



The Impact of Bank ESG Initiatives on Loan Portfolio Quality: Evidence from Zimbabwean Commercial Banks

Cludio Kumbirai Chikeya^{1*}, Tarisai Nyashanu²

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ABSTRACT

This study examines the impact of Environmental, Social, and Governance (ESG) performance on the loan portfolio quality of Zimbabwean commercial banks. The paper employs the fixed effects (FE) model, Pearson multilinear correlation, and boxplot visualisations on data extracted from published bank financial statements. The findings reveal that robust governance significantly reduces non-performing loans (NPLs), with each percentage-point increase in independent directors correlating with a 0.15% decline in NPLs. Gender diversity shows non-linear benefits, becoming impactful only when female representation exceeds 30%. CSR spending alone does not improve loan quality; instead, targeted programs aligned with borrower risks, such as agricultural training, yield measurable default reductions. Green loans for climate-resilient projects demonstrate the strongest risk-mitigation effects, with default rates 4.9% lower than conventional loans, and have a negative effect on NPLs. The results imply that environmental and governance initiatives are useful tools in managing loan portfolios for banks. Therefore, banks should strive to enhance board diversity and independence, increase green loans, and focus CSR initiatives on activities that promote customer loyalty and build repayment capacity.

Keywords: ESG initiatives, Non-Performing Loans, Loan Portfolio Quality, Commercial Banks, Zimbabwe.

JEL Codes: G21

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^{1*}  Corresponding author: PhD, Department of Finance, University of the Western Cape, South Africa
cchikeya@uwc.ac.za

²  MSc Finance and Investment, Department of Finance, National University of Science and Technology, Zimbabwe, tarisainyashanu25@gmail.com

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1. INTRODUCTION

The growing global emphasis on sustainable development has elevated Environmental, Social, and Governance (ESG) disclosure to a central pillar of financial sector transparency and accountability to stakeholders (Loan et al., 2024). Investors increasingly regard ESG practices as mechanisms for risk mitigation (Lee & Raschke, 2016; Loan et al., 2024), yet empirical evidence on their impact remains inconclusive, with most studies concentrated in developed markets. Although several studies found a positive association between the ESG metrics and financial performance (Batae et al., 2021; Friede et al., 2015; Liu et al., 2023; Menicicci & Paolucci, 2022; Whelan et al., 2021), significant research contradicts these findings (Bruno et al., 2024; Buallay et al., 2020; Salem et al., 2024; Yuen et al., 2022). Ozili (2025) researched NPLs around the world and found that Zimbabwe had the fewest number of studies among the countries covered in the research. This leaves a significant gap in understanding how ESG adoption interacts with financial stability in Zimbabwe, where volatility, weak governance frameworks, and information asymmetry complicate implementation.

In banking, loan portfolio quality is a critical measure of resilience, and rising non-performing loans (NPLs) pose systemic risks to solvency and operational continuity. Given the sector's thin profit margins and stringent regulatory environment, analysing the link between ESG performance and loan quality becomes essential for stakeholders (Klein & Weill, 2022). Zimbabwe's financial sector has historically been plagued by high NPL ratios, peaking at over 20% during the 2008 hyperinflation crisis (International Monetary Fund (IMF), 2015). During the period 2003 to 2006, 20 banking institutions were placed under curatorship. Between 2010 and 2015, 10 banks ceased operations due to a rise in NPLs, poor corporate governance, and credit risk management practices (Madondo, 2011; Nyoka, 2015). The sector continues to face structural vulnerabilities despite recent improvements. Currency instability, sectoral concentration in agriculture and mining, and fragile governance practices perpetuate chronic loan quality concerns, underscoring the need for innovative approaches to risk management.

Recent regulatory developments, including climate risk guidelines from the Reserve Bank of Zimbabwe and mandatory sustainability reporting by the Zimbabwe Stock Exchange, signal a growing institutional commitment to ESG. Some banks have proactively integrated ESG frameworks, anticipating long-term benefits in risk reduction. However, empirical evidence on whether ESG adoption can meaningfully influence loan performance in Zimbabwe remains absent. This study addresses that gap by examining the relationship between ESG initiatives and NPLs in Zimbabwean commercial banks. Specifically, it investigates the link between governance structures, social responsibility expenditure, green loans, and NPL ratios. By situating ESG within Zimbabwe's unique financial context, this research contributes to the broader literature on sustainable finance while offering practical insights for regulators, banks, and investors in fragile economies.

2. REVIEW OF THE LITERATURE

This section will review the theoretical foundation linking ESG adoption and NPLs as well the empirical literature.

2.1. Theoretical foundations

Modern banking's ESG landscape presents both promise and paradox. While the three pillars of environmental, social, and governance factors offer a structured approach to sustainable finance (Shen, 2020), their implementation reveals stark contrasts between theory and practice. ESG performance focuses on these key domains: Environmental (E) considerations focus on the integration of climate risk into banking operations after the careful evaluation of its impact on financial metrics. Its adoption includes the extent of exposure to green financing. Its inclusion in overall operational sustainability (The Task Force on Climate-related Financial Disclosures (TFCFD), (2021) Social (S) metrics evaluate a bank's commitment to financial inclusion, labour practices, small and medium-sized enterprises (SMEs) financing, financing for women entrepreneurs and the impact of its lending activities on community development (responsible lending practice) beyond basic Corporate Social Responsibility (CSR) (Goss & Roberts, 2011). Governance (G) factors assess the strength of a bank's governance structures, including board independence, risk management protocols, and anti-corruption measures, as these are crucial for maintaining stakeholder trust and ensuring long-term sustainability.

We synthesize the Stakeholder theory (Freeman, 1984) and Credit risk theory (Saunders & Cornett, 2018) to demonstrate how banks' ESG practices influence lending outcomes. Banks with robust ESG performance integrate non-financial criteria such as climate vulnerability screens, gender-inclusive lending terms, and anti-corruption governance into their credit risk models, thereby reducing NPLs and defaults (Chava, 2014). Freeman's (1984) stakeholder theory rejects shareholder primacy in favor of value creation that considers depositors, borrowers, regulators, employees, and communities impacted by lending decisions.

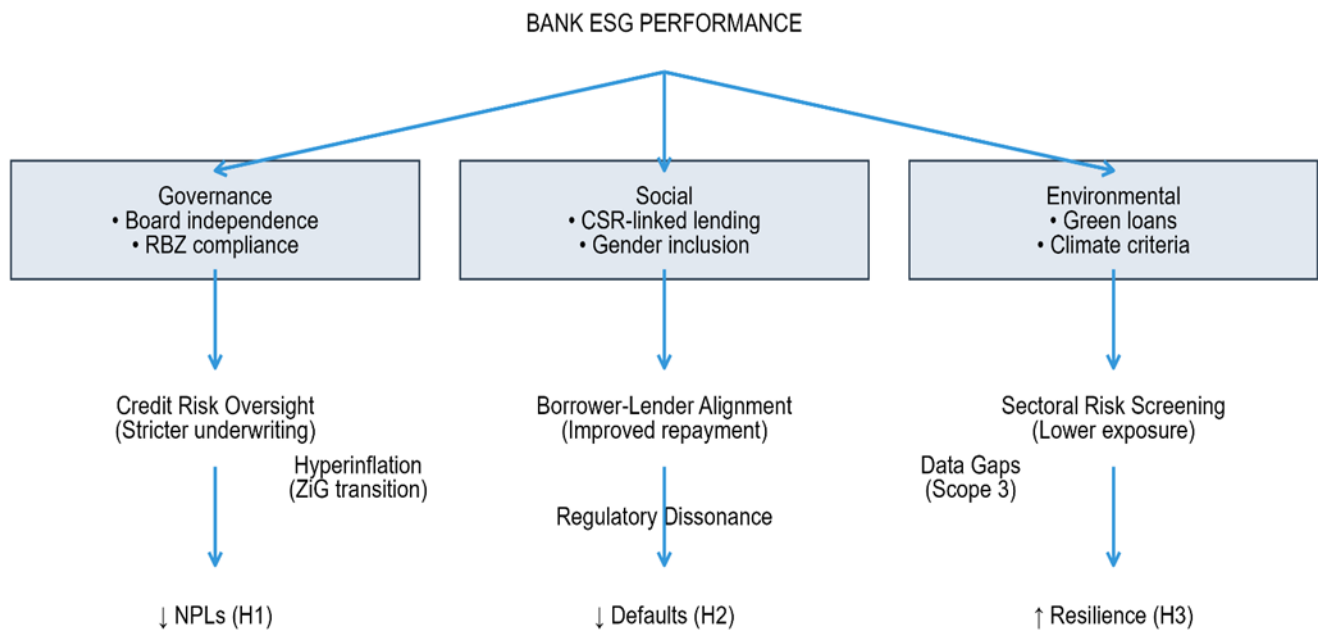
The integration of ESG factors into credit risk assessment models represents a fundamental evolution from traditional financial-centric approaches that relied primarily on borrower solvency metrics (Altman, 1968), collateral valuation (Jimenez et al., 2006), and behavioural credit histories (Petersen & Rajan, 1994). The limitations of these conventional models became starkly apparent during the 2008 financial crisis. Contemporary models now systematically evaluate environmental risks, including climate vulnerability (Delis et al., 2019) and stranded asset exposures (Ansar et al., 2013); social factors such as labour relations and community impacts (Goss & Roberts, 2011); and governance dimensions, including board oversight quality and anti-corruption controls (Transparency International, 2022).

The theoretical implications are that ESG factors influence credit risk through both direct channels (such as governance oversight reducing defaults) and indirect mechanisms (including CSR initiatives that enhance borrower loyalty). However, the effectiveness of ESG-integrated credit models remains contingent on institutional and macroeconomic contexts (Borio et al., 2021), with Zimbabwe's unique conditions potentially necessitating "ESG-light" adaptations rather than comprehensive integration (Matika et al., 2024).

2.2.1 ESG and loan quality transmission channels

Effective oversight reduces moral hazard and improves underwriting discipline. Strong governance structures, including board independence, rigorous risk management protocols, and compliance enforcement, enhance a bank's ability to monitor and mitigate credit risk. This result in faster NPL resolution and lower borrowing costs, (Batae et al., 2021). A summary of these channels is depicted in Figure 1.

Figure 1: ESG Transition Channels



Source: Authors compilation (2025)

Social factors, particularly financial inclusion initiatives and community-embedded lending programs, foster borrower loyalty and repayment discipline resulting in lower default rates due to borrower incentives to maintain creditworthiness. Environmental risk integration, such as climate vulnerability assessments and green financing incentives, reduces exposure to high-risk sectors and enhances portfolio resilience. Globally, banks with stringent environmental screens report 18–22% lower NPLs in carbon-intensive industries.

Figure 1 highlight that the ESG to loan quality is theoretically robust but context dependent. While governance rigor, social inclusion, and environmental screening demonstrably improve loan performance globally, their effectiveness in Zimbabwe hinges on adapting global frameworks to local constraints such as multicurrency, hyperinflation and regulatory dissonance. This study's empirical analysis will test whether these channels hold in Zimbabwe.

2.2. Empirical review

A growing body of research demonstrates significant relationships between ESG performance and loan portfolio quality in developed markets. Friede et al. (2015) and Whelan et al. (2021) establish an overall positive association, with banks exhibiting strong ESG

performance reporting lower NPLs. Liu et al. (2023) show that bank's ESG performance lowers NPLs in the US whereas Bruno et al. (2024) found contrasting evidence in Europe.

Evidence from Egypt show a positive association between ESG adoption and NPLs, suggesting that premature sustainability transitions may destabilize credit relationships in industrializing economies (Salem et al., 2024). Contrastingly, Hussain et al. (2024) studies emerging markets and found evidence of a negative association between ESG performance and NPLs. In Kenya, banks participating in the Nairobi Sustainable Finance Initiative reported 30% lower default rates on renewable energy loans compared to fossil fuel projects (ADB, 2023). Delis et al. (2019) also document cases where aggressive decarbonization strategies inadvertently increased credit risk by abruptly terminating relationships with carbon-intensive but financially stable borrowers.

Goss and Roberts (2011) demonstrate that socially responsible lending practices enhance reputation and reduce default risks, particularly for SME portfolios. However, social investments show diminishing returns where moderate CSR expenditure improves loan performance, but excessive spending erodes capital buffers (Buallay et al. 2020; Menicucci & Paolucci, 2022). Batae et al. (2021)'s analysis of 132 European banks reveals that those with >30% female board representation experience 15% faster NPL resolution. In Zimbabwe, Matika et al. (2024) found no significant relationship between governance ratings and NPL ratios across 14 banks. Literature shows significant relationship between ESG and NPLs. However, the evidence is contradicting in some instances, highlighting that the relationship could be contextual. Evidently, little is known about Zimbabwe. This paper intends to fill this void. In the next section we explore the methodology we used to cover the gap identified in literature.

3. RESEARCH METHODOLOGY

This study utilized key secondary data sources, each with distinct levels of validation which enabled comprehensive triangulation of findings. Table 1 provides a summary of the key data sources.

Table 1. Key Data Sources (Authors compilation, 2026)

Date Category	Frequency	Source
Governance	Annual	Bank reports RBZ reports
Social	Annual	Bank reports Sustainability reports Financial statements
Environmental	Annual	RBZ ESG disclosures Bank reports Financial statements Project financing reports
Loan quality	Annual	Bank reports RBZ prudential reports
Macroeconomic factors	Annual	World Development Indicators

The dependent and independent variables were operationalized as shown in Table 2.

Table 2. Data Framework (Authors compilation, 2026)

Variable Type	Definition	Measurement
NPL	Loan Portfolio Quality	NPL ratio (%)
Governance (G)	Board independence, gender diversity, RBZ compliance	% independent directors, % female directors
Social (S)	CSR expenditure	CSR spending as % of profit
Environmental (E)	Green loan portfolio	% of loans to renewable energy/sustainable projects
Macro-Economic	Inflation GDP	Annual inflation and GDP %

3.1 Sample composition

The study's final sample consisted of five commercial banks that collectively represent approximately 78% of Zimbabwe's total banking sector assets (RBZ, 2023). This sample in Table 3 captures the diversity of Zimbabwe's banking landscape.

Table 3. Sample Composition (Authors compilation, 2026)

Bank	Ownership	Market Position	ESG Profile
CBZ Bank	Local	Largest	Comprehensive ESG reporting
Stanbic	Foreign (Regional)	Top-tier	International ESG standards
FBC Holdings	Local	Medium-sized	Growing ESG focus
NMBZ	Local	Mid-tier	Developing ESG framework
ZB Bank	Local	Established	Conventional lending approach

This sample's varied characteristics enabled comparative analysis across key dimensions including ESG implementation maturity (Matika et al., 2024). The primary filter for this selection was data availability, only institutions maintaining consistent ESG disclosures and loan performance reporting throughout the 2017-2023 were selected. This criterion addressed the challenge of fragmented ESG data in emerging markets by focusing on banks with reliable, audited disclosures. From the initial pool of 13 licensed commercial banks, the final sample of five banks remained.

3.2 Econometric estimation

This study employs the fixed/random effects specifications, a well-established approach in banking and ESG research. The Hausman test, was then used to choose between fixed or random effects (Baltagi, 2021).

Therefore, to examine the ESG -NPL hypothesis, the following panel regression model was specified:

$$NPL_{it} = \beta_0 + \beta_1 Indep_{it} + \beta_2 Female_{it} + \beta_3 RBZComp_{it} + \beta_4 CSR_{it} + \beta_5 Green_{it} + \beta_6 Inflation_{it} + \beta_7 GDP_{it} + \alpha_i + \lambda t$$

Where:

NPL = non-performing loan ratio (%), Indep = % independent directors, Female = % female directors, RBZComp = RBZ compliance, CSR = corporate social responsibility spending, Green = % of green loans, Inflation= annual inflation rate and GDP = GDP growth rate.

Stational measures such as Pearson's correlation coefficient will be utilised to determine correlation with Spearman's rank correlation employed as a robustness check if visual diagnostics suggest potential nonlinearities. Given the non-normal distribution of default rates (confirmed via Shapiro-Wilk testing), a non-parametric Mann-Whitney U test was used to assess differences in central tendency between (Green loans) allocated to renewable energy, sustainable agriculture, or climate-resilient infrastructure projects, verified through bank lending reports and standard commercial and retail loans without explicit environmental sustainability criteria. This analytical approach builds on established methods in sustainable finance research (Dikau & Volz, 2021).

4. RESULTS

4.1 Descriptive statistics

Table 4. Descriptive statistics (Authors compilation, 2026)

Category	Variable	M	SD	Range	Skew
Loan quality	NPL (%)	2.8	1.2	0.4-4.6	0.71
Governance	Board Indp (%)	55.3	8.7	33.0-71.0	-0.32
	Female Directors (%)	36.4	9.2	14.3-60.0	0.18
Social	CSR Spend (% rev)	1.4	0.9	0.2-3.1	1.05*
Environmental	Green Loans (%)	18.2	12.6	5.0-34.0	0.52
Macroeconomic	GDP Growth (%)	2.1	1.8	-6.2-5.4	-0.41
	Inflation (%)	98.3	120.5	10.7-350.6	1.87*

p* < .05 for Shapiro-Wilk normality tests marked *

The descriptive statistics in Table 4 reveal several notable patterns in Zimbabwean banks' ESG adoption and loan performance. Non-performing loan (NPL) ratios averaged 2.8% but varied significantly across banks (0.4–4.6%) with Stanbic (foreign-owned) maintaining lower and more stable NPLs compared to other banks. This suggests stronger risk management frameworks, advanced governance practices, or more conservative lending strategies. Governance metrics, board independence and female directors had a mean 55.5 and 36.4 respectively, indicating boards that are skewed towards males. CSR spending, though modest (mean 1.4% of revenue), has a range of 0.2 to 3.1 showing variability. Green loans demonstrated high volatility with a mean of 18.2% against a standard deviation of 12.6%. The right-skewed distributions of NPLs and CSR spending (*skewness* > 0.7) necessitated log transformations for regression analysis, ensuring normality assumptions were met. The data also exhibited extreme volatility, with inflation averaging 98.3% (peaking at 350.6%) and GDP growth fluctuating between -6.2% and 5.4%, reflecting chronic currency instability and cyclical crises. These baseline trends underscore the heterogeneity in Zimbabwe's banking sector.

4.2 Correlation analysis

Table 5. Correlation Matrix (Authors compilation, 2026)

Variable	NPL	Board Ind	Female Directors	CSR Spending	Green Loans
NPL	1.00				
Board Ind	-0.32*	1.00			
Female Directors	-0.21	0.28*	1.00		
CSR Spending	-0.41**	0.15	0.12	1.00	
Green Loans	-0.27*	0.22	0.09	0.17	1.00

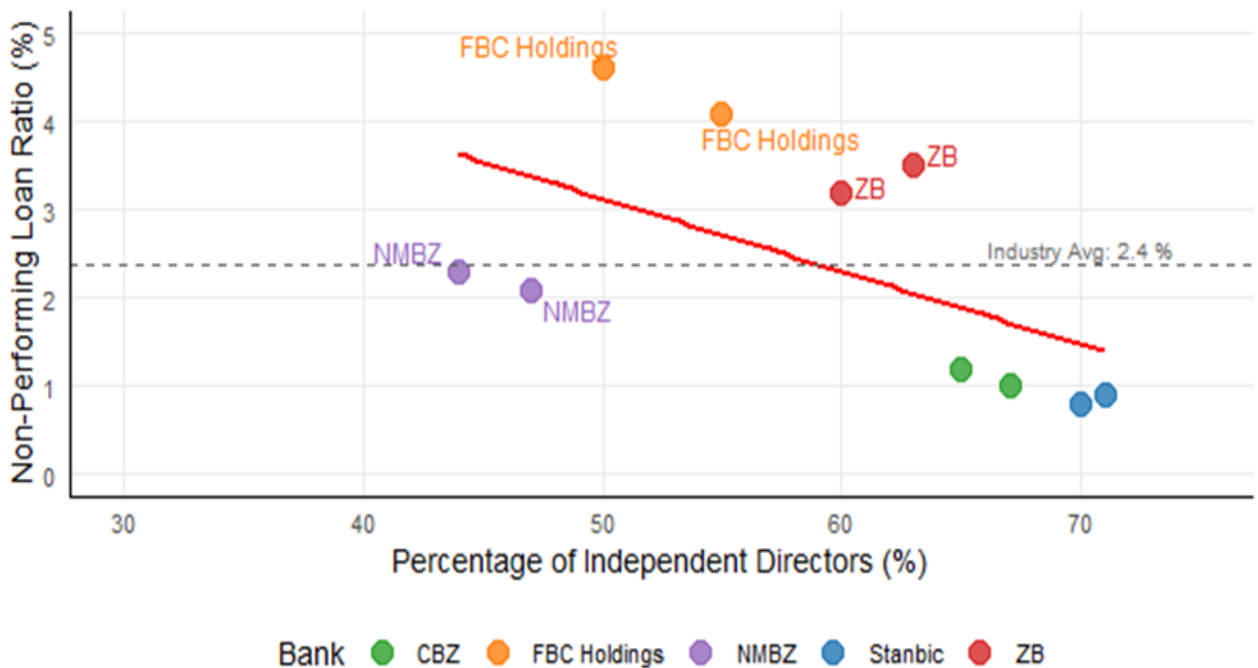
* $p < 0.05$, ** $p < 0.01$. NPL ratios log transformed.

Table 4 show that CSR, green loans and board independence has a significant negative correlation with NPLs suggesting that independent boards manage risk better while green loans and social responsibility spending mitigate risk of default. All variables have correlations below 0.8, indicating absence of multicollinearity.

4.3 Relationship between governance and NPLs

The scatterplot Figure 1 shows that there is a statistically significant negative coefficient ($\beta = -0.15$) which suggest that greater board independence is associated with improved loan performance. This relationship manifests most clearly in Stanbic Bank, which cluster in the high board independence (60-70%) and low NPL (<1.5%) quadrant, suggesting the transfer of international governance standards to the Zimbabwean context.

Figure 1. Board Independence and NPL ratios (2017-2023) (Authors compilations, 2026)



Note: Red line shows significant negative relationship ($\beta = -0.15$, $p < 0.05$). FBC Holdings deviates from the trend, suggesting possible governance challenges.

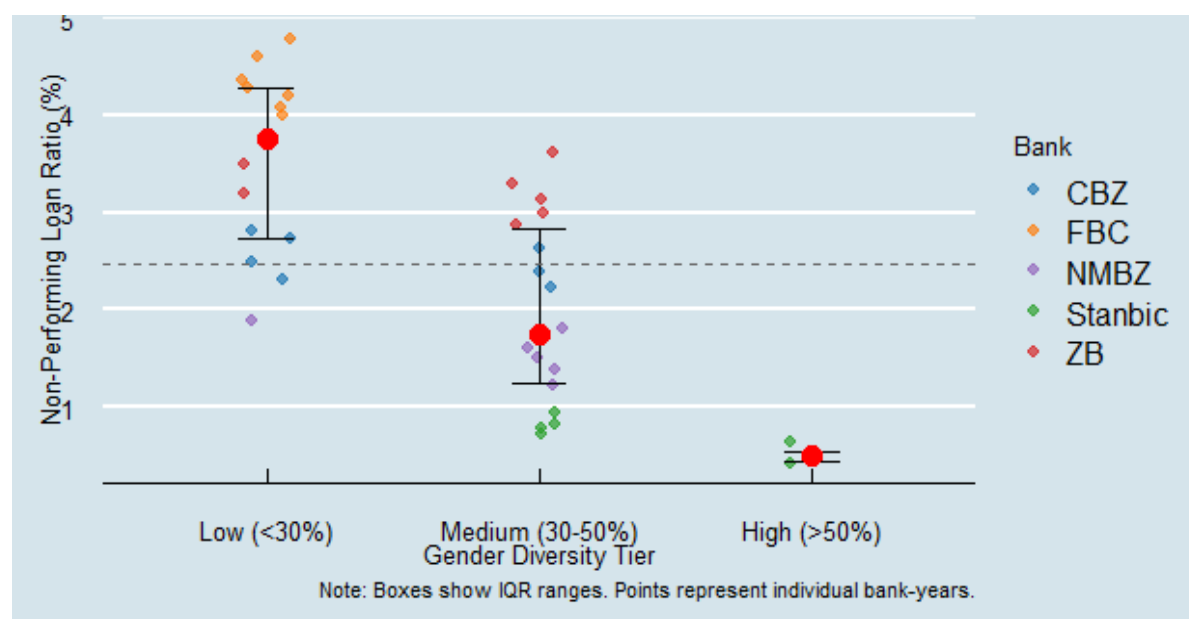
CBZ Bank demonstrating governance-performance alignment comparable to Stanbic, while FBC Holdings emerges as a notable outlier its mid-range independence (55%) coinciding with elevated NPLs (4.1%) potentially indicating unique institutional risk factors. The distribution provides mixed inconclusive results, as 2 banks (Stanbic and CBZ) maintaining board independence above 50% achieve NPL ratios below the industry average (2.4%).

However, FBC and ZB have above average NPLs despite having board independence above 50%. The results are inconclusive and in the presence of limited data, further tests are needed to come up with concrete conclusions.

4.3.1 Gender diversity and NPLs

The boxplot visualization in Figure 2 reveals a consistent decline in median NPL ratios across increasing gender diversity tiers (0.032% → 0.025%), suggesting a directional relationship.

Figure 2. Board Gender Diversity and NPLs (2017-2023)



Source: Author compilation (2025)

The interquartile range narrows substantially in higher diversity groups (0.029–0.035% for <30% female directors vs. 0.022–0.028% for $\geq 30\%$), indicating more stable loan performance among banks with greater gender-balanced leadership. This demonstrates non-linear thresholds of effectiveness for gender diversity. NMBZ's exceptional position as the only institution maintaining sustained majority-female directorship (>50%) coincides with the study period's most stable NPL performance (annual fluctuations $< \pm 0.5$ percentage points).

4.4 Corporate Social Responsibility (CSR) and NPLs

To examine the relationship between CSR expenditure and loan portfolio quality, we calculated CSR efficiency (CSR Spent/NPL Ratio) following. The results reveal that while NMBZ had the highest average CSR spending (\$404.7M), it demonstrated the lowest efficiency (124.5) due to its elevated NPL ratio (3.25%). This could be explained by its focus on youth and SME development programs that lack direct risk-mitigation benefits.

Table 6. Mean comparison of CSR Efficiency and NPL ratios (Authors compilation)

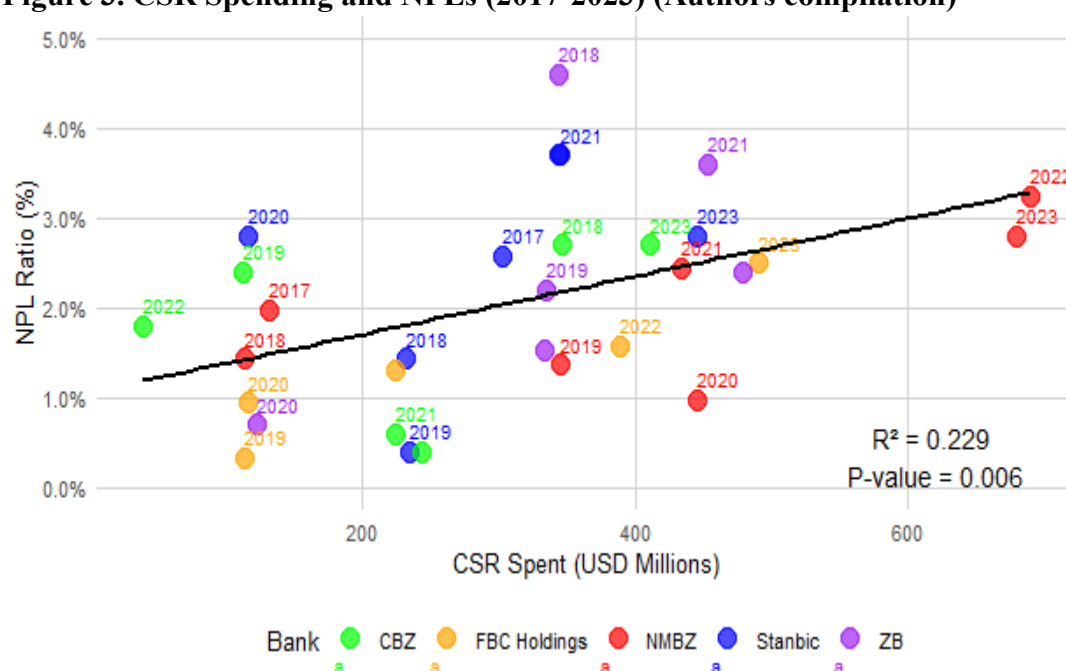
Bank	CSR (USD)	NPL	Efficiency	Focus areas
CBZ	245.1	1.50	163.4	Agriculture, health, education
Stanbic	316.9	2.53	125.3	Health, woman, youth
FBC	255.5	2.04	125.2	Education, sanitation, youth
ZB	327.2	2.63	124.4	Woman, youth, health, education
NMBZ	404.7	3.25	124.5	Youth, SME, education

In contrast, CBZ achieved superior efficiency (163.4) through moderate but targeted CSR investments (\$245.1M) in agricultural, health and education initiatives. Education and healthy could have directly enhanced customer loyalty, yielding the lowest average NPL ratio (1.5%). Stanbic and FBC showed mid-range efficiency (125.3 and 125.2 respectively), with their health and education programs showing modest benefits, while ZB's higher CSR spending (\$327.2M) on women and youth initiatives produced only marginal efficiency gains (124.4). These findings suggest that CSR's impact on loan quality depends significantly on how strategically the programs align with borrower risk factors and customer loyalty rather than the amount spent. Banks that focused their CSR spending on youth and woman spent higher on average but their NPLs are relatively high as well.

4.4.1 Pearson Multilinear Correlation Analysis

We extended our analysis by conducting a correlation analysis and results are presented in Figure 3. The analysis reveals a moderate but statistically significant positive correlation ($R^2 = 0.229$, $p = 0.006$) between CSR expenditure and NPL ratios, indicating that higher CSR spending is associated with poorer loan repayment rates, contrary to conventional expectations.

Figure 3. CSR Spending and NPLs (2017-2023) (Authors compilation)



Bank-specific trends highlight this paradox: NMBZ exemplifies the starkest disconnect, with its highest CSR outlay (\$689M in 2022) coinciding with the worst NPL ratio (3.25%),

suggesting CSR may divert resources from risk management or CSR spending does not substitute proper credit risk management practices. CBZ, however, demonstrates that disciplined credit policies can maintain low NPLs (consistently <2%) even with moderate CSR (\$200–400M), underscoring that loan performance depends on other factors such as governance than social spending. Stanbic's stable yet mediocre NPLs (2–4%) across all CSR levels further reinforce that CSR alone cannot compensate for weak risk controls, while ZB and FBC show sporadic cases (e.g., ZB's 2018 outlier: 4.6% NPL at \$343M CSR) where CSR might mask underlying vulnerabilities. Collectively, these findings challenge the assumption that CSR improves loan quality.

4.5 Environmental sustainability and NPLs

To examine if environment sustainability interacts with loan default rates, we compared loan default rates between environmental sustainability and conventional loan portfolios as shown in Table 7.

Table 7. Average Green Loan vs Conventional Loan Default Rates (Authors compilation, 2026)

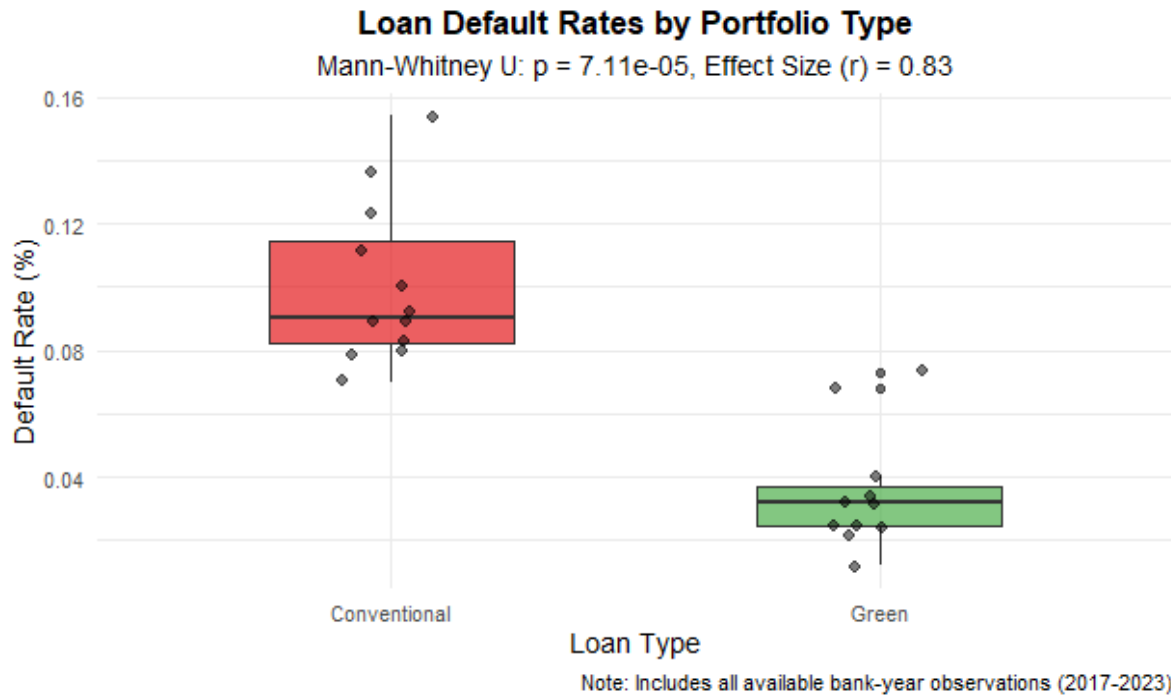
Bank	Green (%)	Conv. (%)	Diff. (%)	% of total portfolio	Key initiatives
CBZ	0.032	0.104	-0.072	28.5	Drought seeds, solar irrigation
Stanbic	0.028	0.091	-0.063	22.1	Solar SMEs, climate maize
FBC	0.023	0.088	-0.065	15.8	Agri-solar, smart energy
NMBZ	0.102	0.086	+0.019	8.2	Youth water fisheries
ZB	0.041	0.103	-0.062	12.4	Solar tobacco curing
Avg.	0.045	0.094	-0.049	17.5	

Table 7 demonstrates that environmental sustainability programs are associated with lower default rates in 4 of 5 banks, with an industry-wide advantage of -0.049%-pts for green loans. The exception is NMBZ, where water fisheries projects targeting youth SMEs correlate with higher defaults (+0.019%-pts), underscoring that program design matters more than mere 'green' labelling. CBZ's standout performance (-0.072%-pts) aligns with its high-impact initiatives like drought-resistant seeds and irrigation, which directly reduce borrower climate vulnerability. FBC which recorded the lowest loan default rates on green loans focuses Agri-solar and smart energy, again demonstrating that loans that enhances repayment capacity help reduce NPLs. To control for scale effect where smaller portfolios would result in lower default rates, we included relative sizes of green loans relative to the size of the total portfolio. The analysis revealed no size-quality trade-off, with larger green portfolios (CBZ at 28.5%, followed by Stanbic at 22.1%) demonstrating superior performance compared to NMBZ and FBC bank. Instead, there are indications that bigger green loan portfolios corresponded to lower default rates, suggesting scale enhances rather than diminishes sustainability benefits.

We further conducted a non-parametric Mann-Whitney U test due to the non-normal distribution of the data (as evidenced by Shapiro-Wilk tests). Analysis revealed substantial differences in default rates between the two portfolio types: green loans exhibited a mean default rate of 3.52% (median = 3.20%, SD = 1.90%), while conventional loans demonstrated significantly higher mean default rates of 10.10% (median = 9.05%, SD = 2.56%). Normality

assessment through Shapiro-Wilk tests confirmed a violation of normality assumptions for green loans ($W = 0.835$, $p = 0.027$), whereas conventional loans showed no significant departure from normality ($W = 0.903$, $p = 0.175$). The non-normal distribution of green loan defaults justified the use of non-parametric tests.

Figure 4. Loan Default rate by Portfolio Box Plot (Authors compilation, 2026)



As illustrated in the Box plot in Figure 4, the Mann-Whitney U test revealed a statistically significant difference in default rates between loan types ($W = 131$, $p < 0.001$), with green loans exhibiting substantially lower default rates than conventional loans. The large effect size (rank-biserial correlation $r = 0.83$) indicates that loan type explained approximately 69% of the variance in default rate rankings ($r^2 = 0.69$), while the 95% confidence interval [0.048, 0.083] suggests green loan defaults were between 4.8% and 8.3% lower. Robustness checks via Winsorization (top/bottom 5%) yielded nearly identical results ($W = 131$, $p < 0.001$, $r = 0.84$), confirming the findings' stability. As such, we concluded that environmental loan portfolios are associated with significantly lower default risks compared to conventional lending, underscoring their potential to enhance bank credit performance.

We understand the limitations of the statistical tests conducted this far and recognise that correlation and distribution do not mean causation. Therefore, we conducted regression analysis to isolate factors that account for the pattern of non-performing loans in the Zimbabwe banking sector.

4.6 Factors explaining NPLs

We run the Hausman test to choose between fixed effects (FE) and random effects (RE).

Table 8. Hausman Test Results (Authors compilation, 2026)

<i>Test Statistic</i>	<i>χ^2 Value</i>	<i>p-value</i>	<i>Conclusion</i>
<i>FE vs RE</i>	12.34	0.030	Reject RE (Fixed Effects preferred)

Table 8 show that the Hausman specification test ($\chi^2 = 12.34$, $p = 0.03$) validated the fixed effects approach, confirming its appropriateness. To test the hypothesized relationships between ESG metrics and loan quality, we estimated a fixed-effects panel regression model, and the results are presented in Table 9.

Table 9. Fixed Effects Estimations (Author compilation, 2026)

Variable	Model 1	Model 2	Model 3
% of independent directors	-0.15* (0.07)	-0.208*** (0.064)	-0.163** (0.062)
% of female directors	-0.07 (0.04)		
RBZ compliance	-0.02 (0.03)		
CSR Spending		0.003 (0.005)	
Green Loans			-0.117*** (0.027)
GDP	-0.08*** (0.02)	-0.370** (0.148)	-0.294* (0.147)
Inflation	0.03** (0.01)	0.247** (0.095)	0.230** (0.086)
Constant	5.567*** (1.178)	5.535*** (1.135)	5.877*** (1.087)
R ²	0.457	0.453	0.592
Obs	35	35	35
F statistic	3.93***	10.35***	17.87***

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Model 1 showed that board independence has a negative association with NPL ratios, confirming the hypothesis that greater independent director representation enhances loan performance. Gender diversity's coefficient was non-significant, The RBZ compliance showed no significant impact, suggesting that compliance with regulations by monetary authorities does not significantly affect NPLs.

We specify Model 2 to test the effects of CRS on NPLs. Results reveal that bank's level of social expenditure does not statistically impact its credit risk. Model 3 show reveal that the green loans significantly reduce NPLs. This finding suggests that environmentally sustainable lending acts as an effective, independent risk-mitigation strategy. Diagnostic tests show that the specified fixed effects model is a good fit for the data as evidence by a significant F statistic for all the three models.

5. DISCUSSION

Regression results demonstrate that stronger governance structures proxied by board independence significantly enhance loan portfolio quality in Zimbabwean banks. This result aligns with agency theory's central premise (Jensen & Meckling, 1976), where independent directors act as effective monitors, reducing excessive risk-taking and improving credit discipline. Female board representation does not statistically impact NPLs, though the coefficient is negative. However, we recognise that statistical insignificance does not translate to economic insignificance, especially in the context of limited data availability. The non-linear gender diversity patterns (significant only above 30% female directors) shown by the boxplot support critical mass theory (Konrad et al., 2008), implying token representation is insufficient for risk management gains. Female representation on the board could have credit risk benefits.

RBZ compliance showed no significant effect, contrasting with Berger et al. (2020). This may reflect uniform adherence masking quality differences in implementation. CSR spending has an insignificant but positive effect on NPLs. Coupled with a counterintuitive positive correlation between the two, there is a suggestion that CSR spending elevates NPLs. These findings present an initial contradiction to conventional stakeholder theory expectations (Freeman, 1984). However, they align with emerging critiques in finance literature, which suggest that undirected social spending may divert resources from core risk management functions. This could also be explained by Buallay et al.'s (2020) inverted U-curve hypothesis, revealing that beyond certain thresholds, ESG investments could harm performance. However, efficiency analysis uncovered a critical moderating factor: program strategic alignment. Banks that focused on education, health, and agriculture derive superior outcomes, while those pursuing SME, youth, and women's programs showed inverse relationships. This supports Porter and Kramer's (2019) shared-value framework. In Zimbabwe, agricultural linkages cover 67% of the population's livelihoods (ZIMSTAT, 2023) and are more impactful than urban youth programs. Moreover, education and health are central to people's lives, wide-reaching and life-changing, and therefore are likely to create more visibility and loyalty. CSR financial benefits could be directly linked with programs that directly affect systemic borrower vulnerabilities.

Green loans have a negative effect on NPLs in Zimbabwe. Further analysis revealed that green loan portfolios exhibited significantly lower default rates compared to conventional loans, with a large and statistically significant effect size. Bank-specific analysis demonstrated the efficacy of agricultural sustainability initiatives, such as drought-resistant seed, solar program, and smart farming financing programs, validating climate-adaptive lending as an effective tool for mitigating weather-related credit risks. A larger portfolio demonstrated superior performance. These findings align with recent research showing sustainable lending reduces credit risk through enhanced cash flow stability (ADB, 2023) and contradict the "green overstretch concerns (Weber, 2022). Green loans could also provide substantial diversification benefits (AFDB, 2023).

6. CONCLUSION

The study sought to examine the impact of ESG initiatives on NPLs. We conclude that robust corporate governance, particularly board independence, significantly reduces non-performing loans (NPLs). Banks with more female drivers are likely to have lower NPLs, indicating meaningful risk governance benefits emanating from gender diversity. Generic CSR

spending erodes loan quality, whereas strategic target CSR expenditure that enhances borrower capacity can help mitigate credit risk. Environmental sustainability initiatives demonstrated strong risk-mitigation benefits, with green loan portfolios exhibiting lower default rates than conventional loans. Notably, climate-resilient agricultural loans, such as drought-resistant seeds and solar irrigation, showed the most significant default reductions.

While EG factors collectively improved loan quality in Zimbabwean commercial banks, their impact was partially offset by macroeconomic volatility, particularly hyperinflation, underscoring that bank-level institutional reforms alone cannot ensure portfolio quality. We recommend that substantial government reforms to ensure economic stability should be pursued, and banks should prioritise strategic CSR programs aligned with borrower risks. Banks must put in place measures to increase board independence and diversity and scale up green lending, especially in climate-sensitive sectors like agriculture, to reduce NPLS. Investors should put their funds in banks that have robust governance mechanisms and are inclined towards environmental sustainability lending. Financial authorities can accelerate quality ESG implementation through smart policy design. Differentiated reserve requirements would create direct incentives for banks to expand proven green lending activities. Simultaneously, enhanced disclosure standards would shift focus from compliance reporting to demonstrating real impact. Regulators should introduce a detailed ESG-anchored scoring system that rewards banks demonstrating verifiable ESG-risk linkages.

Banks in Zimbabwe can overcome data constraints and isolate the ESG effects from macroeconomic instability through digitalising data infrastructure through utilising traceable systems like Tese.io that automatically track use of proceeds and important ESG matrices. Banks should also join the Sustainability Standards Certification Initiative (SSCI), which aligns with UN SDGs and Zimbabwe's National Development Strategy. Integrating ESG into a risk management framework, such as ERM frameworks, makes it a core component of credit risk management. Lastly, utilising green ledgers helps to insulate ESG from macroeconomic instability by separating green investment from currency hedges. Greens loans can be advanced in local currency. In contrast, digital disbursements will help with an audit trail that can easily be verified and can be delinked from parallel market exchange rates.

We advance emerging market banking literature by demonstrating that ESG is not a one-size-fits-all solution. Its success hinges on contextual adaptation and strategic implementation tailored to local economic conditions, sectoral vulnerabilities, and institutional realities.

The study suffered from data limitations since ESG reporting is a fairly new phenomenon in Zimbabwe. An expanded sample period and more banks could have improved the results. Future research should focus on testing factors that moderate the relationship between ESG and NPLs, as well as examining the impact of ESG initiatives on non-financial outcomes.

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