



EXAMINING THE INTERDEPENDENCE BETWEEN THE PERFORMANCE OF FIFTY SECTORAL INDICES AND THE NIFTY INDEX TO FACILITATE EFFECTIVE INVESTMENT DECISION-MAKING.

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Abstract

Indian financial markets are one of the fastest growing markets and emerging economies in the world. This study analyzes the performance of the fifteen sectoral indices and NSE. Global markets have witnessed peak volatility since the covid 19 pandemic. Thus, this study uses DCC-GARCH to establish asymmetrical relationship among the indices. Nifty has performed positive in all the years considered. The findings of the study show volatility clustering among the indices. Bank, Auto, Metal, IT and Financial services are dominant. All indices influence nifty on long run.

Key Words: NSE, DCC-GARCH, Volatility Clustering, Sectoral Indices Analysis.

Introduction

Indian stock market are one of the highly rated and fastest growing markets in the world. The Nifty, also known as the Nifty 50, is a stock market index that consists of 50 of the largest publicly traded companies listed on the National Stock Exchange (NSE) in India. The Overall development in the market has been crucial for attracting foreign Portfolio investors, FIIs, DIIs and the retail investors to gain returns for their investments. According to a report of (ZeeBiz WebTeam, 2021) Indian indices had outperformed the global markets and stood at third spot in the rankings.

Figure 1: Flow of FPIs in global markets



Source: (ZeeBiz WebTeam, 2021)

Figure 2: Performance of world indices in last 12 years



Source: (ZeeBiz WebTeam, 2021)

To provide a more detailed view of the performance of different sectors of the Indian economy, NSE also maintains several sectorial indices that track the performance of specific industries within the Nifty 50. These sectorial indices include: Nifty Bank: Tracks the performance of the top banking stocks within the Nifty 50, Nifty Auto: Tracks the performance of the top automobile stocks within the Nifty 50, Nifty Financial Services: Tracks the performance of the top financial service stocks within the Nifty 50, Nifty FMCG: Tracks the performance of the top fast-moving consumer goods stocks within the Nifty 50, Nifty IT: Tracks the performance of the top information technology stocks within the Nifty 50, Nifty Media: Tracks the performance of the top media stocks within the Nifty 50, Nifty Metal: Tracks the performance of the top metal stocks within the Nifty 50, Nifty Pharma: Tracks the performance of the top pharmaceutical stocks within the Nifty 50, Nifty PSU Bank: Tracks the performance of the top public sector bank stocks within the Nifty 50, Nifty Realty: Tracks the performance of the top real estate stocks within the Nifty 50, These sectorial indices provide a more granular view of the performance of different industries within the Indian economy, and can be useful for investors looking to gain exposure to specific sectors. Overall there are fifteen sectorial indices listed on the NSE, this study aims to analyze the performance of the indices and how these indices influences nifty on short run and long run using DCC- GARCH. The performance of the index rises when it's underlying and weighted stocks perform well. Also, when indices perform well the overall market performs well too (Debasis Mohanty, 2019). A gauge of the risk, volatility, and return attached to an investment is how it is evaluated by regular investors. Investors typically track an index's ups and downs to gauge market sentiment. Stock market indices are used as a gauge to determine the mood of the market. This index is being watched by a variety of people, including academics who want to provide accurate analysis, investors who want to buy or sell financial assets, policymakers who want to develop future policies, etc (Banhi Guha, 2016).

Empirical Results

The core objective of the study is to analyze the performance of the NSE and its sectorial indices during the volatility driven market due to Covid-19 pandemic, Russia-Ukraine war, Oil prices, fear of global recession and consolidation in global markets. The time span considered for the study is from 1st January 2019 till Dec 31st, 2022. The data is collected from the official website of NSE.

Table 1: Annual Performance of NSE and Indices

Instrument	2019	2020	2021	2022
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Nifty	12.33%	14.90%	23.79%	2.72%
Auto	10.17%	11.26%	18.68%	14.64%
Bank	18.12%	-2.79%	13.63%	18.02%
Consumer Durables	18.28%	24.55%	46.28%	-14.07%
FS25_50	20.43%	3.71%	17.19%	3.61%
Financial Services	24.40%	4.47%	14.14%	6.87%
FMCG	-0.91%	13.46%	9.27%	17.46%
Healthcare	-6.83%	56.53%	17.53%	-10.39%
IT	8.31%	54.94%	58.25%	-26.84%
Media	-29.93%	-8.57%	33.75%	-11.51%
Metal	-10.65%	16.18%	69.44%	19.46%
Oil & Gas	11.50%	6.76%	32.58%	13.53%
Pharma	-9.48%	60.64%	9.39%	-11.01%
Private bank	15.44%	-2.90%	4.92%	17.97%
PSU	-19.53%	-30.57%	39.83%	67.08%
Realty	25.71%	5.12%	53.02%	-11.81%

NSE has recorded positive returns, similarly Nifty Auto, Financial Services, Oil and Gas have recorded positive figures while others have at least one negative returns. Indices have also outperformed the returns of nifty.

Table 2: Correlation and Beta with the mother Index

Correlation and Beta with NSE		
Instrument	Correlation	Beta
Auto	0.8087568	1.05
Bank	0.9015864	1.24
Consumer Durables	0.7645618	0.79
FS25_50	0.9333338	1.19
Financial Services	0.9238557	1.21
FMCG	0.7314533	0.64
Healthcare	0.5838266	0.56
IT	0.6855253	0.80
Media	0.5844865	0.95
Metal	0.7189278	1.14
Oil & Gas	0.7935178	0.93
Pharma	0.552277	0.58
Private bank	0.8950086	1.26
PSU	0.6692184	1.15
Realty	0.7126336	1.10

From the above table the highest correlation is found with banking, financial services, and private bank and auto sector indices. Meanwhile pharma, healthcare and media have the lowest correlation with the mother index. Beta (β), which is mostly employed in the capital asset pricing model (CAPM), is a measurement of a security or portfolio's volatility—or systematic risk—in comparison to the market as a



whole (KENTON, 2022). Banking and financial services have the highest beta among the considered indices. The high rated beta indices provide better returns during the Bull Run. However, on the bearish side these indices will tend to become highly volatile. Metal index has been crucial in terms of beta with the market. NSE has often witnessed many drags due to metal index. One such instance is hike in cost of coal and Coke lead to crash in metal index and stock crash by 50% (Vasudev, 2022), (Kishore, 2023). Pharma, Media and Health care have lowest beta with market thus in bearish and consolidation phase these indices tend to perform (Moneycontrol, 2015). The information technology sector was essential to India's growth and made a major contribution to its GDP. Even when the Covid'19 pandemic strikes in 2020, it amounts to a gain of 7.7%, and exports saw an increase of over 15% the previous year (Jasmine Mehta, 2021).

DCC GARCH

For determining how asset values behave and how they move together, it is crucial to comprehend the dynamic correlations of asset returns. Additionally, it has significant effects on risk management and portfolio diversification (Peimin Chen, 2020). Current financial market as witnessed volatility based on pandemic, news, war and other. This asymmetric volatility in the financial markets and assets are accurately measured by eGARCH and DCC- GARCH. DCC GARCH was developed by Eagle and Sheppard (2001) adding theoretical and empirical properties to multivariate GARCH model. Given that the pandemic may have a significant impact on investors' and portfolio managers' risk portfolios globally, it is essential to recognize how digital currencies behave during critical situations like a COVID-19 pandemic and to engage in educated trading (Ştefan Cristian Gherghina, 2023). In this study a total of fifteen sectoral indices were considered out of which only the indices that have a beta higher than one are considered to study the dynamic relationship and the impact of performance of sectoral indices on the NSE. The objective is to measure the short and long term implications of these indices on the NSE.

Table 1.3: alpha and beta terms of DCC GARCH model

Index	Parameters	Estimates	P. Value
Auto	Joint Alpha	0.046	0.000108
	Joint Beta	0.8868	0
Bank	Joint Alpha	0.0649	0.002667
	Joint Beta	0.8415	0
Financial Services 25_50	Joint Alpha	0.03844	0.16757
	Joint Beta	0.9152	0
Financial Services	Joint Alpha	0.05	0.005672
	Joint Beta	0.8942	0
IT	Joint Alpha	0.032144	0.00106
	Joint Beta	0.94699	0
Metal	Joint Alpha	0.0231	0.074
	Joint Beta	0.9504	0
Private Bank	Joint Alpha	0.097	0.00233
	Joint Beta	0.743	0
PSU	Joint Alpha	0.057	0.00018
	Joint Beta	0.86	0
Realty	Joint Alpha	0.0467	0.00007



Alpha term of the DCC- GARCH represents short term persistence and the joint beta represent the long term persistence. The Beta term for all the considered indices are found positive and significant. On the other side Financial Services 25_50 and Metal index don't influence NSE for short term but have their hold in long run.

Conclusion

This study was to analyze the performance of the sectoral indices during this volatility driven market. Nifty, Nifty auto, Financial services and oil & gas has recorded positive returns in the considered time frame. Bank nifty and financial services have highest correlation among the others. Eight of the sectoral indices have beta higher than one. The study also used DCC- GARCH model to understand the impact of these sectoral indices on the nifty and their ability to dominate the performance of NSE. The results suggest that Metal, IT and Financial services are dominant in long run. Bank Nifty is the highest traded index in India and its influence on NSE is also significant. Investors always wish to maximize the returns and minimize the risk. Thus investors can park their fund in health care, media and pharma index during the consolidation and bear phase as this have lower correlation and beta and vice versa invest in financial services, bank nifty and other higher beta indices during the Bull Run.

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