SOVEREIGN CREDIT RATINGS AS A HINDRANCE FOR BANKS IN EMERGING MARKETS TO ISSUE GREEN BONDS

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Abstract

Banks' efforts to issue green bonds for climate mitigation can be hampered by governmental conduct through sovereign credit ratings (Adrian et al., 2024). The research problem concerns emerging market banks' issuance challenges resulting from the nexus between sovereign credit ratings and bank credit ratings. The purpose of the research is to establish associations between the ratings and their impact on banks' attempts to issue green bonds. The methodology is quantitative. Credit ratings for 57 banks that issued green bonds and sovereign credit ratings are collected from banks, S&P Global, Fitch, and Moody's websites, respectively. Descriptive statistics, estimations, and regression methods are used to test hypotheses. Findings confirm hypotheses that 1) the majority of banks' (88 percent) credit ratings mirror or are lower than the corresponding sovereign credit rating; 2) if sovereign ratings are non-investment, local banks' credit ratings are also non-investment. A population estimate between 76 percent and 100 percent, a Pearson correlation coefficient of +0.91, and $p = 0.026 < 0.05$ support the hypotheses. In conclusion, the positive correlation indicates that a downgrade leads to increased financing costs, affecting banks' green bond issuances (Li et al., 2020). The study's relevance lies in drawing governments' attention to safeguarding against sovereign rating deteriorations to enhance banks' capacity to issue green bonds.

Keywords: Banks, Bank Credit Ratings, Emerging Markets, Green Bonds, Sovereign Credit Ratings

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1. INTRODUCTION

Green finance, which is earmarked for environmental benefits, has unsurprisingly become a buzzword in the global climate discourse. One of the players that has a huge responsibility to contribute to this noble goal is the banking sector. Due to their expertise in playing the intermediary role of borrowing money from savers and lending it to the needy, banks are perfectly placed to play a critical role in channeling funds towards green projects. They can execute this function by issuing green bonds whose proceeds are only meant to be channeled towards green projects, unlike conventional bonds that can be channeled towards any projects, which the banks could deem to be profitable. However, a number of obstacles can derail the efforts of banks to contribute to the greening of the economy. Amongst other variables, sovereign ratings seem to be key in determining banks' access to green bonds. Lejard et al. (2021) pointed to a co-movement of sovereign credit ratings and bank credit ratings, adding that these bank credit ratings are actually bound by sovereign ratings. Unfortunately, in the case of

emerging markets, there has been a deterioration in sovereign credit ratings, and the consequential impact on banks as a result of those downgrades is on the rise (Rogoff, 2022; Feyen & Zuccardi Huertas, 2019). This is despite the presence of the recognised greenium effect, which can favor those banks that can partake in issuing green bonds. However, the effectiveness of the greenium is in doubt, particularly when lower credit ratings, both of the sovereign country and those of banks themselves, are manifested. It is seemingly a reality that in markets such as emerging markets, a close relationship exists between the sovereign credit rating and those of banks. The influence of sovereign credit ratings on banks transcends the impact on credit ratings by significantly determining the overall business performance (Jesuka & Peixoto, 2022). Referring to the Euro-area crisis, Gibson et al. (2017) linked the subsequent downgrades of banks within the sovereign jurisdiction to the prior downgrades of the sovereign ratings. Investigating the impact of credit rating downgrades on bank lending, Adelino and Ferreira (2016) posited the mirroring of bank ratings to rating agencies' sovereign policies and credit ratings. Not surprisingly, they linked the downgrades of banks to the status of macroeconomics, which is significant to the determination of sovereign ratings. Another possible reason captured in the discourse is the exposure of banks through loans advanced to their sovereigns, which entails that a downgrade of the sovereign is also manifested in the balance sheet of a bank. The weaker balance sheet then leads to the downgrade of a bank's credit rating. However, the discourse in the literature shows some fundamental gaps:

- the intricacies of the thread from government policies affecting sovereign credit rating, bank credit ratings, and the commensurate impact on banks' attempts to issue green bonds are not clear;
- the association between sovereign credit rating and bank credit ratings in strength and direction, as well as the subsequent influence on bank finance costs when raising green bonds, is also not well-documented.

Resultantly, this research is carried out to establish the extent of the difficulties that banks encounter when raising green bonds in emerging markets due to the prevailing sovereign ratings in their respective countries of operation. In order to achieve this aim, the research objective is set out as follows: to establish the nature of the association between sovereign credit rating and banks' credit ratings and the commensurate influence on banks' efforts to issue green bonds.

More importantly, the study's significance and relevance are located in its influence on green finance and the subsequent climate mitigation efforts, by bringing to the fore practical ways in which governments can aid the banks in raising green bonds. Through the avoidance of actions and behaviors that could lead to sovereign downgrades, governments can mitigate corresponding downgrades in bank credit ratings, thereby preventing escalation of bank financing costs. Banks can then issue bonds at reasonable financing costs, allowing them to significantly participate in financing green projects.

In order to gain insights and to test hypotheses, a quantitative methodological approach is employed. Credit ratings for the banks that issued green bonds over a five-year period (2016–2021) are drawn from the bank websites, whilst the corresponding sovereign ratings are obtained from the websites of the three internationally recognized rating agencies: S&P Global, Moody's and Fitch. Descriptive analyses of the relationship between sovereign credit rating and bank credit ratings, estimations of population parameters concerning that relationship, as well as regression analysis to determine the strength, direction, and statistical significance of the association are carried out. Ultimately, the testing of the two hypotheses is carried out. The research outcomes reflect the confirmation of hypotheses *H1* and *H2*. Resultantly, it is recommended that governments should always strive to avoid policies or actions that would see downgrades of the sovereign rating since banks' credit ratings are subsequently impacted. Avoidance of such actions would, in turn, allow banks to raise green bonds without the impact of escalated finance costs that are associated with downgrades of credit ratings.

The study is structured as follows. Section 2 refers to the related literature reviewed, and Section 3 dwells on the study's methodology. Section 4 provides the results, while Section 5 discusses the results. Section 6 furnishes derived conclusions from the results.

2. LITERATURE REVIEW

Banks' expertise in channeling funds towards economically viable projects cannot be questioned. Resultantly, society expects banks to use that expertise in playing a critical role in the green transition process through the issuance of green bonds (Bedendo et al., 2023). Even though there is no standard definition of a green bond, what is known is that green bonds are intended only for green projects, and their issuance is strongly tied to the credit ratings as well as the financial standing of the particular issuer (Alamgir & Cheng, 2023). There are certain advantages that accrue from issuing green bonds, such as the strategic alignment to long-term climate risk management as well as sustainable competitive advantage (Muchiri et al., 2025). Palmieri et al. (2025) furnished economic advantages pertaining to enhanced profitability and reduced funding costs. Other non-pecuniary advantages, such as the mere preservation of the reputation of a bank, need to be recognized (Di Tommaso et al., 2025).

Despite the presence of these aforementioned advantages, bottlenecks appear in the process of issuing green bonds, and of significance is the detrimental role played by downgraded credit ratings. An argument has been established that financial markets are sensitive to credit rating agencies' (CRAs') announcements, and market reactions to such announcements (both upgrading and degrading) are not the same. The essence of sovereign credit rating is captured succinctly by Martinez et al. (2022), who stated that governments need to borrow to invest in sustainable projects, sustaining government services such as in the health sector and supporting employment opportunities, amongst other benefits. However, in order to execute these obligations and to borrow in

the international arena, credit ratings are pivotal, as creditors rely upon them as sources of information regarding the capabilities of those governments to repay the principal and interest obligations.

Sovereign credit ratings are derived from a combination of factors that include current assets, liabilities, and the financial background of a specific sovereign and depict a future-biased outlook (Li et al., 2019). Aggregating the collective views of Fitch, Moody's, and S&P Global, Mutize and Nkhalamba (2021), as well as Griffith-Jones and Kraemer (2021), summed up the basis upon which sovereign credit ratings are determined. Economic resilience, with factors such as income and competitiveness, amongst others; Sustainability in the finances of the public sector; Fiscal robustness, which depicts the relationship between debt and gross domestic product (GDP); vulnerability to default under stressed conditions, as well as the capability of monetary authorities to maintain a balanced economy, are some of the considerations. Referring to the emerging markets in particular, Takawira and Mwamba (2020) summed up the considerations as mainly of the economic nature, such as inflationary indicators, productivity dimensions such as GDP per capita, government affinity to borrow as reflected in the debt levels, and the levels of funds set for contingencies (reserves). Interestingly, Athari et al. (2021) added the social dimension and political behaviours as factors that are also considered. The categorizations in the rating scale do not differ substantially in terms of meaning amongst the rating agencies. S&P Global (2025) categorizes the scales from investment grades (AAA, AA, A, BBB) to speculative grades (BB, B, CCC, CC, C, D).

According to Li et al. (2019), financial markets in general are sensitive to sovereign credit rating pronouncements. Hence, sovereign credit ratings are vital for financial stability (Takawira & Mwamba, 2021). Not only do sovereign credit ratings influence the corresponding credit ratings of banks but also have massive influences on the overall performance of corporate organisations (Jesuka & Peixoto, 2022). To the banking sector in particular, credit ratings are pivotal as information sources for ascertaining the creditworthiness of borrowers, of course, taking other relevant factors into consideration (Anginer et al., 2019). On the aspect of the bond markets, it was asserted by Saadaoui et al. (2022) that credit ratings, especially on the downside, greatly impact the liquidity of the bond markets through selling pressures or, in some cases, through outright fire sales.

Studying the dynamics of market discipline, Kolaric et al. (2021) posited the possibility of a bank's rating being linked to the sovereign rating of the country in which it does its banking activities, a feature attributed to the existential narrative of ceilings associated with sovereign ratings. Explaining the impact of probability of default on a bank's expected losses, Lejard et al. (2021) highlighted the connection between credit ratings and sovereign ratings, concluding by confirming their co-movements. According to Panetta et al. (2011), one of the glaring impacts of sovereign credit rating downgrades is the subsequent downgrades of domestic banks, putting pressure on their funding costs and constraining their access to markets. Meanwhile, looking at credit default swaps, Fiordelisi et al. (2020) described the connection between sovereigns and banks as very close. Using data from 140 emerging market economies, Feyen and Zuccardi Huertas (2019) revealed that the consequential impact on banks' operations as a result of what happens to sovereign credit ratings is on the rise. To put the challenges faced by banks in perspective, the narrative by Rogoff (2022) indicated that emerging markets had suffered deteriorating sovereign credit ratings from CRAs, with some, such as Zambia and Sri Lanka, even defaulting.

However, it should be noted that banks' credit ratings, if they are low, have a significant impact on the ability of banks to refinance their high costs and may simultaneously see other banks with low credit ratings benefiting from the flow of funds from investors (Kolaric et al., 2021). Worse still, Perez (2015) asserted that a sovereign default exacerbates the financial position of a bank through the manifestation of a precarious balance sheet (Adrian et al., 2024), resulting in a constrained situation in which banks find it difficult to issue green bonds. Subsequently, channeling resources to productive projects such as green investments is also impacted. Moreover, in developed countries, Meyer and Mothibi (2021) argued that there is a marked dependence on bank loans from both the private sector and the government. Hence, the government holdings by banks manifest in a transfer of risk from sovereign credit risk.

The concern for the link between banks' credit ratings and sovereign credit ratings is discerned from arguments put forward by leaders in the banking sector. In a report by Jacobs (2025), Shabalala, the chief executive officer (CEO) of Standard Bank in South Africa, lamented the sub-investment rating attached to his bank due to the bank's exposure to the South African government, whose sovereign rating has been designated junk status BB- by the international CRAs. He cited the rising costs on the country and the banks as a result of what he termed unfair ratings. Justifiably so, the troublesome sovereign-bank nexus may manifest in financial instability triggered by the absence of easy recourse to financial resources as a result of higher interest rates the banks have to deal with in order to borrow money, especially from international markets (Adrian et al., 2024). Similarly, Grittersová (2020) established that countries endowed with a substantial presence of foreign banks are likely to be earmarked for better sovereign credit ratings, resulting in access to funding at favorable interest rates. However, in contrast, Emara and El Said (2021) hailed the work done by CRAs as a reason behind increased capital inflows in emerging markets.

A comprehension of the emerging market green bond markets cannot be achieved without looking at the dynamics of green bond spreads in conjunction with conventional bonds. In an attempt to highlight the dynamics at play, Löffler et al. (2021) studied the performance of green and non-green bonds from 650 universal issuers and established that the yield for green bonds was lower than that of conventional bonds by about 15–20 basis points for both primary and secondary markets. In carrying out a study to determine the performance of sustainability bonds (social and green bonds), Kumar (2022) highlighted the phenomenal growth of these bonds

over traditional bonds due to a shift in capital allocation preferences of investors to green projects. Furthermore, the study showed that bonds earmarked for green projects commanded a slightly tighter yield than traditional corporate bonds, particularly in the early 20s. Referring to the Chinese markets, Amundi Asset Management (Amundi) and International Finance Corporation (IFC) (2023) cited a concern over a widening gap between the lower spreads on green bond yields and conventional bonds. The report by Amundi and IFC (2023) attributed this occurrence to the dearth of issuers carrying internationally recognized investment credit ratings. However, he summed up his assessment by pointing out that in the broader emerging markets, there has been an increase in investment credit ratings for newly issued green bonds.

The credit ratings of banks influence the greenium effect. The green bond premium, also called greenium, is the pricing advantage that issuers receive when placing green bonds compared to a conventional bond issue. The greenium effect is more significant if one considers that green bonds, as well as the subsequent green loans, are designed to exhibit sustainable financial benefits as well as environmental, social, and governance (ESG) ratings (reputation) for issuers (Sapiri & Putra, 2023). Amongst other factors such as environmental performance and financial health, the credit ratings of the issuer significantly influence the pricing of green bonds and the green bond premium (Pietsch & Salakhova, 2022). Notably, bonds issued in emerging markets generally furnish higher yields, denoting enhanced risk premiums, bringing to the fore the pertinence of geographical space. These findings support the risk-return paradigm in the context of sustainable finance and underscore the importance of geography and industry in green bond pricing. On bank-specific dynamics, one of the most important advantages accruing is the enhancement of the capital adequacy metric, which is vital for banks to absorb unexpected losses (Nabil, 2023). Inevitably, challenges are witnessed, and some of these bottlenecks constitute institutional frameworks that are regarded as weak, as well as the minimum size criteria, added Pietsch and Salakhova (2022). Voicing their concern about credit ratings, Saadaoui et al. (2022) as well as Alcarva et al. (2026) described the rating changes that lead bonds to the non-investment grade category as unfortunate, since they can trigger selling pressure or generate fire sales of the securities. Hinsche (2021) supported this discourse by adding issuer sector to the credit rating factor. The impact of individual characteristics of issuers is manifested in the assertion by Hinsche (2021) that issuers with AAA credit ratings see increased greenium, unlike those with lower credit ratings, confirming the influence of credit ratings on green bond premium. Several studies have been conducted to determine the existence of greenium in the green bond markets. Others have established negative premiums, which are more pronounced for green bonds with lower credit ratings. Huynh et al. (2022) and Alcarva et al. (2026) confirmed the existence of positive premiums (in supranational and corporate issuers but not in financial institutions). On a completely different note, Apergis et al. (2025) presented the possibility of skepticism on the part of investors regarding the banks' capabilities in identifying green projects as a reason behind banks' non-achievement of a greenium. In most cases, however, mixed results have been confirmed (Fandella & Cociancich, 2024; Dan & Tiron-Tudor, 2021). Another deterrent is the prospect of overall high transaction costs in emerging markets (Pietsch & Salakhova, 2022). Transaction costs stemming from pre-issuance to post-issuance processes could be burdensome on issuers, particularly where credit ratings and other technical aspects are assessed (Banga, 2019).

Several factors are recorded as important in the determination of green bond issuances. According to Dan and Tiron-Tudor (2021), credit ratings possess a significant impact on the bond market amidst other factors such as inflation, unemployment, and GDP. ESG ratings as well as credit ratings feature as key determinants that investors take into consideration in the green bond markets (Prajapati et al., 2021). However, credit ratings pose a huge challenge as they present a negative impact on green bond yield spreads. Just as in conventional bonds, whereby issuers with higher credit ratings experience low financing costs and higher spreads, whilst those with low credit ratings are exposed to higher financing costs and lower spreads, green bonds are exposed to the same phenomenon (Li et al., 2020). High costs through lower credit ratings contradict one of the fundamental reasons behind the emergence of green bonds, which is financial sustainability through cost efficiencies (Yu & Lin, 2026). From an interview conducted by Dave and Akongwale (2024), the majority of respondents cited credit fundamentals as key and considered other aspects such as guarantees, subsidies, and incentives as crucial in influencing green bond issuances. In accordance with Al Hamrani and Al Hamrani (2025), the quality of the board of directors and the potential presence or absence of greenwashing are vital factors to be considered, but the key success criteria hinge on the reputable position of the issuer, which encompasses an acceptable investment credit rating and a good ESG.

Two fundamental research hypotheses emanate:

H1: The majority of emerging market banks' credit ratings mirror or are lower than the corresponding sovereign credit rating.

H2: If an emerging sovereign country's rating is non-investment, it is more likely to lead to the local bank's credit rating being non-investment, a situation that will result in constraining the bank's efforts to issue green bonds.

3. RESEARCH METHODOLOGY

In order to address the aforementioned research hypotheses, a quantitative research design was adopted. Data on 59 emerging market banks that issued green bonds between 2016 and 2021 were obtained from the International Finance Corporation database, a well-renowned international body dealing with financial institution datasets. The selection of banks that issued green bonds was carried out in order to include only those that have practically shown an appetite to participate in green finance. Their corresponding ratings, based on the sovereign ratings of the countries in which they

operate, can reflect the extent to which their (assumed) continued efforts to issue green bonds can be impacted. The year-end 2025 sovereign credit ratings of the countries in which those banks operate were collected from S&P Global, Fitch, and Moody's website databases. Only two ratings for Yes Bank in India and PKO Bank in Poland were given by Moody's: a Ba2 rating, which is the equivalent of a BB rating, and an A1 rating, which is the equivalent of A+ for both S&P Global and Fitch. The agencies adopt different rating scales, but there is equivalence across the scales, enabling comparisons to be made. For example, a Baa1 rating from Moody's is equivalent to a BBB+ rating from both S&P Global and Fitch. The rest of the ratings were either from S&P Global or Fitch. The S&P Global and Fitch scales are identical. The credit rankings were allocated from 1 to 17, with a 1 rating matched to the highest AAA and the 17 rating matched to the lowest rating of CCC+. The countries with similar rankings were grouped together to determine the percentages used in the descriptive analysis. The same arrangement applied to the banks. The corresponding bank long-term issuer default credit ratings and the issuing international CRA as at the end of the year 2025 were obtained from each bank's website and annual reports. Initially, the entire population was considered, but two of the banks, one in Russia (Centre Invest Bank) and another in Namibia (Bank of Windhoek), were found without an international credit rating at the end of 2025, only local ratings, and were, therefore, not considered, resulting in a total of 57 banks to be analyzed. The three international rating agencies have since suspended operations in Russia since the commencement of geopolitical tensions with Ukraine.

Descriptive statistical analyses were employed to ascertain the percentages of banks' credit ratings that mirror, are better than, or are worse than those of the corresponding sovereign ratings. Furthermore, investment and non-investment bank credit ratings were determined and aggregated. The banks were categorized based on similar ratings, and their representation in percentage terms was determined as investment or non-investment grades. Excel software was used to carry out descriptive analyses.

Statistical estimation was conducted to determine the population proportion of banks that have credit ratings that mirror or show a lower rating than that of their sovereigns.

This was carried out using the population proportion π and the standard deviation:

$$S_p = \sqrt{(p[1-p]/n} \quad (1)$$

This was made possible by the fact that with a large sample $n > 30$, the sampling distribution of the proportion approximates a normal distribution, with mean equal to the population proportion π and standard deviation equal to $\sqrt{(p[1-p]/n}$ which in effect represents the standard error (Diamantopoulos & Schlegelmilch, 2000). Thereafter, the researcher determined the population parameter using the following formula:

$$P - k_c S_p \leq \pi \leq p + k_c S_p \quad (2)$$

where,

- S_p—standard error;
- k_c—critical value;
- p—sample proportion.

Furthermore, regression analysis was conducted to determine the measure of association between the sovereign credit rating and banks' credit ratings for those banks that issued green bonds.

It should be noted, however, that the credit ratings do not show by how much a certain rating differs from the next ordered rating, except that one rating is better or worse than the next. In this case, Spearman's rank order correlation for capturing the relationship between ordinal variables could also be used to ascertain the relationship between sovereign credit ratings and bank credit ratings.

The obtained results were then used to confirm or reject our hypotheses.

4. RESULTS

This section displays the findings. Table 1 provides a summary of the sovereign ratings per country and the corresponding rating for banks, together with the number of occurrences. The full display of how the matching of the banks' credit ratings to the sovereign credit rating was done is reflected in the Appendix. Furthermore, the Appendix shows the rankings from the highest AAA rating to the lowest CCC rating together with the rating agency that issued the rating grade.

4.1. Descriptive results

In Table 1, all ratings for sovereigns and the corresponding banks are depicted. The most frequent rating for both sovereigns and banks is BBB+, which is an investment grade.

Table 1. Sovereign ratings and bank ratings together with their frequencies

Sovereign rating	*Frequency*	*Bank rating*	*Frequency*
AA+	9	AAA	2
AA	9	AA+	1
AA-	2	AA	5
A+	2	A+	6
A	1	A	4
A-	1	A-	1
BBB+	10	BBB+	12
BBB	2	BBB	5
BBB-	3	BBB-	2
BB+	2	BB+	2
BB	5	BB	6
BB-	7	BB-	7
B-	2	B-	2
CCC+	2	CCC+	2
Total	57	Total	57

Source: Authors' elaboration.

In Table 2, a picture is painted of the linkage between bank credit ratings and sovereign ratings in percentage terms. These are based on the pairing and the ranking displayed in the Appendix.

Table 2. Descriptive results derived from Table 1

Number of countries out of 57	*Rating*	*Percentage of total*
30	Mirrors sovereign	53
20	Worse than sovereign	35
50	Mirror or worse	88
7	Better than sovereign	12
Total		100

Source: Authors' elaboration.

Table 2 displays that out of the 57 banks under study, 53% have credit ratings that are exactly the same as those of their corresponding sovereign countries. 35% reflect ratings that are lower than the corresponding sovereign rating. In aggregate, 88% of the banks have a rating that either corresponds to or is regarded as worse than the corresponding sovereign rating. Only 12% of the banks have ratings that are higher or better than those of the corresponding sovereign.

Table 3. Non-investment sovereign and bank credit ratings

Category	*No.*
Number of sovereigns with non-investment grades	17
Number of banks with non-investment grades	17
Number of banks with non-investment grades > sovereign	2
Percent of banks with non-investment grades > sovereign	12
Percent of banks mirroring the non-investment grades	88

Source: Authors' elaboration.

Table 3 displays a striking correlation. Out of the 17 sovereigns with non-investment grades, no corresponding bank has an investment grade. All the banks listed have corresponding non-investment grades. However, two of the banks that are still reflecting non-investment grades have a better non-investment grade than that of the sovereign, a picture that is still not encouraging.

4.2. Statistical results

The estimated population proportion statistical results at the 95% confidence level, after assuming a normal distribution, are reflected (see Equation 1):

$$\sqrt{\frac{0.88[1-0.88]}{58}} = 0.062 \quad (3)$$

Using Eq. (2), p = 88%, S_p = 0.062, and k_c is the critical level (+1.96 and -1.96), which gives the following results:

$$0.88 - 1.96(0.062) \leq \pi \leq 0.88 + 1.96(0.062)$$
$$0.76 \leq \pi \leq 100 \quad (4)$$

Hence, it is estimated that the proportion of emerging market banks that have ratings which mirror or are worse off than their sovereign countries lies between 76% and 100%

It, therefore, suggests that our hypothesis—that the majority of banks in emerging markets' credit ratings mirror or are worse off than the sovereign credit rating where they operate—holds.

4.3. Regression analysis results

This section shows the results of the regression analysis carried out.

Table 4. Hypothesis testing results

Variable	*Value*
R	0.91
R^2	0.63
p	0.026 < 0.05

Source: Authors' elaboration.

In Table 4, it is reflected that the correlation r between sovereign credit ratings is positive and of a substantial magnitude (0.91). In fact, it is almost perfectly linear, as it is very close to +1. There is a strong association between the two ratings. Furthermore, the correlation is statistically significant at p = 0.026 < 0.05. The R^2 indicates that 63% of the variation in bank credit ratings can be explained by the variation in sovereign credit ratings. These figures help to confirm the hypothesis *H2*.

If an emerging sovereign country is downgraded, it is more likely to see the local bank being downgraded, a situation that will result in constraining the bank's efforts to issue green bonds.

5. DISCUSSION

The key results of this study are based on the outcomes pertaining to hypothesized scenarios based on the literature reviewed. Confirmation is ascertained as to the fact that the majority of banks in emerging markets tend to have credit rating grades that co-move in the same direction and at the same level, or assume ratings that are lower than their sovereign credit rating. 88% of the banks reflect these attributes. The estimated proportion of emerging market banks that have ratings that mirror or are worse than their sovereign countries lies between 76% and 100%, displaying an equally high proportion. Kolaric et al. (2021), Lejard et al. (2021), and Prajapati et al. (2021) emphasized the potential existence of such a relationship between sovereign credit rating and bank credit ratings. The substantial percentage (88%) should be viewed from the perspective of Prajapati et al. (2021), Dave and Akongwale (2024), Al Hamrani and Al Hamrani (2025), and Dan and Tiron-Tudor (2021), who established the pertinence of credit ratings in the determination of green bond issuances. The hypothesis *H2*, which suggested the existence of a positive co-movement between a sovereign downgrade and that of a bank in the same jurisdiction and the commensurate constraint on such banks to issue green bonds, was also confirmed. The correlation coefficient (r) of 0.91, statistically significant at p = 0.026 < 0.05, paved the way for the confirmation, bearing in mind, though, that the r does not signify causation. Furthermore, all sovereigns with non-investment grades are linked to all banks with equally non-investment grades, which is very striking. A corollary to these outcomes is that the performance of banks is affected by these downgrades (Jesuka & Peixoto, 2022). These subsequent downgrades of domestic banks influenced by the sovereign credit ratings put pressure on their funding costs and constrain their access to markets (Panetta et al., 2011). Transaction

costs in the form of pre-issuance and post-issuance could be burdensome on banks, particularly where credit ratings and other technical aspects are assessed (Banga, 2019; Pietsch & Salakhova, 2022). Unfortunately, the high transaction costs, which include higher interest rates, do not seem to be adequately compensated in banks through greenium, as there is a mixed perception of its existence (Alcarva et al., 2026; Fandella & Cociancich, 2024; Dan & Tiron-Tudor, 2021). The credit ratings of the issuer significantly influence the pricing of green bonds and thus the green bond premium (Pietsch & Salakhova, 2022; Dave & Akongwale, 2024; Al Hamrani & Al Hamrani, 2025).

Moreover, the findings by Hinsche (2021), Huynh et al. (2022), and Li et al. (2020) confirm that issuers with lower credit ratings have negative premiums, which are more pronounced for green bonds.

6. CONCLUSION

Sovereign states in emerging markets should strive to maintain investment grades, or else if downgraded, the consequences of such moves are substantial for banks' efforts to issue green bonds. Sovereign credit ratings are to a larger extent mirrored or taken a notch down by the banks, a situation that potentially leads to higher funding costs for those banks, which may not be passed on to borrowers due to a possible lack of positive greenium effects or due to potential downside effects of negative greenium effects.

Implications of results: It seems, therefore, that the efforts to enhance the capacity of banks in the emerging markets to attract green funds should be commensurate with sovereigns' actions of raising the bar in terms of all aspects that are considered by the three CRAs: Moody's, Fitch, and S&P Global in issuing sovereign credit ratings. These aspects include income, competitiveness, sustainability in the finances of the public sector; Fiscal robustness, vulnerability to default under stressed conditions, as well as the capability of monetary authorities to maintain a balanced economy. Other aspects, such as how emerging market governments behave in a political sense, cannot be ignored since they are part of the risk assessment that is taken into consideration when sovereign credit ratings are pronounced.

This study, therefore, contributes to the literature on green finance by indicating the extent to which sovereign credit rating can enhance the financial and risk-related benefits of green bond issuance by banks. Furthermore, the findings indicate the strategic value of linking sovereign credit rating, bank credit ratings, and funding costs into green bond issuances for both government authorities and bank managers. This study empirically demonstrates that sovereign credit rating and bank credit ratings are influential in determining the capacity of banks to play a pivotal role in financing green projects and achieving long-term sustainable climate mitigation.

The study has limitations such as: 1) there is no explicit determination of factors that contribute the most to sovereign credit rating deterioration in emerging markets; 1) since 63% of the variation in bank credit ratings can be explained by the variation in sovereign credit rating, what influences the remaining 37% is not further probed; 3) the study does not interrogate the quantum aspects of financial costs that arise as a result of the combined deterioration in both sovereigns and banks' credit ratings.

Further research should delve deeper into establishing the potential aspects in emerging markets that may be common in influencing the possibilities of downgrades by the CRAs so that collective strategies could be formulated and executed with the health of both the banking sector and the green environment in mind. Moreover, determining these aspects could also lead to a corresponding determination of the quantum of change in a downgrade, both for sovereigns and, in turn, for banks, attributed to a specific factor. What becomes key is that the results can mitigate unnecessary sovereign downgrades and, in turn, bank credit downgrades, thereby arresting concomitant escalations in bank funding costs, a scenario that becomes conducive to raising green bonds and the subsequent financing of green projects.

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APPENDIX. EMERGING MARKETS SOVEREIGN AND BANK CREDIT RATINGS

Emerging markets	*Sovereign rating*	*Ranking*	*Rating agency*	*Emerging markets banks*	*Bank credit ratings*	*Ranking*	*Rating agency*
Nigeria	B-	16	S&P Global	Access	B-	16	S&P Global
Latvia	BB-	13	Fitch	Alturn	BB-	13	Fitch
Türkiye	BB-	13	Fitch	AK	BB-	13	Fitch
Armenia	BB-	13	S&P Global	America	BB-	13	S&P Global
India	BBB+	8	S&P Global	Axis	BBB+	8	S&P Global
Colombia	BB+	11	S&P Global	Banco de Bogota	BB	12	S&P Global
Chile	A	6	S&P Global	Banco de credito e inversions	A	6	S&P Global
Argentina	CCC+	17	S&P Global	Banco Galicia	B-	16	S&P Global
Costa Rica	BB	12	S&P Global	Banco Nacional de Costa Rica	BB	12	S&P Global
Ecuador	B-	16	Fitch	Banco Pichincha	CCC+	17	Fitch
Brazil	BB	12	S&P Global	Banco Votorantim	BB	12	S&P Global
Colombia	BB	12	S&P Global	Bancolombia	BB	12	S&P Global
Thailand	BBB+	8	Fitch	Bank of Agriculture & Agriculture Cooperatives	AAA	1	Fitch
Philippines	BBB+	8	S&P Global	Development Bank of the Philippines	BBB+	8	S&P Global
Taiwan	AA+	2	S&P Global	E-Sun commercial	AA	3	S&P Global
Türkiye	AA	3	Fitch	Garanti BBVA	AA	3	Fitch
India	BBB+	8	S&P Global	Export & Import Bank of India	BBB	9	S&P Global
UAE	AA	3	Fitch	First Abu Dhabi	AA	3	Fitch
Taiwan	AA+	2	S&P Global	First Commercial	A-	7	S&P Global
Philippines	BBB+	8	S&P Global	China Banking Corporation	BBB+	8	S&P Global
Peru	BBB	9	S&P Global	Cofide	BBB+	8	S&P Global
Kazakhstan	BBB-	10	S&P Global	Damu Entrepreneurship Development Fund	BBB-	10	S&P Global
Colombia	BB	12	S&P Global	Davivienda	BB	12	S&P Global
Mexico	BBB-	10	S&P Global	Fondo Especial Para Financiamientos	AAA	1	S&P Global
Lebanon	CCC+	17	S&P Global	Fransa	CCC+	17	S&P Global
Taiwan	AA	3	Fitch	Hua Nan Commercial	AA	3	Fitch
Saudi Arabia	A+	5	Fitch	Islamic Commercial Bank	A+	5	Fitch
Taiwan	AA	3	Fitch	KGI	AA	3	Fitch
UAE	AA	3	S&P Global	Majid AI Futtaim	BBB	9	S&P Global
Taiwan	AA	3	S&P Global	Mega International Commercial	A+	5	S&P Global
South Africa	BB-	13	S&P Global	Nedbank	BB-	13	S&P Global
Poland	A-	7	S&P Global	PKO	A1	5	Moody's
Qatar	AA	3	Fitch	Qatar National	A+	5	Fitch
Philippines	BBB+	8	Fitch	HCBC	A+	5	Fitch
Philippines	BBB+	8	S&P Global	Bank of Philippine Islands	BBB+	8	S&P Global
Namibia	BB-	N/A	Fitch	Bank of Windhoek	AA+	N/A	GCR
Taiwan	AA+	2	S&P Global	Bank Sinopac	BBB	9	S&P Global
Philippines	BBB+	8	S&P Global	BDO Unibank	BBB+	8	S&P Global
Morocco	BB+	11	Fitch	BMCE	BB+	11	Fitch
Brazil	BB	12	Fitch	BTG Pactual	BB+	11	Fitch
Hong Kong	AA+	2	S&P Global	Capital Environment	AA+	2	S&P Global
Russia	N/A		S&P Global (Withdrew)	Centre Invest Bank	A	N/A	RU
Thailand	BBB+	8	Fitch	TMB	BBB+	8	Fitch
Türkiye	BB-	13	Fitch	Turkiye is Bankasi	BB-	13	Fitch
India	Baa3	10	Moody's	YES	Ba2	12	Moody's
Türkiye	BB-	13	Fitch	Yapi Kredi	BB-	13	Fitch
Taiwan	AA+	2	S&P Global	Yuanta Commercial	BBB+	8	S&P Global
Taiwan	AA+	2	S&P Global	Yushan Commercial	A	6	S&P Global
Hong Kong	AA-	4	Fitch	Zhongyuan	BBB	9	Fitch
Taiwan	AA	3	Fitch	Taishin International	BBB+	8	Fitch
Taiwan	AA+	2	S&P Global	Taiwan Business Bank	BBB+	8	S&P Global
Taiwan	AA+	2	S&P Global	Taiwan Cooperative Bank	BBB+	8	S&P Global
Slovakia	A+	5	S&P Global	Tatra Banka	A+	5	S&P Global
Taiwan	AA-	4	S&P Global	Taiwan Shin Kong Commercial	BBB+	8	S&P Global
Indonesia	BBB	9	Fitch	Sarana Multi Infrastruktur	BBB	9	Fitch
Taiwan	AA	3	Fitch	Société Générale Taipei	A	6	Fitch
South Africa	BB-	13	Fitch	Standard Bank	BB-	13	Fitch
India	BBB+	8	S&P Global	Standard Bank	BBB-	10	S&P Global
Taiwan	AA+	2	S&P Global	Taipei Fubon Commercial	A	6	S&P Global