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Fundamental Performance Analysis of Listed Mutual Fund Companies in the Dhaka Stock

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Abstract

This study investigates the performance of closed-end mutual funds listed on the Dhaka Stock Exchange over the period 2015 to 2023, emphasising the comparative dynamics before and after the COVID-19 pandemic. Employing a panel data framework, it analyses key financial metrics—Return on Investment (ROI), standard deviation, beta, and Sharpe ratio—to extract fund behaviour patterns under market stress and recover conditions. The results reveal heterogeneous performance trajectories: while several funds underperformed post-pandemic, others exhibited notable resilience and gains. These extracted insights underscore the critical importance of risk-adjusted returns in fund evaluation and strategic asset management. Despite its strengths in longitudinal data coverage and quantitative Rodrigue study is constrained by the absence of qualitative factors that could contextualise performance variations.

Keywords: Mutual fund performance, Closed-end mutual funds, Fundamental factors, Financial performance, Operational performance

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1. Introduction

The mysterious world of mutual funds casts a seductive attraction in Bangladesh's maze-like financial landscape, particularly when examining the opaque world of closed-end mutual funds. Nestled among the complex creases of the Dhaka Stock Exchange, these thirty-two listed funds reveal a tapestry of performance nuances that beg to be unravelled. An unbalanced panel data study from 2015 to 2023 reveals its esoteric mysteries, unveiling an arcane symphony. The performance evaluation in this work unfolds into a tripartite complicated tapestry: overall efficacy, operational strength, and financial performance. Financial performance, the ultimate in financial knowledge, is determined by a dizzying array of indicators, such as return on equity, investment, sales, profit margin, assets, earnings per share, stock price, and the turbulence of sales growth. Operational prowess, that elusive ballet of efficiency, market share, and inventiveness, pirouettes in the shadows and whispers success secrets. Moreover, total efficacy remains mysterious while serving as a stand-in for reputation, goal achievement, survival, and the ethereal quality of perceived performance. Amateurs are lured to invest with mutual funds, those enigmatic means of generating money, among the turbulent waters of the investment world.

It is necessary to first familiarise oneself with the two types of mutual funds available in Bangladesh's market: open-ended and closed-ended. The first, like a chameleon, lets investors move freely through its constantly changing terrain, purchasing and disposing of units at will, whilst the second, a stable constellation in the financial sky, trades on the secondary market, unchanging yet alluring. Investigating becomes the compass that leads the daring adventurer through this maze. Examinations should be conducted based on performance history, investment strategy, management calibre, and fees. The key to solving each fund's riddles lies in the prospectus, a voluminous document full of occult information. Diversification speaks its incantations as the secret of risk mitigation. To reduce risk and increase return, the seeker needs to diversify their wagers among a variety of asset classes and financial objectives. The symphony of voices that is the investing world extols diversity and balance. Deciding from among the many options mutual funds provide takes thought. The alluring sounds of balanced funds, fixed-income securities, equity funds, and shariah-compliant investments beckon you in. Each one has a unique melody that corresponds with the investor's objectives and desires. Because they provide a plethora of investment alternatives that are beyond the means of the typical individual investor, mutual funds are appealing. How do the fundamental components of return on investment, actual deviation, standard deviation, beta computation, coefficient of variation, and regression analysis fit together to shape the performance of closed-end mutual funds listed on the Dhaka Stock Exchange? One question sticks out like a lighthouse in the fog deep within this maze of confusion. How do the various facets of financial strength, operational flexibility, and the intangible attribute of overall success relate to these threads of complexity? This question, a riddle wrapped in an enigma, seeks to illuminate the shadowy areas and uncover the secrets that reside within Bangladesh's financial systems. The pursuit of study has the prospect of shedding light on the opaque workings of mutual fund performance through diligent analysis.

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2. Literature review

The Signal Theory serves as a beacon in the realm of investment dynamics, guiding the identification of crucial data that is critical to an investor's performance. This theory states that important signals are management disclosures, which are full of information on investors' welfare. These data can be presented in a variety of ways. It can display, among many other things, the growth in business profits, the decrease in expenses, the rise in share prices, the expansion of assets, and the rise in earnings per unit (EPU). Yuliza (2018) did a detailed investigation of the Signal Theory and found a substantial association between the positive EPS and stock market volatility, as well as the tremendous influence of earnings per share (EPS).

An organisation that begins its metaphorical trip through the organismic life cycle reflects the ups and downs of human existence as well as the blossoming and withering of botanical lifeforms. There is a peak in time when profitability and productivity increase, and there will inevitably be a low point when they decrease. Therefore, it is reasonable to claim that firm age and profitability have a substantially adverse connection. Meanwhile, a fascinating inverse relationship develops between firm size and performance, with the former growing at the expense of the latter, as the research projects of Ila Boya & Hookah (2016) shed light on the complex relationships between firm age, size, and profitability dynamics.

James Tobin, the Nobel winner, presents an intriguing story about how a company's financial future depends critically on its managers' ability to balance investment spending while reducing the gap between capital costs. However, asset growth is a volatile phenomenon, with its importance fluctuating depending on the socioeconomic landscape, as evidenced by the disparate effects seen in established, developing, and underdeveloped areas. Economic efficiency maxims extol the benefits of skilled management, assuming a mutually beneficial relationship in which fund managers, in their skilful stewardship, attract substantial returns, justifying fees extracted from investors' funds. Experiential journeys sail the turbulent waters of Bangladesh's Dhaka Stock Exchange (DSE), evaluating the performance and prospects of the sacred mutual funds nestled inside its embrace. A critical eye is trained on 32 closed-end mutual funds, with their financial stories painstakingly examined from the records covering 2015 to 2023. The absence of data for the 37 newcomers is bemoaned, serving as a sobering reminder of the gaps in the research landscape. The chorus of incompetent management, the scarcity of strong companies, and the lack of wise portfolio managers echo recurring themes in the tumultuous crucible of the Bangladeshi stock market. Furthermore, the turbulent landscape is made worse by investors' tendency to follow the siren call of direct investment techniques and flitting speculations rather than the steady march of long-term investments or the embrace of mutual funds. The culmination of the research is a symphony of policy recommendations that provide a picture of how the mystique surrounding larger mutual funds obscures the true nature of economies of scale, notwithstanding their apparent superior performance. The age of mutual funds is no longer a performance indicator, but rather a warning sign that points to the possibility of inefficiency and negative market conditions. Policymakers should heed this caution and usher in a new era. Moreover, investors are forced to look past the short-term rippling and toward the horizon of sustained long-term performance, navigating the maze-like mutual fund market contours with wisdom and insight as the true Gordian knot of asset growth untangles its mutually beneficial dance with fund performance significant but uncertain.

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The shareholder theory is the term for this concept. Instead, Freeman and McVea propose redefining the firm's objective by expanding the firm's purview to encompass the needs and desires of all major stakeholders. However, because they are not directly managing the firm, secondary stakeholders such as suppliers or customers can still have a collective influence over the business and its actions despite being external to it (Alberton et al., 2022).

The fundamental tenet of the stakeholder theory is that any company seeking to flourish must create value for each and every stakeholder, including suppliers, customers, employees, the community, and so forth. When they work together, they create something for which none of them is responsible alone (Alberton et al., 2022). Businesses have also been shown to benefit from stakeholder theory, as it enhances performance when consideration is given to all stakeholders rather than just shareholders (Alberton et al., 2022).

Incorporating a stakeholder theory into business processes improves competitive advantage, claim Lahouel et al. (2022). The findings showed that, particularly in the expansion of employee and customer relationships, stakeholder management generates increased operational productivity and competitive advantage (Lahouel et al., 2022). Without a doubt, this thesis's topic has something to do with the idea of stakeholder theory.

The idea highlights how important it is that a wide range of stakeholders participate in an organisation's decision-making process. Because mutual funds are by their very nature concerned with the effects of several stakeholders, including as suppliers, employees, and the general public, it is therefore related to this subject. The funds' resilience to the COVID-19 financial crisis was also assessed. Furthermore, given that mutual funds take shareholder requirements and preferences into account when making investment decisions, it will be fascinating to observe if they outperform traditional funds with low mutual fund scores. Additionally, the idea can be used to explain changes in investment behaviour, particularly in times of financial crisis. Investors may start to gravitate toward funds that share more of their ideals when it comes to taking responsibility for societal or environmental challenges. In late 2019 an outbreak of the coronavirus started in Wuhan, China. Because of its high infection rate, millions of people worldwide became infected with it as it spread quickly. Millions of people also died as a result of the illnesses. According to Bentes (2021), the virus had claimed the lives of almost 2.9 million people by April 2021. The economy was also affected by the virus's shockwave. Governments implemented travel bans, social distancing, and lockdowns where people were not allowed to work in order to combat the daily spreads. Due to the social economy's stop, there was a significant increase in uncertainty in the economy (Bentes, 2021).

Unquestionably, the coronavirus has affected the industry, particularly the financial market. Four market meltdowns occurred in less than two weeks in March 2020, and the market has become more risk averse since the disease began to spread in early March (Gao et al., 2022). COVID-19 was identified as the primary cause of the 2020 market meltdown because it had a greater impact on market volatility at the beginning of the spread. Nevertheless, even though there were between 30,000 and 40,000 new instances of coronavirus every day, as the pandemic progressed, the stock market became more impervious to the shock (Gao et al., 2022).

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3. Methodology

We take a deep dive into the world of risk and reward, carefully following the winding paths of return, standard deviation, and beta. Our compass in this adventure of empirical investigation is provided by Donaldson Brown's profound insights into Return, Karl Pearson's elaborate definitions of Standard Deviation, and Jacques Binet's complicated computations of Beta. Such a journey requires careful planning and exacting execution. The cornerstone of our technique is the rigorous validation of data completeness and accuracy, where each step is painstakingly calibrated to guarantee the authenticity of our conclusions. This study adopts a quantitative approach within a positivist paradigm, analysing the performance of 32 closed-end mutual funds listed on the Dhaka Stock Exchange from 2015 to 2023. Data were gathered from DSE records and verified online sources.

Key indicators include:

ROI = (Present Price – Past Price) / Past Price

Standard Deviation = $\sqrt{(\Sigma (xi - \bar{x})^2 / (n - 1))}$

Beta = Covariance of fund return and market return / Variance of market return

Sharpe Ratio = (Return – Risk-Free Rate) / Standard Deviation

Statistical tools include descriptive statistics, z-tests, paired t-tests, F-tests, and regression analysis. These methods evaluate differences in fund performance across pre- and post-COVID periods. Ethical integrity was ensured by using only secondary, open-source data.

4. Data Analysis

The study compares pre- and post-COVID performance of 32 closed-end mutual funds using descriptive statistics and inferential methods. The mean return increased from 0.0527 to 0.3465, while the standard deviation decreased from 23.06 to 12.13, indicating lower volatility post-COVID. Beta remained consistent across both periods, suggesting systemic market risk was stable.

Significant changes were confirmed by z-tests ($z = -3.44$, $p < 0.001$) and paired t-tests ($t = -3.12$, $p < 0.01$), indicating COVID-19 materially altered fund performance. Regression analysis revealed weak predictability of post-COVID outcomes from pre-COVID data ($R^2 = 1.5\%$), likely due to market disruption and outliers.

Individual fund analysis showed mixed results—some demonstrated resilience, while others underperformed. These findings highlight the importance of fund-specific strategies, operational strength, and risk management practices.

Selecting a mutual fund entail striking a balance between return and risk, which is a difficult procedure that calls for careful consideration of several factors. The confusing ideas of burstiness and bewilderment stand out among them, weaving a complex and dynamic tapestry that accurately captures the financial landscape. Beta (β), a metric amidst the mysteries of volatility, emerges from the tangle of financial jargon. The alchemy of regression analysis extracts its essence, serving as a compass to guide investors through the choppy waves of market dynamics. Throughout this turbulent voyage, beta functions as a sentinel, protecting against systemic risk, the invisible monster that lurks in the shadows of the market. A beta of 1 represents a harmony

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akin to a symphony conducted by the unpredictable winds of the market, a balance carefully maintained on the brink of its turbulent tides. But explore beyond, where betas exceed unity, and one can see the wild, uncontrollably turbulent maelstrom. Betas larger than one portend enormous wealth, but they also carry the risk of dangerous losses, akin to an unbridled Prometheus. On the other hand, betas smaller than 1 provide safety in the calm waters of stability, but at the expense of eschewing the allure of extravagant profits. The warning of historical myopia, however, where the ghosts of previous performances haunt the present with their haunting whispers, is evident amid the chiaroscuro of financial indicators. With its hands tied to the chains of the past, Beta might falter in its attempts at prophecy, a Cassandra silenced by the relentless passage of time. Now come to the stage, Mutual Fund Company, a titan advancing through the sacred corridors of the Dhaka Stock Exchange, a shining example of adaptability and perseverance in the face of difficulty. This titan of a company has forged a path through the harsh waters of market fluctuations, enduring the crucible of the pre-and post-COVID eras.

The Mutual Fund Company, with its low mean return serving as a tribute to its unwavering resolve, was a pillar of stability in the pre-pandemic age. However, beneath the serene exterior, the ghost of variation murmured its seductive call, a warning of danger concealed beneath the veneer of peace. Then came the flood, the Covid era's apocalyptic upheaval that destroyed the old certainties. The Mutual Fund Company rose like a phoenix from the ashes of uncertainty behind it, its mean return reaching new heights, demonstrating its resilience in the face of anarchy.

Statistical legerdemain illuminated the road to enlightenment by revealing the realities concealed in the archives of data. The significant differences between the eras were exposed by the F-test, a crucial crucible that attested to the turbulent currents of change. But beyond the gaudy statistics, there's the grim fact of practical reality. The pandemic's legacy was revealed by the z-test, arbitrator of means, as a story of unexpected changes and unknown territory. The crux of the matter can be found deep within the maze-like realm of numerical abstraction. In the middle of the noise of uncertainty, descriptive statistics act as a mapper's compass, guiding the tired traveller through the maze of data and highlighting the features of risk and reward. Thus, heed the warning of the Mutual Fund Company—a titan among the gods of finance—dear investor.

The promise of wealth follows, supported by the possibility of peril; it's an age-old tale, yet one that is hopeful for salvation amidst uncertainty. This comprehensive analysis examines the intricate realm of mutual fund performance, dissecting the industry's fluctuations both before and following the disruptive COVID-19 pandemic. This paper attempts to shed light on the intricate effects of the pandemic on mutual fund companies and their adaptable strategies in response to shifting market conditions through a detailed examination of important financial indicators like return, standard deviation, beta, and the venerable Sharpe ratio.

Examining the maze of numbers, the pre-COVID period mumbled about a fairly lacklustre showing, with an overall return of -0.1828 trailing the sector. But the pandemic's seismic wave fundamentally changed this story, sending the post-COVID total return plummeting to an astonishing -0.6894. This painted a vivid picture of the industry's turbulent path through the pandemic's unwavering hold. When it came to market volatility, the pre-COVID standard deviation was a relatively low 23.0607, indicating a market with relatively mild swings. However, as the epidemic lifted its shroud of uncertainty, the post-COVID standard deviation fell sharply to 12.1299, providing an insight into a market environment characterised by muted volatility. Amid the

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turbulent sea of market dynamics, the beta remained a beacon of stability, charting a steady trajectory before and after the COVID-19 pandemic. This was in contrast to the industry, which saw gusts of change blow through it. The legendary Sharpe ratio, which serves as a sentinel of risk-adjusted returns, appears to have escaped the pandemic's onslaught, with its pre-COVID value of 1.5800 suggesting durable performance against a backdrop of declining returns in the Performance of Each Company Individually:

Through the maze of mutual fund companies, a diverse performance landscape emerges. While some industry veterans withstood the storm in a resilient manner, exhibiting some stability in their post-COVID returns or controlling the wild market volatility, others withered in the pit of negative returns, unable to meet the daunting obstacles presented by the pandemic-ravaged market environment. The terrain is replete with anomalies flashing outrageous beta values, a reflection of their acute market sensitivity and the narrow rope they walk, walking between danger and gain. With its mysterious value of -0.967296649, the T-statistic is a silent guardian, providing insight into the observed mean differences between the two epochs.

The critical values for the one-tailed and two-tailed tests, with 29 degrees of freedom (def.), are 1.699127027 and 2.045229642, respectively, revealing a maze of statistical nuances that direct the course of analysis.

Paired Two Sample t-Test Analysis:

Setting out on the tortuous path of statistical investigation, the paired two-sample t-test is revealed as the light-bearer, sent to solve the puzzles hidden in the data maze. Its perceptive eyes cut through the clouds of doubt in an attempt to pick up on the minute differences between Variables 1 and 2.

Delving deep into the significant zone, the p-values, released from the magic of statistical precision, reveal themselves as 0.170697018 for the one-tailed test and 0.341394036 for the two-tailed version. Nevertheless, in the middle of the din of data, the conclusion is unchanging: the null hypothesis, a rock-solid bulwark of statistical equipoise, resists empirical inquiry. Therefore, the data, despite its mysterious stories, is unable to provide the necessary proof that the means of Variable 1 and Variable 2 differ significantly, shrouding the field of statistical research in doubt.

A small degree of entanglement between the two variables is shown by the Pearson Correlation value of 0.025247247, which suggests a delicate dance of influences where one pulls softly at the other. It threads through the information, implying a relationship as fragile as a breeze whispering on a peaceful summer's evening. This shaky connection implies that even while there is a slight resonance between changes in one variable and changes in the other, their harmony is still elusive and phantom-like. However, it wasn't clear from the paired two-sample t-test results how much Variable 1 and Variable 2 differed from each other. The study suggests that the gap in means could simply be the result of a random whim, shrugging off statistical indifference. In their quest for information, upcoming data explorers can find solace in delving into alternative fields of study. Perhaps the fundamental cause of the event is concealed beneath unidentified conditions or causes and is just waiting to be found. Researchers who have an open mind and a keen eye may uncover previously hidden facts beneath the layers of ambiguity and chance. Moreover, employing a greater variety of statistical methods and bigger sample sizes might be the pillars of the

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enlightenment path. In the shadowy labyrinth of data analysis, these measures offer a glimmer of light, assisting the lost traveller in navigating the rough terrain of uncertainty and arriving at the elusive destination of comprehension.

The paired sample t-test is a mysterious tool that shines in the complex world of statistical analysis and helps us navigate the maze of data comparison. a technique that is highly regarded for its ability to compare the means of two related samples. Come with me as we take a deep dive into analysis, where numbers perform a meaningful ballet.

Look at the mighty mean, that illusive average, a momentary window into the core of variation. At 0.052666421, Variable 1 shows its essence; at 0.404331756, Variable 2 triumphantly stands tall. A sharp contrast, a discordant symphony on a canvas of variation. Variable 2 roars with authority at 0.368718781, whereas Variable 1 murmurs its secrets at a modest 0.000755124. Thirty observations watch over this, serving as defenders of consistency. But behold, a story of entwined destinies surfaces as a correlation does. The Pearson Correlation, which is -0.321114365, is a negative indicator of inverse associations.

In a subtle dance of conflicting forces, one variable rises while the other falls. Step inside the hypothesis testing ring, where the t-statistic is king, a fighter in the significance war. A monument to the conflict of ideologies, -3.12384663 shows 29 degrees of freedom obscuring the battlefield. A one-tailed story is told, and P(T<=t) reveals its secrets: the probability is only 0.002013881, a probability that is murmured in extreme tones. The gatekeeper to the domain of significance, the t-critical, is 1.699127027. It is a sentinel of judgment. But hold on—a dual perspective and a one-two punch await. P(T<=t) reveals its other face, 0.004027763, a dualistic mirror image of great importance. At 2.045229642, the t Critical looks upon the dichotomy as a judge in the statistical truth court. The analysis then reaches its dramatic conclusion, a momentous crescendo.

The two-tailed P-value, 0.004027763, breaks beyond the alpha barrier at 0.05 and wins. A statistical truth beacon shines through the maelstrom of chance, and that is the difference in means. Diverse are the eras examined and the performances themselves, but among them, all is an indisputable fact: there is a substantial difference in the mutual fund performance indicators.

When it comes to delving into the complex world of statistical analysis, the paired sample t-test is the go-to technique for closely examining the performance—or more accurately, the mean returns—of two different sets of variables that are intricately linked to the workings of mutual funds. This is a summary of the statistical voyage that has been painstakingly extracted from the maze-like depths of the available data: See the mysterious Mean Return of Variable 1, which is 0.052666421, in comparison to the captivating Mean Return of Variable 2, which is 0.404331756. The Variance of Variable 1 seems to be playing tricks on the curious reader, with its secret meaning hidden in the number 0.000755124, while the Variance of Variable 2, which is the more powerful of the two, has a very intimidating face (0). But look! Look, the Pearson Correlation, that enigmatic predictor of relationship subtleties, looks ghostly at the two variables and reveals an odd dance of -0.321114365. What magical mysteries are there in this numerical flirtation? Statisticians are the only ones who dare to speculate. Step inside the furnace of hypothesis testing, where speculation is put to the test in a serious rite of passage. It begged the question: Does a big difference, a split between the two sets of variables, herald a story of different outcomes, a story of risk or performance differences, reverberating across mutual fund history and historical periods?

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Key Statistical Findings tumble out of the cracks, completing the analysis's tapestry with a flourish:

The Degrees of Freedom, that dreamy notion of freedom within limitation, remain steadfast at 29, a sentinel watching over the doors leading to knowledge. A statistically significant sentinel known as the T-Statistic emerges from the crucible with the mark -3.12384663, an unwavering giant that heralds the beginning of disclosure. P-Values, the enigmatic goblets of probability, entice with their mysterious contents: One Tail murmurs 0.002013881, while the other reveals 0.004027763. Both are cryptic cyphers that open doors to inference. T Critical, that ethereal arbitrator of importance, looks down at the tired traveller: 1.699127027 and 2.045229642, the keepers of the boundaries between fate and chance, are revealed by One-Tail. As a result, the scene comes to life, painting a meaningful story on the canvas of scientific investigation.

The cry of discovery is heard clearly over the symphony of analysis: Between Variable 1 and Variable 2, there is a gap that is hidden behind the ominous curtain of statistical significance. The two-tailed P-value, a sign of confidence, falls below the sacred 0.05 threshold, sending a strong message to the devout: the mean difference is not just the product of random variation. The discordant spectre, the negative t-statistic, illustrates the performance asymmetry: Variable 1 yields to Variable 2's strength, demonstrating the unpredictable and erratic nature of risk. But in the middle of the storm, there's a whisper of correlation -0.321114365 that carries through the analysis corridors, a modest relationship between mutual fund strength and strength. Maybe a story of symbiosis, or the erratic dance of fortune, wrapped in the mysterious mystique of statistics. Statistical analysis tells a story made of entwined strands of ambiguity and complexity. The performance of mutual funds is hidden deep within its maze-like depths, waiting to be discovered by the brave individual who wants to learn from the occult knowledge of empirical research.

5. Result

Regression statistics weave a complex web that reveals a wealth of information about the interactions between pre- and post-COVID variables. Here, among the maze of information, we make our way through the halls of R Square, that mysterious coefficient of determination, and examine the shadows it throws on predictability. However, what we see is a small slice, only 1.5% of the post-COVID variation, calling to us from the heart of the pre-COVID domain. The eerie atmosphere surrounding adjusted R Square belies the peaceful coexistence of the model and data by revealing secrets of conflict.

SUMMARY OUTPUT

a) Regression Statistics

Multiple R	0.120824368							
R Square	0.014598528							
Adjusted R Square	-0.01988423							

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Standard Error	0.952235081							
Observations	30							

Source: Authors' elaboration

b) ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.389567045	0.389567	0.429629	0.517521
Residual	29	26.29579784	0.906752		
Total	30	26.68536489			

Source: Authors' elaboration

c) Pre. Covid Analysis

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Pre. Covid	1.92515949	2.937107122	0.655461	0.517337	-4.0819	7.932218	-4.0819	7.932218

Source: Authors' elaboration

It indicates a departure from the path of model fit, much like a wayward compass point in the wrong direction. The standard error, that phantom of uncertainty, reveals the divergence points in the regression line and tells tales of variance. Its prominent place in this research points to a landscape full of irregular observations, each throbbing to the beat of their drum. F-Statistic, the brave guardian of significance, greets one at the threshold of statistical inference. However, F-values and soaring p-values muffle its voice, suggesting that the model is having trouble explaining the variation that varies with the mean. Pre-COVID, perched on the brink of causation, proposes a universe where every unit increase indicates a marginal rise in the post-COVID domain. We face the ghosts of previous predictions in the murky world of residual analysis. Every step we take is haunted by residuals, those ghostly vestiges of unfulfilled prophecy that indicate the gap between observation and expectation. Like sentinels atop the ramparts, Standard Residuals guard against the incursion of outliers. Their uniform eyes cut through the data, revealing irregularities hidden beneath the surface. That elusive phantom, interpretation, dances on the brink of comprehension. Low predictive capacity portends a future devoid of assurance, a sorrow murmuring through R Square's breezes. Non-significant coefficients cast doubt on the story the data tells by pointing to the weakness of causal relationships, much like

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shadows in the twilight. The terrain of our investigation is long shadowed by outliers, those mysterious beings hiding in the dark. Their existence warps the structure of our model and causes ripples to cascade across the eddies of uncertainty, much like ripples upon a still pond. The holy grail of statistical analysis, model fit, eludes us like a puff of smoke on the wind. Through the devastation of low R Square, non-significant coefficients, and negative adjusted R Square, we navigate the turbulent waters of data analysis like explorers in a sea of doubt.

6. Discussion

Confidence intervals offer additional information beyond significance tests by showing how much the means differ from one another. A thorough explanation of the statistical analysis performed with the paired two-sample t-test is given in this paper. The results show that the means of the two variables under investigation do not significantly differ from one another. This talk presents a study of many mutual funds managed by different organisations, with a focus on two key financial factors during a specified period. Making use of the Excel data provided, an analysis was conducted using a paired two-sample t-test for means, comparing these two variables, designated as Variable 1 and Variable 2. The main goal of the analysis is to determine whether there is a statistically significant contradiction between the two variables, which could be indicative of different performance benchmarks or financial characteristics of the listed mutual funds.

The investigation confirms that, at the 95% confidence level, the difference between Variables 1 and 2 is not significant. This conclusion is reached because the bidirectional P-value of 0.341394036 exceeds the standard alpha level of 0.05. The stark difference in variance between the two variables suggests that Variable 2 is significantly more volatile than Variable 1. For risk-aware stakeholders, this piece of wisdom has significant

importance as it highlights the tendency toward increased unpredictability present in the financial qualities or performance measures identified by Variable 2. Mutual fund statistical analysis reveals a notable difference in performance between two defined groups or periods. When making investing decisions, investors—especially those looking to diversify their portfolios or achieve higher returns—need to consider these facts. But it's important to remember that higher returns often translate into more risk.

As a result, while selecting mutual funds, investors need to carefully consider their risk tolerance and investing goals. It is advised to conduct further in-depth research and speak with financial experts to fully understand the unique characteristics and risks connected to each mutual fund. The COVID-19 epidemic has caused significant disruptions to the performance of mutual fund businesses; most have experienced a decline in returns and volatility. However, the risk-adjusted performance as measured by the Sharpe ratio continues to be very stable. From this point on, mutual fund companies must adjust to the changing nature of the market and implement strong strategies to reduce risks and maximise returns for investors.

The COVID-19 pandemic marked a turning point in mutual fund performance in Bangladesh. While average returns improved and volatility decreased post-COVID, the regression results indicated that past data offered limited predictive value. This underscores the need for adaptive investment strategies that account for unexpected market shocks.

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Despite market-wide challenges, some funds managed to maintain or even enhance risk-adjusted returns, demonstrating the role of effective management and diversification. The Sharpe ratio's stability further supports the idea that certain funds sustained their performance through sound strategic decisions. Policy recommendations include strengthening fund governance, increasing market transparency, and enhancing investor awareness. For investors, the study emphasises the use of both financial and operational metrics—beyond past performance—for fund evaluation.

There is a resounding cry for policymakers to embrace these principles in defining the parameters of asset growth and dividend distribution that align with the fluctuations of the market environment. In addition, the discussion clarifies the mutual fund industry's early development in Bangladesh concerning the larger capital market environment, highlighting the need for further support and investor education. In conclusion, by bridging gaps in understanding the synergy between fundamental determinants and mutual fund savvy, this academic expedition adds to the body of information regarding mutual funds in Bangladesh. It provides a beacon of hope for both investors and policymakers, enabling them to exercise well-informed judgment and spur the development of the mutual fund industry inside Bangladesh's capital market fabric.

7. Conclusion

In summary, this project has examined the nuances of closed-end mutual fund performance dynamics on the Bangladeshi Dhaka Stock Exchange in great detail. An in-depth investigation using unbalanced panel data analysis covering the period from 2015 to 2023 has explored fundamental aspects such as return on investment, standard deviation, actual deviation, beta calculation, coefficient of variation, and regression analysis, revealing their complex impact on mutual fund performance. The disclosures uncovered a plethora of significant relationships between these underlying variables and the numerous measures of mutual fund expertise. Surprisingly, a positive correlation has been found between returns on assets and earnings per unit, while fund age and asset growth have an opposite relationship to return on assets.

Reading over the history of this analysis reveals that the pre-COVID data may not be a reliable indicator of the mutual fund performance trajectory following COVID. This is an insight that calls for more reflection and the possible addition of more variables to strengthen the model. In addition, consideration is given to the outliers, whose examination and possible correction may portend improved model alignment. This analysis broadens its scope by emphasising the importance of paying close attention to fund age, asset growth, and profitability when choosing mutual funds for investing purposes.

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