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Repercussions of Black Swan Event on The Indian Stock Market-A Case Study of Domestic Investors

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ABSTRACT

As the stock market is constantly changing and is dependent on a wide range of unpredictable variables, predicting its behaviour is one of the most difficult tasks in the time-series prediction domain. Black Swan occurrences, which are very rare but sometimes deadly, can have a significant impact on the market. The stock market, like other financial markets, is vulnerable to what are known as 'Black Swan' occurrences, which are sudden and unexpected yet have a profoundly detrimental effect. If the successful stock trend can be forecast, regulators and investors may improve their trading tactics, lowering investment risk while increasing profits. First, this study examines the effect of the black swan event on the stock of the listed firms in which our sample of respondents invests, and then it compares the effectof the varied risk handling of many prominent enterprises on the stock price recovery. A more rapid reaction to risk occurrences means early processing time and less vulnerability to black swans.

Keywords: Stock,Price,Risk,Blackswan,Investors.

INTRODUCTION

Stock markets throughout the globe have dropped or risen by several percent in a single day due to unpredictable occurrences, or 'Black Swans.' The purpose of this research, inspired by Estrada and Vargas's (2012) work, is to determine whether or not the mean reversion assumption may be used to provide a larger return than the market index by taking advantage of unexpected occurrences on the Swedish Stock Exchange (SSE) (OMXS30). For this thesis, I will be making some adjustments toEstradaandVargas'stechnique,focusingonprice movementsratherthanbeta. "Amonthlyreturnchange for the OMXS30 of 5% or more is considered a Black Swan." Our investment technique entails purchasing equities with the least amount of change in return after a negative Black Swan and selling them after a good Black Swan.

What is a 'black swan' event?

The term 'black swan' is used to describe an extreme outlier that causes widespread disruption. It is believed that there are three main features that set exceptional occurrences apart: (1) they are highly unusual and beyond the sphere of ordinary expectations; (2) they have a significant effect after they strike; and (3) they seem likely in retrospect when reasonable explanations surface.

The black swan idea was initially proposed by author and investor Nassim Nicholas Taleb in 2001, and then popularised in his 2007 book - The Black Swan: The Impact of the Highly Improbable. The work was deemed one of the 12 most important books published after WWII by The Sunday Times.

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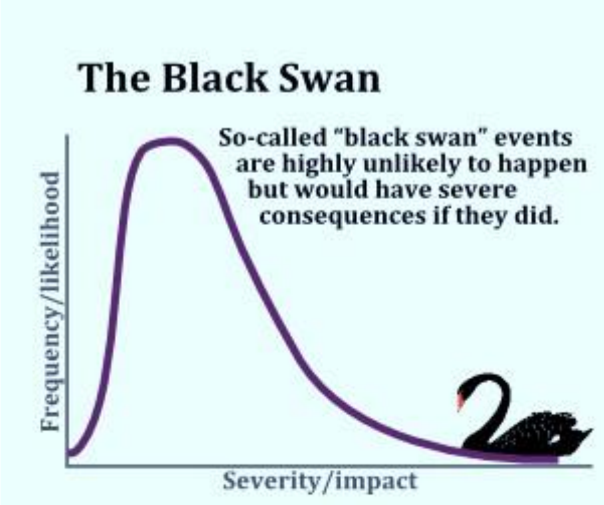

Figure1:Graph showing BlackSwan Event

A black swan event in the stock market is often a market crash that exceeds six standard deviations, making it exceedingly rare from a probabilistic standpoint. Some have argued that stock prices are 'fat- tailed' and that such events are, in reality, more frequent than the statistics would let on.

Later in 2007, his book, 'The Black Swan: The Impact of the Highly Improbable', made the theory well- known. This book focuses on developing such systems and methods that will help deal with the events in resisting their effects on society.

Taleb listed three elements that the event must possess to be known as a Black Swan Event. Every black swan event must:

i) Havetheability toexhibitdrastic,andwide-reachingconsequences

ii) Haveanatureofunpredictabilityandunexpectedness,and

iii) Usually accompanied by hindsight biases, which means that once the event has passed, many individuals think that the event was predictable. This is only because now they are aware of the event and the likely outcomes.

EARLIER BLACK SWAN EVENTS THAT SUNK SENSEX

Sensex and Nifty, domestic stock market indices, have dropped by about 35 percent from their January 2020 highs of 42,273 and 12,430, respectively. Following a worldwide sell-offas the coronavirus spread, the Indian stock market began its own precipitous decline. The stock market's reaction to the coronavirus's potential economic consequences is nothing new; in the previous three decades, four other big 'Black Swan' occurrences have caused Sensex drops of up to 58%. (Musgrave, G. 2009).

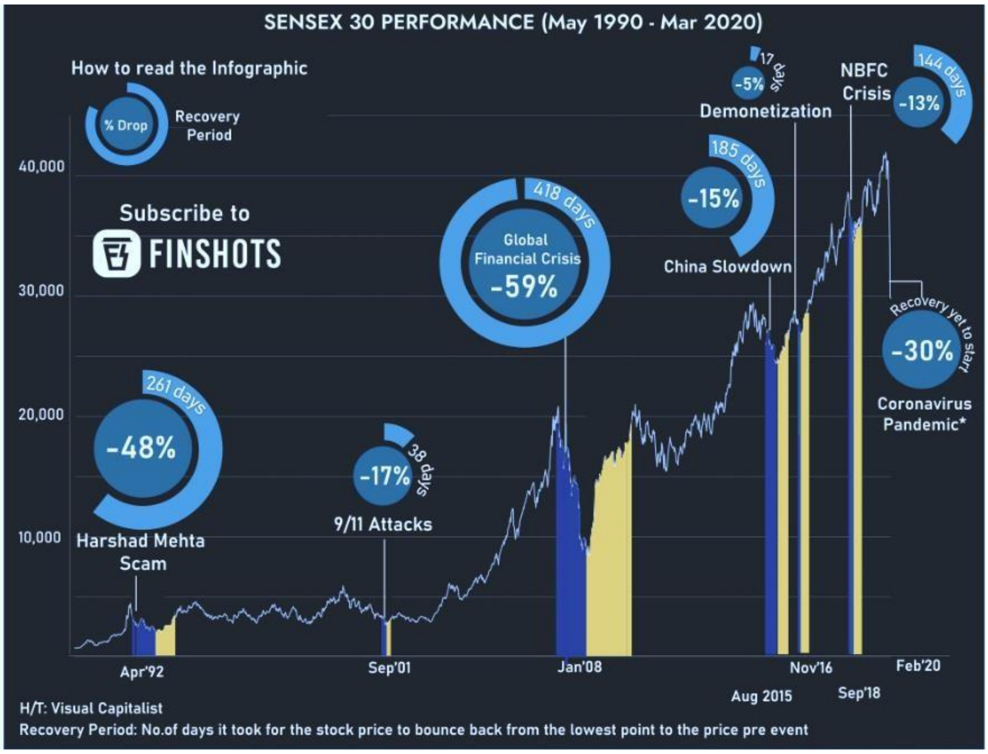

Figure2:Blackswan events from thehistoryof Indian stockMarket

Harshad Mehta scam: The country's economy was severely harmed by the Harshad Mehta scandal. Mehta, a stockbroker, was implicated in the major stock manipulation scam that occurred during the Securities Scam of 1992, which was estimated to be worth roughly Rs 4,500 crores. His company actedas a middleman in financial deals. "The BSE Sensex fell 45 percent that year, and it took the index 18 months to recover."

9/11 Terrorist attacks, 2001– In 2001, 19 militants associated withAl- Qaedahijacked airlines and coordinatedfoursuicide attacksdestroyingtheWorldTradeCentre.Itwas thedeadliestterroristattackin American history. Around 2700 people were killed in New York, 40 in Pennsylvania, and nearly 184 in Pentagon. More than 400 police officers and firefighters were martyred, and all 19 terrorists died.

The first highjacked plane crashed on the north tower of the World Trade Centre in New York, and the second plane soon followed 19 minutes later and crashed on the south tower ofthe center. Now everyone knew that America was under attack.

Global Financial Crisis, 2008– In 2008, the US housing market crashed, which led to a severe global economic crisis. It started in 2006 when the housing prices started to fall for the first time after many decades. At first, the realtors were happy about this situation but the borrowers were failing to repay the loans to banks. In 2007, banks started panicking about the losses, and to control this, they stoppedlending to each other (Sakthive et al., 2014).

As a result, consumer demand dropped and had a devastating effect on the economies of theindustrialised world. Black swans may have good or neutral outcomes. The Indian government's 1991 move to significantly liberalise its economy was yet another example of a Black Swan. It's safe to saythat if you randomly polled analysts and economists back then, very few of them would have predicted the success of liberalisation on such a big scale. The liberalisation of the Indian economy and the Indian markets in 1991 was a watershed moment that had far-reaching consequences over the following quarter of a century.

COVID-19 IN SECURITIES MARKET IN INDIA AS A BLACK SWAN EVENT WHICH AFFECTS INVESTORS

Janata Curfew was declared by the Government of India (GOI)on 22nd March 2020 and closure strategy to keep up societal removing exerciseto hindertheepisodes from 24th March 2020. AstheGOIdeclared such a closure strategy, different financial exercises have been halted out of nowhere. The monetary market of India is seen sharp unpredictability because of the interruption of the worldwide imprint. Because of dropping in the worldwide monetary marketplace, the Indian securities exchange likewise observer'ssevereunpredictability. It has likewisestood theimpact oftheCoronaVirusepidemic(R Ravi 2020).

The2 significant securities files in India-Bombay Stock Exchange (BSE), Sensex, and Public Stock Exchange (NSE), Nifty. In the occurrence of it, there were fall in the B S E13.2% on March 23,2020. This was the most noteworthy sole day fall next to the Harshad Mehta Scam, in 1991 (Mondal, 2020). Likewise, NSE Index has moreover weakened to practically 29% throughout this time. A few financial specialists have deliberated the consequence of Coronavirus on the BSE and NSE as a 'Black SwanEvent' for example the occurrence of an exceptionally unexpected occasion with an incredibly terrible effect. Because of the lockdown strategy embraced by the Indian government, the processing plant has diminished the extent of workforce just as creation level which disturbed the inventory network. In light of the vulnerability winning among humankind, individuals additionally decrease their utilization propensities prompting request side stun. Studies have too discovered that the whole past pandemic had influenced just the interest chain. However, this Corona Virus epidemic has influenced both the interest series and inventory network. Regardless oftheserious impact ofcorona virus on thesecurities exchange of the whole economy, there is restricted examination on it particularly on account of an arisingeconomy.

India's Stock Market is encountering a significant expansion in its instability, as appeared by the VIX list ascending by around multiple times its typical movement, with business sectors stopped twice in March 2020becauseoflowercircuitchannel.Duringthecountrywidelockdown,theordinarynormalnumberof exchanges and the quantity of offers traded in the value money market section expanded fundamentally. NSE subsidiary market volume information shows a fall (20%) in the normal number of day-by-day subordinate agreements exchanged March 2020 contrasted with the earlier months (Sansa A N, 2020).

On 20 March 2020, SEBI took measures to screen unpredictability and check hypothesis by diminishing position cut-off points to practically 50% of what was recently allowed in certain stock fates, restricting short-selling of list subsidiaries, expanding the edge on those offers. The COVID-19 had pushed the Indian benchmark fileto alevel that was seen during theUniversal MonetaryCrisis of2008. The list had plunged in excess of 30% from their ongoing high in January. A few enterprises, for example, the travel industry, and hospitability have been unfavourably influenced and loads of these organizations have fallen by over 40%. The slow economic development, less employment creation, high obligation and credit crisis among NBFC and others have exceptionally contributed, notwithstanding that the episode of COVID-19 and expansion of lockdown have profoundly affected the economy of India. RBI and the Government of India have thought of a progression of changes in light of the current disorder, for example, repo rate decreases, administrative unwinding by broadening ban, and different strides to improve liquidity on the lookout. Conceded installments, stale credit development, developing instances of awful advances, and feeble economic situations have frustrated monetary action development and wellbeing.

HOW DOMESTIC INVESTORS SHOULD HANDLE THE BLACKS WAN EVENT?

How to invest

Duration blindness is one of the most challenging issues for an investor to deal with during a financial crisis. It's hard to predict when a crisis will occur because of the unpredictability of such situations (Barber, B. M., & Odean, T. 2008). "An investor may make advantage of a range of expert opinionswhile yet leaving space for forecasting mistake." An effective strategy is to spread out the investment over a long time frame. Each investor will have their own rationale for choosing a horizon. To ensure a comfortable buffer zone, it's best to invest for the long haul.

Whattoinvest in

Stock and other investment markets are affected by all types of events. Black Monday, the stock market fall of 1987, and the.com boom of 2000 were all downturns or crashes that were reasonably'model- able,' while the September 11 attacks and the COVI19 pandemic were not (Bogle, J., 2008). Not many people at the time believed Enron would fail. One might make the case that there were warning signs about Bernie Madoff's Ponzi scheme.

The premise is that everyone would benefit from knowing the future, yet such knowledge is unavailable toeveryone.Problemsariseonbotha mentalanda physicallevelbecauseofourlimitedabilityto model and forecast certain phenomena, including black swan occurrences.

Even if we properly foresee some elements that affect the stock and other financial markets, such as election outcomes and the price of oil, other occurrences, such as a natural catastrophe or war, may overrule the determinable factorsandthrowour planscompletelyoff.What'smore,incidentsof this kind may occur at any moment and continue for as long as they want to.

- ***Stay inside the circle of competence:*** *In these exchanges, buyers use a screening tool to find the equities that have dropped the greatest. When prices are historically high, investors may feel compelled to invest in companies they haven't followed before. The potential for financial loss increases with the degree of ignorance around the item being purchased. One should never go above their level of expertise.*

- ***Avoid companies with high financial leverage****: Liquidity problems are common fororganisations that use leverage. In order to provide returns for the investor, these companiesmustweatherthecurrent economicstorm.Furthermore,abigreturnisrequiredtoswitchtorisky equities even when excellent firms are available at reasonable values. High-debt enterprises should be avoided unless the earnings trend can be seen clearly.*

- ***Buy robust business models:*** *During a bull market, businesses with weak profiles or negative cash flow might easily attract investors. A buyer of such stocks after a market meltdown is more likely to switch to those with a solid business plan and balance sheet. The appropriate business will have positive cash flow and return on capital employed (RoCE), the capacity to scale, a strong brand franchise, and competent management.*

PROPOSED METHODOLOGY

The study cited a plethora of national and international reports on epidemics from a wide range of organisations. In the midst of the lockdown, it was not able to walk outside to gather data. Data about Black Swan was collected from a variety of authoritative sources, including websites, journals, and electronic material. Covid-19 Happenings and Their Impact on India's Stock Markets

Sample

Total 50 investors are selected who invests in 3 different firms are find appropriate for this study.

Measuring predicted and abnormal returns

Abnormal stock returns are often examined in an event study, with cumulative abnormal return measurement being the method of choice (CARs). "The general idea is to put a number on how much the stock market would have moved differently if the event or occurrence in question had never happened, and how much it really moved after the fact." Predicted returns should be somewhat consistent with actual returns if the event is not informative. Therefore, the effect of the event on impacted stocks is reflected by a large discrepancy between the projected and actual returns, also known as anomalous returns (ARs). The entire market reaction to an event may be measured by calculating the cumulative abnormal return (CAR), which is the total of the daily abnormal returns (AR) throughout the event window.Becausethemarket model is focused on reducing thevarianceofabnormal returns, it is suitable for estimating the effect of black swan occurrences, we utilise the market and risk-adjusted return model (i.e., the conventional market model) to compute expected stock returns.

Testing for statistical significance

t-tests are often used for drawing conclusions from statistical data. Cumulative average abnormal returns (CAARs) are calculated by averaging abnormal returns (ARs) and cumulative abnormal returns (CARs), and then their statistical significance is examined.

DATA ANALYSIS

Marketreaction

Predicted stock returns and associated ARs and CARs are calculated over a 150-estimation trading-day timeframe. Fifteen trading days before to the melamine crisis, CARs for all four companies were very near to zero, and their respective lines overlapped.

Since the event, our chosen investors' CARs have been considerably impacted by the other participating businesses. "All companies saw a reduction in CARs because to the heightened volatility, although the declines ranged from mild to severe." Bright saw a tiny decrease, then a progressive improvement. Bright's CAR seemed to fall at -0.3245 at t=3, but it has since steadied at -0.2, which is far less than the drops seen by the other two afflicted companies. There was no movement in the stock price onSeptember 16th, but a sharp collapse occurred three days later, resulting in a CAR of -0.8827. The black swan occurrence has resulted in a huge negative shift in stock return. The company's net profit increased by 94%, 43%, 59%, and 29% between 2012 and 2016.

CARs for the three companies implicated have dropped significantly after the melamine scandal, indicating a negative reaction from the public. Both investors and customers have lost faith in the three companies, causing their stock values to drop dramatically.

Empirical results

We use t tests to examine whether or not the melamine scandal has affected the stock prices of the companies that were affected. The findings confirm the cumulative anomalous returns after an event by demonstrating the significance of CARRs during the event window (31 trading days).

Although all three businesses felt the incident's negative effects, the extent to which their share prices dropped varied. This demonstrates that even when faced with the same black swan occurrence, various companies react in different ways and use different crisis management strategies.This confirm sour
earlier hypothesis that established risk management practises have an effect on the magnitude of effects on stock price. This motivates us to keep investigating the role that prudent risk management plays in influencing share prices.

Table1:Ttest on CAAR

t-statistics	Degreesoffreedom	Significance	Averagedifference
-4.901	49	0	-0.20968
Samplesize	Average	Standard deviation	Average standard error
50	-0.2085	0.23852	0.04279

CONCLUSION

In conclusion, Black swans are extreme outliers. A black swan occurrence is one that is very unlikely to be anticipated. Portfolios that are immune to black swan events may be managed by investors. It is possible to profit from market crashes if one is familiar with their underlying causes and behaviour. It is highly important to

1. Be humble and stagger investments over a reasonable period.
2. Be attentive in picking up good quality stocks.

It's nicknamed a black swan because it's so improbable. "Thus, developing an investing plan seems to bea challenging task at first glance." When once-unpredictable black swan events become routinely predictable, they are no longer black but white. Yet, I provide two strategies to protect yourself against black swans. To protect your portfolio against potential losses, consider adding puts when the Black Swan chance becomes distinct and multi-dimensional. If the black swan event ends up being a favourable outcome, you will come out ahead after paying for your choice.

You may rely on the put option to generate income even if the black swan event has a bad outcome.

Keep to your asset allocation strategy, which will automatically adjust your asset mix depending on factors such as market values, anticipated interest rates, and so on. You won't have to worry about being caught off-guard by hanging onto assets at inflated prices, which will impose some discipline on your investing approach. In the financial markets, black swans do appear at predictable periods. There's no telling when the next 'black swan' will occur. Better to err on the side of caution!

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