

A Final Project Report on
**“A STUDY ON PERFORMANCE OF SELECTED NIFTY50 COMPANIES
DURING COVID-19”**

Submitted to

DMSR

**G.S. College of Commerce & Economics, Nagpur
(An Autonomous Institution)**

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Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur

In partial fulfillment for the awards of the Degree of
MASTER OF BUSINESS ADMINISTRATION

Submitted By

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Under the Guidance of

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**G. S. College of Commerce & Economics, Nagpur
Department of Management Sciences & Research
(An Autonomous Institute)
NAAC Re-Accredited “A” Grade Autonomous Institution**



For Academic Year 2021-2022

G.S. College of Commerce & Economics, Nagpur

CERTIFICATE

This is to certify that **“Ms. Ashwini Ashokrao Chaudhari”** has submitted the Final Project Report titled, **“A STUDY ON PERFORMANCE OF SELCTED NIFTY50 COMPANIES DURING COVID-19”**, towards the partial fulfillment of **MASTER OF BUSINESS ADMINISTRATION** degree examination. This has not been submitted for any other examination and does not form part of any other course undergone by the candidate. It is further certified that she has ingeniously completed his/her project as prescribed by **DMSR - G. S. COLLEGE OF COMMERCE & ECONOMICS, NAGPUR (NAAC Reaccredited “A” Grade Autonomous Institution)** affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.

Dr. Afsar Sheikh
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Place: Nagpur

Date: 28/07/2022

G. S. College of Commerce & Economics, Nagpur

DECLARATION

I here-by declare that the project with title **“A STUDY ON PERFORMANCE OF SELCTED NIFTY50 COMPANIES DURING COVID-19”** has been completed by me in partial fulfillment of **MASTER OF BUSINESS ADMINISTRATION** degree examination as prescribed by **DMSR - G. S. COLLEGE OF COMMERCE & ECONOMICS, NAGPUR (NAAC Reaccredited “A” Grade Autonomous Institution)** affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur and this has not been submitted for any other examination and does not form the part of any other course undertaken by me.

Ms. Ashwini Ashokrao Chaudhari

Place: Nagpur

Date: 28/07/2022

G. S. College of Commerce & Economics, Nagpur

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I would like to thank all those who helped me in making this project complete and successful.

Ms. Ashwini Ashokrao Chaudhari

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INDEX

Serial No.	Particulars	Page No.
1	Introduction	
2	Company Profile	
3	a. Objective of study b. Scope of study c. Limitation of study d. Need of study	
4	Review of literature	
5	Research Methodology a. Research Design b. Hypothesis	
6	Analysis & Interpretation of Data	
7	Conclusion	
8	Bibliography	

INTRODUCTION

INTRODUCTION

On December 31 2019, the outbreak of Novel Coronavirus came to light when China informed to the World Health Organization (WHO) about the cluster of cases of pneumonia of an unknown cause in Wuhan city in Hubei province. By mid-January 2020, the disease spread quickly to other parts of China. The WHO declared a global emergency on 30th, January 2020, which was only the sixth time that such type of global emergency had been announced by the WHO. By assessing the risk of spread and severity, the WHO declared the outbreak to be a global pandemic on March 11 2020 and the virus has been named SARS-CoV-2 or COVID-19. As, of June 24 2020 over 176 countries have been affected and the number of cases in the world has increased to approximately 92 lakhs, with a fatality of more than 4 lakhs.

As the COVID 19 spread from a regional crisis to global pandemic it not only affected economic activities and production but also impacted financial markets worldwide. Equities plummeted and market volatility shot upwards the world over.

The Indian stock market hit the circuit breaker twice in March and the market fell sharply first after almost twelve years. Both the indices of Indian stock market Bombay stock exchange and National stock exchange's benchmark index S&P Sensex 500 and Nifty 50 saw their worst decline in March as they tumbled by 28.57% and 29.3% respectively. Thus, in the short term, the outbreak came as a shock to market participants and created an unprecedented level of risk. This has led the investors to suffer huge losses in a very short period of time. The long-term consequences however may see mass unemployment, business failures, and huge debt. The adverse effect is to be seen more on certain sectors like aviation and tourism industry. In short run, on the other hand, the exact impact of the pandemic on global economy are not yet clear except for financial markets responding with dramatic movements. To meet the crisis following from the COVID 19 pandemic, the Central bank of India, the RBI announced measures to conduct targeted long-term repo operations (TLTRO) of Rs 50,000 crore to refinance small and medium sized financial institutions, NBFCs, MFIs so as to maintain a healthy cash flow. Along with these measures its infused liquidity by reducing the liquidity coverage ratio for scheduled commercial banks from 100% to 80% and reduced the fixed repo rate under liquidity adjustment facility by 25 basis points from 4% to 3.75%. These were not the only measures taken by the RBI, there was further reduction in the repo rate by 40 basis points in May and the three-month

moratorium on repayment of loans to bank which was initially extended for up to three months was again extended until the end of August 2020. In conjunction with the RBI, the Government of India in May 2020 announced a five-part package of 20.97 lakh crore. At as much as 10% of GDP, the package did not appear to leave any major sphere untouched as the Indian Government brought out the fiscal artillery to complement RBI's monetary ballast, putting India firmly in the league of biggies that have gone all out against the virus. This package aims at focusing on land, labour, liquidity and laws, and deal with such sectors as cottage industries, MSMEs, the working class, middle class and industry. Along the above cited stimulus package, on March 24 2020, the Government of India under Prime Minister Narendra Modi ordered a nationwide lockdown for 21 days, limiting movement of the entire 1.3 billion population of India as a preventive measure against the COVID-19 pandemic in India. The lockdown was placed when the number of confirmed positive coronavirus cases in India was approximately 500. As the end of the first lockdown period approached, state governments and other advisory committees recommended extending the lockdown. On April 14, Prime Minister Narendra Modi extended the nationwide lockdown until May 3, with a conditional relaxation after April 20 for the regions where the spread had been contained or was minimal. On May 1, the Government of India extended the nationwide lockdown further by two weeks until May 17. The Government divided all the districts into three zones based on the spread of the virus— green, red, and orange—with relaxations applied. Accordingly, on May 17, the lockdown was further extended till May 31 by the National Disaster Management Authority. On May 30, it was announced that the ongoing lockdown would be further extended till June 30 in containment zones, with services resuming in a phased manner starting from June 8. It is termed as "Unlock 1". Thus, in all, there were four phases of lockdown followed by the phase unlock I. In the light of the foregone discussion, the present study attempts to examine how COVID 19 outbreak and resultant policy response in India has affected the Indian stock market.

What is NIFTY50?



The NIFTY 50 is a diversified 50 stock index accounting for 13 sectors of the economy. It is used for a variety of purposes such as benchmarking fund portfolios, Index-based derivatives and index funds. The term Nifty 50 is a combination of National Stock Exchange NSE Indices Limited (formerly known as India Index Services & Products Limited) (NSE Indices). NSE Indices is India's specialized company focused upon the index as a core product.

- The NIFTY 50 Index represents about 66.8% of the free float market capitalization of the stocks listed on NSE as on March 29, 2019.
- The total traded value of NIFTY 50 index constituents for the last six months ending March 2019 is approximately 53.4% of the traded value of all stocks on the NSE.
- Impact cost of the NIFTY 50 for a portfolio size of Rs.50 lakhs is 0.02% for the month March 2019.
- NIFTY 50 is ideal for derivatives trading.

Nifty 50 Stocks:

and Fifty (50). Nifty 50 is also known as CNX Nifty.

NIFTY 50 is owned and managed by

Adani Ports and Special Economic Zone Ltd., Apollo Hospitals Enterprise Ltd., Asian Paints Ltd., Axis Bank Ltd., Bajaj Auto Ltd., Bajaj Finance Ltd., Bajaj Finserv Ltd., Bharat Petroleum Corporation Ltd., Bharti Airtel Ltd., Britannia Industries Ltd., Cipla Ltd., Coal India Ltd., Divi's Laboratories Ltd., Dr. Reddy's Laboratories Ltd., Eicher Motors Ltd, Grasim Industries Ltd., HCL Technologies Ltd., HDFC Bank Ltd., HDFC Life Insurance Company Ltd., Hero MotoCorp Ltd., Hindalco Industries Ltd., Hindustan Unilever Ltd.,

Housing Development Finance Corporation Ltd., ICICI Bank Ltd., ITC Ltd., IndusInd Bank Ltd., Infosys Ltd., JSW Steel Ltd., Kotak Mahindra Bank Ltd., Larsen & Toubro Ltd., Mahindra & Mahindra Ltd., Maruti Suzuki India Ltd., NTPC Ltd., Nestle India Ltd., Oil & Natural Gas Corporation Ltd., Power Grid Corporation of India Ltd., Reliance Industries Ltd., SBI Life Insurance Company Ltd., Shree Cement Ltd., State Bank of India, Sun Pharmaceutical Industries Ltd., Tata Consultancy Services Ltd., Tata Consumer Products Ltd., Tata Motors Ltd., Tata Steel Ltd., Tech Mahindra Ltd., Titan Company Ltd., UPL Ltd., UltraTech Cement Ltd., Wipro Ltd.

Derivatives of Nifty 50 Index – Sectoral Indices of Nifty

The success and performance of Nifty 50 index has resulted in introduction of various Nifty sectoral indices. While Nifty 50 index focuses on the bluest of the bluechip stocks, these nifty sectoral indices track different sectors and themes. Some of the common NIFTY indices are:

NIFTY AUTO INDEX	Amara Raja Batteries, Ashok Leyland, Bajaj Auto, Balkrishna Industries, Bharat Forge, Bosch, Eicher Motors, Exide, Hero MotoCorp, Mahindra & Mahindra, Maruti Suzuki, MRF, Tata Motors, Tube Investments, TVS Motors.
NIFTY BANK INDEX	Axis Bank, AU Small Finance Bank, Bandhan Bank, Federal Bank, HDFC Bank, ICICI Bank, IDFC First Bank, IndusInd Bank, Kotak Mahindra Bank, Punjab National Bank, RBL Bank, State Bank of India
NIFTY CONSUMER INDEX	Amber Enterprises, Bata, Blue Star, Crompton Greaves, Dixon Technologies, Havells, Kajaria Ceramics, Orient Electric, Rajesh Exports, Relaxo, Titan Company, TTK Prestige, V-Guard, Voltas, Whirlpool

NIFTY Financial Services	Axis Bank, Bajaj Finance, Bajaj FinServ, Cholamandalam, HDFC, HDFC AMC, HDFC Bank, HDFC Life, ICICI Bank, ICICI Lombard, ICICI Prudential, Kotak Mahindra Bank, M&M Finance, Muthoot Finance, Piramal Enterprises, Power Finance Corporation, REC, SBI Life Insurance Company, Shriram Transport Finance, State Bank of India
NIFTY FMCG	Britannia, Colgate-Palmolive, Dabur, Emami, Godrej Consumer Products, Hindustan Unilever, ITC Limited, Marico, Nestlé India, Procter & Gamble, Radico Khaitan, Tata Consumer Products, United Breweries, United Spirits, Varun Beverages
NIFTY OIL & GAS	Castrolind, Aegischem, ATGL, BPCL, Reliance, IOC, OIL, Hindpetro, Petronet, ONGC, MGL, GAIL, Gujgasltd, GSPL, IGL
NIFTY IT	Coforge, HCL Technologies, Infosys, L&T Infotech, L&T Technology Services, Mindtree, Mphasis, Tata Consultancy Services, Tech Mahindra, Wipro
NIFTY Media	Dish TV, Hathway, INOX Leisure, Nazara Technologies, Network18, PVR Cinemas, Saregama, Sun TV Network, TV18, Zee Entertainment Enterprises
NIFTY Metal	Adani Enterprises, APL Apollo Tubes, Coal India, Hindalco, Hindustan Copper, Hindustan Zinc, Jindal Steel, JSW Steel, National Aluminium Company, NMDC, Ratnamani Metals & Tubes, Steel

	Authority of India, Tata Steel, Vedanta, Welspun Corp
NIFTY Energy	Adani Total Gas, Aegis Logistics, BPCL, Castrol, GAIL, Gujarat Gas, Gujarat State Petronet, HPCL, Indraprastha Gas, IOC, Mahanagar Gas, MRPL, Oil India, ONGC, Petronet LNG, Reliance Industries
NIFTY Pharma	Abbott India, Alembic Pharmaceuticals, Alkem Laboratories, Aurobindo Pharma, Biocon, Cadila Healthcare, Cipla, Divi's Laboratories, Dr. Reddy's Laboratories, Gland Pharma, Glenmark Pharmaceuticals, Granules India, Ipca Laboratories, Laurus Labs, Lupin, Natco Pharma, Pfizer India, Strides Pharma, Sun Pharmaceutical, Torrent Pharmaceuticals
NIFTY Private Bank	Axis Bank, Bandhan Bank, City Union Bank, Federal Bank, HDFC Bank, ICICI Bank, IDFC First Bank, IndusInd Bank, Kotak Mahindra Bank, RBL Bank
NIFTY PSU Bank	Bank of Baroda, Bank of Maharashtra, Bank of India, Canara Bank, Central Bank of India, Indian Bank, Indian Overseas Bank, J&K Bank, Punjab & Sind Bank, Punjab National Bank, State Bank of India, UCO Bank, Union Bank of India
NIFTY Realty	Brigade Enterprises, Brookfield India REIT, DLF, Embassy Office Parks REIT, Godrej Properties, Indiabulls Real Estate, Macrotech Developers, Mindspace Business Parks REIT, Oberoi Realty, Phoenix Mills, Prestige Estates

Study of Selected NIFTY50 companies during Covid-19 using Sharpe Index Model:

What is Sharpe Index Model?

The Sharpe ratio has become the most widely used method for calculating the risk-adjusted return. Modern Portfolio Theory states that adding assets to a diversified portfolio that has low correlations can decrease portfolio risk without sacrificing return.

Adding diversification should increase the Sharpe ratio compared to similar portfolios with a lower level of diversification. For this to be true, investors must also accept the assumption that risk is equal to volatility, which is not unreasonable but may be too narrow to be applied to all investments.

The Sharpe ratio can be used to evaluate a portfolio's past performance (ex-post) where actual returns are used in the formula. Alternatively, an investor could use expected portfolio performance and the expected risk-free rate to calculate an estimated Sharpe ratio (ex-ante).

The Sharpe ratio can also help explain whether a portfolio's excess returns are due to smart investment decisions or a result of too much risk. Although one portfolio or fund can enjoy higher returns than its peers, it is only a good investment if those higher returns do not come with an excess of additional risk.

The greater a portfolio's Sharpe ratio, the better its risk-adjusted-performance. If the analysis results in a negative Sharpe ratio, it either means the risk-free rate is greater than the portfolio's return, or the portfolio's return is expected to be negative. In either case, a negative Sharpe ratio does not convey any useful meaning.

COMPANY PROFILE

COMPANY PROFILE

Cipla

Cipla Limited is an Indian multinational pharmaceutical company, headquartered in Mumbai, India. Cipla primarily develops medicines to treat respiratory, cardiovascular disease, arthritis, diabetes, weight control and depression; other medical conditions.

Sun Pharmaceutical

Sun Pharmaceutical Industries Limited is No. 4th Global and no. 1 Indian multinational pharmaceutical company headquartered in Mumbai, Maharashtra, that manufactures and sells pharmaceutical formulations and active pharmaceutical ingredients primarily in India and the United States.

Hindustan Unilever

Hindustan Unilever Limited is an Indian consumer goods company headquartered in Mumbai, India. It is a subsidiary of Unilever, a British company. Its products include foods, beverages, cleaning agents, personal care products, water purifiers and other fast-moving consumer goods.

Tech Mahindra

Tech Mahindra is an Indian multinational company that provides information technology and business process outsourcing services. A subsidiary of the Mahindra Group, the company is headquartered in Pune and has its registered office in Mumbai.

Wipro

Wipro Limited is an Indian multinational corporation that provides information technology, consulting and business process services. It is headquartered in Bangalore, Karnataka, India. In 2013, Wipro separated its non-IT businesses and formed the privately owned Wipro Enterprises.

Dr Reddy

Dr. Reddy's Laboratories is an Indian multinational pharmaceutical company located in Hyderabad, Telangana, India. The company was founded by Anji Reddy, who previously worked in the mentor institute Indian Drugs and Pharmaceuticals Limited.

Tata Motors

Tata Motors Limited is an Indian multinational automotive manufacturing company headquartered in Mumbai, Maharashtra, India. It is a part of Tata Group, an Indian conglomerate. Its products include passenger cars, trucks, vans, coaches, buses, sports cars, construction equipment and military vehicles.

Titan company

Titan Company Limited is an Indian lifestyle company that mainly manufactures fashion accessories such as watches, jewellery and eyewear. Part of the Tata Group and started as a joint venture with TIDCO, the company is headquartered in Electronic City, Bangalore.

Asian Paints

Asian Paints Ltd is an Indian multinational paint company, headquartered in Mumbai, Maharashtra, India. The company is engaged in the business of manufacturing, selling and distribution of paints, coatings, products related to home decor, bath fittings and providing related services.

Divis Laboratories

Divi's Laboratories Limited is an Indian producer of active pharmaceutical ingredients (APIs) and intermediates headquartered in Hyderabad, Telangana, India. The company manufactures and custom synthesizes generic APIs, intermediates and nutraceutical ingredients. Divi's Laboratories is India's second most valuable pharmaceutical company by market capitalization.

Kotak Mahindra Bank

Kotak Mahindra Bank Limited is an Indian private sector bank headquartered in Mumbai, Maharashtra, India. It offers banking products and financial services for corporate and retail customers in the areas of personal finance, investment banking, life insurance, and wealth management.

HCL technologies

HCL Technologies is an Indian multinational information technology services and consulting company, headquartered in Noida, Uttar Pradesh, India. It is a subsidiary of HCL Enterprise.

HDFC Ltd

Housing Development Finance Corporation Limited is a privately owned Indian development finance institution based in Mumbai, India. It is a major housing finance provider in India.

Shree Cement

Shree Cement is an Indian cement manufacturer, founded in Beawar, Rajasthan, in 1979. Now headquartered in Kolkata, it is one of the biggest cement makers in Northern India. It also produces and sells power under the name Shree Power and Shree Mega Power.

Bharti Airtel

Bharti Airtel Limited, also known as Airtel, is an Indian multinational telecommunications services company based in New Delhi, Delhi NCT, India. It operates in 18 countries across South Asia and Africa, as well as the Channel Islands.

Oil and Natural Gas Corporation

Oil and Natural Gas Corporation is an Indian government owned corporation and multinational crude oil and gas entity. Its registered office is in New Delhi. It is owned by the Ministry of Petroleum and Natural Gas, Government of India.

GAIL

GAIL Limited is an Indian government agency responsible for natural gas processing and distribution in India headquartered in New Delhi, India. It is under ownership of Ministry of Petroleum and Natural Gas, Government of India.

TCS

Tata Consultancy Services is an Indian multinational information technology services and consulting company, headquartered in Mumbai, Maharashtra, India. As of February 2021, TCS is the largest company in the IT sector in the world by Market capitalisation of \$169.2 billion.

Bajaj auto

Bajaj Auto Limited is an Indian multinational two-wheeler and three-wheeler manufacturing company based in Pune, Maharashtra. It manufactures motorcycles, scooters and auto rickshaws. Bajaj Auto is a part of the Bajaj Group. It was founded by Jamnalal Bajaj in Rajasthan in the 1940s.

Infosys

Infosys Limited is an Indian multinational information technology company that provides business consulting, information technology and outsourcing services. The company is headquartered in Bangalore.

OBJECTIVE OF STUDY

OBJECTIVE OF STUDY

The main objective of the study is

- To identify the sector which emerged during Covid-19.
- To identify which stock, sustain even during outbreak of Covid-19.

SCOPE OF STUDY

SCOPE OF STUDY

- Ability to provide high return.
- SEBI a regulatory body of Indian stock market that protects the interest of the investors.
- Large number of securities that provides medium for investment.
- Large number of Brokers who plays a role of facilitator for investment.

LIMITATION OF STUDY

LIMITATION OF STUDY

- The weak point of Indian stock market is its volatility i.e., High risk.
- It is a kind of gambling where no guarantee of return and some time it depends on luck also.
- Impact of COVID-19 on the financial market as well as the stock market.

NEED OF STUDY

NEED OF STUDY

- It analyses the financial performance of the selected companies listed in NIFTY50.
- It explores the pandemic effect on the companies' overall performance using statistical tests.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

The impact of COVID-19 on the financial market as well as the stock market has been subject to many empirical studies both in advanced and emerging economies. Existing literature found diverse results in these regards.

Throughout history, there has been an occurrence of highly unlikely events that leave almost everyone in shock and has the potential to have a significant impact on the status quo by disrupting human activities and creating havoc. Such instances are called black-swan events (Taleb, 2007). Coronavirus is considered to be one of the recent black swan events after the global recession in 2008. Few studies are available which have examined the effects of COVID-19 on stock markets.

Baker, Bloom, Davis, Kost, Sammon, and Viratyosin (April 2020) examined next-day newspaper explanations for each daily move in the U.S stock market greater than 2.5 percent, up or down. They found that no previous infectious disease, including the Spanish flu, had influenced the stock market as powerfully as the current COVID-19. While other situations have seen significant declines or increases in equity markets over periods of several weeks or months, COVID-19 stands out for an extremely high frequency of sizeable daily stock market moves in the U.S. They concluded that non-pharmaceutical policy interventions in the form of government restrictions on individual mobility and commercial activities plus voluntary social distancing in a service-oriented economy had a powerful effect on the stock market.

Ozili and Arun (2020) have conducted an empirical study on the effect of social distancing policy that was adopted to prevent the spread of the Corona Virus, based on four continents: North America, Africa, Asia, and Europe. The study found that 30 days of social distancing policy or lockdown hurts the economy through its negative impact on stock prices.

Raja Ram (2020) in his study has found that COVID-19 crashes the entire global share. Indian stock market also experienced sharp volatility due to the collapse of the global financial market. Again, fall in FPIs also reduces the return of the Indian stock market. By analyzing the history of all unexpected events, the author has considered COVID-19 also a “black swan” event. He has further analyses the history of the crash and recovery of the Indian stock market and concluded that the economist 7 can't predict the recovery of the economy until a stable public-health system.

Ravi (2020) has compared the pre-COVID-19 and during COVID-19 situation of the Indian stock market. His findings revealed that before COVID-19 i.e., at the beginning of January, trade of NSE and BSE were at their highest levels hitting peaks of 12,362 and 42,273 respectively showing favorable stock market conditions. After the outbreak of the COVID-19 stock market came under fear as BSE Sensex and NSE Nifty fell by 38 percent. It leads to a 27.31 percent loss of the total stock market from the beginning of this year. The Stock of some other sectors such as hospitality, tourism, and entertainment has been dropped by more than 40% due to transport restrictions.

RESEARCH METHODOLOGY

RESEARCH METHODOLOGY

Research as a scientific and systematic search for pertinent information on a specific topic. In fact, research is an art of scientific investigation. It is an academic activity and as such the term should be used in a technical sense. Research is, thus an original contribution to the existing stock of knowledge making for its advancement. It is as per suit of truth with the help of study, observation, comparison and experiment. In short, the search for knowledge through objective & systematic method of finding solution to a problem is “research”.

Our objective is to analyze out of selected 20 NIFTY50 companies who sustain even during an outbreak of pandemic with the help of sharpe and also to construct an optimal portfolio. Researchers suggest using secondary data for such analysis. To analyse data using sharpe a model on excel was created to reduce risk and maximize return.

Collection of Data:

1. Primary Data
2. Secondary Data

Primary Data

1. Primary data would be collected during the course of asking questions by performing surveys.
2. Primary data would be either through respondent either through questionnaire or through personal interview.
3. I had collected the data through both of them.

Secondary Data

1. The data will be already available in the form of print material, website, journals etc.
2. Data is collected from some Magazines, Newspapers, Websites and course material for that purpose.
3. Data is collected from the website – Nifty 50 Companies List - Nifty50 Stocks by Weight [2019] | Trade Brains.

RESEARCH DESIGN

Research Design:

The study is applied cum quantitative analysis. The data has been collected from secondary sources only. The secondary source includes data collected from the NSE website for downloading stock daily closing price.

Sample Size:

For the purpose of the study 20 top companies are selected from NIFTY 50 index.

Following are the names of 20 companies:

- Cipla
- Sun Pharmaceutical
- Hindustan Unilever
- Tech Mahindra
- Wipro
- Dr. Reddy
- Tata Motors
- Titan
- Asian Paints
- Divis Laboratories
- Kotak Mahindra Bank
- HCL technologies
- HDFC Ltd
- Shree Cement
- Bharti Airtel
- Oil and Natural Gas Corporation
- GAIL
- TCS
- Bajaj Auto
- Infosys Ltd

HYPOTHESIS

Hypothesis:

A hypothesis is a tentative statement about the relationship between two or more variables. It is specific, testable prediction about what we expect to happen in a study.

Hypothesis can also be divided as:

- (1) Null Hypothesis
- (2) Alternative Hypothesis

Hypothesis Testing:

H₀: The performance of selected NIFTY50 companies during COVID-19 does not have an effective impact.

H₁: The performance of selected NIFTY50 companies during COVID-19 does have an effective impact.

Hypothesis Testing Interpretation:

From the said research study, it is found that from the above hypothesis, Alternative hypothesis i.e., H₁: The performance of selected NIFTY50 companies during COVID-19 does have an effective impact is found to be true, hence accepted. Whereas Null Hypothesis i.e., H₀: The performance of selected NIFTY50 companies during COVID-19 does not have an effective impact is not found to be true hence rejected.

ANALYSIS & INTERPRETATION OF DATA

ANALYSIS & INTERPRETATION OF DATA

Data Analysis:

The collected data is sorted out and analyzed to prepare the Excel model. The authenticity of the entire data and figures depends on the content given in the NSE website about the respective companies. Any misinformation given in the NSE of the respective companies will hamper and deflect the findings and conclusion of this report.

Model:

$$R_i = \alpha + R_m + \beta + i_e$$

Here,

R_i – Expected Return of a Security

α – Non-Market component of the Return of Security

i_e – random Residual error

R_m – Market Return

β – Sensitivity of R_i to R_m

The Stock Systematic Risk and Unsystematic Risk calculated as follows:

Systematic risk = Beta X Variance of Index

Unsystematic risk = Total variance of security return – Systematic risk

The Following steps for finding out the stocks to be included in the construction of an optimal portfolio:

- a) First, find the "excess return to beta" ratio for each stock under consideration.

The excess return to beta ratio is calculated as follow;

$$= (R_n - R_f) / \beta$$

Where,

R_n = the expected return on the stock,

R_f = the return on a riskless investment,

β = systematic risk of an individual stock with comparison to the unsystematic risk of the whole market.

- b) Ranking them from highest to lowest
- c) Last, proceed to calculate C_i (cut-off) for all the stocks according to the ranked order using the following formula,

$$\text{Cut - off Rate } C_i = \frac{\sigma_m^2 \sum_{t=1}^j \frac{(R_i - R_f)\beta_i}{\sigma_{ei}}}{1 + \sigma_m^2 \sum_{t=1}^j \frac{\beta_i^2}{\sigma_{ei}^2}}$$

- d) The cumulative values of C_i begin decreasing after a particular C_i , and that point is considered the cut-off point and that stock ratio is the cut-off ratio.

The percentage of funds to be invested in each security can be estimated as follows:

$$X_i^0 = \frac{Z_i}{\sum_{j=1}^n Z_j}$$

Where, $Z_i = \frac{\beta_i}{\sigma_{ei}^2} \left(\frac{R_i - R_f}{\beta_i} - C^* \right)$

Calculations of Portfolio Return:

$$R_p = \sum_{i=0}^n x_i (\alpha_i + \beta_i \times R_m)$$

Calculation of Portfolio Variance:

$$\sigma_p^2 = \left[\left(\sum_{i=1}^n x_i \beta_i \right)^2 \sigma_m^2 \right] + \left[\sum_{i=1}^n x_i^2 e_i^2 \right]$$

Calculation of Portfolio Beta:

$$\beta_p = \sum_{i=1}^n x_i \beta_i$$

INTERPRETATION OF DATA

Interpretation of Data:

1. Comparison of Expected Returns and beta of selected companies

Sr. No	Company	Beta (2019)	Expected Return (2019)	Beta (2020)	Expected Return (2020)
1	Divis Laboratories	0.54958621	0.0007381414	0.5650039	0.002936969
2	Dr. Reddys Laboratories	0.037534017	0.0002109585	0.4728459	0.002284032
3	Cipla Ltd	0.151998788	-0.0005607948	0.4571763	0.002154292
4	Wipro	-0.04635117	0.0000634159	0.8643989	0.001009417
5	HCL Technologies	0.132582357	-0.0015827362	0.7706483	0.00199687
6	Infosys Ltd	0.248792543	0.0002591323	0.8638979	0.002121188
7	Asian Paints	0.131701216	0.0009129817	0.6994983	0.001656084
8	Sun Pharmaceutical	0.073806858	-0.0001427904	0.5007715	0.001149288
9	Tata Consultancy Services	0.022091189	0.0004075285	0.7250388	0.001035284
10	Hindustan Unilever Ltd	0.242371736	0.000446629	0.6252954	0.000753458
11	Tech Mahindra	-0.04635117	0.0000634159	0.8643989	0.001009417
12	HDFC Ltd	1.2701149	-0.0015809677	0.4624755	0.000467792
13	Shree Cement	1.084109968	0.0005510004	0.8508394	0.000634481
14	Kotak Mahindra Bank	-0.04008412	0.0009984447	1.093158	0.000801001
15	Bharti Airtel	0.071711665	0.0014431912	0.7720726	0.000512591
16	Bajaj Auto	0.784363429	0.0004134600	0.8145495	0.000316781
17	Tata Motors	2.070418074	-0.0005020090	1.048981	0.000392488
18	GAIL	1.040149082	-0.0037693628	0.8150914	0.000190371
19	Oil and Natural Gas Corp.	0.443587655	-0.0007560590	1.0402858	-0.000960911
20	Titan Company	0.209854571	0.0008818485	-0.0273992	0.00119224

Interpretation:

It found that if stock Beta values are near to one, then stock expected returns are also almost near to market assumed return, and some stocks are higher than market assumed return. From 2019 to 2020 Beta as well as expected return increased.

2. Ranking of Selected Sample:

Ranking of Selected Sample: 2019			
Company	Ri-Rf	(Ri-Rf)/ β	Ranking
Wipro	-0.0012008574	0.081512555	1
Bharti Airtel	0.0014431912	0.020124916	2
Tata Consultancy Services	0.0004075285	0.018447558	3
Asian Paints	0.0009129817	0.006932219	4
Dr. Reddys Laboratories	0.0002109585	0.005620463	5
Titan Company	0.0008818485	0.004202189	6
Divis Laboratories	0.0007381414	0.001343086	7
Infosys Ltd	0.0002591323	0.00104156	8
Bajaj Auto	0.0004134600	0.000527128	9
Shree Cement	0.0005510004	0.000508251	10
Hindustan Unilever Ltd	0.0000446629	0.000184274	11
Tata Motors	-0.0005020090	-0.000242467	12
HDFC Ltd	-0.0015809677	-0.001244744	13
Tech Mahindra	0.0000634159	-0.001368161	14
Oil and Natural Gas Corp.	-0.0007560590	-0.001704419	15
Sun Pharmaceutical	-0.0001427904	-0.001934649	16
GAIL	-0.0037693628	-0.003623868	17
Cipla Ltd	-0.0005607948	-0.003689469	18
HCL Technologies	-0.0015827362	-0.011937759	19
Kotak Mahindra Bank	0.0009984447	-0.024908732	20

Interpretation:

The ranking of the selected stocks based on highest to the lowest beta ratio is presented in above table. It is clear that WIPRO stocks produced the maximum excess return to the beta ratio (0.0815) and followed by Bharti Airtel (0.0201) Tata Consultancy Services (0.0184) and so on. The lowest excess return to beta ratio is KOTAK MAHINDRA BANK (-0.0249), HCL Technologies (-0.0119), CIPLA LTD (-0.0036) and so on. But it all are before Covid-19. Now we see after Covid-19 which sector is grow.

Ranking of Selected Sample: 2020			
Company	Ri-Rf	(Ri-Rf)/β	Ranking
Divis Laboratories	0.002936969	0.00519814	1
Dr. Reddys Laboratories	0.002284032	0.004830393	2
Cipla Ltd	0.002154292	0.004712169	3
Wipro	0.001009417	0.001167768	4
HCL Technologies	0.00199687	0.002591157	5
Infosys Ltd	0.002121188	0.002455368	6
Asian Paints	0.001656084	0.002367531	7
Sun Pharmaceutical	0.001149288	0.002295036	8
Tata Consultancy Services	0.001035284	0.001427901	9
Hindustan Unilever Ltd	0.000753458	0.001204964	10
Tech Mahindra	0.001009417	0.001167768	11
HDFC Ltd	0.000467792	0.001011496	12
Shree Cement	0.000634481	0.000745712	13
Kotak Mahindra Bank	0.000801001	0.00073274	14
Bharti Airtel	0.000512591	0.000663915	15
Bajaj Auto	0.000316781	0.000388903	16
Tata Motors	0.000392488	0.000374161	17
GAIL	0.000190371	0.000233558	18
Oil and Natural Gas Corp.	-0.000960911	-0.000923699	19
Titan Company	0.00119224	-0.043513626	20

Interpretation:

Now during covid-19 the ranking of the selected stocks based on highest to the lowest beta ratio is presented in above table. It is clear that PHARMA and Information TECHNOLOGY grow mostly like DIVIS LABORATORIES stocks produced the maximum excess return to the beta ratio (0.0051) and followed by DR. REDDYS LABORATORIES (0.0048), CIPLA LTD (0.0047), WIPRO (0.0011), HCL TECHNOLOGIES (0.00259), INFOSYS LTD (0.0025) and So on. The lowest excess return to beta ratio is Titan Company (-0.0435), Oil and Natural Gas Corp. (-0.0009) and so on.

3. Calculation of cut-off point value

2019

Sr. No	Company	$\frac{(R_i - R_f) \times \beta}{\text{Variance}}$	$\frac{\sum[(R_i - R_f) \times \beta]}{\text{Variance}}$	$\frac{\beta^2}{\text{Variance}}$	$\sum \left[\frac{\beta^2}{\text{Vari}} \right]$	Cut- off Rate
1	Wipro	-2.852461413	-2.852461413	0.515539811	0.515539811	-0.000216205
2	Bharti Airtel	2.706266285	-0.146195128	9.643312943	10.15885275	-0.000011073
3	Tata Consultancy Services	1.958870962	1.812675834	2.345773222	12.50462598	0.000137269
4	Asian Paints	4.651998253	6.464674087	88.38062254	100.8852485	0.000486297
5	Dr. Reddys Laboratories	1.077224825	7.541898912	7.193816199	108.0790647	0.000567023
6	Titan Company	2.644494607	10.18639352	132.0643466	240.1434113	0.000758315
7	Divis Laboratories	2.660263443	12.84665696	1088.570906	1328.714317	0.000884664
8	Infosys Ltd	0.847696115	13.69435308	202.4852663	1531.199584	0.000930071
9	Bajaj Auto	2.123524685	15.81787776	3159.792247	4690.991831	0.000884482
10	Shree Cement	2.198330137	18.0162079	4689.080446	9380.072277	0.000798136
11	Hindustan Unilever Ltd	0.332664968	18.34887287	437.5461629	9817.61844	0.000797416
12	Tata Motors	-0.410835387	17.9380374	3508.10384	13325.72228	0.000676434
13	HDFC Ltd	-1.353381505	16.58465598	1380.966851	14706.68913	0.000594443
14	Tech Mahindra	0.310479796	16.89513577	10.51857046	14717.2077	0.000605343
15	Oil and Natural Gas Corp.	-2.153323606	14.74181217	560.4185353	15277.62624	0.000517794
16	Sun Pharmaceutical	-0.341423308	14.40038886	13.02529727	15290.65153	0.000505570
17	GAIL	-2.584719985	11.81566887	741.8852631	16032.5368	0.000404295
18	Cipla Ltd	-2.733864489	9.081804385	112.6297829	16145.16658	0.000309558
19	HCL Technologies	-1.296606985	7.7851974	14.40029185	16159.56687	0.000265232
20	Kotak Mahindra Bank	5.258408503	13.0436059	8.46204015	16168.02891	0.000444252

Interpretation:

The Above Chart shows the cut-off value of selected stocks of NSE NIFTY 50 Index. Cut off rate C_i is 0.000930071. which is the highest cumulated value of C_i . Moreover, the cumulated values start to decline after Infosys Ltd stock. So, we analyse that during F.Y.2019-2020, that most of the company decline and the Beta also High. The risk of the market is also high that time.

2020

Sr. No	Company	$\frac{(R_i - R_f) \times \beta}{\text{Variance}}$	$\frac{\sum[(R_i - R_f) \times \beta]}{\text{Variance}}$	$\frac{\beta^2}{\text{Variance}}$	$\sum \left[\frac{\beta^2}{\text{Vari}} \right]$	Cut- off Rate
1	Divis Laboratories	5.329183135	5.329183135	5.329183135	5.329183135	0.001694372
2	Dr. Reddys Laboratories	4.564065241	9.893248375	4.564065241	9.893248375	0.002754244
3	Cipla Ltd	3.449347704	13.34259608	3.449347704	13.34259608	0.003397951
4	Tech Mahindra	2.816552994	16.15914907	2.816552994	16.15914907	0.003482016
5	HCL Technologies	3.187956451	19.34710552	3.187956451	19.34710552	0.003461707
6	Infosys Ltd	3.341104479	22.68821	3.341104479	22.68821	0.003354048
7	Asian Paints	3.335719391	26.02392939	3.335719391	26.02392939	0.003357935
8	Sun Pharmaceutical	1.976097524	28.00002692	1.976097524	28.00002692	0.0034225
9	Tata Consultancy Services	2.093156218	30.09318314	2.093156218	30.09318314	0.003255431
10	Hindustan Unilever Ltd	1.627141689	31.72032483	1.627141689	31.72032483	0.003144247
11	Tech Mahindra	1.454602563	33.17492739	1.454602563	33.17492739	0.002971309
12	HDFC Ltd	0.701299863	33.87622725	0.701299863	33.87622725	0.002949417
13	Shree Cement	1.101537662	34.97776491	1.101537662	34.97776491	0.002744955
14	Kotak Mahindra Bank	-0.341205166	34.63655975	-0.341205166	34.63655975	0.002831281
15	Bharti Airtel	0.695806254	35.332366	0.695806254	35.332366	0.002708979
16	Bajaj Auto	0.565099351	35.89746535	0.565099351	35.89746535	0.002523321
17	Tata Motors	0.260990607	36.15845596	0.260990607	36.15845596	0.002417336
18	GAIL	0.212607005	36.37106296	0.212607005	36.37106296	0.002316635
19	Oil and Natural Gas Corp.	-0.78768938	35.58337358	-0.78768938	35.58337358	0.002145249
20	Titan Company	1.7914046	37.37477818	1.7914046	37.37477818	0.002253096

Interpretation:

Here 0.003482016 is maximum therefore consider companies above this cut-off point. That means above 0.003482016 is higher the cut-off rate Higher the Risk and vice versa. And also, we realize that most of the above listed Top companies are from Pharmaceutical and Information Technology.

CONCLUSION

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The construction of an optimal portfolio is big and difficult for a normal investor. Using the Sharpe Index Model (SIM), the construction of a portfolio is a big procedure and requires a lot of calculations. Construction of the same optimal portfolio is difficult for all the investors because each investor will have their own assumptions regarding market expected return, and market variance. The market expected return and expected variance play an important role in the ranking of stocks and selection of cut-off points. It has been observed that stock Beta values play the primary and stock average return play the secondary role in the selection of stocks for the optimal portfolio. In 2020 that is during COVID19 pandemic only pharmaceutical and Information Technology companies like Divis Laboratories, Dr. Reddy's Laboratories, Cipla Ltd, Wipro, HCL Technologies and Infosys Ltd survived. But in 2019 there is no specific sector performed well. So, we concluded that the advantage of Covid-19 was benefited by sector wise like Pharmaceuticals and Information Technology, and also, we released that overall NIFTY50 perform very well except some sector like Banking, Oil and Gas.

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