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Effect of Green Finance on Stock Returns of Commercial Banks Listed at the Nairobi Securities Exchange Kenya

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Abstract

The study sought to determine the effect of green finance on the stock returns of commercial banks listed at the Nairobi Securities Exchange, Kenya. The study found that Green Finance had a positive and significant influence on stock returns ($\beta=0.364$; $P\text{-value} < 0.05$). This indicates that increased investment in green finance initiatives contributed to improved stock performance. The F- test was significant ($P\text{-value} < 0.05$) indicating that the regression model was reliable. Adjusted R-square value of 0.851., depicting that a large proportion of the variation in stock returns is attributed to green finance and the control variables (dividend policy, bank size and capital adequacy). The study concludes that banks that prioritize green finance initiatives tend to experience significant improvements in their stock returns, aligning with global sustainability trends and investor expectations. The study recommends that commercial banks should prioritize green finance initiatives to improve their financial performance.

Keywords: Green finance, Stock returns, Portfolio theory.

1. INTRODUCTION

Dealing with environmental degradation, especially in terms of lowering carbon dioxide emissions is one of the most important worldwide issues. The Kyoto Protocol, which was based on the United Nations Framework Convention on Climate Change, established guidelines for the reduction of emissions and the improvement of environmental protection. Sustainability has become a top priority for individuals, organizations, and governments (UNEP, 2016). In response to consumer demand for eco-friendly products, corporations in developed countries are aligning their policies with environmental protection, leading to the rise of green finance and green economies. While this trend is well-established in advanced economies, it is still emerging in Africa, particularly in the Kenyan banking sector. Thus, there is a growing need to explore how green finance can be leveraged to enhance stock returns for banks in Kenya as they adapt to the increasing emphasis on environmental sustainability and social responsibility (Song, Deng, & Wu, 2019).

Green finance includes funding both public and commercial investments in environmental products and services, like biodiversity preservation and water management, as well as policies

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that assist programs aimed at mitigating environmental harm and adaptation (Baletti, 2012; Hussain, Rasheed & Rehman, 2023). It also includes financial instruments like green bonds and funds dedicated to green investments (Maltais & Nykvist, 2020; Sangiorgi & Schopohl, 2021).

The primary objective of green finance is to enhance the funding of sustainable development projects across the public, commercial, and nonprofit sectors. This is achieved through the utilization of various financial instruments, including banking, microcredit, insurance, and investment (Omare, 2023). Key components of green finance include managing social and environmental risks, leveraging opportunities that provide both monetary gains and ecological, and promoting responsible investment practices (Ferri & Acosta, 2019). For commercial banks, integrating green finance can lead to improved growth and greater market appeal, especially to environmentally conscious investors (Hussain, Rasheed & Rehman, 2023). This can be achieved by increasing the use of green bonds, harmonizing public financial incentives, and aligning financing decisions with the environmental goals of the SDGs. These measures can enable banks to contribute to a more sustainable economy while also enhancing their market valuation and risk management capabilities (Lee, 2020).

The measurement of green finance involves evaluating the development level of green finance using various indicators and models. This system is crucial for policymakers and investors to guide their actions in promoting green finance (Bábosik, 2019). The evaluation provides insights into the progress made and areas needing improvement (Debrah, Chan & Darko, 2022). The growth rate of green finance is often compared to the overall GDP growth rate to assess its effectiveness. The evaluation emphasizes the need for stronger support for the green economy and the importance of including risk assessment and returns on green investment in financial reports (Xu & Zhu, 2022).

Scholars have used various measures for green finance: Wang, Zhao, and Bi (2021) used green finance index for development levels, Zhao (2023) used green finance index that guides investments and measures progress. Mangwa and Jagongo (2022) made use of emission permits, environmental credits, carbon asset financing, and green credit mechanisms. This study seeks to add to the existing literature by measuring green finance using the annual allocation of the banks'

budgets to green initiatives (Zhang, Mohsin, Rasheed, Chang & Taghizadeh-Hesary, 2021) and assess its effect on the stock returns in the Kenyan context.

Green financing is being embraced in the Kenyan market with many commercial banks being actively involved. The Central Bank of Kenya (CBK) has reinforced its dedication to integrating green finance into the Kenyan financial sector, urging industry players to adopt climate-related risk management practices. A green finance taxonomy is being developed by the CBK to classify green investments, initiatives, and activities. This will include a disclosure structure that is in line with international standards, like the ones set by the International Sustainability Standards Board (ISSB). To encourage investors to back Kenya's shift to a low-carbon economy, the reforms are under underway with the goal of making green finance more transparent. These projects highlight the CBK's will to create a green, low-carbon, and climate-resilient economy together with the results of the Africa Climate Summit and COP 28 preparations.

This study is important because the findings can drive the formation of policies that stimulate green financing, thus connecting financial sector development with national and international environmental goals. Additionally, the study provides evidence-based data that can be used to evaluate the effectiveness of current green finance policies and identify areas where further regulation or support is needed to enhance the growth of sustainable finance in Kenya. The study is also important for practitioners, including financial analysts, portfolio managers, and bank executives as it provides practical insights into the implications of adopting green finance strategies. Understanding how green finance initiatives affect stock returns enables better investment decisions, portfolio management, and risk assessment. Moreover, the study's findings can help commercial banks enhance their sustainability practices by demonstrating the potential financial benefits of green finance, thereby promoting a stronger incorporation of ESG (environmental, social, and governance) considerations into corporate activities and financial planning.

2. RESEARCH METHODOLOGY

A descriptive research design was employed in the investigation. The population constituted of listed commercial banks in Kenya. A census of 12 commercial banks was conducted, and data was

collected for a period of five years (2019 -2023). 11 banks met the criteria of having all essential data for budget allocation on green finance for a five-year period beginning in 2019 and ending in 2023. To determine how green financing affects the stock returns of publicly traded commercial banks, regression analysis was employed.

The regression equation was as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon ;$$

Where:

Y= Stock Returns (Dependent variable)

X₁= Green Finance (Independent variable)

X₂= Dividend Policy (control variable)

X₃= Bank Size (control variable)

X₄= Capital Adequacy (control variable)

3. RESULTS

Descriptive statistics and inferential statistics are presented in this section.

3.1 Descriptive Statistics

3.1.1 Green Finance

The commitment of the listed commercial banks on the NSE has been increasing over the years in green finance, indicating an increasing stance in sustainable finance. The reasons are increasing recognitions of environment, social, and governance factors, including green finance, as critical to long-term success. Table 1 presents the descriptive statistics for bank allocation to green finance. ABSA Bank has a high mean return of Ksh.30 billion with significant variability (standard deviation of Ksh.18.17 billion). This suggests a diversified investment portfolio with some fluctuation in allocation, which could align with substantial allocations to green finance. The positive skewness (0.55) and lower kurtosis (-1.11) indicate moderate asymmetry in allocation with fewer extreme values, potentially signaling the stabilizing effect of green finance initiatives. The mean allocation at Co-operative Bank is Ksh.11.68 billion, with a standard deviation of Ksh.1.57 billion, indicating consistent returns. The slight positive skewness (0.14) and low kurtosis (-1.28) imply minimal allocation extremes.

DTB Bank has a mean allocation of Ksh. 2.75 billion and a minimal standard deviation of Ksh.0.56 billion. The low mean depicts that the bank may be conservative in adopting green finance initiatives. The skewness and kurtosis near zero suggest an almost normal distribution, indicating few extremes in allocation. Equity Bank has a mean allocation of Ksh.14.94 billion and a standard deviation of Ksh.6.99 billion indicating a moderate variability, likely due to diverse green finance investments. The slightly negative skew (-0.03) and moderate kurtosis (-1.31) suggest a distribution with occasional allocation deviations.

HFC has a mean allocation of Ksh.1.3 billion and a standard deviation of Ksh.0.48 billion. This shows that HFC may have a conservative approach toward green finance. The minor positive skew (0.25) and negative kurtosis (-1.28) imply minimal volatility, reflecting a cautious stance on green projects. I &M Bank reports a mean allocation of Ksh. 1.36 billion and a standard deviation of Ksh. 0.99 billion indicating slight variability. The higher skew value (0.65) suggests some positive allocation deviations, possibly from selective green finance investments.

KCB Bank has a high mean allocation of Ksh. 24.6 billion and a substantial standard deviation of Ksh. 16.93 billion, showing significant fluctuations. This could reflect active green finance allocations aligned with the study's assertion that larger institutions can leverage green finance for competitive advantage. The mild positive skew (0.18) and lower kurtosis (-1.32) suggest a balanced yet asymmetrical distribution.

NBK has a mean allocation of Ksh. 4.67 billion and a standard deviation of Ksh. 1.25 billion, which depicts a conservative allocation profile. The slightly negative skew (-0.38) and narrow range (kurtosis -1.5) suggest limited involvement in green finance. NCBA has a mean allocation of Ksh. 4.5 billion and standard deviation of Ksh. 1.12 billion reflecting a cautious allocation, with a nearly normal distribution of returns (skew 0.00, kurtosis -1.36). This suggests stability, possibly due to limited green finance involvement. Standard Chartered reported a mean allocation of Ksh. 11.1 billion, with a moderate standard deviation of Ksh. 2.84 billion indicating a stable allocation. The positive skewness (0.27) and negative kurtosis (-1.24) suggest stability with minimal allocation extremes.

Stanbic Bank reported a mean allocation of Ksh. 12.6 billion and a standard deviation of Ksh.3.56 billion showing moderate allocation with some variability. The positive skewness (0.25) may indicate occasional upward price deviations, likely associated with selective green finance investments. The analysis indicates that larger banks reported higher mean allocation to green finance as compared to smaller banks.

Table 1: Green Finance

Bank	Mean	Standard Deviation	Skewness	Kurtosis
ABSA	30.00	18.17	0.55	-1.11
Co-op Bank	11.68	1.57	0.14	-1.28
Diamond Trust Bank	2.75	0.56	0.00	-1.36
Equity Bank	14.94	6.99	-0.03	-1.31
HFC	1.30	0.48	0.25	-1.28
I&M Bank	1.36	0.99	0.65	-1.20
KCB Bank	24.60	16.93	0.18	-1.32
National Bank of Kenya	4.67	1.25	-0.38	-1.50
NIC/NCBA	4.50	1.12	0.00	-1.36
Standard Chartered Bank	11.10	2.84	0.27	-1.24
Stanbic	12.60	3.56	0.25	-1.28

3.1.2 Stock Returns

The descriptive statistics for stock returns for banks listed at the NSE are presented in Table 2. HFC, with the highest mean return (0.22192), stands out as a bank with relatively strong average returns. This stability suggests it may be well-positioned to take on green finance projects, as higher average returns often imply a capacity to absorb potential short-term financial fluctuations associated with sustainable investments. Conversely, National Bank of Kenya shows a negative mean return (-0.24332) and the highest standard deviation (0.1415), highlighting high volatility and overall negative performance. This profile indicates higher financial risk and could limit its appeal to green finance investors looking for stable return environments. In contrast, banks like

Co-op Bank and ABSA, with lower standard deviations (0.0028 and 0.0025, respectively) and moderate mean returns, exhibit stable financial returns, making them potentially safer options for green finance investments, where long-term sustainability and risk mitigation are critical.

In terms of skewness, National Bank of Kenya and NCBA show positive skewness (1.2234 and 1.0926, respectively), suggesting a tendency toward positive returns despite their more volatile profiles. This skewness could signal occasional upward performance spikes, possibly driven by isolated profitable quarters or strategic shifts. On the other hand, banks like Standard Chartered and ABSA exhibit significant negative skewness (-1.1210 and -1.1761, respectively), indicating a higher frequency of returns below the average. While this might imply that these banks face more frequent downward trends, it also shows a reliable return pattern, potentially appealing to green finance investors seeking steady returns, even if lower.

Table 2: Stock Returns

Bank	Mean	Standard Deviation	Skewness	Kurtosis
ABSA	0.06024	0.0025	-1.1761	-0.1302
Co-op Bank	0.09904	0.0028	-0.1794	-1.1166
Diamond Trust Bank	0.06990	0.0046	-0.5291	-0.8839
Equity Bank	0.09564	0.0163	-0.7071	-1.0748
HFC	0.22192	0.0217	0.0031	-1.2982
I&M Bank	0.11562	0.0153	0.3562	-1.1335
KCB Bank	0.11484	0.0329	-0.8828	-0.8313
National Bank of Kenya	-0.24332	0.1415	1.2234	-0.1071
NIC/NCBA	0.07354	0.0293	1.0926	-0.4397
Standard Chartered Bank	0.11768	0.0132	-1.1210	-0.2655
Stanbic	0.10496	0.0082	-0.0327	-1.3041

Most banks show negative kurtosis, meaning their return distributions have lighter tails and are less prone to extreme outliers. For instance, HFC and Stanbic have relatively lower kurtosis (-1.2982 and -1.3041), indicating predictable returns with low risk of extreme fluctuations. This

characteristic is attractive for green finance investments, which often involve long-term horizons requiring stable financial environments. However, National Bank of Kenya, with a kurtosis close to zero (-0.1071), has a relatively higher probability of outliers, underscoring its susceptibility to unpredictable returns. This volatility could make green finance riskier for the bank, as environmental investments might exacerbate their existing return instability.

3.2 Regression Analysis

The model explained 85.1% of the total variation of stock returns, according to the Adjusted R-square value of 0.851. This suggests that the model cannot take into consideration 14.9% of the overall volatility in stock returns. The correlation coefficient is 0.929 indicating a strong relationship between green finance and stock returns.

Table 3: Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.929 ^a	.863	.851	.30399	2.016

a. Predictors: (Constant), Capital Adequacy, Dividend Policy, Bank Size, Green Finance
b. Dependent Variable: Stock Returns

The F test in Table 4 is significant (P-value < 0.05) which depicts that the model is reliable. This implies that green finance has an influence on stock returns and can therefore be used to predict stock returns.

Table 4: Analysis of Variance

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	29.933	4	7.483	89.601	.000 ^b
Residual	4.176	50	.084		
Total	34.109	54			

a. Dependent Variable: Stock Returns

b. Predictors: (Constant), Capital Adequacy, Dividend Policy, Bank Size, Green Finance

Table 5 presents the regression coefficients. The relationship between green finance and stock returns is positive and significant ($\beta=0.364$; P-value <0.05) indicating that an increase in the banks' allocation for green finance increases the value of the firms by positively affecting the share prices and stock returns. Capital adequacy (control variable) also exhibited a positive and significant relationship with stock returns. However, the other control variables, dividend policy and bank size depicted a positive but insignificant relationship. Green finance has the steepest slope of 0.364 implying its great influence on stock returns.

Table 5: Coefficients of the Regression Model

Coefficients^a		Unstandardized Coefficients		Standardized Coefficients	Collinearity Statistics			
Model		B	Std. Error	Beta	T	Sig.	Tolerance	VIF
1	(Constant)	.184	.206		.893	.376		
	Green Finance	.364	.123	.442	2.963	.005	.137	7.321
	Dividend Policy	.134	.080	.103	1.674	.101	.803	1.245
	Bank Size	.159	.079	.169	2.002	.051	.427	2.343
	Capital Adequacy	.252	.115	.321	2.181	.034	.141	7.099

a. Dependent Variable: Stock Returns

4 DISCUSSION

High mean returns and significant variability in green finance suggests a diversified investment portfolio with some fluctuation in returns, which could align with substantial allocations to green finance. According to the study, banks active in green finance can attract investors focused on sustainability, which may help maintain steadier stock performance. Larger, more stable banks

with higher mean returns and manageable volatility appear well-suited for green finance initiatives, aligning with their capacity for long-term investment and risk mitigation. Smaller or more volatile banks may face challenges due to their higher risk profile and heavier tails in kurtosis, possibly making green finance adoption less attractive without additional support.

Banks with high capital adequacy ratios—evidenced by higher means, lower standard deviations, and relatively normal skewness and kurtosis—are likely better positioned to adopt green finance without adversely affecting stock returns. They can manage the associated risks and long-term nature of green investments, making green finance a viable strategy for sustained stock performance. Zheng et al., (2021) who ranked green finance as an important factor for better performance in banks.

The analysis shows that green finance has the highest influence on stock returns. Increased allocation to green financing contributes positively to commercial banks' stock returns. The findings concur with Kitonga (2023), Awino (2014) and Hussain, Rasheed, and Rehman (2023). This highlights its growing importance as a determinant of financial performance. The correlations suggest that banks investing in sustainable finance are likely to achieve better stock returns.

5. CONCLUSION

The study's findings indicate that green financing has a considerable impact on the stock returns of commercial banks listed on the Nairobi Securities Exchange. Banks that participate in sustainable finance efforts are likely to achieve greater financial success, as indicated by the strong positive link between green finance and stock returns. This research emphasizes how crucial environmental sustainability is to the banking industry. Increased engagement in green finance not only aligns with global trends but also translates into significant financial benefits for the banks.

In addition to green finance, the study also highlights the roles of capital adequacy, dividend policy, and bank size in influencing stock returns. Capital adequacy shows a significant positive effect, suggesting that banks with robust capital reserves are better positioned to achieve higher stock returns, reflecting their financial stability and lower risk. While dividend policy and bank

size are positively related to stock returns, their effects were not statistically significant in this study.

The study recommends that policymakers should prioritize the promotion and support of green finance initiatives as a key strategy for enhancing the financial performance of commercial banks. Given the significant positive impact of green finance on stock returns, creating incentives for banks to increase their engagement in sustainable finance could drive both environmental and economic benefits. Policymakers might consider implementing regulatory frameworks that encourage investments in green projects, offer tax benefits or subsidies for sustainable practices, and foster partnerships between financial institutions and environmental organizations. Additionally, incorporating green finance criteria into national financial policies can align with global sustainability goals and enhance the overall resilience and attractiveness of the banking sector.

To capitalize on green finance's significant impact on stock performance, banking practitioners must integrate it into their strategic planning and operations. Banks should actively explore and engage in sustainable finance initiatives, as they have been proved to considerably improve stock returns. Practitioners should also focus on maintaining strong capital adequacy to support financial stability and investor confidence. While dividend policy and bank size also influence stock returns, practitioners should be mindful that these factors may have less direct impact compared to green finance and capital adequacy. Therefore, a balanced approach that prioritizes green finance while maintaining financial robustness will likely yield the best outcomes for enhancing stock performance

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