Financial Performance and the Circular Economy: The Moderating Role of the CSR Committee[♦]

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Abstract

The purpose of this paper is to investigate the relationship between corporate circular economy (CE) practices and financial performance, and the moderating effect of corporate social responsibility (CSR) committee among European listed companies.

Based on a sample of 567 firms over the period 2019–2023, the study found that financial performance is positively associated with CE scores, suggesting that it is an important driver of CE practices.

Furthermore, the study found that CSR committee positively moderate the association between financial performance and CE scores, facilitating the integration sustainability into companies.

Keywords: Circular Economy, CSR, Financial Performance, Listed Companies, Europe.

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Performance finanziaria ed economia circolare: il ruolo moderatore del Comitato CSR

Sommario

Lo scopo di questo articolo è investigare la relazione tra le pratiche aziendali di economia circolare (EC) e la performance finanziaria, considerando l'effetto di moderazione del comitato CSR (Corporate Social Responsibility) nel contesto delle società europee quotate.

Analizzando un campione di 567 imprese nel periodo 2019-2023, lo studio mostra come la performance finanziaria sia positivamente associata ai livelli di EC, suggerendo che essa sia un importante fattore trainante delle pratiche di EC.

Inoltre, lo studio rileva che i comitati CSR moderano positivamente l'associazione tra la performance finanziaria e i livelli di CE, facilitando l'integrazione della sostenibilità nelle strategie aziendali.

Parole chiave: Economia Circolare, RSI, Performance Finanziaria, Società Quotate, Europa.

1. Introduction

Recent events have highlighted the need to reshape traditional management methods, prompting companies to align their production processes with sustainability principles (Sciarelli, 2018). Value chains are experiencing a sustainability transition, with governments and global regulations imposing environmental restrictions and closely monitoring the adoption of ecological practices (De Giovanni and Cariola, 2021).

The circular economy (CE), rooted in the principles of reduce, reuse, recycle, and recover (4Rs), has emerged as a strategic approach to align economic growth with environmental sustainability (Kirchherr *et al*., 2017).

The European Commission has adopted strategic actions aimed at stimulating the transition to a circular economy, a model that promotes resource efficiency and long-term sustainability.

These initiatives align with the United Nations' 2030 Agenda for Sustainable Development, which sets global goals to reduce environmental impact and promote inclusive, green growth.

In addition to this, the European Commission has developed its own strategy, the European Green Deal, which aims to achieve ambitious sustainability targets. These include reaching the goal of zero pollution, promoting sustainable industrial practices, and designing products with longer lifespans that can be easily reused or recycled.

In 2020, the European Commission adopted an updated Circular Economy Action Plan (CEAP), which further encouraged specific initiatives to support the long-term transition to a circular economy. This revised plan introduced more targeted measures to promote sustainability in key sectors, including production, waste management, and consumption.

Despite growing pressure, the application of CE practices remains limited to a few companies and sectors.

In this context, there is scientific interest in understanding the factors that can facilitate the implementation of CE practices.

The purpose of this manuscript is to explore potential drivers of CE practices: financial performance and CSR committee.

In particular, the study aims to investigate the relationship between corporate CE practices and financial performance, considering the moderating effect of corporate social responsibility (CSR) committee among European listed companies.

This paper is organized as follows. Section 2 presents the literature review and research hypotheses, section 3 explains the methodology, section 4 describes the results, and section 5 concludes.

2. Theoretical Background and Research Hypotheses

2.1 CE and Corporate Financial Performance

The adoption of CE practices has been shown to influence corporate financial performance (CFP) through mechanisms such as cost reduction, improved operational efficiency, and enhanced reputation (Rodríguez-González *et al*., 2022). Mazzucchelli *et al*. (2022) demonstrated that waste treatment and recycling initiatives contribute to financial performance by fostering positive stakeholder perceptions. Moreover, Esposito *et al*. (2024) identified the role of stakeholder engagement as a critical multiplier in realising CE benefits.

Despite these promising findings, the relationship between CE and CFP in assessment processes remains complex (Sciarelli *et al*., 2023; Berg *et al*., 2022; Landi *et al*., 2022). Some studies have suggested that the adoption of CE entails significant initial costs and operational adjustments that may offset potential financial gains in the short term (Blasi *et al*., 2021; Esposito *et al*., 2024). Moreover, empirical evidence on the long-term financial outcomes of CE practices is mixed, with several studies highlighting both positive effects (Rodríguez-González *et al*., 2022) and limited impacts (Sarfraz *et al*., 2023). These discrepancies underscore the need to investigate

the mediating and moderating factors that influence the success of CE initiatives (Palea *et al*., 2023; Kwarteng *et al*., 2022).

2.2 The Role of CSR and Stakeholder Engagement

CSR plays a central role in embedding CE principles within broader corporate strategies. CSR initiatives provide a framework for integrating environmental and social objectives into business practices, thereby enhancing the credibility and effectiveness of CE efforts (Mazzucchelli *et al*., 2022; Esposito *et al*., 2024).

Governance mechanisms, such as CSR committees, are relevant in this process, ensuring alignment between sustainability goals and corporate strategies (Elamer and Boulhaga, 2024). According to Mazzucchelli *et al*. (2022), CSR committees act as key enablers by institutionalising sustainability practices and facilitating their communication with external stakeholders, thereby enhancing a firm's market reputation.

Stakeholder engagement is essential for legitimising CE practices and ensuring stakeholder management approaches (Mazzucchelli *et al*., 2022; Esposito *et al*., 2024). Firms that actively engage stakeholders in their CE strategies not only gain their trust but also benefit from improved collaboration and reduced resistance to change. For instance, Esposito *et al*. (2024) highlighted that stakeholder engagement amplifies the financial and reputational benefits of CE initiatives, while Rodríguez-González *et al*. (2022) emphasised the role of sustainable supply chain management in reinforcing these outcomes. Furthermore, the role of organisational culture in supporting CE adoption cannot be overlooked. Kwarteng *et al*. (2022) noted that a strong organisational culture-characterised by adaptability, shared values, and internal cohesion-facilitates the successful implementation of CE practices. This is consistent with the findings of Blasi *et al*. (2021), who demonstrated that CE communication strategies, such as transparent reporting and stakeholder dialogue, significantly improve financial performance by aligning internal and external stakeholder expectations.

2.3 Gaps in the Literature

The following table summarises the main gaps identified in the literature on the relationship between CE practices and CFP.

These gaps highlight the need for further research to take a more holistic approach, integrating insights from CSR, stakeholder theory, and organisa-

tional behaviour, while using standardised metrics to better understand the dynamics of CE practices and their financial implications.

The existing literature highlights the potential of CE practices to improve financial performance (Mazzucchelli *et al*., 2022; Esposito *et al*., 2024). However, mixed empirical evidence has suggested that while CE can enhance operational efficiency and reputational capital, its financial benefits often depend on specific contextual and organisational factors, such as corporate governance and stakeholder dynamics (Kwarteng *et al*., 2022; Sarfraz *et al*., 2023, Vuppuluri *et al*., 2024). It is critical to understand the role of CSR governance, particularly CSR committees, in shaping these outcomes. As highlighted by Mazzucchelli *et al*. (2022) and Esposito *et al*. (2024), CSR committees serve as important governance bodies that institutionalise sustainability practices and align them with financial objectives, thereby promoting both legitimacy and trust among stakeholders.

Table 1 – Gaps

Gap	*Remarks*	*References*
Inconsistent evidence on financial outcomes	Mixed evidence on the financial impact of CE practices, with challenges arising from high implementation costs and context-specific factors.	Mazzucchelli *et al*. (2022) Esposito *et al*. (2024) Sarfraz *et al*. (2023)
Limited research on mediating and moderating factors	Few studies have investigated how brand reputation, CSR committees, organisational culture, and stakeholder engagement influence the CE–CFP relationship.	Mazzucchelli *et al*. (2022) Kwarteng *et al*. (2022) Esposito *et al*. (2024)
Fragmented metrics for measuring CE performance	Lack of standardised tools, such as ESG-based indices, to compare companies across sectors and territories.	Esposito *et al*. (2024) Kirchherr *et al*. (2017) Landi *et al*. (2022)
Underexplored governance mechanisms	Insufficient focus on the role of CSR committees, sustainability managers, and other governance models in the adoption of CE to amplify its financial impact.	Mazzucchelli *et al*. (2022) Esposito *et al*. (2024) Elamer and Boulhaga (2024)
Geographical and contextual limitations	Predominantly focused on developed economies, with limited insights into emerging markets and resource-constrained contexts where CE adoption faces unique challenges.	Kwarteng *et al*. (2022) Sarfraz *et al*. (2023) Berg *et al*. (2022) Sciarelli *et al*. (2023)

Building on these insights, this study seeks to address two key research questions. First, it examined whether financial performance is positively associated with CE practices, given the existing but fragmented evidence on this relationship.

Hp1: Financial performance is positively associated with CE.

Second, it explored whether CSR committees positively moderate this association by improving the financial outcomes of CE practices by ensuring their alignment with organisational strategies and stakeholder expectations.

Hp2: The CSR committee positively moderates the association between financial performance and CE.

By addressing these questions, the research aimed to fill critical gaps in the literature, particularly the limited exploration of moderating factors such as CSR governance, and to provide a more nuanced understanding of the dynamics among CE, financial performance, and governance models. These research questions not only involved a more holistic approach to the study of CE (Palea *et al*., 2023; Blasi *et al*., 2021) but also sought to contribute to the ongoing debate on the strategic integration of sustainability practices within corporate frameworks.

3. Research Design

3.1 Sample and Data

The hypotheses were tested using a sample of nonfinancial listed EU firms, considering a five-year period (from 2019 to 2023). Data were collected from the from LSEG database (formerly known as Refinitiv Eikon database). After excluding companies with missing data, the final sample consisted of 567 firms with 2,835 firm-year observations. The research steps for sample selection are reported in Table 2.

Table 2 – Sample selection

Panel A: Steps of sample construction		
Research construction steps	Banks	Bank-year observations
Non-financial EU firms with no missing data for binary variables used to measure CE score	1,242	6,210
Missing data for interest and control variables	675	3,375
Final sample	567	2,835

Notes: Table 2 provides the research steps of the sample selection procedure.

3.2 Regression Model

The hypotheses were tested by estimating an ordered logit regression model, as follows:

$$CEit = \beta 0 + \beta 1FPit + \beta 2CSR\ COMMITTEEit + \beta 3FPi,t^{*}CSR\ COMMITTEEit + \beta 4SIZEit + \beta 5LEVERAGEit + \beta 6BOARDit + \beta 7INDEPENDENTit + \beta 8BGDit + \beta 9CEO\ DUALITYit + \sum Sector + \sum Country + \sum Year + \varepsilon it \quad (1)$$

To measure the dependent variable, four binary variables were considered separately, equal to 1 if a firm adopted an environmental supply chain policy, a water efficiency policy, an energy efficiency policy, and a resource reduction policy. The comprehensive CE score (CEit) was the sum of all four binary variables and ranged from 0 to 4.

The independent variable for testing Hp1 was financial performance (FPit), alternatively proxied by the return on asset ratio (ROAit) as an accounting-based measure and market value per share (MVPSit) as a market-based measure. In doing so, we captured different perspectives on financial performance, given the historical performance (ROAit) and future investor expectations (MVPSit) (Florio and Leoni, 2017). Consistent with Hp1, we expected a significant positive coefficient on FPit.

Table 3 – Variables

Variable		***Definition***
$CE_{i,t}$	=	Equal to the sum of four binary variables linked to the adoption of certain CE policies (environmental supply chain policy, water efficiency policy, energy efficiency policy and resource reduction policy)
$FP_{i,t}$	=	Equal to returns on assets or market value per share
$CSR\ Committee_{i,t}$	=	Equal to 1 if the firm has a committee focused on CSR initiatives and to 0, otherwise.
$Size_{i,t}$	=	The natural logarithm of total assets.
$Levearge_{i,t}$	=	The ratio of total debt scaled by total assets.
$Board_{i,t}$	=	The natural logarithm of the total number of directors on board.
$Independent\ directors_{i,t}$	=	The percentage of independent directors scaled by the total number of directors on board.
$BGD_{i,t}$	=	The percentage of women directors scaled by the total number of directors on board.
$CEO\ duality_{i,t}$	=	Equal to1 if the separation of the chief executive officer and board chairperson exists and to 0, otherwise.

To test Hp2, we included the CSR committee dummy variable (CSR COMMITTEEit) and its interaction with FPit (FPit*CSR COMMITTEEit). We expected a significant and positive coefficient on the interaction term, consistent with the assumption that the relationship between FPit and CEit is stronger when a CSR committee is appointed on the board. The model also included two sets of control variables that may affect the CE score. The first

set included financial indicators, namely firm size (SIZEit) and leverage (LEVERAGEit). The second set of control variables took into account corporate governance mechanisms, including the number of board directors (BOARDit), the percentage of independent directors (INDEPENDENTi,t), the percentage of female members (BGDit), and CEO duality (CEO DUALITYit). All variables included in the model are defined in the Table 3.

4. Empirical Results

Table 4 shows the descriptive statistics for the dependent and independent variables. The mean value of CE_{it} is 3.428, suggesting that most of the sampled firms developed policies in line with CE practices. Regarding FP_{it}, we found that ROA_{it} is on average equal to 3%, while $MVPS_{it}$ is on average equal to 72.774. The mean value of CSR $COMMITTEE_{it}$ is 79.9%, suggesting that most of the sampled firms had a committee specialising in CSR initiatives.

Table 4 – Descriptive statistics

Variable	*N*	*SD*	*Mean*	*P25*	*P50*	*P75*
CE_{it}	2,835	0.927	3.428	3	4	4
ROA_{it}	2,835	0.154	0.030	0.013	0.039	0.070
$MVPS_{it}$	2,835	39.101	72.774	8.064	21.265	55.162
$CSR\ COMMITTEE_{it}$	2,835	0.401	0.799	1	1	1
$SIZE_{it}$	2,835	1.698	22.194	21.127	22.228	23.278
$LEVERAGE_{it}$	2,835	0.231	0.296	0.169	0.285	0.398
$BOARD_{it}$	2,835	0.384	2.278	1.945	2.302	2.564
BGD_{it}	2,835	12.974	33.967	27.270	33.330	42.860
$INDEPENDENT_{it}$	2,835	27.960	48.460	26.710	44.710	70.000
$CEO\ DUALITY_{it}$	2,835	0.436	0.255	0	0	1

Table 5 presents the Pearson correlation matrix for the variables included in the multivariate analysis. Since the correlations between independent variables are below 0.80 (Gujarati and Porter, 2009), we concluded that there was no multicollinearity effect in Model (1).

Table 6 shows the regression analysis for testing the study hypotheses. The results show a significantly positive coefficient on FP_{it} for both proxies [see Columns (1) and (3)], suggesting that financial performance is a key driver of CE practices at the firm level. We found support for Hp1. Regarding the CSR $COMMITTEE_{it}$ variable, we observed a positive and statistically significant coefficient on β2 [see columns (2)– (4)].

Table 5 – Correlation matrix

Variable	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
(1) CE_{it}	1								
(2) ROA_{it}	0.190*	1							
(3) CSR $COMMITTEE_{it}$	0.412*	0.129*	1						
(4) $SIZE_{it}$	0.451*	0.175*	0.382*	1					
(5) $LEVERAGE_{it}$	0.022	-0.455*	0.033	0.063*	1				
(6) $BOARD_{it}$	0.345*	0.063*	0.289*	0.564*	0.077*	1			
(7) BGD_{it}	0.176*	0.046*	0.181*	0.137*	0.017	0.137*	1		
(8) $INDEPENDENT_{it}$	-0.017	-0.038*	0.059*	0.048*	-0.017	-0.213*	-0.005	1	
(9) CEO $DUALITY_{it}$	0.085*	0.032	0.093*	0.081*	0.008	0.165*	0.120*	-0.090*	1

*Notes: This table reports correlation matrix. *denotes significance at the 5 percent level (two tailed).*

Table 6 – Results

	$FP_{it} = ROA_{it}$				$FP_{it} = MVPS_{it}$			
	(1)		(2)		(3)		(4)	
Variable	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.
FP_{it}	1.038***	3.400	0.751***	3.230	0.940***	2.940	0.582***	2.810
$CSR\ COMMITTEE_{it}$			0.884***	7.630			0.874***	7.690
FP_{it}* $CSR\ COMMITTEE_{it}$			0.754***	2.790			1.309***	2.580
$SIZE_{it}$	0.522***	13.630	0.467***	12.030	0.519***	13.430	0.467***	11.940
$LEVERAGE_{it}$	0.264	1.360	0.199	1.030	0.242	1.210	0.158	0.810
$BOARD_{it}$	0.681***	4.400	0.555***	3.580	0.703***	4.530	0.573***	3.680
BGD_{it}	0.015***	3.890	0.014***	3.720	0.016***	4.010	0.015***	3.810
$INDEPENDENT_{it}$	0.004**	2.480	0.002	1.500	0.004**	2.420	0.002	1.460
$CEO\ DUALITY_{it}$	0.219*	1.870	0.196	1.670	0.216*	1.840	0.185	1.570
Sector fixed effect	Yes		Yes		Yes		Yes	
Country fixed effect	Yes		Yes		Yes		Yes	
Year fixed effect	Yes		Yes		Yes		Yes	
Pseudo R^2	0.205		0.217		0.202		0.210	
N	2,835		2,835		2,835		2,835	

*Notes: This Table reports results of Model (1). The t-statistics are reported in parentheses. ***, **, and * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.*

This indicates that the presence of such a committee is also a key determinant of CE practices at the firm level. More importantly, we found a positive and statistically significant coefficient on β3, indicating that the association between FP_{it} and CE_{it} is stronger when a CSR committee is appointed on the board. As a result, the CSR committee positively moderates the association. We also found support for Hp2.

Regarding the control variables, we found that CEit is positively and significantly associated with $SIZE_{it}$, $BOARD_{it}$ and BGD_{it}.

To strengthen the causality between the independent and dependent variables and to address endogeneity concerns (Richardson *et al.,* 2013; Godos-Díez *et al.,* 2018), we reran Model (1) using the one firm-year lag values of the independent variable FP_{it}. The results are reported in Table 7.

Table 7 – Robustness test

	CE_{it}							
	$FP_{it-1} = ROA_{it-1}$				$FP_{it-1} = MVPS_{it-1}$			
	(1)		(2)		(3)		(4)	
Variable	***Coeff.***	***t-stat.***	***Coeff.***	***t-stat.***	***Coeff.***	***t-stat.***	***Coeff.***	***t-stat.***
FP_{it-1}	1.078***	3.550	0.072***	2.790	1.015**	3.880	0.719***	2.650
$CSR\ COMMITTEE_{it}$			0.862***	7.480			0.870***	7.650
$FP_{it-1}{}^{*}CSR\ COMMITTEE_{it}$			1.349***	2.400			1.454***	2.150
$SIZE_{it}$	0.540***	14.270	0.479***	12.520	0.522**	13.580	0.465***	11.940
$LEVERAGE_{it}$	-0.065	-0.410	-0.020	-0.130	0.205	1.090	0.162	0.880
$BOARD_{it}$	0.651***	4.220	0.529***	3.420	0.680**	4.390	0.576***	3.690
BGD_{it}	0.016***	4.070	0.015***	3.780	0.015**	3.970	0.015***	3.830
$INDEPENDENT_{it}$	0.004**	2.170	0.002	1.300	0.004*	2.410	0.002	1.470
$CEO\ DUALITY_{it}$	0.232*	1.980	0.195	1.660	0.220*	1.880	0.178	1.510
Sector fixed effect	Yes		Yes		Yes		Yes	
Country fixed effect	Yes		Yes		Yes		Yes	
Year fixed effect	Yes		Yes		Yes		Yes	
Pseudo R^2	0.203		0.216		0.200		0.209	
N	2,835		2,835		2,835		2,835	

Notes: This Table reports results of robustness test controlling for potential endogeneity issue of the main empirical model. The t-statistics are reported in parentheses. ***, **, *, *and* * *denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.*

The lag test largely confirmed the main results. More importantly, we observed a positive and significant coefficient on FPit and the interaction variable ($FPit^{*}CSR\ COMMITTEE_{it}$). As there were qualitatively unchanged inferences, we concluded that endogeneity issues were not critical in the sample.

5. Conclusion and Implications

The research shows interesting implications both theoretical and managerial. From a theoretical perspective, the study enriches studies on corporate governance mechanisms and sustainability showing how they may be tools to facilitate the implementation of the circular economy (Vuppuluri *et al*., 2024). Moreover, it advances studies on the relationship between the circular economy and financial performance (Blasi *et al*., 2021; Rodríguez-González *et al*., 2022; Esposito *et al*., 2024).

This research provides valuable insights for managers and decision-makers seeking to integrate CE practices. The positive link between corporate financial performance and CE practices suggests that firms with stronger financial positions are better able to implement sustainable business models. Financial health is relevant not only for shareholder value but also for the transition to circular business models. Financially strong firms can invest in research, innovation, and technologies that support resource efficiency and waste reduction. In addition, the CSR committee plays a positive role as a moderator between financial performance and CE practices. Managers should establish or strengthen CSR committees to integrate sustainability goals into their decision-making processes. These committees foster a sustainability-oriented corporate culture, increase internal accountability, and improve communication with external stakeholders. The findings of this study provide compelling evidence for the reverse causality between corporate sustainability and financial performance, as the analysis indicates that the availability of financial resources significantly enables a company to improve its sustainability performance.

Therefore, managers should recognise the combined role of financial resources and governance mechanisms in adopting CE practices that can support the transition to sustainable models while achieving long-term profitability and competitive advantage.

6. Limits and Future Research

This research provides valuable insights into the relationship between financial performance and the adoption of CE practices, but it has certain limitations. The CE score used may not fully capture the complexity of the practices adopted by firms and may overlook qualitative factors, such as innovation in business models or the long-term impact of strategies. Future research could address these limitations by including qualitative variables, such as sustainability culture, environmental leadership, and intellectual capital. In addition, future studies could explore other corporate governance tools, such as sustainability-linked compensation or specialised environmental management roles.

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