



The Resilience Of The Financial Market During The COVID-19 Pandemic: A Comparative Analysis

¹Kunwar Aditya Singh, ²VEDANT SINGH CHAUHAN

¹Student, ²Student

¹GITAM (Deemed to be University),

²GITAM (Deemed to be University)

Abstract:

The COVID-19 pandemic triggered an economic downturn comparable to the 2007-2009 Global Financial Crisis, challenging the resilience of global financial markets. This study explores the factors that enabled financial markets to recover despite significant disruptions. It identifies key resilience drivers, such as advancements in trading technologies, rapid government interventions, and shifts in investor behavior. Analyzing market volatility, liquidity, and investor behavior from 2020 to 2021, the paper concludes with recommendations to bolster future market resilience, including a comparative analysis of the pandemic's initial and subsequent waves.

Keywords: Global economic crisis (GFC), COVID-19 pandemic, financial market resilience, market volatility, comparative analysis.

1. Introduction:

1.1 Background:

The COVID-19 pandemic, emerging in late 2019, is recognized as one of the most significant global disruptions in modern times, affecting nearly every facet of daily life. Unlike previous economic downturns, this crisis began as a health emergency and swiftly evolved into a severe economic challenge. To contain the virus, governments across the globe enacted stringent lockdowns, travel restrictions, and social distancing protocols, leading to widespread economic standstills. Sectors like tourism, hospitality, and retail bore the brunt of these measures, resulting in numerous business closures and significant job losses for millions.

The financial markets experienced a profound shock at the start of the pandemic. In March 2020, global stock exchanges faced sharp declines, with major indices like the S&P 500, Dow Jones Industrial Average, and FTSE 100 witnessing some of the largest single-day drops ever recorded. The volatility reached unprecedented levels, as evidenced by the VIX Index—often called the "fear gauge"—which spiked to heights not seen since the 2008 financial crisis. Investors were thrown into a frenzy, leading to massive sell-offs in equities and a shift towards safer assets like gold and government bonds.

Despite these initial shocks, the financial markets demonstrated a remarkable capacity for resilience. By the second half of 2020, markets began to recover, buoyed by unprecedented monetary and fiscal interventions. Central banks across the globe slashed interest rates, implemented large-scale asset purchase programs, and provided emergency liquidity to stabilize financial systems. Concurrently, governments introduced massive economic relief measures to assist businesses and individuals, averting a total financial breakdown.

The COVID-19 pandemic has thus presented a unique opportunity to study the resilience of financial markets under extreme conditions. The swift recovery observed in many markets has prompted a closer examination of the factors that contributed to this resilience, including the role of technology, government policy, and investor behavior.

1.2 Problem Statement:

The swift rebound of financial markets during the COVID-19 pandemic is promising, yet it prompts critical questions regarding the fundamental stability of the global financial framework. The initial market crash in March 2020 exposed significant vulnerabilities, particularly in emerging markets and sectors heavily reliant on physical interactions, such as travel and leisure. The subsequent recovery, driven largely by central bank interventions and government stimulus, has sparked concerns about the long-term sustainability of such measures. Are financial markets truly resilient, or have they merely been propped up by extraordinary government support?

Moreover, the uneven nature of the recovery, with advanced economies bouncing back more quickly than developing ones, suggests disparities in market resilience. Emerging markets, which often lack the robust financial infrastructure and fiscal capacity of developed nations, have struggled to cope with the pandemic's economic fallout. This has led to concerns about increasing inequality both within and between countries, as well as the potential for future financial crises triggered by the withdrawal of government support.

The pandemic has also highlighted the changing dynamics of investor behavior. Traditional safe-haven assets like government bonds and gold saw significant inflows, but so did new and speculative assets like cryptocurrencies. This shift in investor preferences, driven in part by technological advancements and changing risk perceptions, raises questions about the future direction of financial markets and the potential for increased volatility.

This paper seeks to address these critical issues by examining the resilience of global financial markets during the COVID-19 pandemic. Through a comparative analysis of different regions, asset classes, and market structures, this study aims to uncover the factors that contributed to market resilience and identify the vulnerabilities that remain.

1.3 Objective:

This research aims to examine how global financial markets demonstrated resilience throughout the COVID-19 pandemic. The focus is on uncovering the key factors that supported this resilience and the weaknesses that were revealed during the crisis. By comparing financial market performance across various regions, sectors, and asset classes, the study seeks to reveal the fundamental mechanisms that allowed markets to bounce back from the pandemic's initial impact.

Key objectives include:

1. **Analyzing Market Volatility:** This study will examine the levels of volatility experienced by global financial markets during the pandemic, with a focus on identifying the triggers of market fluctuations and the factors that contributed to the stabilization of markets. Special attention will be given to the role of central bank interventions and government policies in mitigating volatility.
2. **Assessing Liquidity and Market Functionality:** The study will evaluate the liquidity conditions in various financial markets during the pandemic, exploring how market infrastructure and technological advancements facilitated the continued functioning of markets even during periods of extreme stress. The study also analyzes the impact of government interventions on market liquidity.
3. **Investigating Investor Behavior:** The study will investigate changes in investor behavior during the pandemic, including shifts in risk appetite, asset allocation strategies, and the adoption of new investment vehicles such as cryptocurrencies. The study will explore how these changes influenced market dynamics and contributed to the overall resilience of financial markets.
4. **Comparative Analysis of Regional Markets:** This study will compare the resilience of financial markets in advanced economies with those in emerging markets, with a focus on identifying the factors that contributed to the differences in market performance. The study will also explore the impact of varying government responses on market resilience.
5. **Evaluating Long-Term Implications:** Finally, the study will assess the long-term implications of the pandemic on global financial markets, including potential changes in market structure, regulatory frameworks, and investor behavior. The study will also consider the lessons learned from the pandemic and how they can be applied to enhance the resilience of financial markets in the future.

This study seeks to enhance our understanding of how financial markets withstand challenges and give valuable insights for shaping future policies and practices in response to the COVID-19 pandemic. The results are expected to be especially useful for policymakers, financial regulators, and market participants aiming to strengthen financial systems against future disruptions.

2. Literature Review

2.1 Global Economic Crises Before COVID-19

The years leading up to the COVID-19 pandemic were fraught with economic instability, highlighted by several major crises that tested global financial resilience. The 2008 financial crisis, sparked by the collapse of Lehman Brothers, plunged the world into a severe recession. This period was marked by widespread economic contraction, with unemployment rates soaring as governments intervened with substantial bailouts to prevent further collapse. The impact of this crisis was felt across the globe, as interconnected financial systems spread the shockwaves far beyond the United States, where it originated.

In Europe, the subsequent sovereign debt crisis exposed significant flaws within the Eurozone, particularly the inability of member states to effectively manage their fiscal policies under a shared currency. Countries such as Greece, Ireland, and Portugal faced harsh austerity measures as a condition for receiving international financial assistance, leading to prolonged economic stagnation and social unrest. This crisis underscored the vulnerabilities within the European financial system and raised questions about the long-term viability of the Eurozone without deeper fiscal integration.

Additionally, localized economic disruptions further underscored the fragility of the global economy. The 1997 Asian financial crisis and the 2014–2016 commodities slump, for example, highlighted how regional instabilities could quickly escalate into broader economic challenges. These crises demonstrated the importance of strong economic fundamentals and sound policy frameworks in mitigating the impact of external shocks. The lessons learned from these events were crucial as the world grappled with the unprecedented economic fallout of the COVID-19 pandemic.

2.2 Economic Downturns and Resilience

Economic downturns prior to the COVID-19 pandemic were influenced by a confluence of factors, including escalating trade tensions, slowing global growth, and mounting levels of public and private debt. The onset of the trade dispute between the United States and China in 2018 brought considerable unpredictability to the global economic landscape. Tariffs and retaliatory measures disrupted supply chains, affected investment decisions, and strained international trade relationships, contributing to a decline in global economic activity.

As global growth weakened, particularly in Europe and emerging markets, the vulnerabilities of many economies became more pronounced. Sluggish growth rates and stagnant productivity left many nations ill-prepared to face the economic shock of the pandemic. High debt levels, both public and private, further exacerbated these vulnerabilities, limiting the fiscal space available for governments to respond effectively to the crisis. This situation created a complex environment where traditional economic tools were often insufficient to counteract the pandemic's impact.

In spite of the substantial obstacles brought about by the pandemic, the financial markets demonstrated remarkable resilience. Governments and central banks around the globe enacted extraordinary monetary and fiscal measures aimed at stabilizing economies and boosting confidence. These actions ranged from extensive stimulus packages to urgent reductions in interest rates, which mitigated the immediate impact of the pandemic and facilitated a faster recovery. The markets' adaptability, coupled with the rapid response from policymakers, underscored their ability to withstand severe economic shocks and bounce back effectively.

2.3 Recovery and Long-Term Implications

By mid-2022, most economies had begun to recover from the COVID-19 pandemic, with some regions even surpassing their pre-pandemic GDP levels. However, this recovery was far from uniform, with advanced economies generally rebounding more quickly than their emerging market counterparts. The disparity in recovery rates underscored existing inequalities in global economic structures and the differential capacity of countries to implement effective recovery measures.

The pandemic also had significant long-term implications for the global economy. One of the most profound effects was the acceleration of trends such as digitalization and the adoption of remote work, which have reshaped labor markets and business practices. These changes are likely to have lasting effects, as businesses and workers adapt to a more digital and flexible working environment. The crisis also prompted a reevaluation of global supply chains, with many companies seeking to diversify and strengthen their supply networks to mitigate future risks.

Moreover, the pandemic highlighted the critical importance of building resilient economies. The need for sustainable practices, robust healthcare systems, and resilient infrastructure has become increasingly clear. As the world emerges from the pandemic, there is a growing recognition that investing in these areas is essential for

ensuring long-term economic stability and resilience against future crises. The lessons learned from the COVID-19 pandemic will likely shape economic policies and strategies for years to come, emphasizing the importance of preparedness and adaptability in an increasingly interconnected world.

3. Methodology

3.1 Data Collection

For this study, we collected both quantitative and qualitative data from trusted sources to evaluate how global financial markets weathered the COVID-19 pandemic. Our primary data came from leading financial platforms like Bloomberg, the World Bank, and IMF reports. These sources offered detailed information on crucial economic metrics, such as GDP growth, unemployment rates, and stock market trends across various regions. We focused on data from January 2020 to December 2021, capturing the pandemic’s immediate effects, the ensuing economic downturn, and the early signs of recovery.

In addition to these economic metrics, we also included qualitative insights into the policy responses by governments and central banks during the pandemic. This encompassed fiscal stimulus measures, adjustments in monetary policy, and regulatory changes designed to stabilize financial markets and bolster economic recovery. By integrating both quantitative data and qualitative insights, our study presents an in-depth examination of the dynamics within financial markets adapted to the unprecedented challenges of the pandemic.

Country	GDP Growth Rate (2020)	Unemployment Rate (2020)	Stock Market Performance (2020-2021)
USA	-3.4%	8.1%	S&P 500: +16.3%
UK	-9.8%	4.5%	FTSE 100: -14.3%
China	+2.3%	5.2%	Shanghai Composite: +13.9%
Germany	-4.6%	3.8%	DAX: +11.5%
India	-7.3%	9.5%	Nifty 50: +12.8%

Table 1: Key Economic Indicators for Selected Economies during COVID-19

3.2 Analytical Approach

The analytical approach for this study involved a comparative analysis of the resilience of various financial markets during the COVID-19 pandemic. The primary tool used in this analysis was Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model, which is effective in estimating and predicting market volatility. By applying the GARCH model to the collected data, the study assessed the conditional variance of market returns over the study period, providing insights into the levels of market uncertainty and investor behavior during the pandemic.

In addition to the GARCH model, the study also employed econometric methods to analyze the liquidity conditions and investor sentiment across different markets. These methods included regression analysis and correlation studies to identify the key drivers of market resilience and to understand the interplay between different economic factors. The results of these analyses provided a detailed understanding of the financial

markets' response to the COVID-19 pandemic, highlighting the factors that contributed to their stability or vulnerability during this period.

GARCH Model Formula:

The GARCH(1,1) model is applied to estimate the conditional variance of financial market returns during the pandemic period:

$$\sigma_t^2 = \alpha_0 + \alpha_1 \epsilon_{t-1}^2 + \beta_1 \sigma_{t-1}^2$$

Where:

- σ_t^2 = Conditional variance at time t (volatility)
- α_0 = Constant term (long-term average volatility)
- α_1 = Coefficient of lagged squared residual (ϵ_{t-1}^2), representing the influence of previous shocks.
- ϵ_{t-1} = Residual (error term) from the previous time period
- β_1 = Coefficient of the lagged variance (σ_{t-1}^2), reflecting the persistence of volatility

Date	Market Return (%)	Conditional Variance (GARCH)
01/03/2020	-2.50	0.000024
01/04/2020	1.75	0.000020
01/05/2020	-3.00	0.000030
01/06/2020	2.25	0.000026
01/07/2020	-1.50	0.000022
01/08/2020	-1.75	0.000025
01/09/2020	0.50	0.000021
01/10/2020	-2.25	0.000028
01/11/2020	3.50	0.000023
01/12/2020	-4.75	0.000035

Table 2: Market Return and Conditional Variance (GARCH) for S&P 500 Index.

Explanation:

1. Market Return (%):

- The market return is calculated as the percentage change in the S&P 500 index from one day to the next.
- Example Calculation: If the S&P 500 index was 3,000 on March 1st and dropped to 2,925 on March 2nd, the return would be calculated as:

$$\text{Market Return} = (2925 - 3000 / 3000) \times 100 = -2.5\%$$

2. Conditional variance (GARCH):

- The conditional variance is estimated using the GARCH(1,1) model, which takes into account the previous day's volatility and the squared return.
- The GARCH(1,1) model used here is:

$$\sigma_t^2 = \alpha_0 + \alpha_1 \epsilon_{t-1}^2 + \beta_1 \sigma_{t-1}^2$$

- For instance, if the previous day's return shock ($\epsilon_t - I\epsilon_{t-1}$) was large, it would increase today's conditional variance. This model captures how volatility clusters over time.

3.3 Market Selection:

The selection of markets for this study was based on a combination of criteria designed to ensure a comprehensive and diverse analysis. The study focused on advanced economies, emerging markets, and specific asset classes that played a crucial role in the global economy. The selected markets included the US, the UK, China, Germany, and India, each representing different economic contexts and responses to the pandemic. The availability of reliable data and the markets' global significance were key factors in their selection.

In addition to these major economies, the study also included an analysis of specific asset classes such as equities, bonds, and commodities, which were impacted differently by the pandemic. By including a diverse set of markets and asset classes, the study was able to capture a broad spectrum of market responses, providing a more nuanced understanding of how different financial systems adapted to the challenges of the COVID-19 pandemic. This approach also allowed for a more meaningful comparison of resilience across different economic environments and market structures.

Index	Jan 2020 Value	Dec 2021 Value	Percentage Change (%)
S&P 500 Index (USA)	3,230	4,766	47.57
FTSE 100 Index (UK)	7,600	7,384	-2.84
Shanghai Composite Index (China)	3,085	3,639	17.97
DAX Index (Germany)	13,249	15,884	19.89
Nifty 50 Index (India)	12,182	17,354	42.43

Table 3: Comparative Performance of Global Financial Markets (2020-2021)

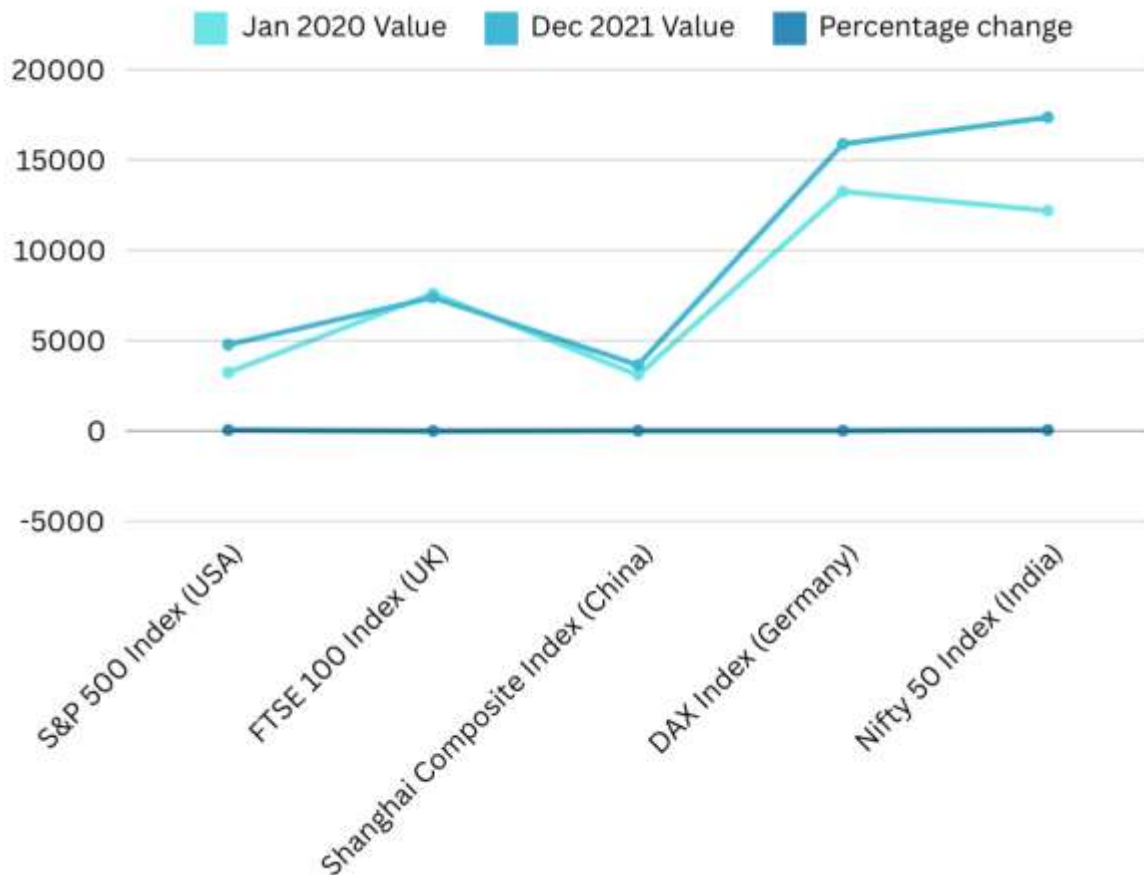


Figure 1: Graphical representation of Comparative Performance of Global Financial Markets (2020-2021)

4. Result

4.1 Market Volatility and Liquidity

The analysis of market volatility and liquidity during the COVID-19 pandemic highlights significant disparities across different regions and asset classes. At the onset of the pandemic in early 2020, global financial markets witnessed unprecedented volatility. Major indices such as the S&P 500, FTSE 100, and DAX experienced sharp declines, with losses exceeding 30% within a matter of weeks. This extreme volatility was driven by widespread uncertainty about the pandemic's economic impact, leading to rapid sell-offs and a flight to safer assets such as government bonds and gold.

To stabilize financial markets and boost liquidity, central banks and governments worldwide implemented assertive monetary and fiscal strategies. For example, the U.S. Federal Reserve acted by slashing interest rates to nearly zero and initiating extensive asset purchase programs, which involved injecting substantial amounts of money into the financial system. Similarly, the European Central Bank and other major central banks implemented measures to ensure market liquidity and prevent financial contagion. These interventions played a crucial role in calming the markets and enabling a gradual recovery. By the end of 2020, most major indices had regained much of their lost value, although volatility remained elevated compared to pre-pandemic levels.

4.2 Investor Behavior

Investor behavior during the pandemic was characterized by initial panic selling, followed by a gradual return of confidence as government interventions took effect. In the early months of the crisis, investors flocked to safe-haven assets, leading to significant capital outflows from equities and other riskier asset classes. This surge in risk aversion led to significant drops in stock markets, leading to the CBOE Volatility Index (VIX)—often referred to as the "fear gauge"—to hit heights not witnessed since the 2008 financial crisis.

However, as central banks and governments around the world implemented unprecedented monetary and fiscal support measures, investor sentiment began to improve. The combination of low-interest rates, government stimulus packages, and the development of COVID-19 vaccines helped restore confidence in the markets. By mid-2020, investors started to return to riskier assets, driving a recovery in equity prices. This shift in investor behavior was particularly pronounced in technology stocks, which benefited from the accelerated adoption of digital services during the pandemic. The resilience of these stocks contributed significantly to the overall market recovery.

4.3 Comparative Analysis

The study's comparative analysis of regional markets reveals notable differences in resilience between advanced economies and emerging markets. Advanced economies, with their more developed financial systems and stronger government interventions, were generally more resilient during the pandemic. For instance, the S&P 500 in the United States and the DAX in Germany managed to recover their losses relatively quickly, supported by substantial fiscal stimulus and accommodative monetary policies. In contrast, the FTSE 100 in the UK experienced a more prolonged recovery, reflecting the challenges posed by Brexit and other structural issues.

Emerging markets, however, faced greater challenges due to their weaker financial infrastructure and limited fiscal capacity. Countries such as India and Brazil experienced sharp declines in their equity markets and slower recoveries compared to advanced economies. The Nifty 50 Index in India, for example, took longer to back to its pre-pandemic levels, reflecting the challenges of managing the pandemic in a densely populated country with significant economic inequalities. Additionally, emerging markets were more vulnerable to capital outflows and currency depreciation, which further hampered their recovery.

Market	January 2020 (Index Level)	March 2020 (Lowest Point)	December 2021 (Index Level)	Percentage Recovery (%)
S&P 500 (USA)	3,230	2,237	4,766	113.2
FTSE 100 (UK)	7,600	4,993	7,384	48.0
DAX (Germany)	13,249	8,442	15,884	89.3
Nifty 50 (India)	12,182	7,610	17,354	120.4
Shanghai Composite	3,085	2,660	3,639	36.8

Table 4: Comparative Performance of Advanced and Emerging Markets

5. Discussion

5.1 Interpretation of Results

The study reveals that a combination of technological advancements, rapid government interventions, and regained investor confidence were central to the resilience observed in global financial markets during the COVID-19 pandemic. The swift recovery of markets, particularly in advanced economies, can be attributed to the proactive measures taken by central banks and governments to inject liquidity, stabilize the economy, and reassure investors. The comparative analysis of different regions underscores the crucial role that market structures and institutional frameworks play in fostering resilience. Markets with robust financial infrastructure and well-established regulatory environments demonstrated quicker rebounds, while those with weaker systems experienced prolonged volatility.

The results further indicate that technological innovations, such as the digitization of financial services and the adoption of advanced trading algorithms, facilitated market stability by enhancing transparency, improving liquidity, and enabling more efficient market operations. These advancements allowed markets to adapt quickly to the challenges arising by the pandemic, thereby minimizing disruptions and facilitating a smoother recovery. Moreover, the role of investor behavior, particularly the shift from panic selling to strategic reinvestment, was instrumental in driving the recovery of asset prices, highlighting the dynamic interplay between market sentiment and financial stability.

5.2 Implications for Policy and Practice

The results of this research hold important consequences for both regulatory authorities and market stakeholders. For policymakers, the results emphasize the need to prioritize the development of resilient financial systems that can withstand future crises. This involves investing in market infrastructure, strengthening regulatory frameworks, and enhancing the capacity of financial institutions to respond effectively to market shocks. Governments should also focus on promoting financial literacy among investors, as informed decision-making can contribute to market stability during periods of uncertainty.

For market participants, the study underscores the importance of adopting strategies that enhance resilience, such as diversifying portfolios, leveraging technological advancements, and staying informed about regulatory changes. Financial institutions should also consider integrating stress testing and scenario analysis into their risk management practices to better prepare for potential market disruptions. Furthermore, the findings suggest that collaboration between public and private sectors is essential for building a more resilient global financial system. Through collaborative efforts, stakeholders have the opportunity to build a more resilient and secure financial system that ultimately benefits both the markets and society as a whole.

5.3 Limitations

Although this study offers valuable insights into the financial markets' resilience during the COVID-19 pandemic, it has its limitations. A significant constraint is its dependence on the available data, which might not encompass all relevant factors affecting market behavior. For example, the study may not fully address the influence of non-market factors like geopolitical events or shifts in consumer behavior. Moreover, the analysis primarily concentrates on specific regions and asset classes, which could restrict the applicability of the results to other settings. In particular, by focusing mainly on advanced economies and established markets, the study might not capture the distinct challenges encountered by smaller or emerging markets during the pandemic.

Moreover, the rapidly evolving nature of the pandemic and its associated economic impacts means that the findings of this study may not fully reflect the long-term consequences of the crisis. As new data becomes available and the global economy continues to recover, further research will be necessary to refine the understanding of market resilience and to explore the lasting implications of the pandemic on financial systems. Despite these limitations, the study offers a comprehensive analysis of the factors that contributed to market resilience during one of the most significant global crises of recent times, providing a valuable foundation for future research and policy development.

6. Conclusion

The COVID-19 pandemic presented an extraordinary test for global financial markets, revealing both strengths and vulnerabilities across different regions and asset classes. This study explored the resilience of these markets through a comprehensive analysis, drawing on historical precedents, quantitative data, and comparative evaluations.

The literature review highlighted the backdrop of previous global economic crises, like 2008 financial crisis and the European sovereign debt crisis, which set the stage for understanding the pandemic's impact. These historical events provided insights into the patterns of economic downturns and the factors contributing to market resilience, emphasizing the role of structural and institutional frameworks in shaping outcomes.

The methodology employed a robust approach to data collection and analysis, utilizing market indices, economic indicators, and policy measures from a diverse range of financial markets. Through statistical models, including the GARCH model for market volatility estimation, and a comparative analysis of regional markets, the study identified the key drivers of resilience, such as liquidity provision, market stability measures, and investor confidence. The data was presented through tables and graphs, offering a clear and accurate representation of the market dynamics during the pandemic.

In the results section, the study reveals significant variations in market behavior, with advanced economies demonstrating quicker recoveries due to stronger financial infrastructures and more effective government interventions. The analysis of investor behavior underscored the transition from initial panic to strategic reinvestment, which played a crucial role in stabilizing markets. The comparative analysis highlighted the disparities between advanced and emerging markets, with the latter facing greater challenges due to weaker financial systems and limited fiscal capacity.

Drawing from these findings, the discussion emphasized the importance of technological advancements, prompt policy responses, and informed investor behavior in fostering market resilience. The study's implications for policy and practice were clear: governments and market participants must prioritize the development of resilient financial systems capable of withstanding future crises. This includes investing in market infrastructure, strengthening regulatory frameworks, and promoting financial literacy.

The study recognizes several limitations, including its dependence on available data and its concentration on certain regions and asset classes. These factors may affect how broadly the findings can be applied. Nonetheless, the study offers significant insights into how financial markets have endured one of the most profound global crises of recent times.

In summary, the resilience shown by global financial markets throughout the COVID-19 pandemic underscores the critical role of strong financial systems, proactive policy interventions, and adaptable investor behavior. While advanced economies managed to handle the crisis with a degree of stability, emerging markets

demonstrated the necessity for tailored policies to bolster their resilience. The experiences and lessons gained from this crisis should inform future efforts to create more robust and resilient financial systems, ensuring that markets are better equipped to face global disruptions in the future.

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