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ASSESSING THE IMPACT OF ESG INTEGRATION ON CREDIT RISK IN VIETNAMESE COMMERCIAL BANKS

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ABSTRACT

This article examines the integration of environmental, social, and governance (ESG) factors into credit risk assessment at commercial banks in Vietnam. It is edited from the original student research report into a condensed journal-style manuscript while preserving the complete research logic: problem statement, literature review, theoretical framework, methodology, empirical results, discussion, implications, conclusion, and references. The empirical analysis uses balanced panel data from 20 Vietnamese commercial banks during 2017–2023, while the policy and practical discussion is extended to the 2020–2025 period because this is when Vietnam accelerated green growth, sustainable finance, and environmental risk management in lending.

Credit risk is measured primarily by the non-performing loan (NPL) ratio. Supplementary indicators such as the capital adequacy ratio (CAR), leverage ratio (LEV), liquidity ratio (LIQ), return on assets (ROA), loan-to-deposit ratio (LDR), bank size (SIZE), and GDP growth are used to interpret bank-specific and macroeconomic conditions. The findings indicate that stronger ESG performance is associated with a lower NPL ratio. Among the three pillars, Governance has the strongest negative relationship with credit risk, followed by Environmental, while Social has a weaker but still meaningful effect. The results imply that ESG should not be treated merely as disclosure or corporate social responsibility. It should be embedded in borrower screening, internal credit ratings, risk-based pricing, credit conditions, and post-disbursement monitoring.

KEYWORDS: ESG; credit risk assessment; commercial banks; non-performing loan ratio; green credit; environmental and social risk management.

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1.0 INTRODUCTION

In recent years, ESG has shifted from a voluntary reporting trend to a framework for risk management and capital allocation in the financial market. For commercial banks, ESG is not limited to social responsibility campaigns or sustainability commitments. It represents a set of non-financial risk factors that can become tangible financial risks. Environmental risks may raise compliance costs, interrupt operations, reduce collateral value, or generate compensation obligations. Social risks may delay projects, create labor disputes, trigger community opposition, and reduce borrowers' cash-flow capacity. Governance risks may lead to fraud, misreporting, weak internal controls, and excessive risk-taking. Once these risks materialize, they affect repayment capacity and the quality of banks' credit portfolios.

The Vietnamese banking sector makes this topic particularly important. Since 2020, banks have faced the effects of the COVID-19 shock, the post-pandemic recovery, changes in interest rates and liquidity, and volatility in real estate, corporate bonds, and export-oriented sectors. At the same time, Vietnam has promoted green growth and sustainable finance. Decision No. 1658/QD-TTg on the National Green Growth Strategy and the SBV's guidance on green credit and environmental risk management in lending have created an important policy foundation. The key challenge is no longer whether banks mention ESG in reports, but whether ESG is substantively integrated into credit appraisal, internal rating, risk-based pricing, credit covenants, and post-disbursement monitoring.

The overall objective of this study is to assess the role of ESG integration in credit risk assessment at Vietnamese commercial banks. The article pursues four specific objectives. First, it systematizes the theoretical basis of ESG, credit risk, credit risk assessment, ESG scoring, and environmental and social risk management. Second, it reviews domestic and international studies to identify research gaps. Third, it develops a panel data model to test the relationship between ESG performance and credit risk. Fourth, it proposes governance and policy recommendations for banks and regulators. The empirical dataset covers 20 banks during 2017–2023, while the 2020–2025 periods are used to discuss the policy environment and practical transformation in the banking sector.

2.0 LITERATURE REVIEW AND RESEARCH GAPS

2.1 International studies on ESG, banks, and credit risk

International research shows that ESG is increasingly viewed as a set of factors influencing bank risk and performance, not merely as a framework for non-financial disclosure. Earlier studies focused on sustainability reporting and corporate responsibility. More recent studies approach ESG as a risk management mechanism because environmental, social, and governance factors may transform into financial risks when they affect cash flows, asset values, legal compliance, or reputation.

One research stream examines the relationship between ESG performance and bank performance. Evidence from developed markets generally suggests that banks with stronger ESG practices tend to have lower funding costs, more stable profitability, and greater resilience to shocks.

Nevertheless, the results are not fully uniform. The magnitude of ESG effects depends on the legal system, market development, data availability, and the relative importance of each ESG pillar. This is particularly relevant for banking, where Governance can influence internal controls directly, while Environmental and Social risks often work through borrowers and financed projects.

Another research stream links ESG to credit risk. It argues that ESG factors complement traditional credit models because historical financial statements may not fully capture climate risk, transition risk, labor disputes, community conflicts, or governance failures. By integrating ESG into lending decisions, banks can identify vulnerable borrowers earlier, adjust credit conditions, reduce concentration in high-risk sectors, and monitor long-term exposures more effectively. However, international findings also show that ESG measurement remains complex, and the separate effects of E, S, and G are not always consistent across countries.

2.2 Vietnamese studies and research gaps

In Vietnam, ESG research in banking has emerged later and is often associated with corporate social responsibility, green banking, green credit, or corporate governance. Large listed banks and state-owned commercial banks usually disclose sustainability-related information earlier, while smaller banks face constraints in data systems, personnel, and governance capacity. Among the three pillars, Governance is the most commonly studied component because it is linked to boards of directors, internal control, transparency, and compliance. Environmental issues are often analyzed through green credit and environmental risk management in lending. Social factors are less quantified and are usually discussed through financial inclusion, community responsibility, or employee-related issues.

Domestic studies on credit risk mainly use the NPL ratio, loan-loss provisions, or overdue loans as risk indicators. They generally find that credit risk is affected by bank-specific factors such as size, profitability, capital adequacy, credit growth, and governance, as well as macroeconomic factors such as GDP growth, inflation, and business cycles. However, many models still rely heavily on historical financial indicators and have not fully incorporated ESG-related non-financial risks.

This review identifies three gaps. First, ESG in Vietnam is still frequently treated as a sustainability objective or compliance requirement rather than a component of credit risk. Second, quantitative evidence on the ESG–NPL relationship remains limited, especially after COVID-19 and during the accelerated development of green credit policies. Third, many studies use a composite ESG score without decomposing the effects of Environmental, Social, and Governance pillars. This article addresses these gaps by preserving the general research structure of the original report, condensing duplicated content, standardizing terminology, and analyzing both composite ESG and pillar-level ESG effects.

3.0 THEORETICAL FRAMEWORK AND HYPOTHESES

3.1. Concepts and integration mechanism

ESG is a set of criteria used to evaluate an organization's sustainability and responsibility in relation to environmental, social, and governance issues. The Environmental pillar refers to emissions, resource use, climate risk, environmental compliance, and the ecological impact of

financed activities. The Social pillar refers to labor standards, customer protection, occupational safety, community relations, and the social impact of projects. The Governance pillar refers to governance structure, transparency, business ethics, internal control, and risk management. In banking, ESG is relevant both to the bank itself and to the borrowers or projects receiving credit.

Credit risk is the possibility that a bank suffers losses because a borrower fails to meet debt obligations. Credit risk assessment is the process of collecting, analyzing, classifying, and monitoring borrower risk before and after credit approval. Traditional models focus on cash flows, collateral, repayment history, financial ratios, and industry conditions. ESG integration expands the scope of assessment by adding non-financial factors that may affect the probability of default and loss given default. For example, a high-emission borrower may face stricter regulations, higher compliance costs, or reduced access to export markets; a project with community conflict may be delayed; and a poorly governed firm may misreport financial information or use funds inefficiently.

Environmental and social risk management systems (ESRM/ESMS) provide a practical mechanism for ESG integration. These systems help banks screen industries, classify risk levels, evaluate documents, set credit conditions, and monitor compliance after disbursement. ESG integration therefore reflects a shift from purely financial credit assessment toward holistic credit risk assessment, in which financial and non-financial risks are considered together.

Table 1. ESG pillars and reference weights used in the study

Pillar	Assessment content	Reference weight
Environmental	Green credit, environmental management, climate risk, and environmental compliance	30%
Social	Labor standards, social responsibility, community relations, and project social impact	30%
Governance	Board structure, internal control, transparency, compliance, and risk management	40%

3.2. Variables, expected impacts, and hypotheses

The composite ESG score reflects the extent to which a bank implements environmental, social, and governance practices. The main expectation is that stronger ESG performance is associated with a lower NPL ratio. ROA reflects profitability; banks with stronger profitability usually have more resources and better governance capacity, so ROA is expected to reduce NPL. SIZE reflects the scale of a bank; larger banks tend to have better data systems, technology, professional staff, and supervisory pressure, so SIZE is expected to be negatively associated with credit risk. LDR reflects the extent to which deposits are converted into loans. A very high LDR may signal pressure to expand credit and may increase liquidity and credit risk; therefore, it is expected to have a positive relationship with NPL. LIQ reflects liquidity strength and is expected to reduce risk. GDP growth represents macroeconomic conditions; stronger economic growth improves borrowers' cash flows and is expected to reduce NPL. CAR is interpreted as a capital buffer, while LEV reflects reliance on debt financing; these indicators can be used as supplementary measures or robustness checks rather than replacing the NPL ratio as the main dependent variable.

Table 2. Key variables in the research model

Variable	Measurement / meaning	Expected sign for NPL
NPL ratio	Loans in categories 3, 4, and 5 / total outstanding loans	Dependent variable
ESG	Composite ESG score of each bank	Negative
E, S, G	Environmental, Social, and Governance pillar scores	Negative; strongest effect expected for G
ROA	Net profit after tax / average total assets	Negative
SIZE	Natural logarithm of total assets	Negative
LDR	Total outstanding loans / total deposits	Positive
GDP	Annual GDP growth rate	Negative
LIQ/LR	Liquid assets / short-term liabilities	Negative

Based on the theoretical framework, four hypotheses are proposed. H1: The composite ESG score has a negative effect on the NPL ratio. H2: The Environmental pillar has a negative effect on credit risk because it improves screening of environmental and transition risks. H3: The Social pillar has a negative but relatively weaker effect because its impact is often indirect through reputation, stakeholder relations, and project stability. H4: The Governance pillar has the strongest negative effect because governance is directly connected with internal controls, credit discipline, transparency, and the prevention of excessive risk-taking.

4.0 RESEARCH METHODOLOGY

The study adopts a mixed-methods approach. The qualitative strand is used to review the literature, analyze the policy framework, clarify how ESG is integrated into lending procedures, and interpret results in the Vietnamese banking context. The quantitative strand uses panel data regression to examine the relationship between ESG and credit risk. This approach is suitable because ESG is both a governance framework and a set of measurable factors that can be linked to financial and risk indicators.

The empirical dataset includes 20 commercial banks operating in Vietnam from 2017 to 2023. The sample is selected based on three criteria: availability of audited financial statements for the full period, disclosure of ESG-related information in annual or sustainability reports, and continuous operation during the research period. Data are collected from audited financial statements, annual reports, sustainability reports, corporate websites, and macroeconomic data from official statistical sources. The dataset is structured as a balanced panel, allowing the model to control for unobserved bank-specific characteristics and time-related effects.

The baseline model is specified as:

$$NPL_{it} = \beta_0 + \beta_1 ESG_{it} + \beta_2 SIZE_{it} + \beta_3 ROA_{it} + \beta_4 LDR_{it} + \beta_5 GDP_t + \beta_6 LIQ_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

Where we denote the bank, *t* denotes the year, μ_i captures bank-specific effects, λ_t captures time effects, and ε_{it} is the error term. To analyze pillar-level effects, the model replaces the composite ESG score with Environmental, Social, and Governance scores:

$$NPL_{it} = \beta_0 + \beta_1 E_{it} + \beta_2 S_{it} + \beta_3 G_{it} + \text{control variables} + \mu_i + \lambda_t + \epsilon_{it}$$

The study compares Pooled OLS, Fixed Effects, and Random Effects estimators. The Hausman test is used to select between Fixed Effects and Random Effects. Variance inflation factors are examined to identify multicollinearity. Robust standard errors are applied when heteroskedasticity or autocorrelation is detected. This estimation strategy helps ensure that the reported relationships are not driven only by observable bank size, profitability, or macroeconomic conditions.

5.0 EMPRITICAL RESULTS

5.1. Sample characteristics and descriptive statistics

The research sample contains banks with different operating scales, ownership structures, and levels of ESG disclosure. Leading banks such as Vietcombank, BIDV, VietinBank, Techcombank, ACB, and MB generally record stronger ESG scores and better asset quality. In contrast, banks under pressure from legacy assets or rapid credit expansion tend to display higher NPL ratios and weaker ESG performance. This pattern suggests that ESG indicators partially reflect governance capacity and the sustainability of credit operations.

Descriptive statistics show that the average NPL ratio of the sample is 1.89%, with a standard deviation of 0.74%, ranging from 0.62% to 3.85%. The average composite ESG score is 58.3 points, with a standard deviation of 11.2, indicating substantial variation across banks. The average ROA, CAR, and LDR are 1.21%, 10.9%, and 84.5%, respectively. These figures show that the sample provides sufficient variation in asset quality, profitability, capital strength, and liquidity to examine the ESG–credit risk relationship.

Table 3. Descriptive statistics of the research variables

Variable	Mean	Standard deviation	Minimum	Maximum
NPL ratio (%)	1.89	0.74	0.62	3.85
ESG score	58.3	11.2	35	82
ROA (%)	1.21	0.52	0.20	2.80
CAR (%)	10.9	1.8	8.2	15.4
LDR (%)	84.5	6.7	70	98

5.2. ESG and NPL trends

The average ESG score increased steadily from 48.5 in 2017 to 71.5 in 2023. This trend reflects the strategic shift of Vietnamese commercial banks from fragmented corporate responsibility reporting toward more systematic sustainable banking practices. The increase after 2020 is consistent with stronger attention to green credit, environmental and social risk management, and transparency requirements.

The NPL ratio moved in line with macroeconomic cycles. It decreased from 2.12% in 2017 to 1.85% in 2019, rose to 2.34% in 2020 and 2.56% in 2021 during the COVID-19 shock and restructuring period, then declined to 2.01% in 2022 and 1.74% in 2023. The simultaneous improvement in ESG scores and subsequent reduction in NPLs suggests that ESG integration may

support resilience, although the relationship should be interpreted together with macroeconomic recovery and bank-specific risk management practices.

Table 4. Average ESG score and NPL ratio over time

Year	Average ESG score	Average NPL ratio (%)
2017	48.5	2.12
2018	50.3	1.98
2019	54.2	1.85
2020	59.8	2.34
2021	63.4	2.56
2022	67.1	2.01
2023	71.5	1.74

Table 5. Selected bank indicators in 2023

Bank	NPL ratio (%)	ROA (%)	CAR (%)	ESG score
Vietcombank	0.89	1.85	11.2	78
BIDV	1.52	1.10	9.8	72
VietinBank	1.35	1.22	10.1	71
Techcombank	0.75	2.80	15.4	80
ACB	0.73	2.50	13.9	79
MB	1.05	2.30	12.8	76
VPBank	2.45	2.10	11.5	65
Sacombank	2.30	1.15	9.5	60

5.3. Correlation, regression, and reliability testing

The correlation matrix shows a negative relationship between ESG and the NPL ratio, with a coefficient of -0.42. This is consistent with the expectation that stronger ESG performance is associated with better credit quality. ROA is also negatively correlated with the NPL ratio (-0.51), suggesting that more profitable banks generally maintain better asset quality. SIZE is negatively correlated with the NPL ratio (-0.28) and positively correlated with ESG (0.49), implying that larger banks may have stronger capacity to implement ESG and control risk. The correlation coefficients remain within acceptable ranges, reducing concerns about severe multicollinearity.

The Fixed Effects regression result shows that ESG has a coefficient of -0.021 and is statistically significant. This means that, on average, a one-point increase in the ESG score is associated with a 0.021 percentage point decrease in the NPL ratio, holding other variables constant. ROA has a negative and significant coefficient, confirming the role of profitability in supporting credit quality. LDR has a positive and significant coefficient, showing that aggressive lending relative to deposit mobilization may increase risk. GDP has a negative coefficient, indicating that favorable macroeconomic conditions help reduce NPLs. SIZE is negative but less statistically significant, suggesting that scale supports risk management but is not the dominant factor.

When ESG is decomposed into the three pillars, Governance has the strongest negative coefficient (-0.028), followed by Environmental (-0.015) and Social (-0.009). This supports the view that Governance is the pillar most directly linked to credit risk because it affects approval discipline, internal control, transparency, and post-disbursement monitoring. Diagnostic tests support the use of the Fixed Effects model. The Hausman test favors Fixed Effects, VIF values are below 5, and robust standard errors are used to improve reliability.

Table 6. Correlation matrix of key variables

Variable	NPL ratio	ESG	ROA	SIZE
NPL ratio	1.00			
ESG	-0.42	1.00		
ROA	-0.51	0.36	1.00	
SIZE	-0.28	0.49	0.21	1.00

Table 7. Fixed Effects regression results

Variable	Coefficient	P-value	Interpretation
ESG	-0.021	0.000	Stronger ESG performance is associated with a lower NPL ratio
ROA	-0.45	0.021	Higher profitability supports credit quality
SIZE	-0.18	0.076	Scale has a negative but weaker effect
LDR	0.012	0.033	Higher credit expansion relative to deposits increases risk
GDP	-0.09	0.041	Economic growth helps reduce NPLs

Table 8. Pillar-level ESG effects on the NPL ratio

Pillar	Coefficient	Interpretation
Environmental	-0.015	Negative effect, reflecting the role of environmental and transition risk screening
Social	-0.009	Weaker negative effect, mainly through reputation, stakeholder relations, and project stability
Governance	-0.028	Strongest effect, directly linked to internal controls, transparency, and credit discipline

Table 9. Reliability tests

Test	Result	Meaning
Hausman test	Fixed Effects preferred	The Fixed Effects model is more suitable for the panel structure
Variance inflation factor	< 5	No evidence of severe multicollinearity
Heteroskedasticity / autocorrelation	Robust standard errors used	Reliability is improved through robust estimation

6.0 DISCUSSION

The empirical results indicate that ESG has practical significance for credit risk management in Vietnamese commercial banks. The negative relationship between ESG and the NPL ratio should not be interpreted as a mechanical effect in which more ESG disclosure automatically reduces non-performing loans. The core interpretation is that banks with stronger ESG practices often have better governance systems, more rigorous appraisal procedures, clearer data, and more active portfolio monitoring. ESG works as an additional risk filter that complements traditional credit models.

The transmission mechanism from ESG to credit risk can be explained through three channels. The first is the borrower channel: ESG assessment helps banks identify borrowers and projects exposed to legal, operational, environmental, social, or reputational risks. The second is the portfolio channel: ESG supports capital allocation away from sectors with excessive transition and sustainability risks and toward borrowers with more resilient business models. The third is the internal governance channel: banks with stronger governance reduce conflicts of interest, improve approval discipline, and detect deterioration earlier during post-disbursement monitoring.

Governance has the strongest effect because it directly shapes credit decisions. A bank with a more independent board, stronger internal audit, better information transparency, and stricter compliance culture can limit relationship-based lending, reduce bias in credit approval, and react faster when loans show early signs of deterioration. In Vietnam, where governance capacity still differs significantly across banks, the Governance pillar is particularly important. Without strong governance, Environmental and Social criteria may become formal checklists rather than actual credit risk tools.

The Environmental pillar has a negative but smaller effect than Governance. This does not mean environmental risk is unimportant. Rather, it reflects the current implementation stage in Vietnam, where borrower-level environmental data remain incomplete, climate risk quantification is inconsistent, and many environmental risks materialize over a longer horizon. As green growth, emissions standards, and sustainable finance requirements become stricter, environmental risks will likely have a clearer impact on borrower cash flows, especially in energy, real estate, heavy industry, agriculture, logistics, and export sectors.

The Social pillar has the weakest estimated effect because social risks are harder to quantify and often work indirectly. However, this pillar should not be ignored. Labor disputes, safety incidents, customer rights violations, community opposition, or adverse social impacts can delay projects, generate compensation costs, damage reputation, and reduce repayment capacity. For banks, social criteria should be included in appraisal for infrastructure, real estate, mining, manufacturing, and projects with strong community impact. Overall, the results support the view that ESG improves resilience, especially during shocks such as COVID-19 and the post-pandemic recovery.

7.0 GOVERNANCE AND POLICY IMPLICATIONS

7.1 Implications for commercial banks

First, banks should move ESG from reporting to risk management. ESG needs to be embedded throughout the credit life cycle, including customer identification, sector screening, project appraisal, credit scoring, limit approval, risk-based pricing, covenant design, disbursement conditions, and post-loan monitoring. For high ESG-risk borrowers, banks may require mitigation plans, additional compliance conditions, periodic reporting, or stronger collateral arrangements.

Second, banks should build a unified internal ESG scoring system. The system should combine quantitative and qualitative data and should be adjusted by sector, borrower size, and project type. A single checklist cannot be applied to all industries because manufacturing, real estate, services, infrastructure, and agriculture face different ESG risks. ESG scores should be linked to internal credit ratings so that they influence probability of default, credit limits, pricing, and covenants.

Third, banks should prioritize Governance. The findings show that Governance has the strongest association with lower NPL ratios. Therefore, banks need to strengthen board oversight, internal audit, data governance, compliance culture, conflict-of-interest controls, and accountability in lending. Credit officers should be trained to identify ESG risks, and banks should maintain high-risk sector lists, update legal and environmental requirements, and use data technology for post-disbursement monitoring.

7.2. Policy implications

Regulators should continue standardizing ESG disclosure in the banking sector. Inconsistent data remain a major obstacle for comparison, supervision, investment analysis, and academic testing. The SBV can coordinate with relevant ministries to develop sector-based environmental and social risk classification, minimum green credit disclosure requirements, guidance on high ESG-risk lending, and supervisory expectations for banks' internal ESG risk management systems.

A national ESG data infrastructure or a shared financial-sector database would also improve implementation. Such a database could include information on emissions, environmental violations, labor disputes, legal compliance, environmental impact assessment, and sustainability performance. When ESG data are standardized, banks can integrate ESG into credit risk models more quantitatively instead of relying mainly on voluntary disclosure. Regulators should also encourage climate stress testing, transition risk assessment, and alignment between ESG governance and Basel-oriented risk management standards.

7.3. Proposed implementation framework

To make ESG integration feasible, banks can adopt a three-layer roadmap. The policy layer defines ESG risk appetite, restricted sectors, green credit criteria, and disclosure principles. The operational layer embeds ESG into customer files, due diligence forms, internal ratings, approval memos, and credit agreements. The supervisory layer monitors ESG commitments after disbursement, updates early warnings, and reassesses risk when legal, environmental, or social conditions change. The objective is not to add formal procedures mechanically, but to help credit officers identify risks faster and make more consistent decisions.

Table 10. Framework for integrating ESG into credit risk assessment

Step	ESG integration content	Implementation tool	Expected result
1	Customer and sector screening	High-risk sector lists and exclusion criteria	Avoid or control loans with excessive ESG risk
2	Assessment of E, S, and G in credit files	ESG scoring, legal records, environmental and labor documentation	Identify risks not captured by financial statements
3	Connection with ratings and pricing	Internal rating model, risk premium, and credit covenants	Reflect ESG risk in limits, interest rates, and conditions
4	Post-disbursement monitoring	Compliance commitments, periodic reports, and early warning indicators	Detect deterioration in credit quality earlier
5	Review and disclosure	Internal reports and sustainability reports	Increase transparency and accountability

8.0 CONCLUSION, LIMITATIONS, AND FUTURE RESEARCH

This article systematized the theoretical foundation, reviewed the literature, and examined the relationship between ESG and credit risk in Vietnamese commercial banks. The findings show that the composite ESG score has a negative and statistically significant relationship with the NPL ratio. This reinforces the argument that ESG is not merely a sustainability commitment but also a tool supporting credit risk management. Among the three pillars, Governance has the strongest effect, followed by Environmental, while Social has a weaker but still meaningful role. Control variables such as ROA, LDR, SIZE, and GDP produce results consistent with banking risk theory.

The study has several limitations. First, ESG data in Vietnam are not fully standardized, so scores may be influenced by methodology and voluntary disclosure. Second, the empirical dataset covers 2017–2023 and does not fully capture the continuing policy changes in 2024–2025. Third, credit risk is measured mainly at the bank level through the NPL ratio, while loan-level and borrower-level data are not available. Future research can use quarterly data, compare bank ownership groups, analyze sector-level loan portfolios, test nonlinear relationships, use lagged ESG variables, and combine loan data with borrower ESG scores to assess credit risk more deeply.

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