk that could be depressed through the OPEC+ deals, the COVID-19 crisis further affected oil prices because of the travel restrictions around the world during the pandemic (Sharif et al., 2020). Managi et al. (2022) contented that the COVID-19 pandemic had revealed flaws

in the regulatory environment of many countries. Dependence on fossil fuels should be reduced to avoid economic crises, stock market crashes, and herd behavior of individual investors. Given the uncertainties of future pandemics, there could be a new oil demand shock, and the analysis was essential for companies involved in the fossil fuel sector and other companies in the hospitality and transportation sector.

Economic Policy Uncertainty (EPU)

Apart from the previous considerations, EPU also played a very significant role in increasing financial volatility (X. Chen & Chiang, 2020). Al-Thaqeb et al. (2022) found that a high EPU was associated with adverse effects on households, corporations, and governments, which tended to delay many financial decisions under high uncertainty leading to lower consumption, fewer issuances of debt, fewer investments, and higher unemployment. Al-Thaqeb et al. continued that the effects of political and regulatory uncertainty also extended to the commodity markets, such as the adverse effects on both oil and gasoline markets. Chowdhury et al. (2022) attempted to measure the impact of COVID-19 and EPU on the U.S. stock market using an event study, finding that although the market responded negatively to the news of confirmed COVID-19 cases and deaths, the response toward economic policy was quite optimistic (Auerbach et al., 2021). News of the crisis contributed to a 43% drop in the aggregate U.S. stock market between February 19 and March 23, 2020, and expansionary policies by the federal government then contributed to a 37% increase in stock prices between March 23 and July 10, 2020 (Thorbecke, 2020).

Effects of Economic Policies

In response to the pandemic and resultant economic downturn, unprecedentedly significant monetary and fiscal stimulus was implemented (Labonte & Weinstock, 2022). In March 2020, the FED lowered the federal funds rate, used QE by buying Treasury and mortgage-backed securities, loaned to Treasury security primary dealers, backstopped money market funds, and encouraged bank lending (Thorbecke, 2020). The FED also responded to the crisis by opening credit facilities to support malfunctioning markets and actions to relieve cashflow stress for small and medium-sized businesses and municipalities (Feldkircher et al., 2021). Congress passed several pieces of legislation in March 2020, including CARES, which provided loans for small businesses to continue paying wages, expanded unemployment benefits, provided relief money to families, and channeled funds to the health care system and to state and local governments (Thorbecke, 2020).

Some of the unusual phenomena in this recovery could be traced to this stimulus, such as the trends in personal income and savings and the sudden improvement in financial conditions (Labonte & Weinstock, 2022). Decreases in disaster risk were found by Cortes et al. (2022) for banks following the announcement of the corporate credit facilities, which was consistent with the inherent nature of the policies because direct bailouts to the U.S. corporate sector that spilled over to lenders, and nonfinancial sectors, in particular transportation, home construction, real estate, and technology also experienced noticeable reductions in disaster risk. Feldkircher et al. (2021) analyzed the effect of monetary expansion and simulated counterfactuals without a monetary stimulus, which showed that the monetary expansion caused higher output growth and stock

market returns, more favorable long-term financing conditions, and a depreciation of the U.S. dollar. Labonte and Weinstock (2022) believed the measures contributed to the rapid recovery in economic activity after the initial contraction. Without a monetary expansion, U.S. economic activity would have been significantly lower (Feldkircher et al., 2021). In other words, the U.S. federal government, so far, has been successful in cushioning the economic consequences of the COVID-19 crisis.

Even though these policies stabilized the situation in the short term, if they had continued indefinitely, there was a risk of debt overhang, investment mistakes, and high inflation later (Fernández et al., 2022). An argument by Lacalle (2021) was that this crisis was a supply shock added to a forced shutdown of the economy; therefore, traditional tools to boost credit demand and usual demand-side policies alone were likely to generate little positive effect because any aggregate demand that might be incentivized would not likely be followed by aggregate supply. Lacalle advised that a combination of demand-side and supply-side measures might be more effective in boosting the recovery after the pandemic. The federal policy of pumping liquidity into the financial system might also have stimulated profit-seeking in the stock market, increasing income and wealth inequality, and some companies took advantage of the government relief fund to repurchase their company stocks (Hong et al., 2021). President Rousseff of Brazil said, "The crisis would not be overcome simply through austerity measures, let alone through QE. Policies that have triggered a 'monetary tsunami' have led to a currency war and introduced new and perverse forms of protectionism" (Cortes et al., 2022, p. 1).

Effect of Interest Rate Changes or Levels

Interest rate policy was the core policy of the FED for macroeconomic adjustment, and the FED's adjustment of interest rates often fully reflected the stock market as an economic barometer (Quan, 2022). The loose interest rate policy effectively suppressed the volatility of the U.S. stock market (Hui & Chan, 2022) and propelled institutions and investors to seek investment returns from the stock market. Quan elaborated that the low-interest-rate policy adopted by the FED to rescue the economy affected by COVID-19 had contributed to a surge in stock prices over the past 2 years through four transmission mechanisms: supply and demand, cost and income, expectation, and the harmful effects of high inflation and a giant stock market bubble.

With the continual surge of prices and the gradual recovery of the economy, it was almost inevitable for the government to start raising interest rates again, and the stock market in 2022 was affected, showing a downward trend (Quan, 2022). The overall softening of the stock market could have ripple effects on millions of households (Bhattarai, 2022). Any slowdown in economic activity resulting from the FED's rate hike would likely keep stock prices under pressure, particularly for high-flying tech companies. Some FED officials began to acknowledge that they were too slow to respond to rapid inflation in 2021, a delay that forced them to constrain the economy more abruptly (Smialek, 2022). Higher interest rates made business leaders think twice before taking new loans for investment or expansion, and investors became increasingly concerned about the FED inducing a recession soon (Bhattarai, 2022).

Fundamental Stock Analysis

The techniques identified for stock market predictions were clustered into three categories: technical, fundamental, and combined analyses (Nti et al., 2020). Fundamental analysis is the cornerstone of investing, providing a technique to determine a security's value by focusing on underlying factors affecting a company's actual business and prospects (Drakopoulou, 2015). Before an investment decision, it is essential to analyze investment risks, which are divided into systematic and unsystematic risks (Snowdon, 2021). According to the illustration by Snowdon (2021), systemic risks refer to the economic, political, and sociological factors that impact all securities to varying degrees, and unsystematic risk represents the portion of investment risk that can be practically reduced or eliminated through diversification. An approach employed by Quan (2022) characterized the factors into macro-level and micro-level issues: the former include economic development, market regulation, and national policies, and the latter include company profitability, financial indicators, development status, and investor expectations.

Since the first outbreak of COVID-19 in March 2020, the economic fundamentals of the United States have been severely hit, and the unemployment rate, GDP growth, and inflation rate have all been in crisis (Quan, 2022). At the same time, companies faced many problems, including the collapse of demand, increased uncertainty, disruption in supply chains, capacity reductions, closures, and employee welfare (Hassan et al., 2020). From both macro and micro points of view, the past 2 years should have been bad for stock markets (Quan, 2022). Fundamental analysis provides a framework to address

systematic and unsystematic risks and macro-level and micro-level issues in investment analysis during COVID-19.

Two Way Approaches

Fundamental analysis is equivalent to EIC analysis, an abbreviation for "economic, industry, and company analysis" (Drakopoulou, 2015, p. 1). Fundamental analysis can be either top-down or bottom-up (Corporate Finance Institute, 2023), and a further description is illustrated as follows:

> An investor following the top-down approach starts the analysis by considering the overall health of the economy. By analyzing various macroeconomic factors such as interest rates, inflation, and GDP levels, an investor tries to determine the economy's overall direction and identifies the industries and sectors of the economy offering the best investment opportunities. Afterward, the investor assesses specific prospects and potential opportunities within the identified industries and sectors. Finally, they analyze and select individual stocks within the most promising industries. Alternatively, the bottom-up approach immediately dives into the analysis of individual stocks. The rationale of investors who follow the bottom-up approach is that individual stocks may perform much better than the overall industry. (para. 4)

Economic Analysis

Complementing the economic analysis, Drakopoulou (2015) expressed that all common stocks issued were subject to market uncertainty risks, and significant sources of uncertainty such as accounting fraud, the threat of war, economic crises, and political scandals could force the market down. Stock prices responded favorably to earnings

growth, low inflation, increasing GDP, and a less volatile market. Furthermore, monetary and fiscal policy could affect the market, and the stock index would assist policy advisors in making better judgments about monetary and fiscal policy because the stock market responds in precedence to a recession or economic growth (Drakopoulou, 2015). Further study would indicate whether the U.S. stock market could be a leading indicator of the real economy cycle (Jareño & Negrut, 2016).

Industry Analysis

Industry analysis provided key conclusions about which industries would survive the anticipated economic situation (Drakopoulou, 2015). A standard approach to industry analysis proposed by Porter (1979) was the competitive strategy analysis framework. Porter's five components of industry structure pertain to the threat of new entrants, the rivalry among existing competitors, the substantial threat of substitutes, the buyer's bargaining power, and the supplier's bargaining power. A financial analyst could appraise the industry's responses to the prospective economic environment more efficiently by considering each of the five elements (Drakopoulou, 2015). After covering industry analysis, the subsequent step is to analyze specific firms within an industry.

Company Analysis

The most significant part of the fundamental analysis is to investigate the financial statements and perform a quantitative analysis of the revenue, expenses, assets, liabilities, and all the other financial aspects of a company to gain insight into a company's future performance (Drakopoulou, 2015). According to Gibson (2013), the analysis of financial data employed various techniques to emphasize the comparative and relative importance of the data presented and to evaluate the firm's position. The

financial data analysis included ratio analysis, common-size analysis, and study of differences in components of financial statements among industries, and financial ratios were usually expressed as a percentage or as times per period, with liquidity, debt, and profitability ratios mainly concerned by investors. The information derived from these types of analysis should be blended to determine the overall financial position, and no one type of analysis should support overall findings or serve all types of users.

CHAPTER 3: METHODOLOGY

Purpose Statement

The purpose of this study was to analyze the U.S. stock performance impacted by COVID-19 under the fundamental analysis framework by evaluating the correlation between COVID-19 and economic variables with the stock market performance, the changing trends in industry development, and the individual company for an investment decision. Quantitative and qualitative data were collected, studied separately, and combined to analyze the results. The daily stock market index, COVID-19 case numbers, and economic variables were collected to test their correlation and understand the overall state economy through quantitative analysis. The factors like risk and opportunities explored the distinctive features of changing trends at the industry level through document analysis. The management practice and financial ratios were used to test the theory of investment based on company value that predicted the long-term growth potential through case analysis.

Research Questions

Qualitative research was used to study the stock market reaction to COVID-19 at the industry and company levels to answer the following questions:

1. How did differentiated industry sectors react differently to COVID-19?
2. How did investors evaluate company performance impacted by COVID-19?
3. What is the implication for investors and policymakers in studying the U.S. stock market impacted by COVID-19?

Before exploring the research questions, I adopted quantitative research to test the correlation between COVID-19 and economic variables with stock market index return at the macroeconomic level. The alternate hypotheses were the following:

H1: COVID-19 case numbers negatively affected the stock market index return.

H2: A positive correlation existed between GDP, CPI, and oil price with the S&P 100 index return.

H3: A negative correlation existed between unemployment and the S&P 100 index return.

Research Design

I adopted the framework of top-down fundamental analysis, from economic analysis, industry analysis to company analysis. A mixed quantitative and qualitative research method was used to analyze the U.S. stock market performance impacted by COVID-19. I first used the hierarchical regression model to test the correlation of COVID-19 case numbers with the S&P 100 index return controlling the effective interest rate, because interest rate proxies the EPU to determine whether EPU played a significant role in stock market performance. I then applied the Pearson correlation coefficient to check the intensity between the two variables (Hernández-Sampieri, 2018) to understand how the economic variables of GDP, CPI, unemployment, and oil price predicted the stock market index return.

The nonnumerical data were further collected, and a vast field of research was narrowed into one easily researchable topic (Creswell & Poth, 2018) to interpret the meaning and provide an in-depth understanding of a particular situation or problem (Mohajan, 2018). Given that industry sectors reacted differently to COVID-19 based on

its effect on business operations, conducting an in-depth study on selected companies to determine COVID-19's impacts and considering how companies in particular industries responded to the impacts was essential. I adopted a combined content and case-study analysis approach in the qualitative method. Content analysis was focused on answering a research question by identifying themes in selected material related to my area of interest (Terrell, 2016). In case analysis, approaches of Dupont analysis, pattern matching, synthesis across cases, time-series analysis, and direct interpretation were used (Stake, 1995; Yin, 2013).

Demographics

The research focused on publicly listed companies in the United States. In 2020, the New York Stock Exchange had 2,873 listed domestic and international companies, while the Nasdaq had a much higher 3,303 (Statista, 2023). Because the analysis was within the social context of the United States, the research result only applied to domestic companies. It excluded international companies, 510 for NYSE and 516 for Nasdaq, respectively in 2020. The whole population of the study was, therefore, 5,153. This population category could guarantee the data collection because of the accessibility to the companies' annual reports, financial statements, and sustainable reports, which are open to the public.

Sample

Stratified random sampling is a probability sampling technique in which the total population is divided into homogenous groups (strata); each stratum is based on shared attributes or characteristics and random samples are selected from each stratum for comparison against each other to reach specific conclusions (Qualtrics, n.d.). Companies

in each industry were required in the samples to understand the impact of COVID-19 on different industries. The S&P 100 component companies were targeted for analysis because the S&P 100 is designed to measure the performance of large-cap companies in the United States and comprises 100 major blue-chip companies across multiple industry groups with sector balance considered in selecting companies (S&P Dow Jones Indices, n.d.).

Methods and Data Collection

The fundamental analysis approach was employed to study the U.S. stock market impacted by COVID-19 through economic, industrial, and company analyses. IBM SPSS software was used to test the correlation between the daily COVID-19 case numbers and the S&P 100 index performance controlling interest rate through a hierarchical regression model and test the correlation of economic variables like GDP, CPI, unemployment, and oil price with the S&P 100 index using Pearson correlation test. Through the economic analysis with quantitative research, I could understand the overall economic state impacted by COVID-19. To analyze changes at the industry level after COVID-19 broke out, I studied the annual reports of the S&P 100 component companies for the fiscal year of 2020 as well as published articles and news to find out the pattern of change in different industry sectors. For individual company performance analysis, qualitative and quantitative factors were analyzed to evaluate their performance impacted by COVID-19. Qualitative factors included risk, opportunities, management, and strategies, and quantitative factors included net income, sales, assets, equity, liquidity, earnings per share (EPS), and price-to-earnings (P/E) ratio of the companies. I analyzed published

documents, articles, and news that were valid and reliable, and content analysis required no formal instruments (Terrell, 2016).

The data collection was from January 2020 to August 2022, when this research was conducted. The significant time framework covered before the market crash, during the market crash, and through the market recovery. The annual reports from 2018–2021 were studied by subscribing to Refinitiv Workspace (https://refini.tv/3Pl01yl) to compare what changes occurred. To analyze COVID-19's impact on the volatility of all S&P industry sectors, I generated the S&P 100 index and 10 subindustry indexes from the S&P website, namely information technology, health care, financials and real estate, consumer discretionary, communication services, industrials, consumer staples, energy, utilities, and materials. The reported daily COVID-19 case numbers, interest rate, data of GPA, CPI, unemployment, oil price, annual reports, and company financial ratios were collected. Table 1 describes the data name, research method, data mode, and source.

Because daily S&P 100 index performance is not available on weekends and holidays, the data of daily COVID-19 case numbers and interest rates on weekends and holidays were deleted to match the performance of the S&P 100 index performance. Because GDP, CPI, and unemployment data were in the monthly mode, the COVID-19 case numbers and S&P index were converted to data in monthly mode using the average for the Pearson correlation test between them. When studying the annual reports for industry analysis, I used search engines for the words "COVID-19," "pandemic," "corona," and "coronavirus" to identify the parts related to the disease. Most companies reported the impact of COVID-19 on their business under the section of "Risk Factors" or "Management's Discussion and Analysis" in their annual reports. In company analysis,

the financial ratios of net profit margin, sales to asset, and asset to equity were collected to compute the return on equity (ROE) for 2018 to 2021. Other significant financial ratios like liquidity, EPS, and P/E were collected to evaluate company performance.

Table 1

Methods and Data Collection

Quantitative or qualitative research	Methods	Fundamental analysis level	Data	Mode	Data source
Quantitative	Multi-regression model & Pearson correlation	Economic analysis	S&P Index	Daily	S&P website
			COVID case numbers	Daily	CDC website
			Interest rate	Daily	FED bank
			GDP	Monthly	S&P website
			CPI	Monthly	US BLS
			Unemployment	Monthly	US BLS
			Oil price	Daily	Economic data St. Louis FED
Qualitative	Coding & content analysis	Industry analysis	Annual reports of S&P 100 companies related to COVID-19 part	Yearly	Refinitiv workspace articles & news
	Case study & financial analysis	Company analysis	Financial ratio (revenue, profit, liquidity, earnings per share, P/E)	Yearly	Refinitiv workspace articles & news

Note. CDC is the abbreviation for the Center for Disease Control and Prevention; U.S. BLS is the abbreviation for the U.S. Bureau of Labor Statistics.

Data Analysis

In the quantitative research, the hierarchical regression analysis was used to test the hypothesis of the negative correlation of COVID-19 case numbers with the S&P 100 index controlling the interest rate, which could be a proxy of the EPU. The Pearson

correlation test was used to analyze the correlation between GDP, CPI, unemployment, oil price, and the S&P 100 index. The research tested assumptions using graphs including normality, linearity, homogeneity of variance, and absence of outliers for both analyses and an additional lack of multicollinearity and normally distributed residuals for the hierarchical regression analysis. In the hierarchical regression analysis, the model summary table, analysis of variance (ANOVA) table, and coefficient table were studied with the *p* value calculated, and the significance of coefficients between COVID-19 case numbers and interest rate with the S&P 100 index return were compared. In Pearson correlation tests, the correlation coefficients were calculated to determine the direction and level of statistical significance of the correlation between the various economic variables and the S&P 100 index return. Both tests interpreted the effect size of the correlation to determine whether they were statistically significant.

The qualitative research for industry analysis focused on the parts related to COVID-19 in annual reports of S&P 100 index companies for the year 2020 by using the coding tools to analyze the risks and opportunities each industry faced and summarize the industry development pattern. Open coding was first used to break down the data into the smallest components, and the data were then brought back together at a greater conceptual level in axial coding. When investigating published reports and articles of listed companies, the facts in the reporter's statement were contextual and must respect varying viewpoints and subjective truth. A comparison of the performance and strategies of companies representing various industries was studied through charts and tables.

In company analysis, Amazon was selected for the case study because of its multibusiness portfolio and being a leader both in the technology and retail industry.

Qualitative and quantitative factors were analyzed to evaluate the company's performance based on raw materials from triangulating data sources. The qualitative factors included the company's management and culture, the impact on its operation by COVID-19, and EPU related to company performance. Dupont analysis was used to analyze quantitative factors within ROE, which is decomposed into net income/sales, sales/assets, and assets/equity to analyze companies' business growth and management at different stages of COVID-19. Critical financial indicators such as cash flow, liquidity, and debt were also analyzed. EPS and P/E ratio were studied for the company's valuation compared to peer competitors. The research was unobtrusive in not requiring interaction between company members and me (Terrell, 2016).

Ethical Considerations

This research contained no studies with human participants or animals. All data were from publicized reports without being fabricated or falsified. No confidential information related to the research objects was released. In the use of articles and reports, there were no ethical considerations other than the truthful analysis and reporting of the actual text of the articles used. The results and conclusions in this study did not constitute an investment recommendation or advice to buy or sell specific stocks. The research was based on objective and unbiased interpretations of evidence, and my position with their evidence and interpretation was central. There were no modifying results to support a theory or hypothesis and omitting troublesome observations from a report to present a convincing conclusion.

Limitations

The study had limitations in that it relied on online documents as a significant source for research. There were neither corporate management access nor interviews for the qualitative analysis, so the research might need more internal validity. Moreover, categorizing sectors for the S&P 100 components did not include all business lines; for example, no airline companies were on the list. Moreover, companies with varying natures were grouped in the same sector, such as banks and insurance companies in the financial sector and transportation and manufacturing in the industrial sector, making some findings hard to generalize. The quantitative analysis covered data from January 2020 to August 2022 with a result that did not specify the condition of each stage of COVID-19, like outbreak, high peak, vaccine rollout, and recovery.

Summary

This chapter introduced the research methodology, including the purpose statement, demographics, sampling, data collection, and analysis, and the ethical considerations and limitations of the study were also covered. The quantitative research for economic analysis tested the correlation between COVID-19 case numbers and S&P index performance controlling interest rate and the correlation between economic variables with the S&P index to understand the overall economic state. The qualitative industry and company analysis examined industry development trends and individual company performance for investment decisions.

CHAPTER 4: ANALYSIS AND RESULTS

Economic Analysis

There was a general perception of the impact of COVID-19 on financial volatility and returns, but econometrical approaches were relevant to quantify the statistical significance of such perception. COVID-19 was an exogenous shock (Fernández et al., 2022), so daily COVID-19 case numbers in the United States were included as an exogenous variable to the U.S. stock index return. The interest rate was studied in this research to explore the effect of EPU. A formal investigation identified the causal effects of COVID-19 on the S&P 100 index by employing the framework of the hierarchical regression model controlling interest rates. Economic variables such as GDP, CPI, unemployment, and oil price were practical factors that helped investors predict the index return. Therefore, the Pearson correlation test was implemented to test whether a linear relationship existed between them.

Correlation Between COVID-19 and Index Return

COVID-19 seriously disrupted economic activities and caused severe volatility in the stock market (Baek et al., 2020). The government intervened with monetary policies. The interest rate decreases and increases affect stock market performance (Quan, 2022). I adopted a hierarchical regression model to analyze the correlation of the reported daily number of COVID-19 cases with the S&P 100 index return controlling the effective interest rate movement. The hierarchical regression model fit because S&P 100 index, daily COVID-19 cases, and effective interest rates were all scale-level variables to test the alternate hypothesis that COVID-19 case numbers negatively affected the S&P 100 index return controlling for interest rates.

Testing Assumptions

Several key assumptions must be met for the statistical test results to be trustworthy. The assumptions of multiple regression analysis are the absence of outliers, linearity, lack of multicollinearity, homogeneity of variance, and normally distributed residuals.

Absence of Outliers. The first step was to check for univariate and bivariate outliers of both independent and dependent variables. The results are shown in Figures 2, 3, and 4, and Table 2 presents the data description.

Figure 2

Test of Absence of Univariate Outlier for S&P 100

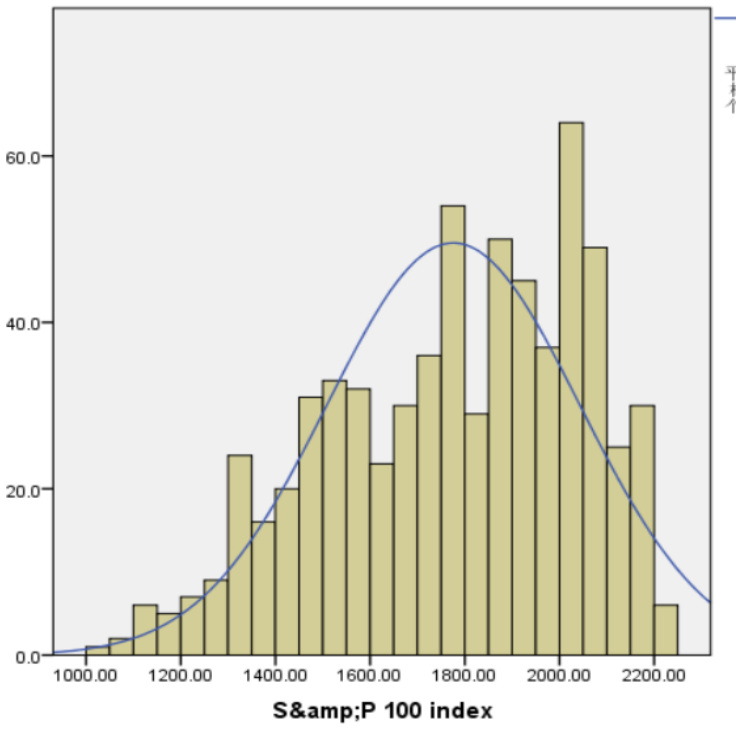


Figure 3

Test of Absence of Univariate Outlier for COVID Case

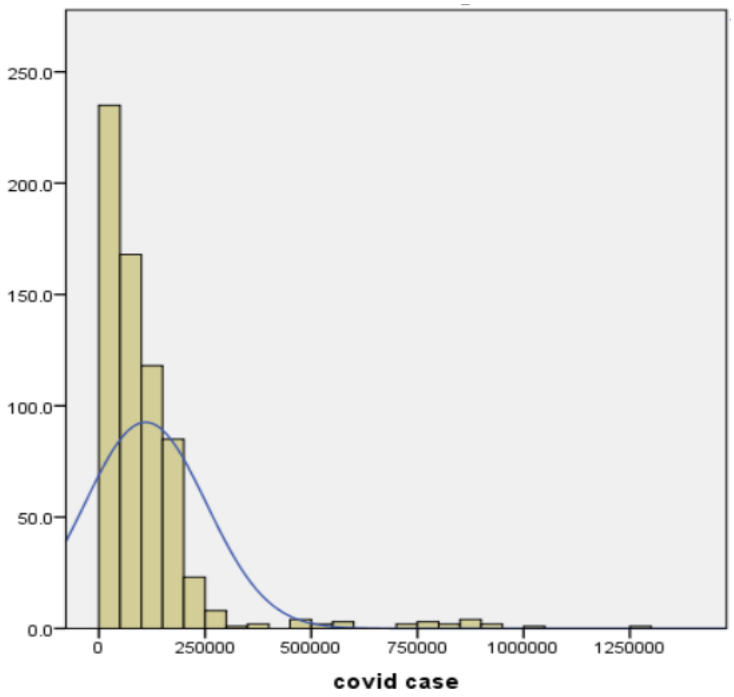


Figure 4

Test of Absence of Univariate Outlier for Effective Rate

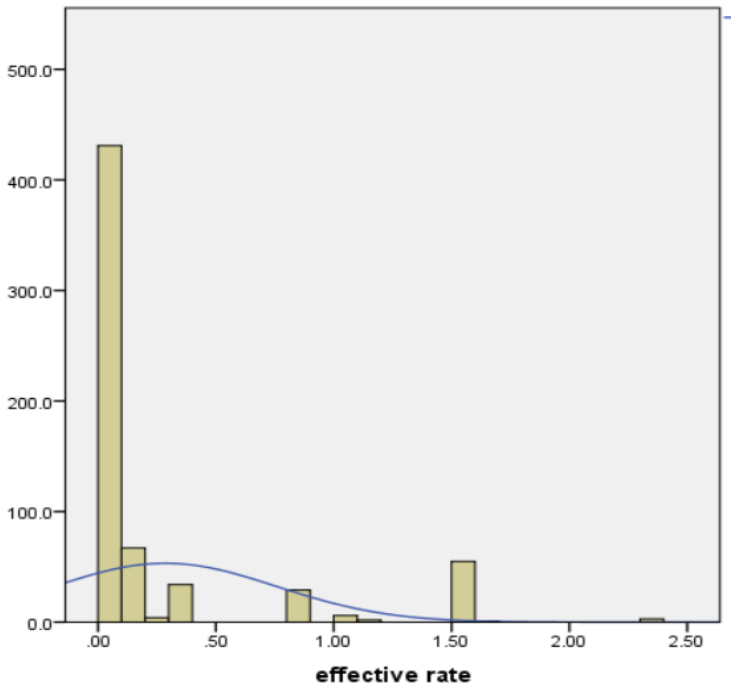


Table 2

Description of S&P 100 Index, COVID-19 Case Numbers, and Interest Rates

Data description	Mean	Standard deviation
S&P 100 index	1776	267
COVID case numbers	110053	142959
Interest rate	.29	.47

The S&P 100 index is close to a normal distribution with a slight negative skew. The data of daily COVID-19 case numbers and effective interest rates show a positive skew with outliers, but the outliers could be regarded as part of the tail. There are no unusual observations present in any of the distributions. All of the distributions are free of apparent outliers. The scatterplots for each independent variable were created to check for bivariate outliers and are free of bivariate outliers as shown in Figures 5 and 6.

Figure 5

Testing of Absence of Bivariate Outliers for COVID Cases

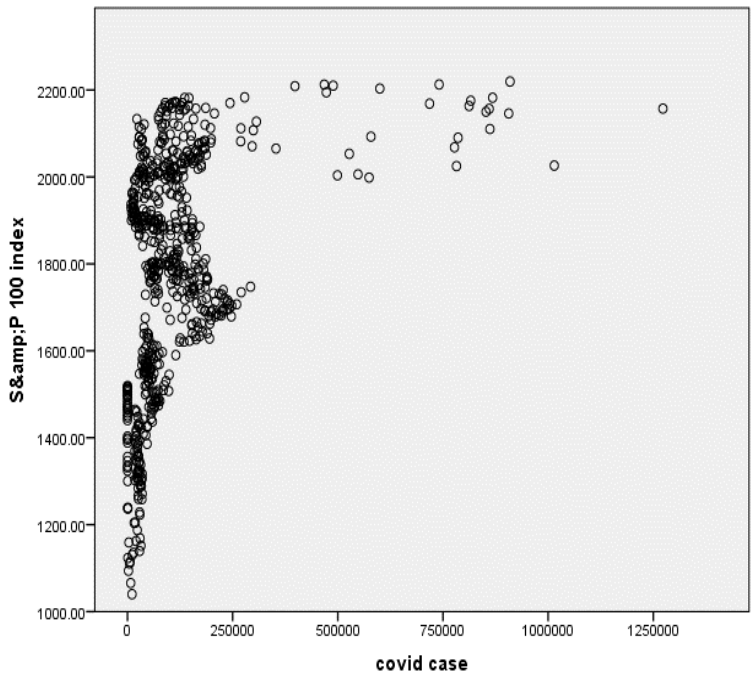
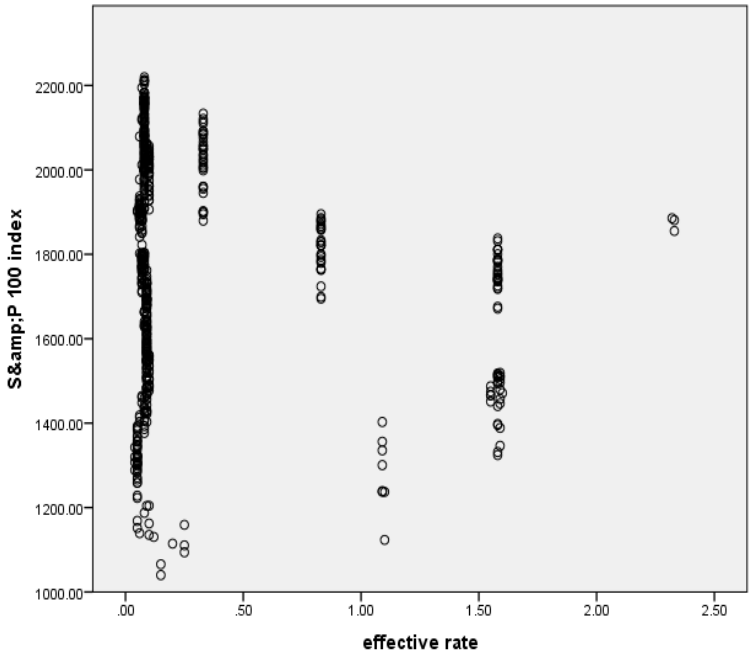


Figure 6

Testing of Absence of Bivariate Outliers for Effective Rate



Linearity. The points on the scatterplots appeared to follow a straight line extending from the lower left to the upper right of each graph. The assumption of linearity was supported.

Lack of Multicollinearity. Next, the assumption of lack of multicollinearity was tested by creating a correlation Table 3, which included all variables. The independent and dependent variables were significantly correlated with correlation coefficients of .396, -.168, and -.084. These correlations did not exceed the .80 cutoff. Therefore, the assumption of lack of multicollinearity was supported.

Table 3

Correlation Table

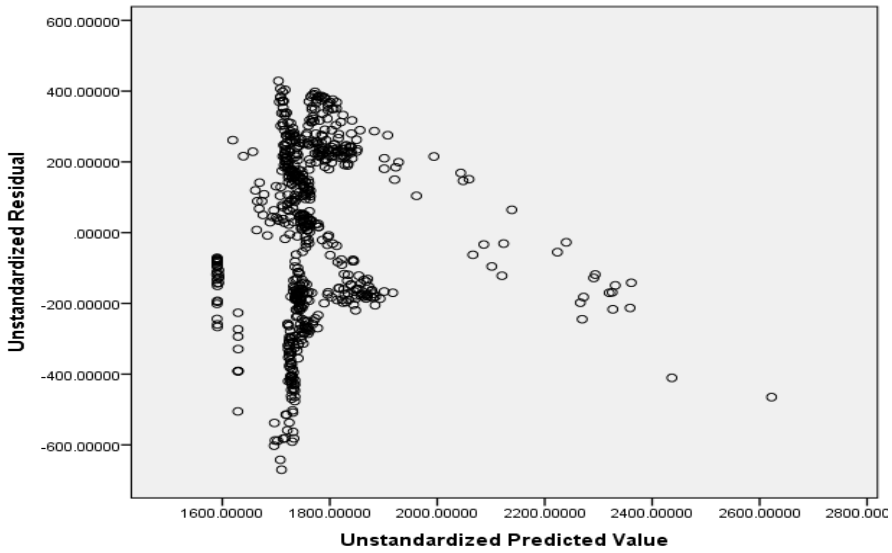
Variable		S&P 100 index	COVID case	Effective interest rate
S&P 100 index	Pearson correlation	1	.396**	-.168**
	Sig (2-tailed)		.000	.000
	N	664	664	632
COVID case	Pearson correlation	.396**	1	-.084*
	Sig (2-tailed)	.000		.034
	N	664	664	632
Effective interest rate	Pearson correlation	-.168**	-.084*	1
	Sig (2-tailed)	.000	.034	
	N	632	632	632

Note. **In 0.01 level (2-tailed), correlation is significant. *In 0.05 level (2-tailed), correlation is significant

Homogeneity of Variance. From the scatterplot in Figure 7, because the residuals are not approximately evenly spread along all predicted values and there is fanning, the assumption of homogeneity of variance needs to be better supported. Otherwise, it could cause a decrease in the power of the test.

Figure 7

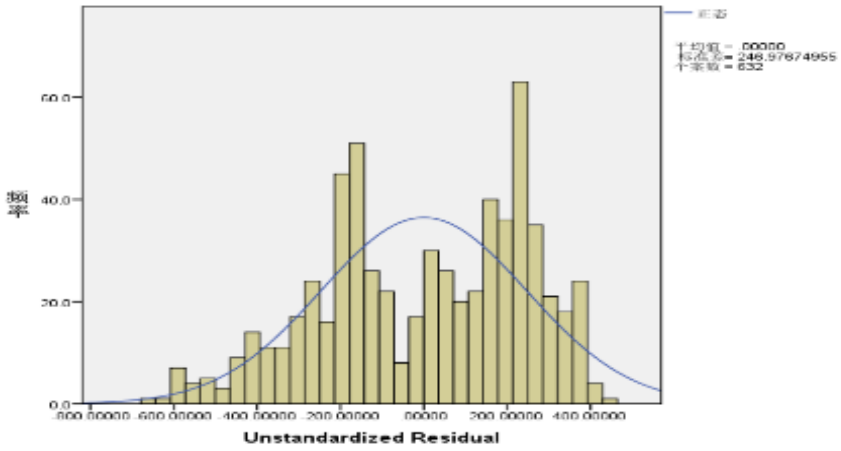
Testing of Homogeneity of Variance



Normally Distributed Residuals. Generating the histogram in Figure 8 presents the data with mean = .00000, standard deviation = 248.9767, and case number = 632. The residuals are approximately normally distributed. Thus, the assumption of normally distributed residuals was supported.

Figure 8

Testing of Normally Distributed Residuals



Interpretation

Except for the homogeneity of variance, the other assumptions were satisfied, and the regression output could be interpreted. The first step was interpreting the model summary table (Table 4).

Table 4

Model Summary Table

					Change statistics				
Model	*R*	R^2	Adjusted R^2	*SE* of the estimate	R^2 change	F change	*df* 1	*df* 2	Significant *F* change
1	.168[a]	.028	.027	268.50245	.028	18.331	1	630	.000
2	.420[b]	.177	.174	247.36909	.148	113.243	1	629	.000

Note. Dependent variable: S&P 100 index performance. [a]Predictors: (constant), interest rate. [b]Predictors: (constant), interest rate, COVID-19 case numbers.

After accounting for the effective interest rate in Step 1, COVID-19 daily case numbers predicted an additional 14.8% of the variation in the S&P 100 Index in Step 2. The *p* value associated with the R^2 change statistic was less than .001. Because *p* was less than .05, COVID-19 daily case numbers predicted a statistically significant additional variation in the S&P 100 index. The *p* value associated with the ANOVA statistic (Table 5) at Step 2 was less than .001. Because this value was less than .05, the full regression model (at Step 2) results were significantly better predictions than estimates based solely on the mean.

Table 5

ANOVA Table

	Model	*SS*	*df*	*MS*	*F*	Sig.
1	Regression	1321556.757	1	1321556.757	18.331	.000[a]
	Residual	45418944.760	630	72093.563		
	Total	46740501.520	631			
2	Regression	8251069.670	2	4125534.835	67.420	.000[b]
	Residual	38489431.850	629	61191.466		
	Total	46740501.520	631			

Note. Dependent variables: S&P 100 index. [a]Predictor: (constant), effective interest rate. [b]Predictor: (constant), effective interest rate, COVID case numbers.

The coefficient table (Table 6) reveals that the *p* value associated with the COVID-19 daily case variable was less than .001. Because this value was less than .05, the COVID-19 daily case significantly predicted S&P 100 index controlling the effective interest rate at Time 1. The slope of the line (b_2) was not zero. Therefore, the hypothesis was accepted.

Table 6

Coefficient Table

Model	Unstandardized coefficients		Standardized coefficients		
	B	*SE*	Beta	*t*	Sig
(Constant)	1798.349	12.473		144.180	.000
Effective rate	-96.711	22.588	-.168	-4.281	.000
(Constant)	1714.153	13.952		122.864	.000
Effective rate	-77.992	20.884	-.136	-3.734	.000
COVID case	.001	.000	.386	10.642	.000

Note. Dependent variable: S&P 100 index.

In Step 2, the standardized beta coefficient of the effective interest variable was -.136. The standardized beta coefficient of the daily COVID-19 case number was .386. Therefore, the effective interest rate negatively affected the S&P100 index return, and the daily COVID-19 case number positively affected the S&P100 index return. The equation was written as follows:

S&P 100 index = 1798 +(0.386) COVID-19 daily case + (-.136) effective interest rate

Effect Size

The final step was to determine the practical significance of the findings by calculating Cohen's f^2 using the following equation:

$$f^2 = \frac{(R^2_{AB} - R^2_A)}{1 - R^2_{AB}}$$

$$f^2 = \frac{(.177 - .028)}{1 - .177} = 0.18$$

According to Cohen's criteria, an effect size of .02 is small, .15 is medium, and .35 is large. In this analysis, the f^2 value was .18, close to .15. Therefore, the model

explained a medium amount of additional variation in predicting the S&P 100 index in Step 2. The findings were significant.

Report Result

A hierarchical multiple regression analysis was conducted to predict S&P 100 index based on the effective interest rate at Step 1. The model explained a substantial proportion of the variance in the S&P 100 index, $R^2 = .03$, $F(1, 630) = 18.33$, $p < .001$. Daily COVID 19 case numbers were added to the model in Step 2. After controlling for effective interest rate, the daily COVID-19 case number predicted a significant additional variation in the S&P 100 index, $b_3 = .001$, $t(629) = 10.64$, $p < .001$. The increase in variance explained ($\Delta R^2 = .148$) was statistically significant, $F(1,629) = 113$, $p < .001$. The approach explained an additional 14.8% of the variance in S&P 100 index for a total R^2 of .174 and corresponded to a medium effect size ($f^2 = 0.18$) according to Cohen's criteria.

Although daily COVID-19 case numbers caused changes in the S&P 100 index, the effect was contrary to the assumption that the correlation between them was negative. The correlation number was 0.386 for a study period between January 2020 and August 2022. As COVID-19 prolonged, people adapted to COVID-19, and the rollout of the vaccines reduced people's fear sentiment toward case numbers. The increasing COVID-19 case number might not have driven the stock return down for a prolonged period. The assumption of homogeneity of variance was not well supported, suggesting improvement in data collection and analysis. It would be practical to study COVID-19 separately at its outbreak, high peak, and recovery to understand how COVID-19 case numbers affected index return at a particular stage. Yilmazkuday (2023) did find a negative effect of

COVID-19 on the S&P 500 between February–April 2020 and mainly during March 2020, suggesting that the stock market risk perceived by investors took its highest values during the initial months of the COVID-19 pandemic.

Economic Variables Predicting Index Return

The Pearson correlation test is appropriate to analyze the strength of the association between two scale-level variables. The investors could refer to the change in GDP, CPI, unemployment rate, and oil price during COVID-19 to predict index return if a Pearson test showed a correlation between them. The alternate hypothesis was that there was a positive association between GDP, CPI, and oil price with S&P 100 index return, but the correlation between unemployment and stock index return was negative.

Testing of Assumptions

Several key assumptions must be met for the statistical test results to be trustworthy. Testing assumptions of a Pearson correlation include normality, linearity, homogeneity of variance, and absence of outliers.

Normality. In the normality test in Figures 9–12, some variables appeared to have a moderate negative or positive skew, but the distribution of all four measures was approximately normal. The assumption of normality was supported. The description of the data is presented in Table 7.

Table 7

Data Description of GDP, CPI, Unemployment, and WTI Oil Price

Description	Mean	Standard deviation
GDP	19,306	812
CPI	272	18
Unemployment	5.9	2.8
WTI Oil	66	26

Figure 9

Testing of Normality: Monthly Real GDP

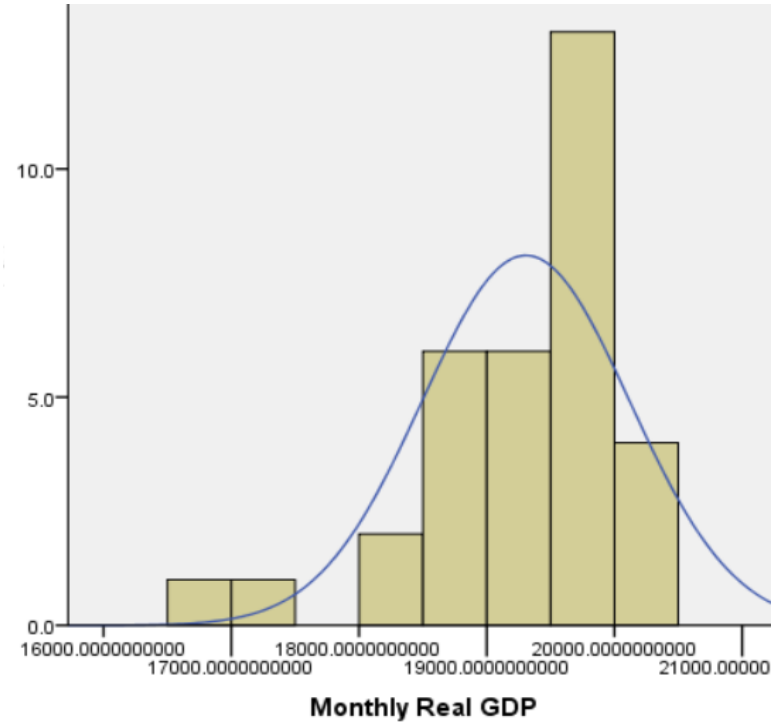


Figure 10

Testing of Normality: CPI

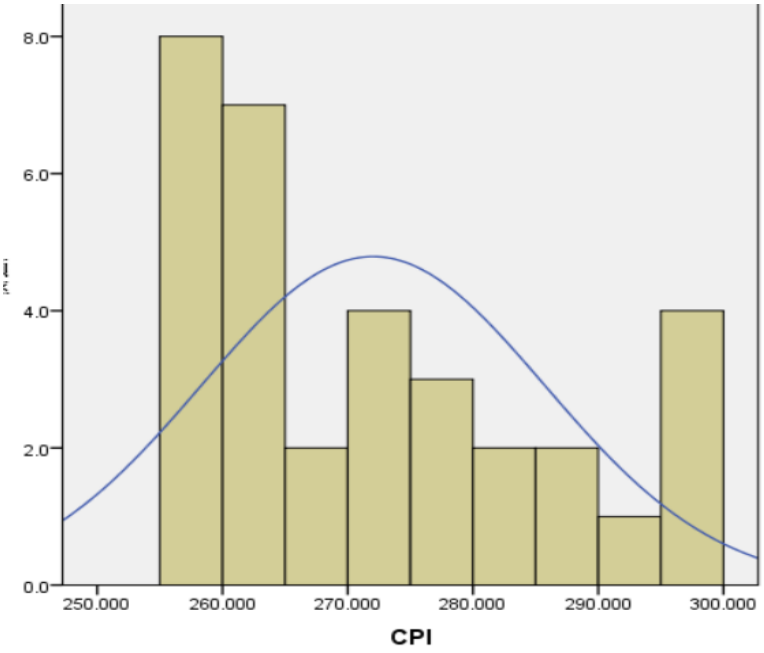


Figure 11

Testing of Normality: WTI Oil

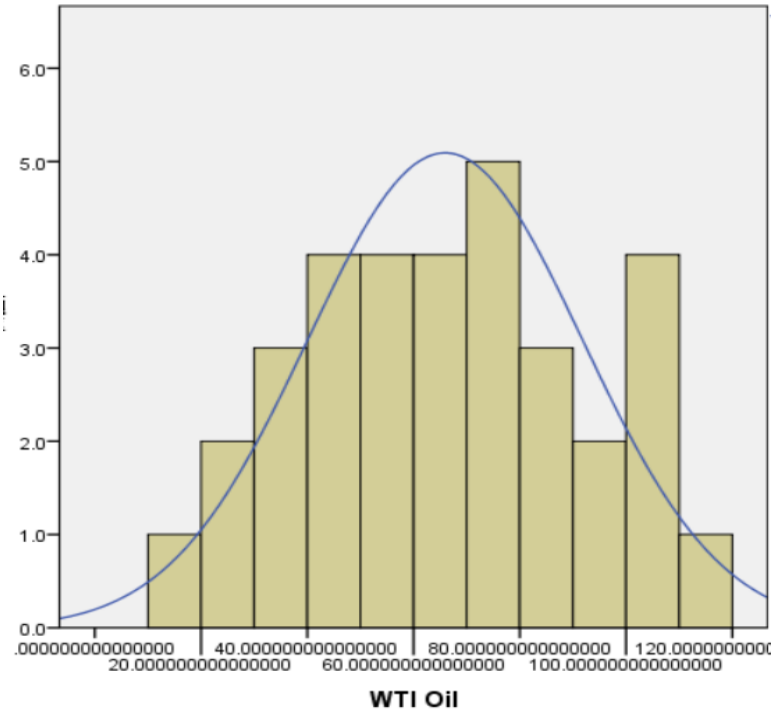
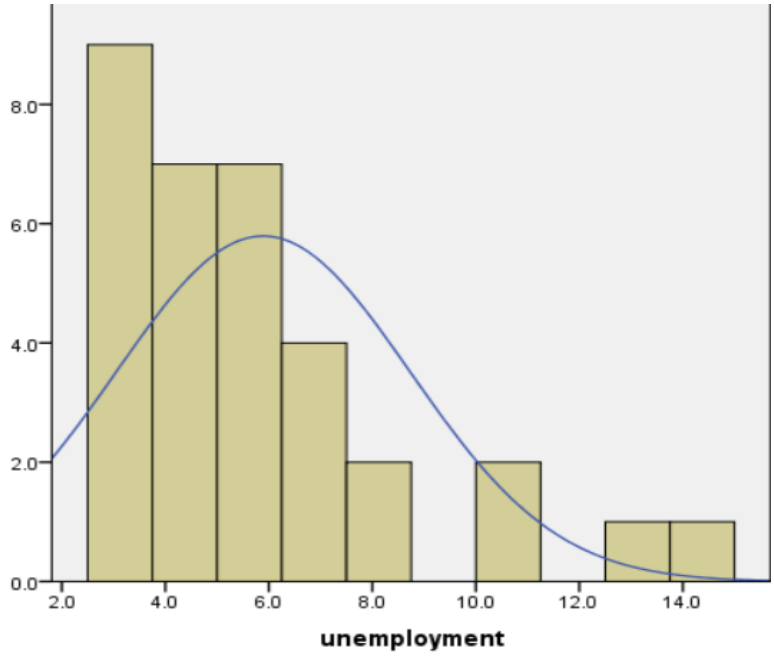


Figure 12

Testing of Normality: Unemployment



Linearity. Viewed from Figure 13, the points on the scatterplot of GDP, CPI, and oil price follow a straight line from the bottom left to the top right. For unemployment, the points follow a straight line from the bottom right to the top left of the graph. The assumption of linearity was supported.

Homogeneity of Variance. The scatterplots in Figures 13–16 show that the points were evenly spread out along all levels of the independent variable (along the line), and there was no apparent fanning. The assumption of homogeneity of variance was supported.

Absence of Outliers. The final step was to check univariate from the histograms in Figures 9–12 and bivariate outliers from the scatterplot in Figures 13–16. The four distributions appeared free of any apparent outliers, and no extreme or unusual observations were present in either distribution. The scatterplot was free of bivariate outliers.

Figure 13

Testing of Linearity: Monthly Real GDP

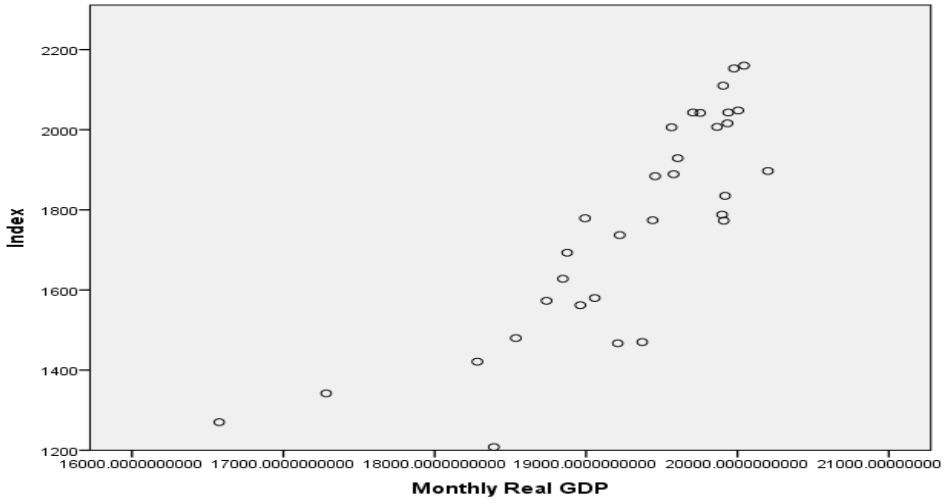


Figure 14

Testing of Linearity: CPI

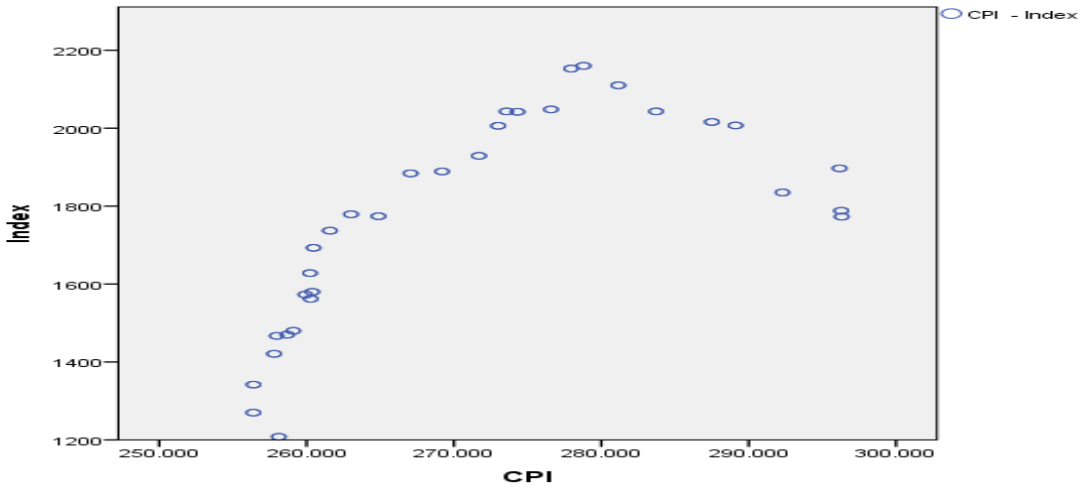


Figure 15

Testing of Linearity: WTI Oil

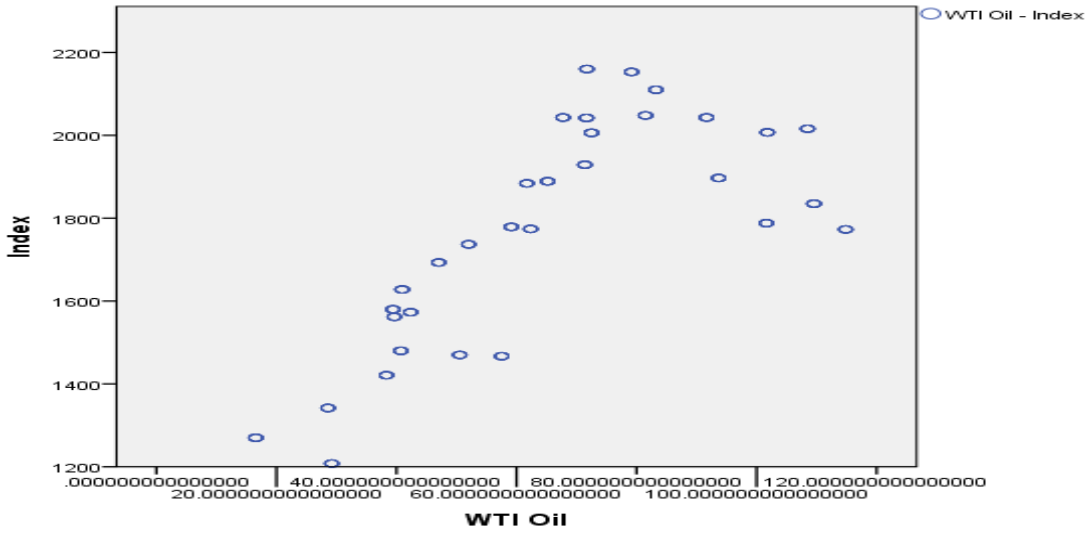
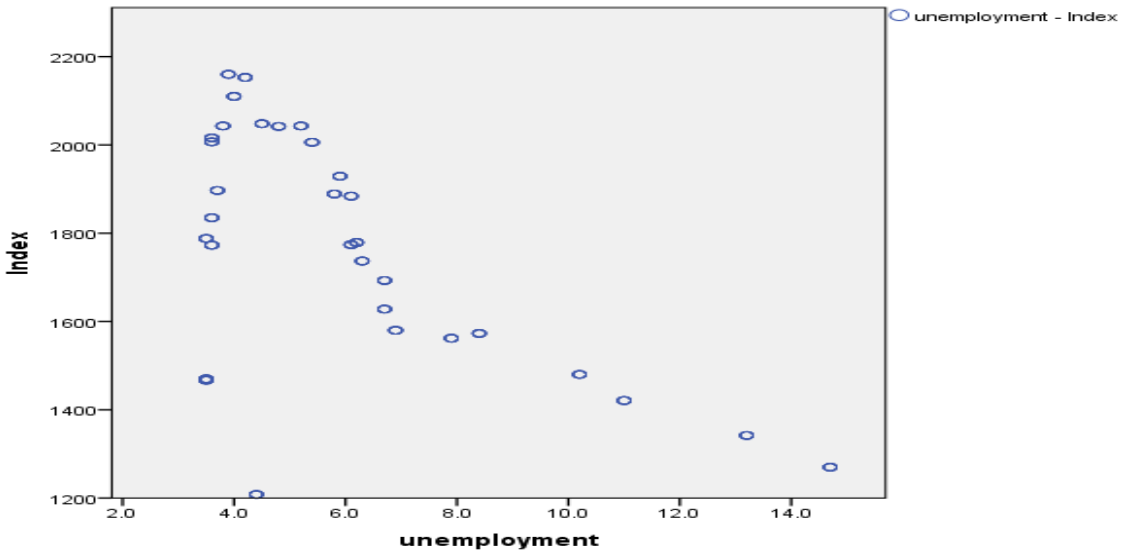


Figure 16

Testing of Linearity: Unemployment



Interpreting the Correlation Coefficient

The coefficients between GDP, CPI, and oil price with S&P 100 index are presented in Table 8 at 0.829, 0.678, and 0.739, respectively. As GDP, CPI, and oil prices increased, so did the S&P 100 index return. Thus, the direction of the correlation was positive. The coefficient between unemployment and S&P 100 index was -0.621. As unemployment went up, the S&P 100 index return went down. The *p* value in each measure was so low that it was reported by SPSS as .000. Because *p* was less than .05, the correlation between these variables was statistically significant. If the null hypothesis were true, there was less than a 0.1% chance to generate a test statistic at least this significant. Therefore, the alternate hypothesis that there was a correlation between GDP, CPI, and unemployment was accepted.

Table 8

Correlation Table

	Variable	Index	Real GDP	CPI	WTI Oil	Unemployment
Index	Pearson correlation	1	.829**	.678**	.739**	-.621**
	Significance (2 tails)		.000	.000	.000	.000
	No	32	32	32	32	32
Monthly	Pearson correlation	.829**	1	.739**	.834**	-.902**
	Significance (2 tails)	.000		.000	.000	.000
Real GDP	No	32	32	32	32	32
CPI	Pearson correlation	.678**	.739**	1	.948**	-.641**
	Significance (2 tails)	.000	.000		.000	.000
	No	32	32	32	32	32
WTI Oil	Pearson correlation	.739**	.834**	.948**	1	-.746**
	Significance (2 tails)	.000	.000	.000		.000
	No	32	32	32	32	32
Unemploy-	Pearson correlation	-.621**	-.902**	-.641**	-.746**	1
ment	Significance (2 tails)	.000	.000	.000	.000	
	No	32	32	32	32	32

**. At 0.01 level (two tails) correlation significant.

Calculating and Interpreting Effect Size

The correlation coefficient represented an effect size and showed the relationship's strength between the two variables. According to Cohen's guidelines, a correlation with an absolute value of .10 is small, .30 is medium, and .50 is large. In this study, the correlations between GDP, CPI, oil price, and unemployment with S&P 100 index were 0.829, 0.678, 0.739, and -0.621, respectively, and the absolute values were all well over .50. Therefore, there was a significant correlation between each measure with S&P 100 index return. The correlations were practically significant.

Reporting the Results

A Pearson correlation test assessed economic variables' relationship with S&P 100 index return. Results showed that there was a significant positive correlation between

each measure with S&P 100 index with $r(31) = .829$ for GDP, $r(31) = .678$ for CPI, $r(31) = .739$ for oil price, and $r(31) = -.621$ for unemployment with all $p < .001$. Higher GDP, CPI, and oil prices were positively correlated with higher index returns. Higher unemployment was negatively correlated with stock index return. The research result was consistent with the alternate hypothesis and previous literature review. Investors could predict the stock index return to rise if GDP and CPI rose or unemployment fell. There was uncertainty about whether oil price was correlated with index return because certain factors like oil importers or exporters, demand, or supply shock could affect index return. This study confirmed that oil prices positively correlated with index return during COVID-19.

Summary

Taking the opportunity to test the econometrical toolbox in stressful conditions was a valuable contribution in terms of descriptive and predictive abilities. The limitation of the study was that the quantitative research did not account for the heterogeneous nature of industry sectors. Although total and idiosyncratic risks had increased across all industries because of COVID-19, not all stocks and sectors were affected equally regarding return and volatility (Curto & Serrasqueiro, 2022). Combining qualitative research to explore the performance of different industries impacted by COVID-19 could address the subject more.

Industry Analysis

The qualitative research focused on the S&P 100 index component companies as samples for study. The 100 companies were categorized into 10 sectors, and the research

explored how macroeconomic and idiosyncratic factors affected these industries as well as the risks and opportunities for each specific sector during COVID-19.

S&P 100 Index Companies

The S&P 100 index is indispensable in tracking market performance, and its constituents are selected for sector balance. Table 9 shows the 10 sectors describing their respective business, the number of companies, and the equity percentage in each sector constituting the S&P 100 index. All were U.S.-based companies.

Table 9

S&P 100 Index Component Companies

Sectors	Description	Company number	Equity percentage
Information technology	High-tech, software, semiconductor, computer, IC, credit card & digital payment	17	32%
Consumer discretionary	Automobiles, luxury/brand products, home decoration, catering, and beverage	11	13.3%
Materials	Materials, chemicals, industrial gas	2	0.9%
Health care	Health, medical instruments, pharmaceutical	14	13.8%
Communication services	Telecommunications, cable, entertainment, theme park	9	11.5%
Financials and real estate	Investment, banks, insurance, exchange market, real estate	17	10.2%
Consumer staple	Commodity, home appliances, food and drink, catering, clothing, tobacco, retail	11	7.6%
Industrials	Mechanical, aerospace manufacturing, transportation, logistics, express delivery	12	5.2%
Energy	Energy, oil, gas	3	3.9%
Utility	Electricity, gas	4	1.7%

Note. Adapted from S&P 100, S&P Dow Jones Indices, n.d. (https://www.spglobal.com/spdji/en/indices/equity/sp-100/#overview).

Market Overview

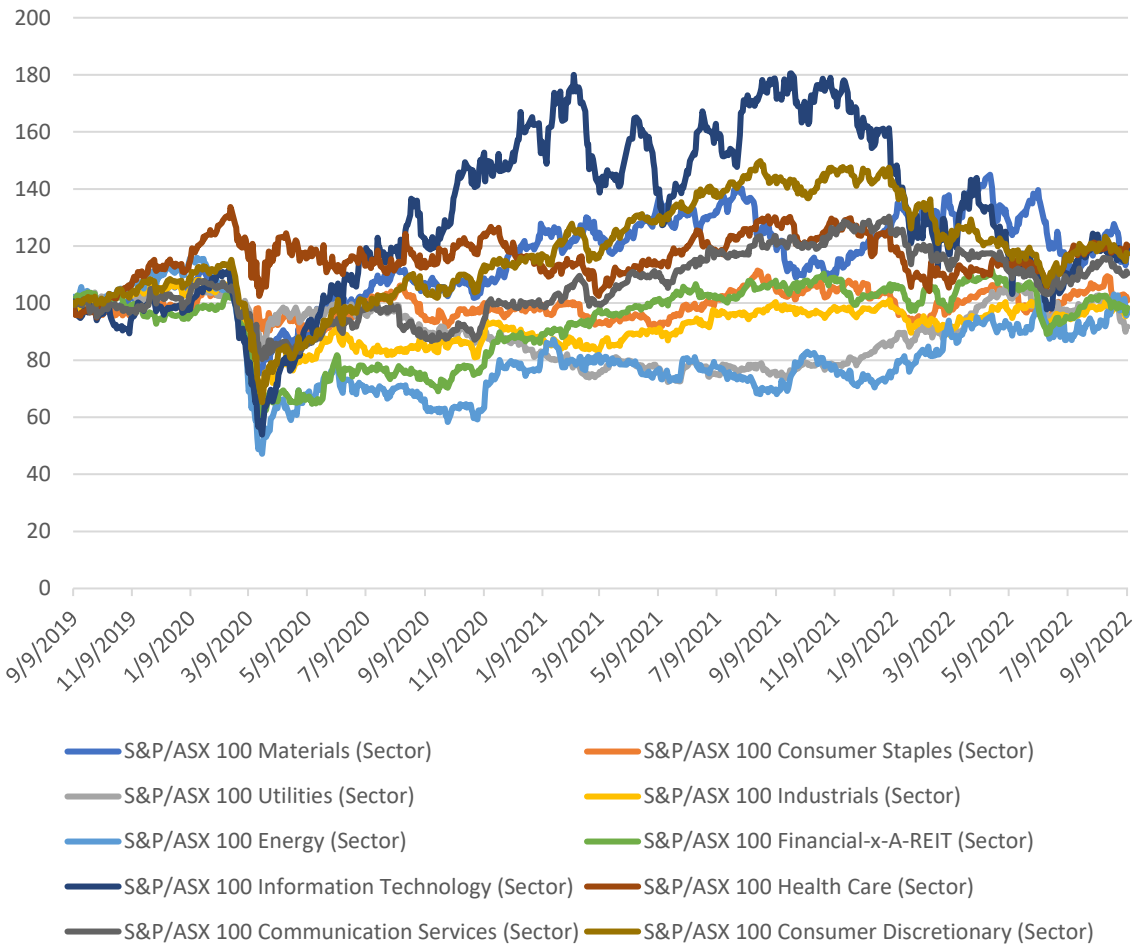
How each sector has performed since the breakout of COVID-19 was studied by analyzing each sector's index performance. The indexes of the 10 industry sectors were generated from the S&P website. Figure 17 shows how various sectors have performed since the 2020 peak, and each sector was normalized to 100 before the pandemic for comparison. The finding was that the market fluctuated in stages from its breakout, similar to the finding by Wen and Arbogast (2021), who normalized each sector to 100 on February 19, 2020, when the stock market started to crash and found that the recovery had been highly uneven across sectors: some recovered quickly, while others were below pre-COVID-19 levels.

Stage 1, spanning roughly the first month of the crisis, saw historically significant and rapid declines across all sectors, and the downside seemed unlimited (Bradley & Stumpner, 2021). Research proved that the reported deaths and cases affected the U.S. stock market return. In the economic analysis, the hierarchical regression model using the interest rate to proxy EPU proved that EPU also had a significant and positive impact on the volatility of the U.S. stock market (Al-Thaqeb et al., 2022). Therefore, in Stage 2, the stock performance of most industries started to recover from the adverse impacts following QE announcements, suggesting that QE effectively boosted investor confidence (H. C. Chen & Yeh, 2021). By early June 2020, some sectors, such as information technology, consumer discretionary, materials, health care, and communication services, started to thrive, and their performance surpassed what was prior to COVID-19. However, the recovery was far from even (Bradley & Stumpner, 2021). Some industries—notably industrials, energy, and utility—remained down from

their prepandemic peaks, indicating concerns about the broader economy's health. Consumer staples, financials, and real estate sectors had gained their ground by mid-2020 but kept flat in performance. The dispersion grew through the middle of 2020, and the high-performing sectors gained strongly and widened their lead on the lagging industries.

Figure 17

S&P 100 Sector Index Performance from 2019–2022



Note. Adapted from S&P 100, S&P Dow Jones Indices, n.d. (https://www.spglobal.com/spdji/en/indices/equity/sp-100/#overview).

From the annual reports of the S&P 100 component companies for the year 2020 (Refinitiv, n.d.) related to COVID-19, the common risks faced by all sectors are summarized in Table 10. Almost all companies were negatively affected. The systematic risks were elaborated before studying idiosyncratic risks for individual sectors.

Table 10

Systematic Risks to Industries Impacted by COVID-19

Risks by COVID-19	Description
Decrease customer demand	Decreased demand occurred in every industry, but some companies met increasing demand in specific categories that offset COVID-19's harmful effects.
Consumer changing behavior	Caused by physical distancing, unemployment, decreasing income, and consumption displacement.
Supply chain disruption	Any failure of a third party in the chains as a provider, vendor, customer, distributor, manufacturer, transportation, or financer disrupted the company's operation or led to liability.
Operation disruption	Suspension of business, construction, production, manufacturing, transportation, or closure of the offices, facilities, schools, stores, restaurants, property, and clinics.
Labor disruption	Employee illness or government restriction inhibited critical role function and reduction in the workforce.
Remote working	Concerns of productivity, corporate culture, cyber security, and inability to support products and services.
Delay/default payment	Affected companies' cash flow and increased credit allowance
Increase in COVID-19 direct cost	Lower operating margin but partly offset by decreasing administration, travel, and marketing expenses.
Liquidity and capital constraints	Difficult to fund because of financial market volatility that affected companies' investment for future income and growth.
Litigation and penalty	Litigation and penalty risks if not conforming to government regulations or not providing relief support as supposed to.

Note. Adapted from the sections of "Risk Factors" or "Management's Discussion and Analysis" of the annual reports of S&P 100 companies in 2020 from Refinitiv (https://refini.tv/3Pl01yl).

From studying the annual reports (Refinitiv, n.d.), many entities saw a sharp revenue decline because of regulatory and organizational mandates and voluntary

consumer changes, which impaired their goodwill and asset charge. They continued to experience conditions often associated with a sudden and severe economic downturn. Those conditions included financial market volatility, erosion of market value, deteriorating credit availability and liquidity, further increases in government intervention, low labor force participation, increasing inventory levels, reductions in production because of decreased demand and supply constraints, layoffs and furloughs, and other restructuring activities. Companies were also unable to predict in a fluctuating context, leading to the cancelation or delay of strategic initiatives and affecting their organic growth. Hassan et al. (2020) studied firm-level exposures to pandemic diseases through earnings call transcripts with similar findings.

Sector Performance

Although the impact of COVID-19 harmed all sectors' business, results of operations, and financial condition, the nature and extent of the impact were uneven according to their different business nature and management strategies (Tut, 2021). COVID-19 exacerbated the leverage effect, and higher volatility positively impacted the returns of the information technology sector, extending their uptrend in price, and had a substantial negative impact on the returns of the energy sector (Curto & Serrasqueiro, 2022). Those who identified opportunities and coped with strategies wisely became winners in the changing market, but some waded through, and others fell behind as underperformers.

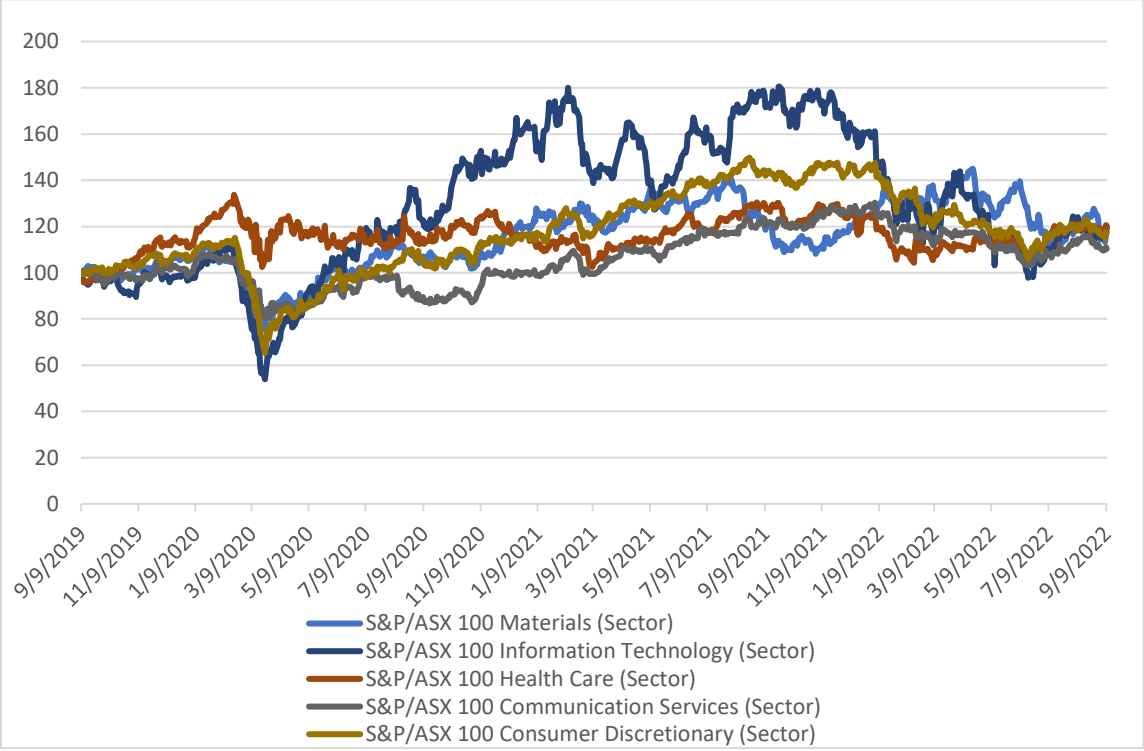
Outperforming Sectors

The sectors of information technology, consumer discretionary, materials, health care, and communication services displayed resilience to the external shock of COVID-

19. Although they also dipped during the outbreak of COVID-19 in March 2020, they picked up by June 2020 and grew far above prepandemic performance. The information technology sector had higher stock volatility and return than other sectors (Curto & Serrasqueiro, 2022). Figure 18 shows the index performance of these sectors, followed by the risks and opportunities of the individual sector and some best practices in dealing with the crisis in this sector.

Figure 18

Outperforming Sector Index Performance



Note. Adapted from S&P 100, S&P Dow Jones Indices, n.d. (https://www.spglobal.com/spdji/en/indices/equity/sp-100/#overview).

Information Technology Sector. According to the annual reports of information technology companies (Refinitiv, n.d.), although the companies experienced disruption in the labor force, manufacturing, and supply chain that could hinder them from providing

products or services, they were presented with more opportunities than others. Demand increased for notebooks, desktops, workstations, servers, cloud, data centers, and wireless facilities for remote work, learning, play, professional visualization, and digital payment. Information technology sectors achieved 42% stock growth by the end of 2020 compared with the end of 2019, and Facebook, Apple, Amazon, Netflix, and Google (FAANG) contributed significantly to the positive performance of the information technology sector (Curto & Serrasqueiro, 2022).

In quick response to the crisis, companies such as Microsoft, Oracle, Intel, Nvidia, and PayPal tried to provide critical technologies to help individuals and organizations navigate, adjust, and continue operations in light of the unique demands and constraints imposed by the pandemic. Subscription models adopted by companies like Adobe and Salesforce prevented them from short periods of business disruption (Refinitiv, n.d.). Some companies like Texas Instruments laid out business continuity plans for unforeseeable situations by investing in building inventory and expanding global internally owned manufacturing to minimize disruption.

Consumer Discretionary Sector. COVID-19 caused customers to be inclined to decrease demand for discretionary products and change to products with lower margins. Thus, some companies closed stores with increasing inventory levels. Home-related products had high demand when people sheltered at home (Thorbecke, 2020). Many customers reduced their spending on dining, travel, lodging, and other leisure activities outside their homes but shifted to shopping centers. Some companies adapted new models like mobile check-in for curbside pickup and an internal order-picking app; others accelerated to be digital-first companies and adopted cost reduction to be commensurate

to the scope of operation (Refinitiv, n.d.). Those companies in e-commerce with competitive advantages or innovative products led the stock performance in the consumer discretionary sector. For example, Amazon leveraged its technology infrastructure for e-commerce, achieving significant success during COVID-19 (Palmer, 2020).

The consumer discretionary sector had a 32% growth in stock price by the end of 2020 compared to the end of 2019 (Curto & Serrasqueiro, 2022), but companies in this sector performed unevenly. Those in catering, like McDonald's and Starbucks, were mainly hit because of dining and social distancing restrictions. Other general merchandise retailers such as Target experienced robust sales because customers relied on Target for essential items like food, medicine, cleaning products, household stock-up items, and those associated with spending more time at home. During the COVID-19 pandemic, some competitors had to temporarily suspend or limit their operations, which contributed to Target's increased sales during the COVID-19 pandemic (Refinitiv, n.d.).

As a manufacturer of consumer discretionary, Tesla has been affected by temporary manufacturing closures, port congestion, and intermittent supplier shutdowns and delays like its automotive competitor Ford and GM. It had been relatively successful in navigating such an impact. For one reason, its new energy and auto-driving cars were beating the traditional automotive markets. Another response strategy was to institute cost reduction initiatives across their business globally to be commensurate to the scope of their operations. They were scaled back in the first half of 2020 through temporary labor cost reduction measures such as employee furloughs and compensation reductions. Other measures included suspending noncritical operating expenses and opportunistically renegotiating supplier and vendor arrangements. They localized procurement and

manufacturing to cope with supply chain disruption and made the products more affordable. While other peers experienced a downturn in 2020, Tesla gained momentum relative to an ever-growing competitive landscape, and its stock price climbed from $28 at the breakout of COVID-19 to $411 at its peak season (Refinitiv, n.d.).

Material Sector. Material companies were not exempt from revenue loss because of decreasing demand and disruption in manufacturing, supply chain, and transportation. The virtual marketing events in replace of physical exhibitions decreased sales revenue. The construction materials industry exhibited a weak decline in abnormal returns even at the initial stage of the COVID-19 outbreak. COVID-related disruption in trading activities of these materials led to a decrease in stock return because of the potential loss in the expected future cash flow as the construction material was the top trading sector between the United States and China (Goodell & Huynh, 2021).

There might have been some emerging opportunities in this sector as more companies pivoted to new products in short supply, for example, medical supplies (Soforo & Kozlowski, 2020). The containers and packaging industry was immune from the shutdown because many consumers moved to online shopping during this time of social distancing. Some material companies also had the discretion to raise prices because of the scarcity of resources. Operating profit was primarily driven by higher prices and the benefit of cost reduction programs and other charges and productivity initiatives, which offset the impact of lower volumes. For Linde, a producer of industrial gas, higher pricing across all geographic segments contributed 2% to sales (Refinitiv, n.d.). Overall, chemical margins improved compared to 2019 because of lower feedstock costs, continued strong demand in packaging, hygiene, and medical as well as industry supply

disruptions through the second half of 2020. Over the long term, demand for chemical products may outpace global GDP and energy demand growth.

Health Care Sector. COVID-19 caused fewer patient visits with fewer new patient starts and reduced diagnostic testing and medical procedures. The reallocation of resources to prioritize COVID-19 led to a shortage of raw materials for other medical product development. Unemployment reduced disposable income and access to health care insurance, and health care providers faced rising costs and pricing pressure. Delays in initiating and enrolling patients in clinical trials, new product development, and government regulation to prioritize COVID-19 also negatively impacted the timing of their pipeline development programs and expected future revenues and cash flows (Refinitiv, n.d.).

The first-mover health care companies that developed products and therapeutics to diagnose, prevent, and treat COVID-19 made abnormal stock returns (Chan et al., 2022). They also gained benefits from government support and resource prioritization. Demand for certain products like oral care, wound care, and respirators also rose for the sake of COVID-19. Some businesses successfully performed at the levels required to meet new demands, some faced challenges, and others were relatively less impacted by the pandemic. Abbott is an example: sales of diagnostics business driven by COVID-19 increased 40.6% in 2020, much outweighing its decrease in cardiovascular and neuromodulation procedures if they could be postponed as nonemergency medical while Abbott's nutritional and diabetes care businesses were the least affected by the pandemic (Refinitiv, n.d.).

Communication Service Sector. According to annual reports in Refinitiv (n.d.), communication service companies faced decreased advertisement sales from canceling sports and entertainment content, closing theatres and entertainment, and lowering television licensing and international roaming service. Commercial and individual customers' decreasing demand for these services was offset by strong market demand for cable communication, network data, cloud, and license technology platforms. There was also an increase in user search and membership to improve the operating margin. The returns of the communication service industry had a positive 5% association with an increase in Google searches about coronavirus before January 21, 2020, perhaps because investors were predicting social-distancing-related growth in the communication industry (Goodell & Huynh, 2020).

It was inspiring that the communication service companies operated with a mission to connect Americans in the crisis. Charter Communications used its technology platform to offer Remote Education Offer and Keep Americans Connected programs. They also paused collection efforts and related disconnects for residential and small and medium business customers with COVID-19-related payment challenges through June 30, 2020 (Refinitiv, n.d.). These programs resulted in higher customer net additions in 2020 than the prior year, and retention rates for these customers were similar to the average customer base. Other efforts included accelerating network capacity and Wi-Fi access, enhancing digital self-service capabilities, and improving advertisement format and delivery. Their ability to successfully operate businesses and deliver services during the COVID-19 pandemic resulted from their network, employees, and systems

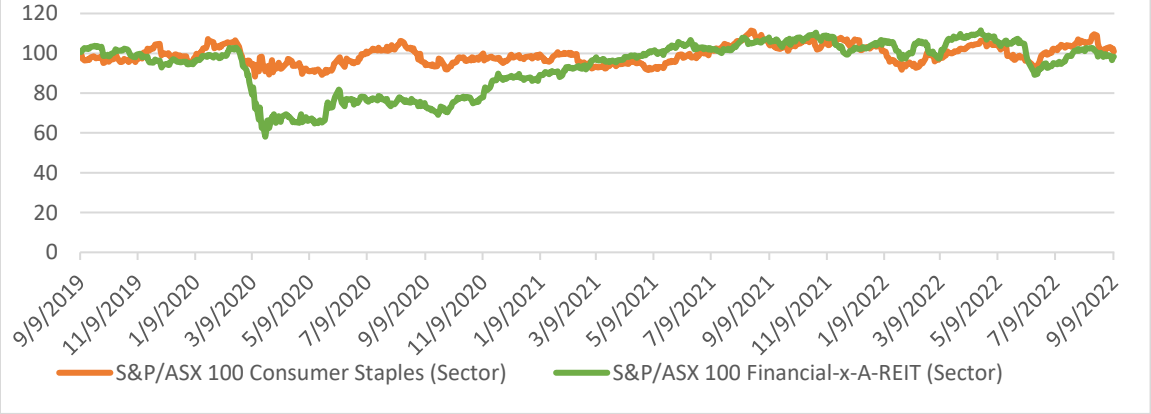
investments. Thus, their operating and investment strategy allowed them to sustain and accelerate customer and financial growth during the pandemic.

Average-Performing Sectors

The consumer staples sector includes goods and services viewed as necessities, such as groceries and nondurable household goods, and performs relatively well during recessions (Wen & Arbogast, 2021). The stock price just dipped slightly, responding to the public panic at the outbreak of COVID-19, and moved around its average line with slight fluctuation. The stock price of the consumer staple sector showed a weak growth of 7.63% between the end of 2019 and 2020 (Curto & Serrasqueiro, 2022). Financials and real estate did poorly in 2020 but regained their ground by the middle of 2021, and stock prices picked up from before the pandemic. Figure 19 shows these sectors' index performance.

Figure 19

Medium Performing Sector Index Performance



Note. Adapted from S&P 100, S&P Dow Jones Indices, n.d. (https://www.spglobal.com/spdji/en/indices/equity/sp-100/#overview).

Consumer Staple Sector. This sector was balanced by its risks and opportunities. Although their traditional offline sales model was greatly challenged because of the shelter-at-home policy, consumer staples were in rigid demand by customers. Spending more time at home and receiving government relief funds increased the purchase of consumer staples. Stockpile purchases of food, personal hygiene, disinfectant product, and daily necessities driven by panic were witnessed during the outbreak of COVID-19. As nontradable and nondurable goods, they were not sensitive to the slowdowns in the rest of the world (Thorbecke, 2020) and the fluctuation of interest rates or exchange rates that had impacted many other industries.

Some stores had inventory disruption with the high-in-demand commodities out of stock, and others had to write off inventory items. Multibusiness lines could offset certain risks. For example, Altria's wine business was affected because of the closure of hotels and restaurants, but its tobacco business remained intact (Refinitiv, n.d.). Many companies in this sector tried adapting to digital sales and new models like ordering from home and curb sales because of the disruption of distribution and supply chains.

Financials and Real Estate Sector. This sector mainly includes banks, wealth management, insurance companies, and commercial real estate. From annual reports in Refinitiv (n.d.), banks encountered a decline in net income primarily because of higher provisions for credit and loan losses driven by the weaker economic outlook related to COVID-19. They also had decreased credit card loans, service charges, and asset management fees. The fall in interest rates and spreads during the pandemic harmed bank profitability (Thorbecke, 2020) and impacted certain risk management derivatives. Other revenue decreased primarily because of lower equity investment income and higher

partnership losses. Moreover, expenses increased because of incremental costs to support customers and employees during the pandemic, increased client activity, and continued investments for business growth such as the merchant services platform.

Banks embraced deposit growth because of the government's relief fund for citizens. Digital banking offset business interruption by COVID-19. The performance started to improve with the recovery of business activities when the lockdown policy was lifted. The reverse of the provision for credit loss and FED interest hike also facilitated its operation. According to Thorbecke (2020), a 100-basis point increase in the 3-month Treasury security rate or the spread between the 10-year and the 3-month Treasury rates would increase bank stock prices by 3% and 4%. When monetary tightening continued, banks were threatened with liquidity and bankruptcy risks.

The biggest threat to insurance companies was the increased claims during COVID-19, but mortality and longevity risks offset each other to some extent, depending on the balance of the product mix that was underwritten (Farrell, 2020). It was also challenging to secure reinsurance when a disaster hit. The relief efforts to help customers with premium renewal or extension dampened its revenue, and litigation costs rose with increasing claim disputes. Social distance prevented business leads when meeting with clients was necessary to close contracts, but insurance companies were quick to respond by offering digital underwriting. COVID-19 also decreased dental, auto, and group medical benefits claims (Refinitiv, n.d.).

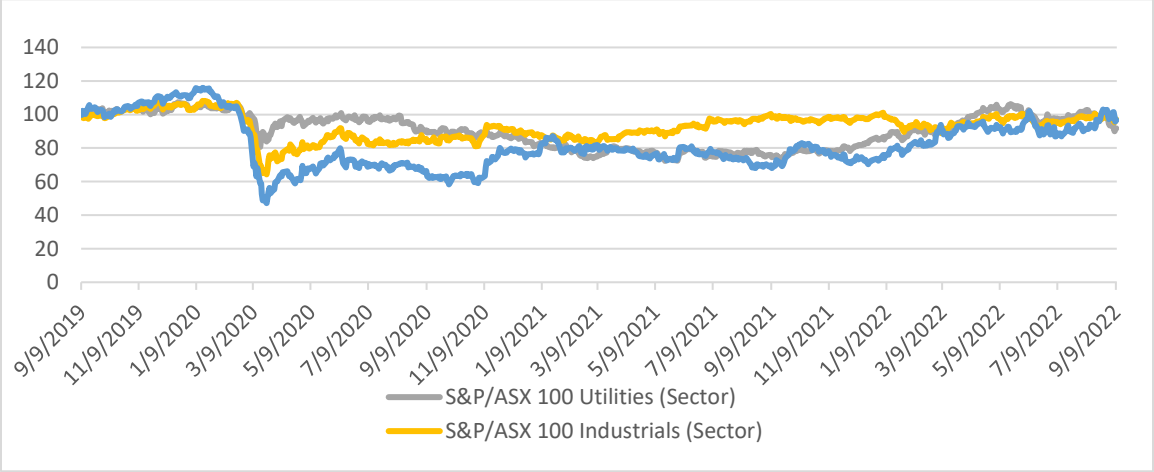
Underperforming Sectors

Industrials, utilities, and energy sectors were the worst performers, demonstrating the most asymmetric stock performance before and after the crisis. Energy and industrials

had low points of 44% and 58% of their index level on February 19, 2020, during the crash in March 2020; as of February 19, 2021, the energy and utility sector had still only recovered to 84% and 88% of its level a year earlier (Wen & Arbogast, 2021). QE was more significant for the underperforming industries severely affected by the pandemic than other industries (H. C. Chen & Yeh, 2021). Figure 20 shows these sectors' index performance supported by an illustration of the risks and opportunities they faced.

Figure 20

Underperforming Sector Index Performance



Note. Adapted from S&P 100, S&P Dow Jones Indices, n.d. (https://www.spglobal.com/spdji/en/indices/equity/sp-100/#overview).

Industrial Sector. Manufacturing companies are in the middle of the industrial chain with the upper stream of suppliers and downstream of the consumer market. The industry was hit hard by the manufacturing and supply chain disruption. Any failure of third parties interrupted their operation. Furthermore, the economic uncertainties affected the value of the equipment financed or leased. Macroeconomic factors caused significant losses in the production equipment, machinery, electronic, and electrical equipment

sectors, which suggested that a macroeconomic recovery and not just a defeat of the pandemic was necessary to revive capital goods spending in this sector (Thorbecke, 2020).

Industrial companies were unevenly hit per their business nature. The airline manufacturers suffered huge losses because of the global travel restrictions. Companies like 3M experienced adverse demand shocks in some sectors but strong demand for their masks, respirators, biopharma filtration solutions, and cleaning and disinfecting products. They prioritized investments where demand was vital in personal safety and health care products to capitalize on these market trends. 3M reached certain agreements with governments in the United States and others involving over $250 million of asset funding to expand capacity to supply necessary products. 3M recorded a 48 million sales growth in 2020 compared with 2019 with an 18% net income growth rate and an increase of $1.44 to $9.25 EPS (diluted) in 2020. Although the industrial sector index remained down from what was before the pandemic, the stock price of 3M picked up from its lowest point of $124.89 at the market crash in March 2020 to $207.76 in mid-2021, surpassing its peak price at $181.35 in January 2020 (Refinitiv, n.d.).

In the defense industrial base, the government responded to COVID-19 by increasing the progress payment rates in new and existing contracts, reimbursing COVID-19-related costs, and accelerating contract awards to provide cash flow and liquidity for large prime contractors like Lockheed Martin (Refinitiv, n.d.). The industrial sector also comprises transportation and express mail companies. They were duly impacted by an increase in residential delivery service because of the shelter-at-home policy and charter flight growth but a decrease in commercial business because of

reduced business activities, leading to lower composite yields than the typical service mix. A benefit for transportation companies was the lower fuel fee because of lower oil prices, driving operating expenses down. Moreover, there were various ways for transportation companies to overcome the disorder. FedEx reduced capital expenditures by decreasing planned spending on vehicles and trailers, delaying facility expansions, and postponing specific information technology initiatives. Union Pacific took the opportunity of COVID-19 to build strength in e-commerce parcel shipment. United Parcel Service quickly met the high demand for health care logistics and distribution solutions. Overall, the transportation companies recorded a satisfactory stock performance during COVID-19.

Utility Sector. The utility sector also experienced a reduced load and a lower price of natural gas. Although there was an increase in electric volume with residential customers, there was a decrease in usage for industrial and commercial natural gas classes. Impairment of the ability to develop, construct, and operate facilities could have led to unavailable products and services. Credit loss increased as government acts allowed customers to suspend or delay paying bills related to providing electric or natural gas services in emergencies. Uncertainty in demand for energy resulted in lower earnings and higher costs (Refinitiv, n.d.).

Nevertheless, rate cases and other legal proceedings were delayed during COVID-19. Regulators might not permit the traditional electric operating companies or Southern Company Gas's regulated operating companies to adjust rates to recover the costs of new generation, associated transmission assets, new pipelines, and related infrastructure on time. Thus, these subsidiaries might not have been able to recover expenses entirely.

Alternatively, they might have had exposure to regulatory lag associated with the time between the incurrence of costs and customer rates recovery. Their business performance, revenue, and cash flow were thus impaired (Refinitiv, n.d.). The systematic risk appeared to have increased in the utility sector because of its lower price elasticity (Baek et al., 2020).

Energy Sector. In the cyclical sectors, oil companies were initially among the most negatively responsive to COVID-19 because of the decreasing demand for oil caused by economic disruption, lockdown, and restrictions on travel (Jiang et al., 2021). This demand reduction coincided with announcements of increased production in certain key oil-producing countries, which led to increased inventory levels and sharp declines in prices for crude oil (Bourghelle et al., 2021), natural gas, and petroleum products. Oil companies were also faced with disruption in production because of restrictions posed to the labor force and disruptions in the supply chain due in part to scrutiny or embargoing of shipments from infected areas. A strategy was curtailments to support oil prices or alleviate product storage shortages. Shrinking investment in oil production could lead to an oil shortage when demand increases. With the recovery of economic activities and demand shock caused by the breakout of the Ukraine war in early 2021 (Labonte & Weinstock, 2022), supply and demand began to rebalance, and oil prices increased, contributing to high inflation. Oil companies were then expected to supply more to facilitate inflation curbing.

ExxonMobil experienced the highest fluctuation in stock performance and net income growth. Its heavy oil and gas production investment at the wrong time contributed to its loss. It cut capital expenditure, laid off labor, and improved technology

to cut production costs. ExxonMobil was criticized for not diverting to new energy as the competitors did. Its business results were also exposed to potential adverse impacts because of changes in interest rates, inflation, currency exchange rates, and other local or regional market conditions. Macroeconomic and idiosyncratic factors roiled the industry (Refinitiv, n.d.).

Summary

The COVID-19 outbreak did not hit all the U.S. sectors and all the stock prices in the same manner (Curto & Serrasqueiro, 2022), and the analysis attempted to identify those differences. The higher volatility favored some sectors over others. Evident and simple explanations were the significant increase in remote work (information technology and communication service) and the stay-at-home population behavior and needs, which became prevalent because of lockdown restrictions (consumer discretionary and staples). Whereas the lockdown and unemployment negatively affected the energy sector, and the weak broad economic condition dampened the investment in industrial manufacturing, it is no surprise that the health care sector fared well during a pandemic-induced recession (Wen & Arbogast, 2021), posing a challenge for biomedical advancement. The external shock could be transformed into a banking crisis if the economic measures were ineffective enough to stop the expected increase in delinquency rates, bankruptcies, and mistrust in financial markets or the economy (Lacalle, 2021).

Company Analysis

Firms with different characteristics reacted heterogeneously across regions and industrial sectors in response to the COVID-19 pandemic, especially the financial performance and position (Qin et al., 2022). Even in the same industries, some companies

strengthened their competitiveness in the crisis while others barely survived. To better illustrate how to evaluate the company performance impacted by COVID-19 for investment decisions, a case study was presented to analyze the risks and opportunities, coping strategies, financial performance, and effect of EPU at a company level. Amazon covers consumer discretionary, staples, and advertisement, owns its transportation team and logistics center, manufactures electronic devices for sale, entered the financial and health care services, and even advanced to automobile and aerospace sectors. Moreover, it is categorized into the FAANG group as a high-technology company and, at the same time, bears a diversified retailer label. Because of its multioperational business, it is ideal to select Amazon for the case study and compare its performance with its peer FAANG and retail competitors.

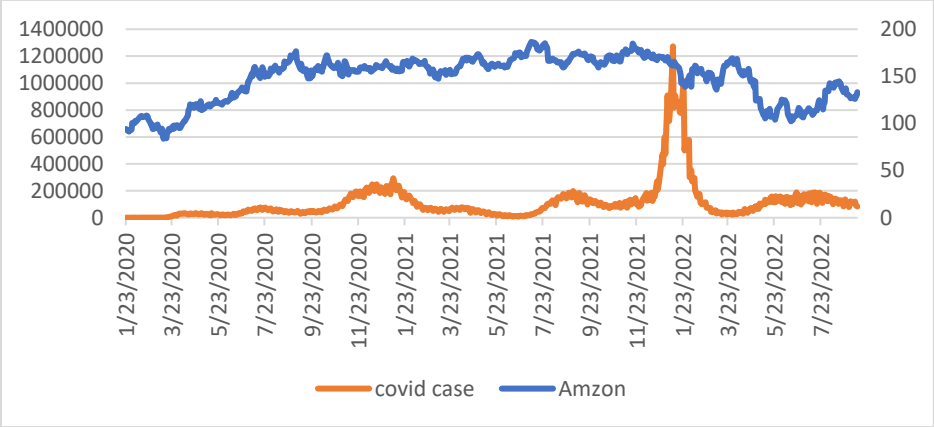
COVID-19 and Amazon Stock Return

This study used stock prices to connect the change in COVID-19 case numbers and consumer demand. Calculations made it clear that although many other factors affected e-commerce in this period, the effect of COVID-19 was prominent. From Amazon's stock performance in Figure 21, its stock price only underwent a short dump in early 2020 when COVID-19 broke out because the company's business operation was disrupted. However, its stock price soon increased from below $100 to $180. The rise was supported by Amazon's net sales growth for the second, third, and fourth quarters of 2020 at 18%, 8%, and 31%. Işik et al. (2021) did the same research on the relationship between Amazon's net sales for online shopping and its stock prices on a quarterly base with a correlation between these two variables at 0.86752954. The high positive correlation was the intermediate step to connecting COVID-19 cases to net sales, a

primary consumer demand indicator. With the predictions of the increase in profitability and sales, the stock prices of Amazon increased.

Figure 21

Amazon Stock Price and COVID-19 Case Correlation



Note. Adapted from COVID Data Tracker, Centers for Disease Control and Prevention, n.d. (https://covid.cdc.gov/covid-data-tracker/#datatracker-home) and Yahoo Finance.

Risk, Opportunity, and Strategies

Responding positively to COVID-19, Amazon remained one of the few companies to benefit from the coronavirus pandemic (Palmer, 2020), CEO Jeff Bezos acknowledged, “The current crisis demonstrates the adaptability and durability of Amazon’s business as never before, but it is also the hardest time we have ever faced” (p. 3). Although Amazon stood out triumphantly in riding the opportunities from COVID-19, Amazon came out stronger in navigating many challenges (Palmer, 2020). Like many businesses, it experienced supply chain disruption resulting in delivery delays and inventory disruption, defaults in accounts receivable, impairment charges derived from asset valuations, availability of lease and financing credit, labor safety issues, and litigation (Refinitiv, n.d.).

The outbreak of COVID-19 might have significantly stimulated the development of the freight and e-commerce industry (Qin et al., 2022). Amazon's solid infrastructure, cutting-edge technology, and the demise of its physical competitors helped it win over competitors and become the default vendor for many consumers at the height of the COVID-19 crisis (Palmer, 2020). The shelter-at-home policy brought in a flood of online orders for living necessities or online entertainment (Işik et al., 2021). The lowered interest rate increased the availability to take credit for online shopping. The operations of Amazon were not significantly affected compared to other companies around the world because it belonged to one of the best performing and fastest developing industries.

Amazon's management played critical roles with attention turned squarely to COVID and away from other longer term projects like Blue Origin (Palmer, 2020), a project founded by Jeff Bezos with a vision of enabling a future when millions of people live and work in space for the benefit of Earth. Amazon management met daily for inventory issues and the latest coronavirus updates (Palmer, 2020), modifying numerous aspects of their logistics, transportation, supply chain, purchasing, and third-party seller process. It also spent 11.5 billion on coronavirus-related investments like safety gear for workers and initiatives in 2020. Amazon hired 400,000 full-time and part-time employees to increase its fulfillment network beginning in February 2020 (Refinitiv, n.d.) when many companies had to lay off laborers. Amazon appropriately balanced profit, CSR, and implementation of sustainable development goals (Yu et al., 2022). Because of the lockdowns and restricted movements, the company offered a solution to the current market issues with the concept of online services that required minimum interpersonal contact.

Financial Analysis

There are certain types of analysis that investors are particularly concerned about when evaluating a company. The research used Dupont analysis to study Amazon's profitability, operating efficiency, and leverage. Other important indicators of cash flow, liquidity, and debt-paying ability were also necessary for the study. A valuation comparison with its peer competitors by analyzing EPS and P/E helped it better learn its position in the industry.

Dupont Analysis

Dupont analysis calculated the return on equity (ROE) based on net income/sales, sales/assets, and assets/equity for understanding Amazon's profit margin, asset efficiency, and leverage ability during COVID-19. Relevant financial figures from 2018 to 2021 are presented in Table 11.

Table 11

DuPont Analysis for Amazon (2018–2021, Figures in Millions)

Year	Net income	Sales	Assets	Share-holders' equity	Net income/ sales	Sales/ assets	Assets/ equity	ROE
2018	10,073	232,887	162,648	43,549	0.04	1.43	3.73	0.23130
2019	11,588	280,522	225,248	62,060	0.04	1.25	3.63	0.18672
2020	21,331	386,064	321,195	93,404	0.06	1.20	3.44	0.22837
2021	33,364	469,822	420,549	138,245	0.07	1.12	3.04	0.24134

Note. Adapted from the financial statement of Amazon's annual report (2019-2021), Refinitiv, n.d., Annual Reports (https://refini.tv/3Pl01yl).

Although Amazon was challenged with fulfillment network capacity and supply chain constraints, its North America and international sectors underwent higher net sales driven by continued efforts to reduce customer prices, such as shipping offers, and

increased demand as people stayed home for household products. Amazon Web Services sales grew more quickly because of increased customer usage and cost structure improvement (Refinitiv, n.d.). Amazon's sales growth was 20%, 38%, and 22% in 2019, 2020, and 2021 with net income growth of 15%, 84%, and 56%, respectively.

The ROE increased yearly from 18% in 2019, 23% in 2020, to 24% in 2021, mainly driven by the profit margin increase, i.e., net income/sales increase from 2018 to 2021 from 4% to 7%. Although the unit cost and income might not change much, the surge in the number increased the total profit. Its operation efficiency declined as the sales/asset ratio declined from 1.43% in 2018 to 1.12% in 2021. It might not have represented a decline in the company's sales capacity because its revenue maintained a very high growth rate yearly. Instead, Amazon's asset purchase speed was too fast. Many fixed assets were purchased yearly, especially in 2020, because of COVID-19, which showed that Amazon actively expanded its business. However, the purchased assets could not be used and converted into sales in time (Qin et al., 2022). Fulfillment and sales costs could also have been increased because of lower productivity during COVID-19 than usual, which might have decreased asset efficiency. The leverage ratio (assets/equity) decreased from 3.73% to 3.04%, which showed that its debt level decreased, and the shareholders' interests were better protected. Amazon also efficiently sold goods and received payments, contributing to its asset growth.

Cashflow, Liquidity, and Liability

Besides the Dupont analysis, the financial indicators of cash flow, liquidity, and debt should be included to evaluate the company's solvency and financial flexibility properly. The COVID-19 disruptions contributed to defaults in the accounts receivable

and affected asset valuations resulting in impairment charges. The disruption also deteriorated the availability of leases, financing credit, and other credit market segments. COVID-19 might have resulted in cash flow uncertainty and magnified liquidity risk among U.S. firms (Tut et al., 2021).

Cash flow is an indicator of the ability of enterprises to operate, repay debts, and pay dividends. As shown in Table 12, Amazon's overall net cash flow of operating activities had been on the rise in recent years, increasing from $38,514 million in 2019 to $66,064 million in 2020 because of the surge in online sales during COVID-19. The net cash flow of investment activities was negative, especially with a significant rise in 2020 because the company purchased many fixed assets and equipment that year and supported its logistics and e-commerce (Qin et al., 2022). The investment showed Amazon's expansion efforts necessary for its future growth. The cash flow of financing activities was mainly determined by the receipt and payment of liabilities and the repayment of a finance lease, which was negative in all years except 2021, probably because of its long-term debt maturity. Because most of the net cash flow from operating activities was derived from selling goods and providing services, it could provide stable cash support for future operation and development. With a reverse trend that the operating cash flow decreased in 2021, Amazon should be discrete in investing activities and shorten the span for investment return.

Amazon's liquidity position was analyzed by studying its current asset and liability structure in Table 13. The current ratio (current asset/current liability) is a significant indicator, and sometimes it is desirable to access a more immediate position by employing a quick ratio relating the most liquid assets to current liabilities (with

inventory deducted from current assets). The current ratio and quick ratio are presented in Figure 22.

Table 12

Amazon's Cash Flow Statement 2018 to 2021 (in millions)

Cash provided by/use	2018	2019	2020	2021
Operating activities	30,723	38,514	66,064	46,327
Investing activities	-12,369	-24,281	-59,611	-58,154
Financing activities	- 7,689	-10,066	- 1,104	6,291

Note. Adapted from the financial statements of Amazon annual reports (2019–2021), Refinitiv, n.d., Annual Reports (https://refini.tv/3Pl01yl).

Table 13

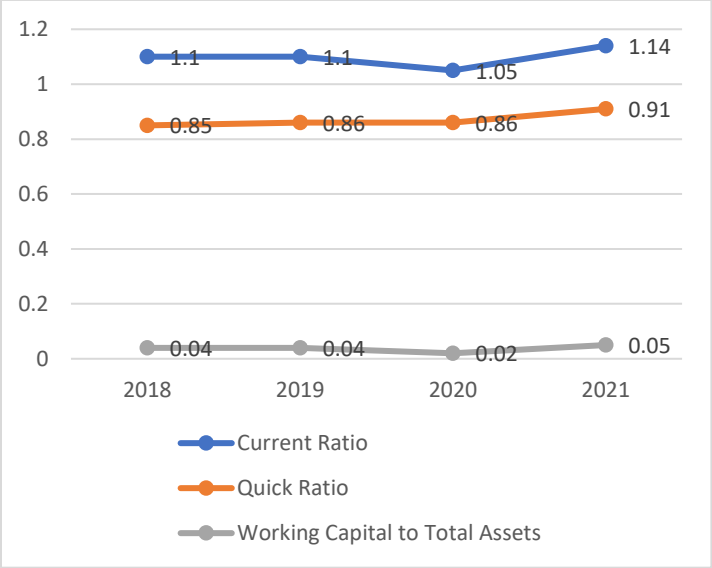
Amazon's Current Asset and Liability (2018–2021)

Current asset and liability (in millions)	2018	2019	2020	2021
Cash & cash equivalents	31,750	36,092	42,122	36,220
Inventory	17,174	20,497	23,795	32,640
Marketable securities	9,500	18,929	42,274	59,829
Accounts receivable	16,677	20,497	23,795	32,891
Current asset	75,101	96,334	132,733	161,580
Current liability	68,391	87,812	126,385	142,266

Note. Adapted from the financial statements of Amazon annual reports (2019-2021), Refinitiv, n.d., Annual Reports (https://refini.tv/3Pl01yl).

Figure 22

Amazon's Liquidity Ratio (2018 to 2021)



Note. Adapted from "Amazon Current Ratio 2010–2023," by Macrotrends, n.d.-a (https://www.macrotrends.net/stocks/charts/AMZN/amazon/current-ratio).

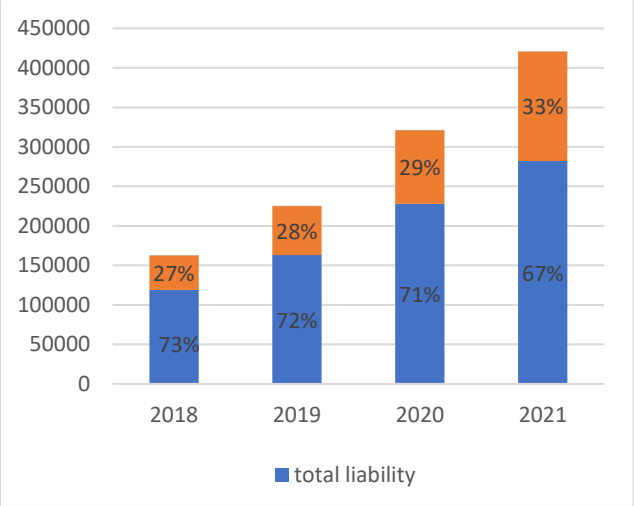
Amazon's current liabilities increased rapidly (Qin et al., 2022), more than its current assets. The year with the fastest growth was from 2019 to 2020, increasing by 43.9%. The decline of liquidity of the company was unfavorable to enhancing the solvency of the enterprise and meeting the demand for the liquidity of the asset. Nevertheless, the quick ratio remained relatively high from 2019 to 2020. It was probably because its cash and cash equivalents had increased for these years, showing that Amazon had abundant capital and short-term solid solvency. Amazon's total inventory has grown in recent years. Otherwise, its quick ratio could show better. This area was identified for operation improvement to efficiently use its working capital.

In recent years, Amazon's total noncurrent liabilities had increased more than current liabilities; the most prominent reason is that Amazon has had long-term lease liabilities since 2018 (Qin et al., 2022). Although the company's total liabilities increased

yearly, the growth rate was still relatively slow compared with the total assets shown in Figure 23. Its liability percentage to the asset decreased yearly, indicating an improving debt-paying ability. Amazon should fully use the financial leverage effect brought by liabilities and prevent the increase in financial risks.

Figure 23

Amazon's Debt Ratio (2018 to 2021)

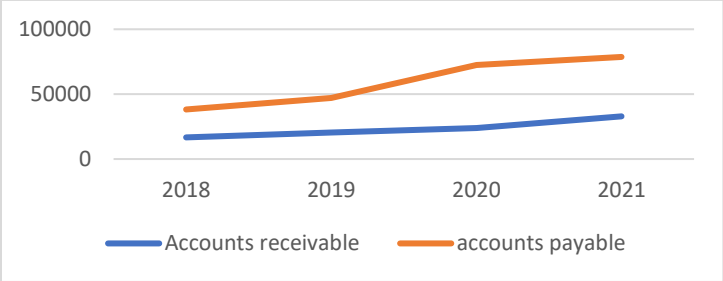


Note. Adapted from "Amazon Total Liabilities 2010–2023 | AMZN," by Macrotrends, n.d.-c (https://www.macrotrends.net/stocks/charts/AMZN/amazon/total-liabilities).

Finally, studying how Amazon managed its accounts receivable and payable to use its working capital efficiently was worthwhile. Viewed from Figure 24, its accounts payable increased more than accounts receivable, showing that Amazon was good at leveraging the other party's funds free of charge. Because of Amazon's increasing scale and demand for commercial goods, suppliers were willing to sell goods on credit for Amazon and moderately extend their collection period to benefit Amazon (Qin et al., 2022). Compared with Amazon's sharp sales growth during COVID-19, its accounts receivable grew only mildly, indicating its good performance in collecting payments.

Figure 24

Amazon's Accounts Receivable and Payable (in Millions)



Note. Adapted from the financial statement of Amazon Annual Reports (2019–2021), Refinitiv, n.d., Annual Reports (https://refini.tv/3Pl01yl).

Valuation and Peer Comparison

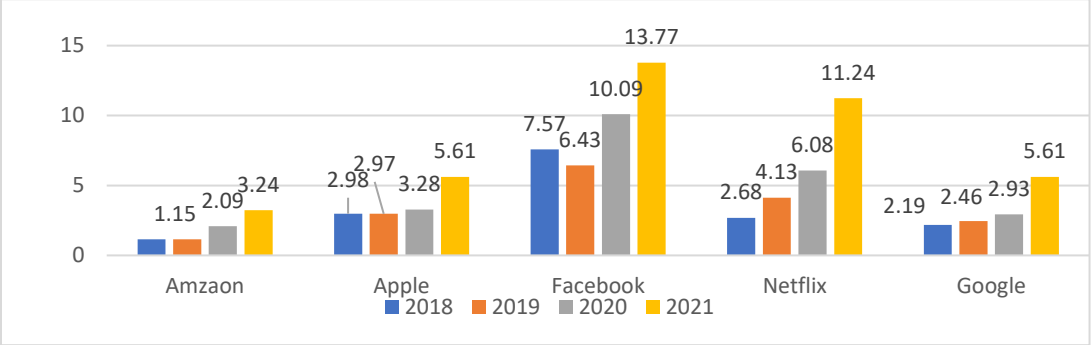
Stock peer comparison is one of the most widely used and accepted methods of equity analyses to detect undervalued stocks with similar characteristics or determine the stocks that would be a good addition to a portfolio. Traditional asset-and-earnings-based valuation metrics are significantly challenged for the new economy companies in that they contain relatively few traditional physical assets like large factories and manufacturing plants but generally derive their value from more technologically based intangible assets like patents, algorithms, software, and user interfaces (Distillate Capital, 2018). The research used the P/E ratio as a standard valuation tool to help investors search for stocks that traded at higher or lower prices than their actual value. As part of a valuation analysis module, the EPS was studied first. Then the stock prices were added for P/E ratio comparison between Amazon and Facebook, Apple, Netflix, and Google of the FAANG group and Target, Costco, and Walmart in the retail sector.

EPS Growth. Amazon's EPS denotes the portion of a company's earnings allocated to each share of common stock. To calculate EPS, investors must take a

company's net income, subtract any dividends for preferred stock, and divide it by the average outstanding shares. The EPS of Amazon and its peer competitors from 2018 to 2021 are shown in Figure 25. Amazon increased its EPS from 1.01 in 2018 to 3.24 in 2021, signifying a strengthened earning power.

Figure 25

Comparison of Amazon's EPS Growth with FAANG Companies (2018 to 2021)



Note. Adapted from "Amazon PE Ratio 2010–2023," by Macrotrends, n.d.-b (https://www.macrotrends.net/stocks/charts/AMZN/amazon/pe-ratio); "Amazon – 26 Year Stock Price History | AMZN," by Macrotrends, n.d.-d (https://www.macrotrends.net/stocks/charts/AMZN/amazon/stock-price-history).

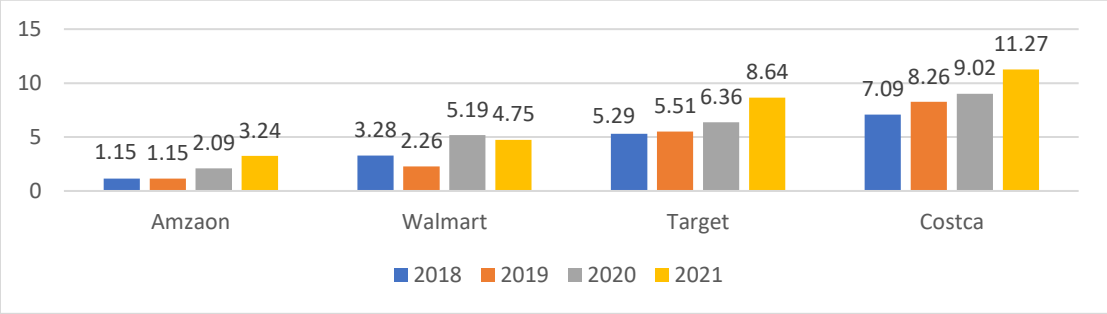
Compared with its peer competitors in the FAANG group of EPS growth in Figure 25, Amazon surpassed the others at 82% from 2019–2020. Facebook and Netflix came next with EPS growth at 57% and 47%, respectively, because of the increasing need for online social media, streaming services, and entertainment. Google had 19% EPS growth for its online search engine service during COVID-19. Apple had the smallest EPS growth at 10% because of the disruption to its forefront stores by COVID-19. In the subsequent year of recovery in 2021, Google led the growth in EPS by 91%, followed by Netflix at 84%, Apple at 71%, Amazon at 55%, and Facebook at 36%. With

part of the shopping returning to physical stores, it was evident that Amazon lowered its EPS growth speed (Granahan, 2023).

In the retail sector, although many small competitors or nonessential businesses were shut down during COVID-19, giant retailers were allowed to open for consumer staple supplies (Healy, 2022). In Figure 26, Walmart had an EPS growth in 2020 at 129% because of the surging need for its low-cost goods. Walmart outperformed the total market only at the height of the lockdowns and continued its increase in sales revenue in its domestic sector, but decreased revenue in its international and Sam's Club sector, affecting its operating and net income (Qin et al., 2022), and its EPS was in a downward trend in the following year. Target grew EPS at 15% and 35% for 2020 and 2021, and Costco grew from 9.2% to 24% by 2021. Both strengthened their competitiveness during the crisis but fell behind Amazon's EPS growth. Target's investments in technology and efficiency failed to unlock a competitive edge (Lash, 2023). Despite its growing revenue during COVID-19, Costco increased expenses on hazard pay for its employee, sanitation costs, and other safety protocols (Isidore, 2020).

Figure 26

Comparison of Amazon's EPS Growth with Retail Companies (2018 to 2021)



Note. Adapted from "Amazon PE Ratio 2010–2023," by Macrotrends, n.d.-b (https://www.macrotrends.net/stocks/charts/AMZN/amazon/pe-ratio); "Amazon – 26 Year Stock Price History | AMZN," by Macrotrends, n.d.-d (https://www.macrotrends.net/stocks/charts/AMZN/amazon/stock-price-history).

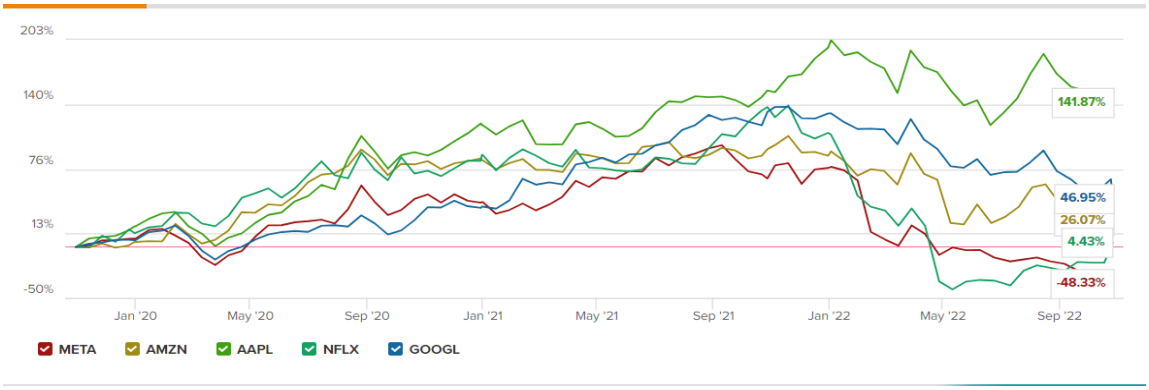
P/E Ratio. There was no comparability of the absolute value of EPS between stocks if the stock price was not included. The P/E ratio provides evidence of how much an investor earns for the amount he pays for a share of stock. Figure 27 shows a comparison of the stock performance of the FAANG companies, and Figure 28 shows a comparison of the stock performance of the retail stocks. The P/E ratios can then be compared to evaluate their performance.

Apple, Amazon, and Netflix were the best performers from the outbreak of COVID-19 until mid-2021, when the trend started to change, and Facebook and Netflix fell further behind. One potential reason was the decreased demand for online social media and entertainment. Facebook did very well historically but was disrupted by massive innovation (Keller et al., 2022). Netflix was pressured by decreasing subscriber growth and growing production costs of creating content, driven by the competition for new content (Whitten, 2022). Google demonstrated more sustainable growth as it continued to invest heavily in data centers and other infrastructure to keep it as a centerpiece of online activity with offerings such as its search engine, digital advertisement, YouTube video platform, and Google Cloud service (Brand Equity, 2022).

Based on the stock performance of retail companies in Figure 28, Amazon outperformed Target and Costco from the outbreak of COVID-19 until early 2021. It gave way to Target and Costco when the lockdown started to loosen and customers started to return to physical stores, but Walmart's stock price remained relatively flat, questioning its fundamental performance and growth potential.

Figure 27

The Stock Performance Comparison of FAANG Companies



Note. From "FAANG Stocks Comparison," by TipsRank, n.d., p. 3 (https://www.tipranks.com/compare-stocks/faang).

Figure 28

The Stock Performance Comparison of Retail Companies

Note. Adapted from Yahoo Finance (https://finance.yahoo.com).

The P/E ratios of the FAANG and retail companies are listed in Table 14 from 2019 to 2021. The P/E ratios for Facebook, Apple, and Google made more sense and were more attractive than Amazon and Netflix. Apple was historically inexpensive and remained more attractively valued than the overall market with a higher normalized cash

flow yield than the average company. It was the only one among the FAANG groups that paid dividends each year although it dropped from 1.3% in 2019 to 0.7% in 2020 during COVID-19. Google's valuation was also more appealing than the overall market. Facebook had been generally attractive after a significant sell-off in early 2018. Recently, Amazon made a stock split to make its stock price more appealing, and its P/E ratio decreased year over the year.

Table 14

P/E Comparison Between Amazon and Peer Competitors

	FAANG stocks					Retail stocks		
FY	Facebook	Apple	Netflix	Google	Amazon	Walmart	Target	Costco
2019	31.87	22.76	45.45	27.23	80.31	36.98	12.16	31.67
2020	27.05	35.57	88.79	29.86	77.97	21.10	20.23	44.86
2021	24.37	29.28	69.41	25.81	51.47	28.31	15.34	46.16

Note. The end of a fiscal year is January 31 for Walmart and Target, November 30 for Costco, and December 31 for FAANG groups. Adapted from https://www.macrotrends.net.

In the retail sector, the accounting treatment of Amazon's high research and development spending and relatively smaller capital expenditures caused its P/E to drastically exceed the average P/E for the retail sector (Distillate Capital, 2018). It made people think of Amazon as a costly stock compared to other retailers though investors expected the company to grow or become profitable. Based on an alternative valuation framework by Distillate Capital (2018), which considered and adjusted for the widely used accounting conventions related to leasing activity in traditional retailers, Amazon's price was much more comparable to the retail sector and was even less expensive.

According to a Refinitiv (n.d.) report, the earning rating was 5 for Amazon and 4.2 (out of 10) for department stores on average.

Effect of EPU

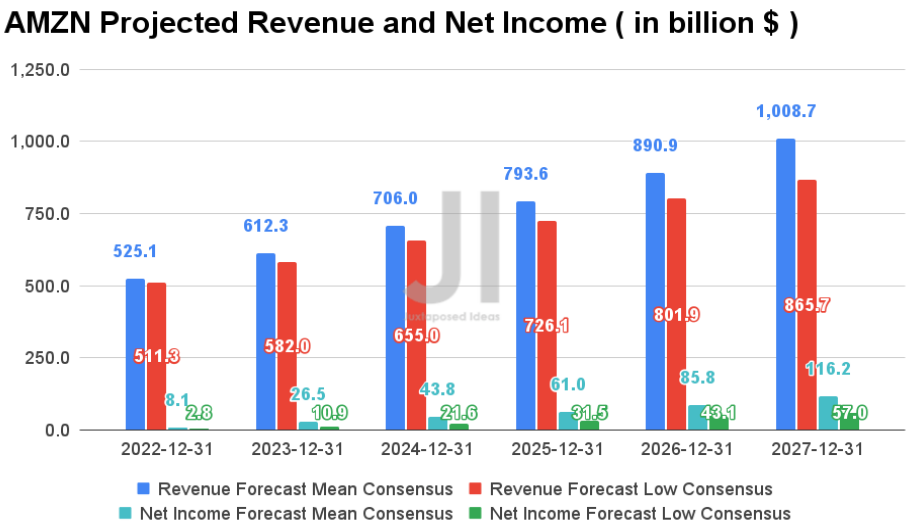
FED monetary and fiscal policy played a role in Amazon's business performance. The interest rate decrease and the family relief fund accelerated Amazon's business growth. In contrast, the interest rate hike could kill the hyper-growth enjoyed by Amazon during the COVID-19 pandemic, given the potential reduction in consumer spending moving forward. According to a report by Juxtaposed Ideas (2022), the company had reported revenue growth at a calculated average growth rate (CAGR) of 29.41% in the past 2 years, which was expected to plunge to a CAGR of 14.16% by fiscal year 2023 based on mean consensus estimates, or worse at 11.3%, assuming lower consensus estimates. Amazon's profitability was estimated to decline by -90% in the year 2022 based on Amazon's projected revenue and net income in Figure 29. Incremental costs for its operational expenses contributed to the decline of profitability, including $2 billion for inflated transportation costs, China's COVID policy, and the ongoing Ukraine war; $2 billion for excess labor force post-Omicron variant wave, and $2B for overcapacity in its in-house fulfillment and transportation network.

Amazon then faced growing pressure to prove they could sustain the high-flying growth they enjoyed during the crisis. Granahan (2023) found that 2022 was Amazon's slowest year ever in terms of growth because of inflation as rising food and natural gas had shrunk Amazon's profit margin. Consumers' return to in-store shopping and rising interest rates helped slash the value of Amazon stock by nearly half in 2022. According to CNBC report, not all of Amazon's investments were wise moves: its recent investment

in EV manufacturer Rivian brought the total loss to $11.5 billion in 2022 (Levy, 2022). Shifting market conditions added another challenge. Investors began to rotate out of tech-stocks at the end of 2021, and stocks were sold off further after the FED raised its benchmark interest rate (Juxtaposed Ideas, 2022). The case illustrated the point of the investment cycle.

Figure 29

Amazon Projected Revenue and Net Income



Note. From "Amazon: Fed's rate Hike Spells Trouble for its Growth and Profitability," by Juxtaposed Ideas, 2022, p. 5, *Seeking Alpha* (https://seekingalpha.com/article/4519001-amazon-fed-rate-hike-spells-trouble-for-growth-and-profitability).

Summary

The case study evaluated Amazon's financial situation during COVID-19 through vertical analysis and horizontal comparison. It proved how Amazon enhanced its operational systems to tackle the pandemic and sustain steady growth. Granahan (2023) identified the most potent force behind Amazon's success was its ability to operate at

scale to increase revenues and profit. One of the primary ways was by constantly investing in research and development and identifying new market opportunities with the digitalization of shopping and telehealth as two major pathways for future growth. With Amazon's long-term prospects still shining and the shares currently sitting in value territory, the stock could be a good buy for those with the right investment objectives and risk tolerance.

While the COVID-19 occurred, the company's performance was determined by company size, indebtedness, profitability, internationalization, number of employees, age, and leverage (Pereira et al., 2021). Wanasida et al. (2021) emphasized business analysis capabilities, information and innovation quality, and organizational agility. Amazon practiced those principles well in the crisis. Despite moving upwards and downwards, its founder Jeff Bezos applied three core strategies to revolve customers` demand: the best selection, the lowest prices, and cheap and convenient delivery (Lee, 2015). In the post-COVID-19 age, Amazon should continue to expand with low cost and high efficiency through its unique corporate style and management technologies to create the world's best chain network service brand (Qin et al., 2022).

CHAPTER 5: DISCUSSION AND CONCLUSIONS

Investment Principles

The COVID-19-induced stock market performance offered several lessons for investors. Some were reminders of timeless and perennial investment pitfalls, and others indicated evolving market dynamics that could help investors prepare for the subsequent unprecedented events (Gezelius, 2020). These principles were based on many perspectives of the market mechanism.

Risks and Opportunities Coexist

COVID-19 did not pull all companies down. Although some energy, utility, entertainment, and airline companies reacted negatively to the crisis, some reacted positively based on their industry and corporate management in high-tech, e-commerce, health care, and even home products. Investors should identify market trends. The momentum with which a company emerges from a downturn determines its course for years: those that come out strong keep outperforming, but the latecomers continue to lag (Bradley & Stumpner, 2021). The growing divergence between individual companies highlighted the reality that although every crisis produced winners and losers, economic shocks also created opportunities for those who acted boldly to surge ahead.

Knowing how to navigate these turbulent times is essential in protecting what one has and finding an opportunity for portfolio growth (Solanki, 2023). The market was at its lowest point at the outbreak stage of COVID-19 with the uncertainty of its nature and negative economic impact. Investors' fear sentiment has accelerated such uncertainty, but most sectors have recovered their ground or even outperformed what was before COVID-19 in a couple of months with even abnormal returns. The success of the vaccine rollout

has not necessarily meant more substantial equity returns because some countries with higher vaccination rates have been the best and worst performing stock markets (Fong, 2021). An investor should closely monitor how governments react with economic policies to respond to a crisis because expansionary monetary policies cause higher output growth and stock market returns (Feldkircher et al., 2021).

Identify Cycle and Avoid Prediction

Being aware of investment cycles is critical for investors. Oliver (2022) recognized that cyclical fluctuations were crucial to investment markets. Most markets are driven by economic developments but magnified by investor sentiment swings. A business cycle would last 3 to 5 years within a longer term of a bull or bear market. It tended to relate to the standard economic cycle in which inflation or other imbalances built up after a few years of economic expansion. The result was monetary tightening, leading to a downturn or recession, then falling inflation and monetary easing, setting the scene for the next expansion (Oliver, 2022). The disruption of COVID-19 and market panic ended the 11-year U.S. bull market (Solanki, 2023). Within the bear market, monetary easing policies triggered in March 2020 led to a rising stage. It was still in the downswing phase of the business cycle with the possibility for a weaker and constrained phase of the long-term cycle.

The attempts to forecast economic cycles and market movements through the overwhelming number of scientific studies showed the futility of making short-term market predictions (Gezelius, 2020). The COVID-19 crisis was a compelling case in point. Since the financial crisis in March 2009, hundreds of well-articulated research reports argued for the bull market's end. Not a single report accurately predicted both the

timing and cause, that is, markets would come crashing down in March 2020, triggering unprecedented business interruption globally (Gezelius, 2020). The standard warning to investors is to avoid trying to time the market. Nevertheless, the relationship between the stock market evolution and the real economy was evident (Jareño & Negrut, 2016), and the research proved that economic variables such as GDP, CPI, unemployment, and oil prices were practical indicators to predict market performance during COVID-19.

Diversification Offsets Risk

One investment principle is to diversify the investment portfolio to decrease risk. The systematic risks and cross-market contagion during COVID-19 affected the benefits of stock portfolio diversification during stress periods (Alqaralleh & Canepa, 2021). However, a portfolio of stocks from outperforming sectors offset the loss. At the company level, a firm stood against the risks better with a portfolio of businesses. The impact of COVID-19 and the global economic slowdowns varied across the sectors in some companies operating multiple businesses. Although some areas of its portfolio faced substantial declines, others—products and services connecting people, home-related necessities, and solutions to diagnose, prevent, and treat COVID-19—experienced higher demand. Some companies quickly activated their capacity and doubled the production of demanded products to support the urgent public health response (Refinitiv, n.d.). Others made additional investments and forged partnerships with other companies and governments worldwide to bring on the additional capacity to meet market needs. Considerable performance variation across factors during the crisis required technology-enabled, timely, and accurate analysis of portfolio factor exposures at different levels of

aggregation (Melas, 2020). COVID-19 should therefore serve as a learning experience for portfolio management in similar circumstances in the future.

Global investing provided risk diversification opportunities as the crisis spread to different regions at different times and with varying intensity (Melas, 2020). Because of the different government intervention policies, regional markets performed unevenly. The Asian market, because of its experience in the previous SARS and stricter government policies, performed better than the Europa stock market (Hui & Chan, 2022). The U.S. stock market rebounded when the government started its monetary and financial policies. Australia was relatively flat because of sitting mostly in value industries (Alam et al., 2020). A portfolio manager should have international diversification in cross-market investment with a profound understanding of global macro-economy and regional market development required.

Management, Innovation, and Technology Merit Attention

COVID-19 affected companies with equal stakes, but some companies recorded less loss than others if they had a competitive edge in their management practice, innovation, and technology capacity. The measures included making business continuity plans ahead of risk (Refinitiv, n.d.), reacting quickly to mitigate risks by building digital platforms, and inventing new business models and products. Other companies increased their restructuring and cost reset actions, which supported profitability despite the headwind from lower sales. Those with international outlets tried to accurately project demand and infrastructure requirements around the globe and deploy their production, workforce, and other resources accordingly. They managed to award their investors a return during the market downturn.

The pandemic has generated a rapid demand for efforts to use innovative technologies to cope with damage from COVID-19 on people's lives (O'Leary, 2020, as cited in He et al., 2021). The quick transition to telehealth, telework, and online education brought benefits in managing this pandemic and even after the pandemic (Richter, 2020, as cited in He et al., 2021). The information technology sector outperformed the MSCI AC World index during the COVID-19 downturn, and the digital economy took a giant leap forward by exposing new broad segments of consumers to its emergence (Gezelius, 2020). Other categories greatly challenged by COVID-19 were health care companies that acted quickly for innovative medicines in areas of unmet need with active business continuity plans and diversified business models to prepare for future events like COVID-19 (Refinitiv, n.d.).

Policy Implications

The COVID-19 outbreak highlighted the importance of governments discovering avenues to mitigate national uncertainty. Policymakers must consider economic policy uncertainty as a risk factor that would cause adverse consequences (Al-Thaqeb et al., 2022). Governments should discern the priority with immediate actions and keep policies consistent to bring an end to the crisis and economic recovery.

Quick and Correct Policies

When policymakers face a crisis that may affect their economy, they must react quickly to mitigate the impact of the crisis (Hui & Chan, 2022). Otherwise, investors would lose confidence in the government to deal with the crisis and sell their stocks, leading to a fall in the equity market (Hui & Chan, 2022). The impact of the crisis on the economy could become more significant. Although some policies temporarily stabilized

the situation, they also generated distortions because the COVID-19 crisis was an exogenous crisis with no monetary origin (Fernández et al., 2022). Raising aggregate demand and providing liquidity to businesses were not cures to the fundamental problem in the crisis when spending was constrained by health concerns and stay-at-home restrictions (Gravelle & Marples, 2021) and even generated asset bubbles in the financial market.

Policymakers thus needed to develop new approaches to promote sustainable recovery from the COVID-19 downturn. One step in this direction was to avoid subsidizing employee retention in sectors such as airlines, where labor demand was unlikely to reach prepandemic levels (Barrero et al., 2020), or raised spending in unprofitable areas. A mandatory shutdown because of a supply shock could not be solved alone with government spending or demand-side measures (Lacalle, 2021). Instead, incentives should be provided for workers to pursue new jobs in the hope that they find new productive sectors (Thorbecke, 2020) and support to help people stay at home while keeping their jobs with new and improved skills. The monetary and fiscal policies need to be normalized quickly enough to avoid high inflation, but not so quickly that it would cause a recession (Labonte & Weinstock, 2022). Although the stimulus policies helped decrease unemployment, they caused another problem of low labor participation rate (Labonte & Weinstock, 2022), which decreased productivity. If the policymakers resorted to an easier mechanism to pump liquidity into the market, they might not make the efforts for structural reforms necessary for long-term economic recovery (Fernández et al., 2022).

Sustainable and Consistent Policy

The ideal recovery method should be based on sustainable post-COVID-19 strategies. Therefore, countries should have planned for different stages of response to COVID-19, including an emergency stage, an exit strategy, and a new normal life (Mirza et al., 2020). Inconsistency not only delayed an effective response, very likely allowing the virus to spread in the meantime, but it also sent markets into panic, making a dire economic situation even worse (Goldberg, 2020). Before COVID-19 was subdued, policy coherence could have reduced its impact on the economy and society.

A consistent policy framework to stabilize stock markets would improve the confidence of individual and institutional investors and, therefore, make stock markets more resilient to other external factors like oil price shocks (Managi et al., 2022) or geopolitical conflicts. Government officials should have prioritized COVID-19 with consistent policies rather than divert their efforts to elections or other political affairs, extending the campaign against COVID-19 at a higher economic cost. Because of the nature of a global health crisis, the governments of all countries should have coordinated activities, and no country could remain intact in a community where others acted inconsistently.

Balancing Between Protecting Health and Economy

Crises such as the COVID-19 pandemic created dilemmas for policymakers because the long-term implementation of restrictive social distancing policies could cause massive economic damage and ultimately harm health care systems (K. Chen et al., 2023). COVID-19 was an unprecedented public health crisis, and the government's primary obligation was to curb the virus with restrictive policies for health safety first.

Goldberg (2020) asserted that those shaping health policies must show leadership, humility, and consistency. The U.S. government needed to be quicker to curb the virus at its initial breakout because mandating social distancing policies when the infected population grew too large incurred a higher economic cost. Although social distancing could effectively contain the spread of infectious diseases by reducing social interactions, it might have had economic effects (K. Chen et al., 2023). It should be carried out as soon as possible, requiring resolute leadership and the coordinated efforts of the public willing to give up short-term freedom for long-term benefit.

Both politicians and scientists must find a way to balance public health and the preservation of the business fabric to ensure a solid recovery (Lacalle, 2021). Providing a significant stimulus mitigated the impacts of COVID-19, but the lockdown policy negatively affected some business sectors. The main objective of public policy in a health crisis may be reoriented to increase public health care capacity, and government expenditures should help remedy some of the economic losses produced by containment and mitigation measures, reducing the direct pain inflicted on individuals and businesses and aligning incentives for social distancing (Loayza & Pennings, 2020). Suppose governments damaged the economic fabric of the country during the health crisis. In that case, the economy might have added a lasting recession to the fatalities of COVID-19, thus creating a more extensive, longer lasting social and health challenge (Lacalle, 2021). Economic policies should reinvigorate the world economy after the health care tsunami was curbed (Furman, 2020).

Faith-Driven Investment

For Christ-following investors, it is essential to follow investment principles driven by faith, believing that God owns it all and that He cares deeply about what is behind investment strategies. During a time of uncertainty, Christian investors have a different understanding of the unknown as they have a relationship with the Almighty, to Whom nothing is unknown. “A faithful man will abound with blessings, but whoever hastens to be rich will not go unpunished” (*Holy Bible Recovery Version*, 2003, Prov. 28:20). The love of money is the root of all evils. Through this craving, some unknowns have wandered away from the faith and pierced themselves with many pangs (1 Tim. 6:10).

A growing community of ministries, businesses, entrepreneurs, investors, and fund managers has experienced God awakening a movement (Keller et al., 2022). It is more significant than simply avoiding “sin stocks.” This movement is all about investing in human flourishing and driving capital into initiatives that stand for something significant. God gives His people the ability for businesses and investments to bring order out of chaos, solve problems, and provide solutions to create a better world. God and His people have a shared vision to invest in innovative ideas for His work to move forward and bring His Kingdom on earth as it is in heaven. COVID-19 and the flourishing of digital technology open the way for God to supply life to the earth and gain more market shares. God’s beauty will be manifested in a broken world tortured by COVID-19.

Unlike ordinary investors who seek high returns in as short a time as possible with the least risk possible, faith-driven investors are less about finding the best return and more about stewarding God’s resources appropriately. The mission is to invest in

Christian entrepreneurs who lead companies with a spiritual lens, are committed to making a social impact, and deliver a financial return (Keller et al., 2022). Thus, ESG (environment, social, and governance) investing should be practiced as environment, social, and Godly (spiritual) investing with eternal value.

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