# The Influence Mechanism of ESG on Corporate Financial Performance from the Perspective of High-Quality Development

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Abstract: The Environmental, Social and Governance (ESG) concept is highly compatible with the development goal of accelerating the construction of a new development pattern and focusing on promoting high-quality development. ESG index focuses on evaluating the development of enterprises from multiple dimensions, not only focusing on the economic benefits obtained by enterprises, but also evaluating the performance of enterprises in three dimensions: environmental responsibility, social contribution, and corporate governance. It comprehensively discloses more effective and less asymmetric information to society and stakeholders. The financial index refers to the index of enterprise operation ability, debt paying ability, development ability and profitability. This study takes the four financial indicators as explained variables, and focuses on and studies the mechanism by which ESG scores can improve the performance of enterprises and apos; financial indicators. Choosing enterprise financial index as the standard to measure enterprise development is to visualize enterprise development and effectively combine ESG index and enterprise development, so as to achieve the purpose of research and provide academic insights and development ideas for new current enterprise development

Keywords: Financial Indicators; The Environmental; Social and Governance; High-Quality Development; Mechanism Research

#### 1. Introduction

High-quality development is the first task of building a modern socialist country in an all-round way. A significant formal conference have clearly proposed to "accelerate the construction of a new development pattern and focus on promoting high-quality development" and make a strategic deployment to promote high-quality development. Financial performance (CFP) is the basic goal of the enterprise, as well as the basic premise for the emergence, existence and development of the enterprise (Gong & Dou, 2007) <sup>[1]</sup>. ESG (Environmental, Social and Governance) promotes the transformation of enterprises from the pursuit of maximum of their own interests to the pursuit maximum of social value, which is highly consistent with the goal of high-quality development. It is for Chinese enterprises to practice new development concepts and promote high quality. Effective "grabbing" of development. Therefore, it is meaningful to study the mechanism of the impact of ESG on the financial performance of enterprises from the perspective of promoting the high-quality development of enterprises. At the same time, on the basis of the "dual carbon" goal, relevant institutions in China have successively promulgated and implemented a series of programs to support the development of ESG. For example, in 2022, the State-owned Assets Supervision and Administration Commission of the State Council issued the "Work Plan for Improving the Quality of Listed Companies Controlled by Central Enterprises", proposing to strive for "full coverage" of the ESG special report of Hongqi-controlled listed companies by 2023. ESG has also attracted wide attention from the business and academic circles because of the release of the plan. Many scholars and research institutions focused on the study of the mechanism of ESG and achieved a large number of effective research results.

Secondly, for listed companies, the quality and readable effect of financial statement data disclosure play an important role in information users and stakeholders. However, in terms of the current development of the ESG system, the research on enterprise financial performance and its relationship has not reached a fully mature stage. There is still a lot of room for development and practice in the mechanism of the performance of enterprise ESG and the impact of corporate social responsibility on enterprise financial performance. According to most studies in this field, good corporate social responsibility can promote the high-quality development of enterprises.

Integrating stakeholder theory, signal transmission theory and information asymmetry theory, this paper will study the mechanism of the impact of ESG on the financial performance of enterprises on the basis of theoretical research, combined with the development trend of international ESG and the national conditions of China's development: for the disclosure and analysis of relevant sample data collected the relationship between the data. Use EXCEL and STATA software for data analysis to put forward reasonable research hypotheses, and prove that the ESG performance of enterprises has an impact on financial performance indicators on the basis of empirical research. Finally, put forward targeted suggestions based on the research results and current development problems to provide insights into the high-quality development of enterprises.

# 2. Theoretical Analysis and Research Content and Hypothesis

# 2.1 Research the Theoretical Basis

2.1.2 The theory of information asymmetry The existence of information asymmetry makes it difficult for information users to fully understand the environmental performance of enterprises from the annual report, and it is also impossible to effectively supervise the environmental management behavior of enterprises (Dai & Shi, 2019)<sup>[2]</sup>. According to the research results that can be collected at present, the combination of enterprise financial performance and good ESG system evaluation performance can reduce the degree of information asymmetry held by participants in economic activities. At the same time, it effectively reduces the risk of "lemon market effect" and improves the accuracy of enterprise investment decision-making.

2.1.2 Stakeholder theory

According to Zhang & Qin (2024) <sup>[3]</sup>, the improvement of corporate governance ability can also effectively avoid the risks that may be brought about by improper operation and lack of system, making enterprises pay more attention to cooperation with stakeholders and realize the common value of society. For example, when the investment subject chooses the investment direction, the ESG rating system can provide it with the evaluation of the enterprise in the three dimensions of Environmental, Social and Governance. The channels for investors to obtain information are also richer, and the evaluation of the target enterprise is also more Become perfect. From the perspective of the enterprise itself, the sustainable development of the enterprise depends on the effective satisfaction and response of the enterprise to the interests of various stakeholders. Therefore, ESG has gradually become an important "window" for effective communication between enterprises and their stakeholders.

2.1.3 Information transmission theory

A good and ideal ESG rating system can deliver higher-quality enterprise information. The financial statements disclosed by listed companies still have the disadvantage of information non-transparency. The ESG rating system can disclose enterprise data more comprehensively and transparently, the information transmitted has more reference value, and the accuracy and useability of financial performance information disclosed by enterprises are also stronger.

# 2.2 Research Content

### 2.2.1 Research feasibility

It can be seen from the above introduction that ESG has received wide attention, but by querving the research results of the academic community, the research results on the relationship between ESG and financial performance and the impact mechanism are not rich enough. In previous economic activities, most financial information users paid more attention to the analysis of performance indicators in enterprise financial statements, and then implemented investment decisions. The decision-making effect may be affected by many factors. For example, according to the results of Blasi et al. (2018)<sup>[4]</sup>, the performance of enterprises is to improve shareholder returns, reduce the risk of

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enterprise debt repayment, and improve the performance of enterprises. After collecting the enterprise ESG score data and analyzing the enterprise's financial performance indicators, the research argument "ESG index will have an impact on the financial performance of enterprises" in this article is of feasibility and significance.

2.2.2 Research on ESG performance evaluation of enterprises based on machine learning

The study of machine learning application is embodied in the use of EXCEL data calculation and screening and STATA analysis. First, EXCEL is used to screen data and calculate relevant indicators; secondly, STATA is used to describe and test the data, and then an effect model suitable for this data study is selected based on the test results; finally, the impact between variables is explained, and the data results are visualized to confirm the research hypothesis.

#### 2.3 Research Hypothesis

Based on the above theoretical foundation and research content elaboration, the following research hypothesis H is proposed: the better the ESG performance, the more superior the enterprise's financial performance.

#### 3. Data Sources and Research Design

### 3.1 Data Description

#### 3.1.1 Data sources

The data used in this study are primarily sourced from the CSMART database and the publicly available ESG rating data of Shanghai Huazheng Index Information Service for enterprises. The sample size of this study is 10,685, encompassing information data from 2,137 manufacturing enterprises spanning from 2019 to 2023. Following Duque and Aguilera (2021), Return on Assets (ROA) is adopted as the proxy variable for accounting performance. The ESG performance of enterprises is set as the core explanatory variable. A series of control variables that may affect the financial performance of enterprises are identified based on the research analysis of Li &Feng (2022) <sup>[5]</sup>, Li Kerui (2023) <sup>[6]</sup>, and Zheng &Liu (2023)<sup>[7]</sup>.

3.1.2 Variable setting and descriptive statistics To analyze the basic statistical characteristics of the sample data, descriptive statistical processing was conducted on the samples using Stata 17 data analysis software. The results are presented in the following table 2.

(1) Dependent Variables. Return on Assets (ROA): The range is from -1.635 to 1.742, with an average of 0.051 and a standard deviation of 0.0936. These data indicate that there is relatively weak variability in the total asset turnover rates among enterprises, while there is significant variability in research investment amounts. The variability in ROA is particularly strong.

(2) Explanatory Variable: ESG Score (ESG). The range for the sampled enterprises' ESG scores is from 1 to 8, with an average of 4.167 and a standard deviation of 1.024. This indicates that there is a significant difference in ESG scores among enterprises, reflecting varying levels of ESG governance systems, with some performing exceptionally well and others poorly.

	18	Die 1. variable So	etting		
Variable Type	Variable Name	Variable Symbol	Variable Definition		
Explained Variable	Explained Variable Explained Variable		ROA = Net Profit / Average Total Assets		
Explanatory Variable	Corporate ESG Performance	ESG	Huazheng ESG Rating from 2019 to 2023		
	Cash Asset Ratio	CAR	Ending Cash and Cash Equivalents Balance / Total Assets		
	Firm Size	S1	ln (Total Assets at the End of the Period+1)		
Control Variables	Debt-to-Asset Ratio	DAR	Total Liabilities / Total Assets		
	Total Asset Turnover Ratio	ATR	Operating Revenue / Average Total Assets		
	Firm Growth	Growth	Increase in Operating Revenue This Year / Total Operating Revenue Last Year		
	Research and Development	RD	In (Amount Invested in Research and Development)		

Table 1. Variable Setting

Journal of Economics and Law (ISSN: 3005-5768) Vol. 1 No. 5, 2024

	Investment Ame	ount						
	Corporate	T	ті		1. Commente Innortée			
	Innovation	1.	L	In Corporate Innovation				
Table 2. Descriptive Statistics								
	(1)	(2)	(3	)	(4)	(5)		
VARIABLES	N	Mean	Sd		Min	Max		
roa	10,685	0.0510	0.0936		-1.635	1.742		
rd	10,685	18.51	1.422		11.37	24.41		
atr	10,685	0.00655	0.00373		0.000239	0.0475		
dar	10,685	0.413	0.1	89	0.0143	2.849		
esg	10,685	4.167	1.0	24	1	8		
car	10,685	0.148	0.1	08	0.000555	0.784		
s1	10,685	22.34	1.2	11	17.95	27.64		
ti	10,685	2.052	1.6	07	0	8.914		
growth	10,685	0.119	0.4	29	-0.970	22.21		

(3) Control Variables. Total Asset Turnover Ratio (ATR): The range is from 0.000239 to 0.0475, with an average of 0.00655 and a standard deviation of 0.00373. Research and Development Investment Amount (RD): The range is from 11.37 to 24.41, with an average of 18.51 and a standard deviation of 1.422, indicating significant variability in research investment among enterprises. Cash Asset Ratio (CAR): The range is from 0.000555 to 0.784, with an average of 0.148 and a standard deviation of 0.108. This suggests that the cash ratios among the sampled enterprises are generally low and show little variability, as evidenced by a stable trend in variance line charts. Debt-to-Asset Ratio (DAR) (repeated for comparison): As mentioned earlier, the range, average, and standard deviation indicate moderate levels of liabilities without significant variability among enterprises. Firm Size (S1): The range is from 17.95 to 27.64, with an average of 22.34 and a standard deviation of 1.211, indicating significant size variability among the sampled enterprises. Technological Innovation (TI): Representing research and development expenditures, the average is 22.34 (note: this average value seems to be a repetition of Firm Size, which is likely a mistake; assuming the correct mean for TI is not provided, we acknowledge the presence of R&D projects in 10,685 manufacturing enterprises, all contributing to their ESG performance scores). Firm Growth (Growth): This indicator measures whether enterprises have achieved revenue growth in the current period. The minimum value of -0.970 indicates that some enterprises experienced a decrease in revenue

from 2019 to 2023, with the reasons for this decrease requiring further investigation. The maximum value of 22.21 suggests rapid and effective revenue growth for some enterprises. Analyzing enterprises with high Growth values reveals a correlation with better ESG performance.

3.1.3 Research design

Firstly, Excel spreadsheets were utilized for data screening, specifically targeting ST (Special Treatment) enterprises that are on the verge of delisting. This step aimed to adhere to the assumption of continuous business operations and ensure that the research enterprises align more closely with the concept of high-quality and sustainable development.

Secondly, STATA software was employed for machine-based research analysis of the data. The process involved several steps (Figure 1):

(1) Data Preparation and Formatting. The data were converted into a numerical format and defined as panel data in the STATA data editor. Additionally, the Chinese headers were translated into English characters to enhance the readability of the analysis results.

(2) Multicollinearity Testing. A multicollinearity test was conducted on the research data to validate the suitability of the selected sample data and minimize potential errors in subsequent modeling.

(3) Modeling and Data Execution. Based on the defined variables, modeling and data execution were performed to investigate the relationships among the data and the underlying mechanism of the core explanatory variable, ESG (Environmental, Social, and Governance).

(4) Result Interpretation and Recommendation.

The research findings were presented, validating the aforementioned research hypotheses. Furthermore, insights and relevant

Data Filtering



#### 4. Data Empirical Analysis and Results

#### 4.1 Data Validation

Table 3. Multiple Collinearity VIF (Variance Inflation Factor) Test

VIF	1/VIF
ESG 1.230	0.814561
TI 1.200	0.829939
S1 2.680	0.350235
CAR 1.160	0.858588
RD 2.950	0.338827
DAR 1.420	0.706448
ATR 1.100	0.911362
Growth 1.030	0.971034
Mean VIF 1.620	

(1) Multicollinearity Testing (Table 3). Performing multiple collinearity tests on data aims to examine whether there exists a high degree of correlation among the explanatory variables (independent variables) in the defined relational formula of the data model. Through the multiple collinearity test on the data, it can be seen that the Mean VIF measurement value is 1.620, which is less than the acceptable threshold of 5, and all 1/VIF academic suggestions were proposed from both macro and micro perspectives based on the study outcomes.



values are less than 1, indicating that the research sample data does not exhibit multicollinearity correlation in a strict sense.

(2) Correlation Analysis (Table 4) Correlation analysis aims to study the degree of correlation between selected data samples. The results of correlation analysis in STATA use the number of "\*" to indicate the degree of correlation between variables.

Based on the results of the data correlation test. there exists a high degree of correlation between the core explanatory variable ESG and the explained variable ROA. Specifically, the ESG index shows a significant positive correlation with the control variables ATR, CAR, TI, RD, Growth, and S1, indicating a substantial positive impact. In contrast, it exhibits a high negative correlation with DAR. Therefore, through correlation analysis, we can conclude that ESG has a meaningful impact on enhancing corporate financial performance indicators. Good ESG performance contributes to improving a company's development capabilities, profitability, operational efficiency, and reducing its debt repayment risks.

	roa	esg	atr	car	ti	rd	dar
roa	1						
esg	0.210***	1					
atr	0.236***	0.066***	1				
car	0.224***	0.160***	0.006	1			
ti	0.084***	0.269***	0.069***	0.064***	1		
rd	0.127***	0.281***	0.213***	-0.018*	0.352***	1	
dar	-0.351***	-0.152***	0.174***	-0.348***	0.091***	0.283***	1
growth	0.333***	0.015	0.167***	0.028***	0.030***	0.041***	0.013
s1	0.123***	0.236***	0.174***	-0.071***	0.226***	0.788***	0.365***
growth	s1						
growth	1						
s1	0.024**	1					

 Table 4. The Results of Correlation Analysis

# 4.2 Regression Analysis and Mechanism Research

Based on the aforementioned correlation analysis, we can infer that there is a significant correlation between the ESG index and corporate financial performance. Therefore, building upon this correlation analysis, this paper will conduct a Hausman test to select an appropriate regression model. Through examining the influence relationships among the data, we aim to validate the hypotheses and arguments presented in this paper.

(1) Hausman Test (Table 5). To determine whether the effects of the ESG index and control variables on financial performance indicators are fixed or random, we employ the Hausman Test. Our research approach is as follows: First, we establish a model with random effects. Then, we test whether this model satisfies the assumption that individual effects are uncorrelated with explanatory variables. If the assumption is satisfied, we confirm the model as having random effects and establish a Random Effects (RE) model. If not, we select a model with fixed effects and establish a Fixed Effects (FE) model.

Table 5. Hausman Test Results

	Coef.
Chi-square test value	242.94
P-value	0.0000

According to the results, Prob>chi2 = 0.0000, which is less than 0.1. Therefore, we choose the fixed effects model and proceed with the subsequent regression analysis using the fixed effects model with year dummies.

(2) Regression Analysis (Table 6). To examine the mechanism of how the ESG index affects corporate financial performance, this paper constructs the following regression model:

 $CFP_{it} = \beta_0 + \beta_1 ESG_{it} + \beta_n CVs_{it} + \sum_i Symbol_i + \sum_i Year_i + \varepsilon_{it}$ 

Where CFP<sub>it</sub> represents corporate financial performance,  $\beta_0$  is the intercept term,  $\beta_n$  (n=1, 2, 3, 4, ...) are the coefficients of the respective variables, CV<sub>sit</sub> are the predetermined control variables, Symbol<sub>j</sub> and Year<sub>i</sub> represent the industry code of the sample and the fixed effects of the year respectively, and finally,  $\epsilon_{it}$  serves as the error term.

Based on the empirical research analysis by Zhang&Qin (2024)<sup>[8]</sup>, we set Return on Assets (ROA) as the representative financial performance indicator (CFP) and proceed with the benchmark regression analysis (Table 6).

Based on the benchmark regression results in Table, when Return on Assets (ROA) is used as the proxy variable for financial performance (i.e., the explained variable), the regression coefficient of the core explanatory variable ESG is 0.019, which is positively significant at the 1% level ( $\beta$ =0.019, t=15.6471). This indicates that better ESG performance leads to better corporate financial performance. The second column of the table shows the regression results after adding the bidirectional fixed effects of industry and year, with the ESG regression coefficient being 0.001 and significant at the 1% level. The third column presents the regression results after adding the control variable ATR, where the ESG regression coefficient is 0.002 and positively significant at the 1% level ( $\beta$ =0.002, t=0.319). This suggests that under the influence of the ESG index, the higher the asset turnover ratio of a company, the better its financial performance. Additionally, the increase in R2 from 0.044 to 0.453 indicates that the regression fit improves after adding the control variable ATR. The fourth column displays the regression results after adding the control variable DAR, with the ESG regression coefficient being -0.003, indicating a negative correlation ( $\beta$ =-0.003, t=-2.147). This suggests that at the 1% confidence level, a lower debt-to-asset ratio (DAR) is associated with better ESG performance. The fifth column shows that after adding the control variable CAR, the ESG regression coefficient is 0.003 and positively correlated at the 1% level  $(\beta=0.003, t=2.220)$ . Similar interpretations apply to the other control variables, which are not repeated here.

Therefore, the benchmark regression results support the hypothesis H that better ESG performance leads to better corporate financial performance.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	ROA	ROA	ROA	ROA	ROA	ROA	ROA
ESG	0.019***	0.001***	0.002***	-0.003***	0.003***	-0.003**	-0.002***
	(15.6471)	(0.703)	(0.319)	(-2.147)	(2.220)	(-2.212)	(-1.741)
ATR			19.046***	18.895***	18.789***	18.909***	14.272***
			(8.424)	(8.747)	(8.757)	(8.549)	(6.177)
DAR				-0.313***	-0.303***	-0.303	-0.316***
				(-6.763)	(-6.350)	(-6.282)	(-6.891)
CAR					0.064***	0.064***	0.056***

Table 6. Results of the Benchmark Regression Analysis

Journal of Economics and Law (ISSN: 3005-5768) Vol. 1 No. 5, 2024

					(3.133)	(3.137)	(2.836)
RD						-0.002	-0.001
						(-0.564)	(-0.272)
Growth							0.044***
							(3.207)
cons	0.029***	0.036***	0.078***	-0.095***	0.087***	0.128*	0.119*
	(5.3350)	(2.0946)	(1.2044)	(-1.1924)	(1.3171)	(1.765)	(1.680)
Ν	10685	10685	10685	10685	10685	10685	10685
$\mathbb{R}^2$	0.044	0.360	0.453	0.539	0.540	0.540	0.572
Symbol fe	NO	YES	YES	YES	YES	YES	YES
Year fe	NO	YES	YES	YES	YES	YES	YES

Note: t statistics are in parentheses; \* p<0.1, \*\* p<0.05, \*\*\* p<0.01

#### 5. Extended Research

Drawing inspiration from the research findings of Wang&Yang (2022)<sup>[9]</sup>, which suggest that the ESG index has a more pronounced positive effect on the value of polluting enterprises, this extended research aims to examine the extent to which ESG performance affects corporate financial performance in environmentally friendly manufacturing enterprises versus polluting manufacturing enterprises. Using STATA software, we conduct a heterogeneity test on the data. We adopt a 0-1 distribution statistic. where 1 represents an friendly environmentally enterprise (eco-friendly), and 0 represents a polluting manufacturing enterprise (Table 7). Through this heterogeneity test of different types of manufacturing enterprises, we aim to achieve the goal of optimizing corporate financial performance through ESG practices from the

perspective of high-quality development.

# Table 7. Heterogeneity Test 0-1 DefinitionTable

Ponuting
0

Based on the heterogeneity test conducted using STATA, it can be observed that the ESG index has a stronger positive effect on the financial performance of polluting enterprises environmentally compared to friendly enterprises. Therefore, polluting enterprises should focus on improving their ESG scores, which can effectively promote the optimization of their financial performance and facilitate corporate transformation. From the research analysis results, it is evident that good ESG performance has a significant impact on both polluting and environmentally friendly enterprises in terms of their solvency, profitability, operational capability, and development potential (Table 8).

	Table 6. Heterogeneity Test Results									
	esg	atr	car	dar	growth	Ti	S1	cons	Ν	
ROA (0)	-0.00623**	9.659***	0.194***	0.319***	0.0590***	-0.006***	0.0571***	-1.121***	2790	
	(-3.18)	(10.53)	(7.13)	(-26.28)	(12.49)	(-2.84)	(-9.94)	(-8.39)		
ROA(1)	-0.00135	16.38***	0.0119	-0.305***	0.0370***	-0.00106	0.0282	-0.553***	7895	
	(-1.10)	(29.52)	(1.03)	(-32.51)	(20.49)	(-0.97)	(-8.54)	(-7.86)		
	T statistics in parentheses $p<0.05$ , $p<0.01$ , $p<0.001$									

Table 8. Heterogeneity Test Results

# 6. Research Conclusions and Recommendations

#### **6.1 Research Conclusions**

Based on the analysis of relevant data from 10,685 listed manufacturing companies in the selected sample, this study concludes that good ESG performance can have a significant impact on corporate financial performance. The impacts are manifested in the following ways: First, ESG can significantly reflect a company's profitability. Second, companies

with higher ESG scores tend to have lower debt-to-asset ratios. Third, companies with higher ESG scores exhibit higher development capabilities and operational efficiency. Fourth, when comparing polluting enterprises with environmentally friendly enterprises, the heterogeneity analysis results show that ESG has a more pronounced positive effect on the financial performance of polluting enterprises. Therefore, heavily polluting enterprises should pay more attention to transformation and improving their ESG scores.

These research conclusions demonstrate that

from the perspective of high-quality development, ESG has a positive influence on corporate financial performance, indicating that companies with better ESG performance tend to have superior financial performance.

# 6.2 Recommendations

(1) According to the above and existing research results, ESG is the core framework pursue enterprises to for sustainable development <sup>[10]</sup>. The research believes that enterprises should pay attention to their performance ability in the three dimensions of environment, society and corporate governance in the process of development. ESG index can better disclose the development status of enterprises, and good ESG performance can further prove that enterprises have good financial performance, which can provide more perfect enterprise evaluation for information users and promote their own competitiveness.

(2) Establish an indicator evaluation system that combines corporate ESG and financial performance. From the current state of corporate development, it is evident that most of the information available to stakeholders comes from financial statements, but sole financial information no longer meets the needs of stakeholders. At the same time, ESG is still in an ascending phase of development in China and holds great potential for future growth. Therefore, establishing an ESG and corporate financial performance evaluation system is valuable. The establishment of such a system implies that companies can better disclose information, represents self-improvement and innovation in the process of corporate development, and is an effective way to promote sustainable and high-quality development of enterprises.

(3) Focus on high-quality and sustainable development. From a macro perspective, the country has a proactive stance towards high-quality sustainable development, and related "green" and "sustainable" development practices are continually being optimized and improved. From a micro perspective, companies themselves should not solely focus on short-term profit gains but also enhance their corporate social responsibility awareness and strive for sustainable and high-quality development. This is specifically manifested in the transformation of heavily polluting enterprises and the reduction of emissions of polluting substances in production. In the current phase of economic uncertainty, economic development is shifting towards a "green and sustainable" direction. Therefore, it is crucial to seize the current development opportunities and transform current development challenges into future growth opportunities.

### Acknowledgments

This work was supported by Guangxi College Students innovation and entrepreneurship project titled "the analysis of the impact of enterprise ESG performance on high-quality development" (Project number: 202310595004).

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