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ESG integration and financial outcomes in Mexican family firms: a pathway to sustainable growth

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Abstract

Purpose – This study aims to examine the impact of environmental, social and governance (ESG) practices on the financial performance of family-owned firms in Mexico. It investigates explicitly whether ESG integration leads to improved outcomes and how the unique governance structures of family firms moderate this relationship.

Design/methodology/approach – This study utilizes panel data from 128 Mexican listed companies between 2014 and 2022, employing a fixed-effects model to examine the relationship between ESG practices and financial performance, as measured by returns on equity (ROE), return on assets (ROA) and operating margin. Family ownership is analyzed as a moderating factor, and robustness checks include dynamic Generalized Method of Moments (GMM) models and winsorization to control for outliers.

Findings – The results show that family firms integrating ESG – particularly environmental initiatives – exhibit significantly higher ROE and operating margins than nonfamily firms. However, the effect on ROA is selective, appearing only in robustness and subsample analyses. ESG adoption within family firms offers partial performance benefits, primarily through environmental and governance practices, which align with their long-term orientation and socioemotional wealth priorities.

Originality/value – This paper contributes to the literature by offering empirical evidence from an emerging economy, highlighting the nuanced impact of ESG integration on family firms. It advances socioemotional wealth theory in the context of corporate governance and sustainability, offering practical insights for investors, policymakers and family business leaders.

Keywords ESG, Family firms, Mexico, Financial performance, Sociometional wealth

Paper type Research paper

Introduction

Globally, the emphasis on environmental, social and governance (ESG) practices has intensified, driven by stakeholder expectations for corporate responsibility, ethical governance and sustainable business practices (GSIA, 2023). Alongside government policies that encourage low-carbon innovations through taxes and subsidies, institutional investors in the capital markets are increasingly focusing on ESG principles (Jinga, 2021). Investors are urging their investee companies to reduce carbon emissions in anticipation of transitioning to a low-carbon economy, even in an emerging economy like Mexico (Elizondo *et al.*, 2017).

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However, some authors (McMullen and Bergman, 2017; Lisovsky, 2021) note that there are inherent contradictions in ESG implementation, where actions that benefit one aspect may have adverse effects on another. This complexity highlights the need for a nuanced understanding of ESG, especially in diverse cultural and economic contexts. For example, the integration of ESG within family businesses. While some family firms may leverage their long-term orientation to excel in sustainability initiatives (Hanna *et al.*, 2024), others may encounter challenges related to family dynamics, governance structures or resource limitations (Sharma and Sharma, 2011; Gomez-Mejia *et al.*, 2011). Other research has shown no clear or negative links between ESG practices and financial performance (Makni *et al.*, 2009; Nirino *et al.*, 2021), leaving the causality debate open (Barnett, 2007; Gillan *et al.*, 2021).

The purpose of this study is to investigate the relationship between ESG practices and financial performance in Mexican family-owned firms. This inquiry is grounded in growing academic debate about the actual financial and sustainability performance of family enterprises. Although family firms are often portrayed as natural allies of sustainable development due to their long-term orientation and commitment to a transgenerational legacy, recent research suggests that this relationship is more complex and context-dependent. While these firms may demonstrate a strong desire to preserve reputation and values across generations, this does not necessarily translate into higher levels of social or environmental responsibility (Cruz *et al.*, 2014; Gerlitz *et al.*, 2023). Consequently, the sustainability behavior of family firms cannot be assumed to be superior or inferior; instead, it must be understood as shaped by internal governance dynamics and external institutional pressures. Our study adopts this more nuanced perspective, recognizing both the potential and the limitations of family firms in contributing to ESG objectives.

Drawing on corporate governance and socioemotional wealth (SEW) theory, this study posits that family ownership provides a distinctive strategic context in which ESG practices can yield powerful performance outcomes. SEW theory suggests that family firms are motivated not only by financial returns but also by noneconomic goals such as preserving family legacy, identity and reputation (Berrone *et al.*, 2012; Heo *et al.*, 2024). In addition, concentrated ownership and active involvement in governance enable family firms to align ESG initiatives with broader organizational values, potentially reducing agency conflicts and reinforcing stewardship behavior. Furthermore, family firms in emerging markets often act as institutional anchors, where ESG adoption becomes both a reputational asset and a mechanism for socioemotional preservation. However, the adoption and effectiveness of ESG practices within family firms can vary significantly and be shaped by cultural, economic and governance factors (Le Breton-Miller and Miller, 2016; Miroshnychenko *et al.*, 2022).

In Mexico, where family-owned enterprises are a cornerstone of the economy, understanding how these firms incorporate ESG principles is crucial for evaluating their broader impact on sustainability and financial performance (Gabriel *et al.*, 2017). Previous studies have often examined sustainability in a fragmented manner, focusing on individual dimensions rather than adopting a comprehensive approach (Le Breton-Miller and Miller, 2016), despite growing recognition of its significance for a family firm's reputation and long-term success (Berrone *et al.*, 2010; Adomako *et al.*, 2019; Tiberius *et al.*, 2021). This gap underscores the need to investigate how family firms strike a balance between their financial, environmental and social responsibilities, which may differ significantly from those of their nonfamily counterparts.

In summary, the sustainability of family firms remains a contentious issue with mixed findings and perspectives in the literature (Canavati, 2018; Kariyapperuma and Collins, 2021). A comprehensive examination of how family firms navigate the interplay between

financial, environmental and social responsibilities is essential for understanding the unique sustainability dynamics within family-owned businesses (Sun *et al.*, 2024; Gangi *et al.*, 2025).

Theoretical background and hypothesis development

According to the SEW theory, our findings are robust for family firms because these firms are uniquely motivated by nonfinancial goals tied to the family's legacy and values (Gomez-Mejia *et al.*, 2011). SEW theory posits that family-controlled companies prioritize preserving their socioemotional endowments – such as family reputation, identity and long-term continuity – alongside economic outcomes (Heo *et al.*, 2024).

Familial ownership often harbors aspirations for transgenerational legacy, instilling a forward-looking perspective in business strategies (Mullens, 2018). This long-term outlook underpins the resilience and sustainability of family firms, enabling them to weather economic fluctuations more effectively than their nonfamily counterparts, as measured by key success and sustainability metrics (Clinton *et al.*, 2024). Given that family members typically have a significant portion of their wealth tied to the family business, the long-term viability of the family enterprise becomes paramount (Kariyapperuma and Collins, 2021).

Driven by a blend of emotional ties and a desire to uphold their reputation, family businesses often adopt greener practices (Faller and Knyphausen-Aufseß, 2018; Nikolakis *et al.*, 2022). These firms typically favor strategies that enhance their public image and safeguard the SEW, leading them to embrace more sustainable environmental initiatives (Sharma and Sharma, 2019). The emphasis on social acceptance and legitimacy among family owners translates into a socioemotional benefit derived from engaging in environmentally friendly actions (Berrone *et al.*, 2010).

Consequently, family firms often adopt more robust governance practices and sustainability initiatives to safeguard these socioemotional assets, which can amplify the effects observed in our study. In some cases, family businesses place greater emphasis on long-term ESG strategies than nonfamily firms, driven by the desire to protect and enhance their SEW (Espinosa-Méndez *et al.*, 2024; Sun *et al.*, 2024). For example, family firms have been shown to derive more value from corporate social responsibility (CSR) efforts, reflecting how family owners leverage governance decisions to achieve both financial and socioemotional objectives (Mariani *et al.*, 2023; Combs *et al.*, 2023).

Bahadori, Kaymak, and Seraj (2021) highlight the positive impact of ESG adoption on firm performance in emerging markets, noting that governance and social factors play particularly significant roles in environments with weaker institutional frameworks. Other authors suggest that companies committed to sustainability tend to exhibit enhanced governance and greater employee involvement, ultimately surpassing their competitors in performance (Kempf and Osthoff, 2007; Peters and Mullen, 2009). Similarly, Shaikh (2022) finds that ESG implementation is generally associated with improved financial performance globally, although outcomes vary by region and firm characteristics.

By applying the SEW framework, our study contributes to the literature by demonstrating that family ownership intensifies the relationship between governance mechanisms and sustainability outcomes. In doing so, we highlight the distinctive behavior of family enterprises: their governance decisions are influenced not only by financial goals but also by a commitment to preserving SEW, which ultimately leads to stronger ESG performance in family firms relative to nonfamily firms (Espinosa-Méndez *et al.*, 2024; Sun *et al.*, 2024).

In the context of family firms, recent research has further emphasized the interplay between ownership structure and sustainability engagement. Gangi *et al.* (2025) show that family firms with strong business ethics are more likely to engage in ESG activities, which in

turn enhance financial performance – especially when ethical principles are embedded in governance systems. Espinosa-Méndez, Maquieira, and Arias (2024) also find that ESG performance increases firm value in family firms, particularly when agency problems and financial constraints are effectively managed.

Building on these findings, our study contributes to the literature by focusing specifically on Mexican family firms – an underexplored setting – and by employing a panel data approach to examine how ESG integration interacts with family ownership to influence financial performance. In doing so, we extend existing knowledge by presenting new evidence from Latin America, where family firms are prevalent and institutional conditions create unique ESG challenges and opportunities.

Recent research highlights the paradoxical nature of family firm behavior in relation to sustainability. On the one hand, some family firms demonstrate a strong commitment to environmental and social goals, often rooted in their desire to protect the family's reputation and legacy (Nam *et al.*, 2024). This perspective examines how the intrinsic qualities and principles of family businesses can be leveraged to integrate sustainability into their operational frameworks.

On the other hand, family firms may prioritize family control and wealth preservation over broader stakeholder interests, leading to underinvestment in ESG initiatives (Gerlitz *et al.*, 2023). Some authors note that family dynamics and succession issues can complicate the adoption of ESG (Sharma and Sharma, 2011). Cruz *et al.* (2014) highlight that family firms may prioritize the interests of the family over those of broader stakeholder groups, potentially limiting their engagement with formal CSR and ESG practices. This duality has led scholars to view family firms as exhibiting a form of sustainability ambivalence or ESG paradox, whereby the same socioemotional drivers may lead to either proactive ESG engagement or defensive, opaque and even irresponsible conduct under strain (Gerlitz *et al.*, 2023). Empirical work by Nieri, Ciravegna, and Micelotta (2025) reinforces this complexity, showing that family and nonfamily firms engage in corporate social irresponsibility (CSIR) under different conditions. Their configurational analysis reveals that family firms are more likely to behave irresponsibly when facing simultaneous economic and reputational strain, particularly when accompanied by CSR disclosure. In contrast, nonfamily firms may engage in CSIR even in the absence of such strain.

Furthermore, while some scholars suggest that the deep-seated identification of family members with their firms fosters a commitment to preserving the firm's reputation through sustainable practices, others point to factors like amoral familism, nepotism, conservatism and excessive identification as potential barriers to sustainability (Gomez-Mejia *et al.*, 2011). The debate extends to both theoretical and empirical realms, particularly concerning the social sustainability of family firms, with authors such as Faller and Knyphausen-Aufseß (2018) and Canavati (2018) highlighting the lack of consensus.

The sustainability ambivalence mentioned is aligned with the tendency of family firms to gravitate toward opposite extremes in their behavior toward stakeholders (Miller and Le Breton-Miller, 2021). Nevertheless, both family and nonfamily firms face a range of subtle obstacles when integrating ESG practices (Sheehan *et al.*, 2023). In family businesses, the protection of shareholder wealth (SWE) can sometimes conflict with sustainability goals. Family owners may only pursue ESG initiatives if they see a direct benefit to their family's reputation or legacy, yet become reluctant to invest in ESG when such initiatives threaten their financial wealth or control (Espinosa-Méndez *et al.*, 2024).

In addition, the governance structure of family firms can itself be a barrier: a lack of independent oversight or the presence of nepotism may limit the objectivity and professionalism needed for effective ESG adoption. For instance, family firms often

undercommit to formal environmental targets and disclose less about sustainability, leading to lower ESG ratings despite sometimes achieving lower actual emissions – a pattern that suggests hesitation in fully embracing external ESG transparency (Borsuk *et al.*, 2023).

Family business cultures also tend to be conservative and resistant to change, as familial values and business logic reinforce a focus on traditional financial goals over new sustainability initiatives (Gerlitz *et al.*, 2023). By contrast, in widely held nonfamily firms, classical principal-agent conflicts can hinder ESG progress: managers (agents) may prioritize short-term profits or symbolic ESG actions over substantive, long-term changes valued by owners or stakeholders (Borsuk *et al.*, 2023). Indeed, studies have found that bringing in outside CEOs can lead to superficial improvements in ESG disclosure while actual environmental performance worsens, reflecting misaligned incentives under diffuse ownership (Borsuk *et al.*, 2023).

The internal challenges of family firms are often exacerbated in emerging markets by external factors, such as institutional voids characterized by weak regulatory frameworks, poor enforcement and underdeveloped market institutions. Companies often lack the formal support and pressure to adopt ESG standards (Liedong *et al.*, 2020). At the same time, many emerging economy firms face resource constraints, including financial and human capital, that make substantial ESG investments difficult to sustain (Liedong *et al.*, 2020). As a result, even the inherently long-term orientation of family firms does not always translate into superior environmental performance; recent evidence shows that while family firms often excel in social sustainability, they generally perform no better than nonfamily firms on environmental metrics (Herrero *et al.*, 2024).

Environmental, social and governance in Mexican family firms

In Mexican family firms, the cultural context has a significant impact on business operations, both facilitating and hindering the integration of ESG principles. Therefore, understanding Mexico's business environment is crucial for contextualizing ESG in family businesses (Souza *et al.*, 2024). As Raihan and Tuspekova (2022) described, Mexico's economic landscape is characterized by a mix of modern industries and traditional practices, presenting a unique set of challenges and opportunities for ESG adoption. These cultural nuances are essential in shaping effective and culturally congruent ESG strategies.

The quest for sustainable development, characterized by reduced reliance on energy and an uplift in living standards, is gaining momentum globally. With its abundant natural resources, Mexico faces a critical juncture where environmental decline and escalating climate change threats could impose severe costs, highlighting the urgency of adopting a sustainable growth model (Raihan and Tuspekova, 2022). Improving energy efficiency is a crucial strategy for advancing Mexico's transition toward a low-carbon economy, necessitating comprehensive measures in urban development, waste management, energy conservation and water stewardship (Elizondo *et al.*, 2017).

In this context, family firms emerge as pivotal actors – not only because of their dominance in the Mexican economy but also due to their unique governance models and long-term orientation, which position them as both potential enablers and obstacles in the country's ESG transformation. The most dominant companies in Mexico are typically owned and managed by one or more families or their descendants. Five of Mexico's top ten most prominent companies are family-owned businesses: América Móvil (telecommunications), FEMSA (retail), Grupo Bimbo (food), ALFA (food and petrochemicals) and Grupo Financiero Banorte (banking) (Expansión, 2024). More than 70% of the firms listed on the Mexican Stock Exchange (BMV) have a clear family representation in capital and control (San Martin-Reyna and Duran-Encalada, 2012).

According to the International Federation of Accountants (IFAC), a study focused on the 50 largest Mexican companies found that 62.16% of the sample disclosed high-quality ESG information through annual, sustainability or integrated reports. On the other hand, a smaller fraction (34.07%) of disclosures has an independent assurance statement. Among the companies reporting ESG information, 43% adhere to the Global Reporting Initiative (GRI) standards, a widely recognized benchmark for sustainability reporting. Furthermore, a substantial majority (91.21%) mentions the United Nations Sustainable Development Goals (SDGs) in their reports, even though they have yet to be formally recognized as a standard or framework for ESG reporting (Enríquez and Hernández, 2022).

However, compared to their counterparts in North America and other Latin American countries, Mexican companies, on average, still score at the bottom in overall ESG performance (Gabriel *et al.*, 2017; Godínez-Reyes *et al.*, 2022; Garcés-Ayerbe *et al.*, 2022). On the other hand, Mexican companies that incorporate ESG criteria have higher returns. For example, we compare the S&P/BMV Total Mexico ESG Index with the Mexican stock exchange index from 2020 to 2024. We found that, on average, the annualized return of the S&P ESG index is 1.4% higher than the Mexican stock exchange index (IPC). Figure 1 illustrates both indices, which we standardized to begin at zero in 2020 to facilitate comparison.

Since its launch in 2020, the new ESG Index in the Mexican stock market has consistently demonstrated strong performance, outperforming the Mexican stock index in most periods, as illustrated in Figure 1. The index has provided a viable investment pathway and set a new standard for evaluating corporate ESG performance in Mexico. Its favorable results underscore the index's robust performance, making it a valuable tool for investors seeking to integrate ESG factors into their investment decisions. As we know, stock prices' performance is primarily based on expectations of the firm's financial performance, which is largely influenced by its historical financial results.

Given the central role of family ownership in shaping governance and strategic choices, it is plausible that ESG adoption produces different financial outcomes depending on whether firms are family- or nonfamily-owned. To test this moderate effect, we advance the following hypothesis:

H1. Family ownership moderates the relationship between ESG practices and financial performance, such that the positive effect of ESG is stronger for family firms.

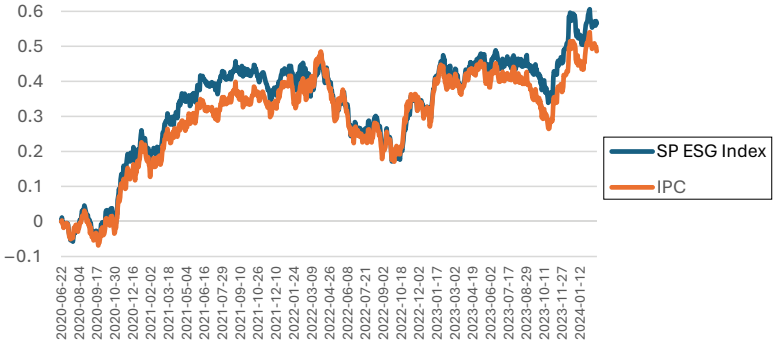

Figure 1. S&P ESG index vs Mexican stock exchange index, 2020–2024
Source: Own elaboration with data from S&P Dow Jones Indices (2024) and Refinitiv

After examining whether family ownership moderates the ESG-performance link, we next consider whether ESG adoption translates into superior financial outcomes, specifically within family firms. This perspective shifts the focus from differences between family and nonfamily firms (*H1*) to the direct impact of ESG practices inside family firms. Accordingly, we propose the following hypothesis:

H2. Within family firms, greater ESG adoption is associated with higher financial performance.

Methodology and data

To test both hypotheses, we use a panel data model to control unobservable heterogeneity and mitigate omitted variable bias, which is particularly relevant when analyzing secondary data from corporate sources, where selection bias and unobserved heterogeneity may arise (Espinosa-Méndez *et al.*, 2024). We use the following specifications:

$$FP_{it} = \beta_0 + \beta_1 ESG_{it} + \beta_2 family_{it} + \beta_3 ESG_{it} * family_{it} + \beta X + a_i + u_{it} \quad (1)$$

The subscript *it*denotes the observation of firm *i* at period*t*. The dependent variable FP_{it} captures financial performance and is measured through three indicators: operating margin (the ratio of operating income to total revenue), Return on Equity (ROE) and Return on Assets (ROA). ESG_{it} represents the firm's ESG scores and a composite ESG measure. The variable $family_{it}$ is a binary variable equal to one if the firm is classified as a family-owned business. X denotes the set of control variables. We denote a_i as the firm-specific (individual) effect and u_{it} as the idiosyncratic error term; together, these constitute the composite error structure of the model. Following Croissant and Millo (2019), we assume that both a_i and u_{it} have zero expected values, are homoscedastic and are mutually uncorrelated.

To test for homoscedasticity, we apply the Breusch and Pagan (1979) test. If heteroscedasticity is detected, we correct for it using robust standard errors. Concerning the treatment of a_i, it is common in panel data analysis to consider whether it should be modeled as a fixed parameter – i.e. a firm-specific intercept – or as a random variable (Wooldridge, 2010). In this regard, the Hausman (1978) test examines the difference between fixed and random effects. The Hausman test is used to determine whether individual effects are correlated with the explanatory variables, thereby informing the choice between fixed-effects and random-effects models. As Baltagi (2013) notes, this test is often misinterpreted as a direct endorsement of the fixed effects model when the null is rejected. Instead, he emphasizes that the Hausman test should be understood by evaluating the correlation between regressors and individual effects. If there is no correlation, both estimators are consistent, but the random effects model is more efficient. If a correlation exists, only the fixed effects estimator remains consistent (Croissant and Millo, 2019).

In this study, we conducted the Hausman (1978) test and found evidence of correlation between the regressors and the individual effects, with a Chi-square statistic of 85.2. Although both estimators are consistent, this result supports the use of the fixed effects model as the appropriate estimation strategy. In addition, we account for time effects to control for any time-specific factors not captured by the explanatory variables in the regression (Baltagi, 2013). We also test whether a_i and λ_t should be treated as parameters to be estimated in the regression. Using the Breusch and Pagan (1980) test, we find evidence to reject the null hypothesis of no individual or time effects, supporting the inclusion of both in the model specification. In this regard, our methodology aligns with recent corporate governance

literature examining ESG and performance outcomes (Liang and Huang, 2024). For instance, in a recent study, Zhang (2025) uses a fixed-effects panel model to analyze the relationships between ESG and ESG performance in Chinese firms, demonstrating that panel regressions can yield robust insights without the need for matching. Similarly, Jarchow *et al.* (2023), in their study of listed German firms, report that family firms significantly outperformed their nonfamily counterparts in terms of return on assets (ROA), as determined by a fixed-effects model. These studies confirm the credibility and widespread application of panel techniques in examining ownership structures and performance across diverse ESG contexts.

Building on this methodological foundation, we turn to the central focus of our analysis: assessing whether ESG adoption has a differentiated effect on financial performance depending on family ownership status. Our empirical model includes the main effects for ESG and Family, as well as their interaction term (ESG × Family), which captures whether the performance relationship differs systematically for family versus nonfamily firms. In equation (1), β_2 reflects the baseline performance gap between family and nonfamily firms when ESG = 0. When testing *H1*, the parameter of interest is β_3, which indicates whether family ownership moderates the relationship between ESG and financial performance. A significant β_3 would imply that the impact of ESG on financial performance differs between family and nonfamily firms. When testing *H2*, the focus shifts to the total ESG effect within family firms, given by the sum $\beta_1 + \beta_3$. Here, β_1 represents the ESG effect for nonfamily firms, and β_3 captures the additional effect specific to family firms. Thus, $\beta_1 + \beta_3$ reflects the full ESG effect in family firms, which we formally test using the linear restriction H_0: $\beta_1 + \beta_3 = 0$.

Our sample is drawn from the Refinitiv database, comprising 128 publicly listed firms in Mexico with available data. Of these, 81 firms (64%) are classified as family firms. For this study, family firms are defined as those where a founding family or its descendants maintain significant ownership and exert substantial influence over strategic decisions through direct management involvement or control of voting rights (Anderson and Reeb, 2003; Chrisman *et al.*, 2005). A comprehensive list of the companies included in the analysis, along with the names of the controlling families, is provided in Appendix. While financial data for these firms is available through 2024, ESG-related information is only available up to 2022. Therefore, our analysis focuses on the period from 2014 to 2022. In Table 1, we present descriptive statistics.

Environmental variables (Envir) measure the company's impact on living and nonliving natural systems, including the air, land, water and entire ecosystems. Social is a variable that measures a company's ability to generate trust and loyalty among its workforce, customers and society through effective management practices. Governance (Gov) is the variable representing the corporate governance pillar that measures a company's systems and processes, which ensures that its board members and executives act in the best interests of its long-term shareholders. ESG is a composite indicator, estimated as the weighted average of the previous variables.

Since not all Mexican firms have an ESG score reported in the Refinitiv database, we treat the absence of a score as indicative of non-adoption of ESG practices. This approach is consistent with prior literature, where the lack of disclosure has often been interpreted as a signal of limited or absent social and environmental performance (Clarkson *et al.*, 2008). Accordingly, we construct binary variables for each ESG pillar – Env_bin, Soc_bin, Gov_bin, and Esg_bin – assigning a value of one if the firm has an ESG score reported in Refinitiv and zero otherwise. This allows us to capture both the presence and absence of ESG practices in our sample firms.

Table 1. Descriptive statistics

Indicator/Variables	ROA	ROE	Operation margin	ESG	Envir	Social	Gov.	lev	tac	EPS	Cash ratio	size	sector	bs	family
Count	1073	1060	1096	471	471	471	471	1043	1073	1096	1089	1096	1096	470	1096
Mean	4	7	19	47	42	49	49	31	11	−430	0	24	3	13	1
Std	8	25	54	22	28	27	22	25	37	13218	0	2	3	4	0
Min	−133	−393	−624	2	0	0	3	0	−88	−435926	−1	18	0	4	0
25%	1	3	6	29	18	26	31	18	1	0	0	23	1	10	0
50%	3	8	13	49	43	56	49	29	6	1	0	24	4	12	1
75%	6	14	28	63	64	69	66	39	14	3	0	25	6	15	1
Max	36	181	595	91	96	97	95	537	938	203	0	28	9	25	1

Source(s): Own elaboration

The control variables are leverage (lev), which is the total debt percentage of total assets; firm size (size), which is the natural logarithm of total assets; cash ratio, which is net cash flow as a proportion of total assets; and total assets growth rate (tac). In addition, we control for sector and board size (bs) with the number of boards of directors. Finally, we included EPS as a control to absorb general earnings performance and isolate the explanatory power of our main independent variables (Saleh *et al.*, 2011). A potential concern is that Earnings Per Share (EPS) may correlate with profitability measures such as ROA and ROE – an expected mechanical linkage since all are derived from net income. In our data set, EPS exhibits modest correlations with ROA ($r = 0.378$) and ROE ($r = 0.322$). Operating margin, although not directly based on net income, also displays a moderate correlation with EPS (0.385), likely because both capture underlying profitability dynamics. These levels are well below conventional thresholds (e.g. $|r| > 0.8$) typically viewed as problematic (Wooldridge, 2010). This evidence aligns with Xu and Zhu (2024), who examine the impact of ESG on financial performance using panel data models, where ROA is the dependent variable and EPS is included as a control. Their findings, consistent with ours, indicate that EPS can be modeled alongside profitability outcomes without introducing collinearity concerns. However, as an additional robustness check, we reestimated all models excluding EPS. While the significance of some individual ESG variables shifts marginally, the overall pattern of results and our core conclusions remain the same.

In Table 1, we can see that some variables have more information than others. For example, while ROA has 1073 observations, ROE and ESG have 1060 and 471, respectively. In our analysis, we eliminate the missing values of some variables. For instance, we had to eliminate 602 observations when running ROA against ESG and 589 when running ROE against ESG. Also, there are some outliers for variables such as ROA, ROE and operating margin. For example, for ROA, the average is 4%, with a minimum of −133%. The ESG variables are scored on a scale ranging from 0 to 100. The sector variable ranges from 0 to 9, which means we include nine sectors in our analysis. It is important to note that the outliers were addressed in the robustness analysis, ensuring that extreme observations do not drive our results.

To complement the descriptive statistics, we conducted independent samples T-tests to assess whether there are statistically significant differences between family and nonfamily firms in ESG engagement and firm characteristics. The results show that family firms are significantly larger on average than nonfamily firms ($t = 6.69$, $p < 0.001$). No significant differences were observed in leverage or in the average scores for the ESG composite or its ESG subdimensions. However, when analyzing binary indicators of ESG adoption (coded as 1 if the firm reports any ESG score, 0 otherwise), we find that family firms are significantly more likely to disclose or engage in ESG practices. This effect is consistent across all binary ESG variables: environmental ($t = 2.98$, $p < 0.01$), social ($t = 3.34$, $p < 0.001$), governance ($t = 3.34$, $p < 0.001$) and the overall ESG score ($t = 3.34$, $p < 0.001$). Figure 1 illustrates both indices, which we standardized to begin at zero in 2020 to facilitate comparison. In Table 2, we see the correlation matrix between the independent variables.

Table 2 examines high correlations between an ESG indicator and a control variable to determine if the model may have a multicollinearity problem. As expected, there is a high correlation between the ESG variables, which is not a problem because we do not simultaneously include those variables in a model. We can see in that table that there is no evidence of multicollinearity. For *H1*, the following Tables 3–5 report the estimation results from equation (1). Table 3 presents the results with ROE as the dependent variable. Here, the focus is on the interaction term (ESG × Family), which examines whether family ownership moderates the relationship between ESG and performance.

Table 2. Correlation matrix

Variables	ESG	Envir	Social	Gov.	lev	tac	EPS	cash_ratio	size	sector	bs	family
ESG	1.000	0.889	0.947	0.708	−0.031	0.048	0.085	0.163	0.236	0.009	0.359	0.032
Envir		1.000	0.845	0.480	−0.040	0.026	0.075	0.137	0.264	−0.087	0.423	0.055
Social			1.000	0.538	−0.050	0.036	0.085	0.149	0.208	0.011	0.355	0.038
Governance				1.000	0.003	0.052	0.047	0.137	0.197	0.129	0.110	−0.083
lev					1.000	−0.027	−0.409	−0.064	0.071	0.016	−0.010	−0.007
tac						1.000	0.063	−0.008	0.007	0.063	0.036	0.038
EPS							1.000	0.027	0.019	0.031	−0.080	−0.025
cash_ratio								1.000	0.057	−0.112	−0.017	0.013
size									1.000	0.077	0.362	0.198
sector										1.000	−0.231	−0.266
bs											1.000	0.213
fam_bin												1.000

Source(s): Own elaboration

Table 3. Results when the independent variable is ROE

Indicator/Variables	(1)	(2)	(3)	(4)	(5)
const	124.1485	129.8364	127.1738	130.2119	122.5425
ESG	0.0034				
Envir		0.0231			
Social			0.0600		
Governance				−0.0659	
env_bin					−3.0800 *
lev	−0.0729	−0.0850	−0.0701	−0.0690	−0.0802
tac	0.0971	0.0996	0.0986	0.0984	0.0979
EPS	0.4834 ***	0.4804 ***	0.4821 ***	0.4806 ***	0.4874 ***
cash_ratio	61.1500 ***	62.1973 ***	61.0254 ***	61.7622 ***	60.9527 ***
size	−4.7470	−5.0317	−4.9154	−4.9082	−4.6717
bs	−0.0325	−0.0917	−0.0427	−0.0009	−0.0626
ESG_×_fam	0.0181				
Envir_×_fam		0.0717			
Social_×_fam			−0.0284		
Governance_×_fam				0.0407	
Env_bin_×_fam					*6.0790* **
rsquared	0.3348	0.3380	0.3360	0.3356	0.3360
rsquared_overall	0.0669	0.0671	0.0535	0.0538	0.0771
rsquared_betwee	0.0051	0.0090	−0.0057	0.0045	0.0181
rsquared_within	0.3241	0.3309	0.3281	0.3197	0.3231
Number of obs	451	451	451	451	451
Years periods	9	9	9	9	9

Note(s): The results are the parameters of the fixed-effects model, which includes both individual and time effects. When applying the Breusch and Pagan (1979) test, we found evidence to reject the null hypothesis of homoscedasticity. We use robust standard errors. The variable sector and the binary variable family are not included in the results because the fixed-effect model absorbs time-invariant characteristics, which are not reflected in the results. The ***, ** and *indicate parameter significance at 1, 5 and 10%, respectively
Source(s): Own elaboration

Table 3 reports the results for ROE as the dependent variable. Among the ESG dimensions, only the interaction with the binary environmental variable (Env_bin × Family) is statistically significant and positive. This indicates that family firms adopting environmental practices achieve stronger ROE compared to nonfamily firms, even though the standalone effect of env_bin is negative. By contrast, the interaction terms for the aggregate ESG score and the ESG pillars are not significant, suggesting no systematic moderation effect of family ownership in these cases. Taken together, these findings provide partial support for *H1*: family firms appear to realize performance advantages specifically when engaging in environmental practices, but not across all ESG dimensions. We intended to include other binary indicators (soc_bin, gov_bin) in the analysis; however, estimation was not feasible due to insufficient variation and missing data. Table 4 presents the results with operating margin as the dependent variable.

The results, with operating margin as the dependent variable, show that the ESG × Family interaction terms are generally positive, with the environmental dimension showing statistical significance in both the continuous and binary specifications, while the other ESG pillars do not reach significance. Table 5 reports the results with ROA as the dependent variable. None of the ESG × Family interaction terms are statistically significant, including the binary environmental indicator.

Table 4. Results when the independent variable is operating margin

Indicator/Variables	(1)	(2)	(3)	(4)	(5)
const	−2201.9 **	−2192.7 **	−2201.8 **	−2177.8 **	−2091.7 **
ESG	−0.2432				
Envir		−0.2316			
Social			−0.1559		
Governance				−0.1124	
env_bin					*−149.4391* **
lev	−1.1192 ***	−1.1218 ***	−1.1201 ***	−1.1199 ***	−1.1232 ***
tac	−0.0351	−0.0306	−0.0325	−0.0211	0.0206
EPS	0.0007 ***	0.0007 ***	0.0007 ***	0.0007 ***	0.0007 ***
cash_ratio	50.7820	51.5755	51.8663	52.0602	73.2024
size	92.4196 **	91.9831 **	92.2550 **	91.7749 **	89.9048 **
bs	−3.3868	−3.4194	−3.4078	−3.1867	−4.0372 **
ESG_×_fam	0.4025				
Envir_×_fam		*0.4542* *			
Social_×_fam			0.3961		
Governance_×_fam				−0.1063	
Env_bin_×_fam					*153.6731* **
rsquared	0.4018	0.4025	0.4022	0.4018	0.4581
rsquared_overall	−3.7179	−3.6681	−3.7298	−3.4470	−4.9567
rsquared_betwee	−9.4521	−9.3284	−9.4627	−8.8366	−12.9660
rsquared_within	0.3195	0.3217	0.3139	0.3280	0.3940
Number of obs	464	464	464	464	464
Years periods	9	9	9	9	9

Note(s): The results are the parameters of the fixed-effects model, which includes both individual and time effects. When applying the Breusch and Pagan (1979) test, we found evidence to reject the null hypothesis of homoscedasticity using robust standard errors. The variable sector and the binary variable family are not included in the results because the fixed-effect model already absorbs time-invariant characteristics. The ***, ** and *indicate parameter significance at 1, 5 and 10%, respectively
Source(s): Own elaboration

This suggests that, when ROA measures profitability, ESG adoption does not have differential effects on family versus nonfamily firms. In contrast to the ROE and operating margin results (Tables 3 and 4), no evidence is found here to support *H1*. Having established the methodology that *H2* tests the joint ESG effect in family firms ($\beta_1 + \beta_3$), we now present the results in Table 6.

Table 6 shows that most joint coefficients are statistically insignificant, indicating that there is no consistent performance premium from ESG adoption in family firms. The only exception is the binary environmental variable for ROA, which is marginally significant at the 10% level, suggesting a potential – although selective – performance advantage. For ROE and operating margin, no ESG dimension reaches conventional significance thresholds, indicating that *H2* is not uniformly supported across profitability measures. All regressions include firm and year fixed effects, as well as the same control variables as in Tables 3–5. For reasons of parsimony, we report only the main test parameters ($\beta_1 + \beta_3$).

In Tables 3 to 6, we analyzed the full sample of firms, incorporating an interaction term for family-firm status to test *H1* (interaction effects) and *H2* (joint effects). To further assess the robustness of these findings, we also reestimated the models using only the subsample of family firms, thereby directly examining whether ESG adoption is associated with improved financial performance within this group. It is a methodological approach that aligns with common practice in the ESG and family business literature. Prior studies frequently use

Table 5. Results when the independent variable is return on assets (ROA)

Indicator/Variables	(1)	(2)	(3)	(4)	(5)
Const	102.997	106.529	102.336	107.345	109.790
ESG	−0.023				
Envir		0.038			
Social			−0.022		
Governance				−0.069	
env_bin					−7.836 *
lev	−0.021	−0.022	−0.021	−0.021	−0.021
tac	0.077 ***	0.078 ***	0.076 ***	0.078 ***	0.079 ***
EPS	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***
cash_ratio	5.432	5.098	5.559	6.230	6.463
size	−4.058	−4.249	−4.051	−4.174	−4.206
bs	0.220	0.198	0.211	0.232	0.202
ESG_×_fam	0.019				
Envir_×_fam		−0.017			
Social_×_fam			0.037		
Governance_×_fam				0.038	
Env_bin_×_fam					5.943
rsquared	0.660	0.661	0.661	0.663	0.672
rsquared_overall	0.161	0.140	0.174	0.108	0.063
rsquared_betwee	−0.751	−0.820	−0.725	−0.849	−0.946
rsquared_within	0.636	0.642	0.639	0.635	0.647
Number of obs	464	464	464	464	464
Years periods	9	9	9	9	9

Note(s): The results are the parameters of the fixed-effects model, which includes both individual and time effects. When applying the Breusch and Pagan (1979) test, we found evidence to reject the null hypothesis of homoscedasticity using robust standard errors. The variable sector and the binary variable family are not included in the results because the fixed-effect model absorbs time-invariant characteristics. The *** and * indicate parameter significance at 1 and 10%, respectively
Source(s): Own elaboration

separate subsample regressions to examine within-group effects among family firms (Dyer and Whetten, 2006; Berrone *et al.*, 2010). By following this empirical approach, we ensure that our analysis captures the differential influence of ESG practices in family businesses, while also confirming that the observed effects are specific to the family firm subgroup, thereby strengthening the validity of our findings. In Tables 7–9, we show the model's results in the following equation (2):

$$FP_{it} = \beta_0 + \beta_1 ESG_{it} + \beta X + a_i + u_{it} \quad (2)$$

Table 7 presents the results of a subsample of family businesses, where the independent variable is ROA.

Based on the results in Table 7, the ESG, Environmental and Social variables are positive and statistically significant when ROA is the dependent variable. This indicates that, within family firms, higher ESG engagement is associated with improved asset-based profitability. Specifically, increases in the ESG composite score, as well as in the Environmental and Social pillars, are associated with stronger ROA outcomes, whereas Governance does not exhibit a significant effect.

Table 8 yields the results consistent with those in Table 7, as the coefficients for the ESG composite and social variables remain positive and statistically significant when ROE is the

Table 6. Joint ESG effect in family firms ($\beta_1 + \beta_3$) including EPS: ROA, ROE and operating margin

Dependent variables	ESG	Environmental	Social	Governance	Env_bin
ROA	−0.0035 (0.0324) $p = 0.915$	0.0208 (0.0216) $p = 0.335$	0.0143 (0.0252) $p = 0.571$	−0.0316 (0.0331) $p = 0.341$	*−1.8924** (1.1179) $p = 0.090$
ROE	0.0215 (0.0702) $p = 0.759$	0.0948 (0.0662) $p = 0.152$	0.0316 (0.0543) $p = 0.560$	−0.0252 (0.0573) $p = 0.660$	2.9991 (2.3566) $p = 0.203$
Operating margin	0.1594 (0.2985) $p = 0.593$	0.2226 (0.1479) $p = 0.132$	0.2401 (0.2052) $p = 0.242$	−0.2186 (0.3692) $p = 0.554$	4.2340 (8.7306) $p = 0.628$

Note(s): Estimates are from tests of $\beta_1 + \beta_3$. Robust standard errors in parentheses. The *indicate parameter significance at 10%. All regressions include firm- and year-fixed effects and the same control variables as in Tables 3–5
Source(s): Own elaboration

Table 7. Results of a subsample of family business, when the independent variable is ROA

Indicator/Variables	(1)	(2)	(3)	(4)	(5)
const	5.021	5.189	4.848	3.895	3.409
ESG	*0.025**				
Envir		*0.020**			
Social			*0.028***		
Governance				0.001	
env_bin					0.946
lev	−0.039***	−0.040***	−0.039***	−0.039***	−0.039***
tac	0.131***	0.132***	0.132***	0.129***	0.128***
cash_ratio	24.921***	24.919***	24.600***	26.384***	25.816***
size	−0.037	−0.033	−0.026	0.018	0.013
bs	−0.187***	−0.190***	−0.210***	−0.127*	−0.139*
EPS	0.000***	0.000***	0.000***	0.063	0.066
sector	0.085	0.109	0.068	0.000***	0.000***
rsquared	0.768	0.768	0.770	0.765	0.766
rsquared_overall	0.768	0.768	0.770	0.765	0.766
rsquared_betwee	0.668	0.674	0.666	0.662	0.666
rsquared_within	0.756	0.756	0.758	0.754	0.754
Number of obs	322	322	322	322	322
Years periods	9	9	9	9	9

Note(s): The results are the parameters of the fixed-effects model, which includes both individual and time effects. When applying the Breusch and Pagan (1979) test, we found evidence to reject the null hypothesis of homoscedasticity in columns 1, 2 and 3, using robust standard errors. The variable sector and the binary variable family are not included in the results because the fixed-effect model absorbs time-invariant characteristics. The ***, ** and *indicate parameter significance at 1, 5 and 10%, respectively
Source(s): Own elaboration

dependent variable. In this specification, however, the Environmental variable is no longer significant, while the Governance score emerges as a significant predictor. Taken together, these results indicate that within family firms, ESG engagement – particularly through the Social and Governance pillars – contributes to stronger equity-based performance. These findings provide additional support for *H2*, demonstrating that ESG adoption has explanatory power when the analysis is restricted to the family-firm subsample.

Table 9 reports results for the family-firm subsample with operating margin as the dependent variable. The analysis reveals that both the Environmental pillar and the binary environmental indicator (env_bin) are positive and statistically significant at the 5% level. This suggests that among family firms, environmental engagement, whether measured by intensity (scores) or adoption (binary), is associated with higher operating profitability. By contrast, the aggregate ESG score, as well as the Social and Governance pillars, do not display significant effects. Taken together, these findings indicate that within family firms, the profitability benefits of ESG adoption are concentrated in the environmental dimension.

To further validate our findings, we conducted an additional analysis using the subsample of nonfamily firms. In this case, the results showed no statistically significant effect of the ESG variables – whether composite or disaggregated – on any of the financial performance metrics considered (ROA, ROE or operating margin). For practical and parsimony-related reasons, we have opted not to include the full output of this analysis in the main tables. The absence of significant results in the nonfamily firm subsample reinforces the view that the performance benefits of ESG practices are more relevant in family firms. As shown in Tables 7–9, these benefits are not uniform across all ESG dimensions but are concentrated in

Table 8. Results of a subsample of family business, when the independent variable is ROE

Indicator/Variables	(1)	(2)	(3)	(4)	(5)
const	11.58	8.408	9.041	17.73	3.582
ESG	*0.127***				
Envir		0.036			
Social			*0.105***		
Governance				*0.161***	
env_bin					4.364
lev	0.04	0.059	0.051	0.03	0.056
tac	0.162**	0.154**	0.165**	0.148**	0.142**
cash_ratio	66.21***	70.7***	67.04***	65.91***	71.13***
size	−0.564	−0.395	−0.433	−0.975*	−0.318
bs	−0.209	−0.012	−0.219	−0.004	0.045
EPS	0.466***	0.974**	0.461***	0.487***	0.906**
sector	1.011***	0.473***	0.91***	1.064***	0.471***
rsquared	0.361	0.346	0.362	0.375	0.348
rsquared_overall	0.361	0.346	0.362	0.375	0.348
rsquared_betwee	0.286	0.269	0.287	0.287	0.28
rsquared_within	0.418	0.419	0.419	0.404	0.415
Number of obs	319	319	319	319	319
Years periods	9	9	9	9	9

Note(s): The results are the parameters of the fixed-effects model, which includes both individual and time effects. When applying the Breusch and Pagan (1979) test, we found evidence to reject the null hypothesis of homoscedasticity in columns 1, 3 and 4, using robust standard errors. The variable sector and the binary variable family are not included in the results because the fixed-effect model absorbs time-invariant characteristics. The ***, ** and *indicate parameter significance at 1, 5 and 10%, respectively
Source(s): Own elaboration

specific pillars (e.g. environmental and social factors). This pattern suggests that family firms may be uniquely positioned to translate ESG adoption into financial performance, consistent with their long-term orientation and SEW priorities.

Robustness tests

As a robustness test, we address a potential endogeneity problem in this section. The issue arises because CSR may be endogenous to corporate financial performance. This result is because companies might engage in CSR activities either because they are already more profitable or because they anticipate higher future profitability (Flammer, 2015). In this regard, Wintoki, Linck, and Netter (2012) suggest applying dynamic panel GMM to address the issue. This approach is handy when analyzing whether performance drives governance or if governance is merely a symptom of an unobservable factor that also affects performance.

We apply the dynamic panel GMM estimator only to *H1*, where the parameter of interest is the interaction term (β_3) between ESG adoption and family ownership. Endogeneity concerns are most relevant here, since profitable firms may be both more likely to adopt ESG practices and more likely to sustain performance, which could bias the estimated interaction effect. The results of this exercise are presented in Table 10.

For *H2*, the key test involves the joint effect of ESG in family firms, evaluated through the restriction H_0: $\beta_1 + \beta_3 = 0$. This is tested directly within our fixed-effects specification using robust standard errors and linear-combination tests. These results are reported in Table 6 (including EPS) and Table 14 (excluding EPS). Because the fixed-effects framework already

Table 9. Results of a subsample of family business, when the independent variable is the operating margin

Indicator/Variable	(1)	(2)	(3)	(4)	(5)
const	−27.87	−18.13	−30.94	−41.99	−47.38
ESG	0.173				
Envir		*0.269***			
Social			0.144		
Governance				−0.084	
env_bin					*24.25***
lev	−0.869***	−0.877***	−0.865***	−0.862***	−0.862***
tac	0.674***	0.7*	0.676***	0.658***	0.621***
cash_ratio	−41.09	−50.64	−40	−26.47	−45.93
size	2.252	1.934	2.424	3.02	2.446
bs	−0.215	−0.635	−0.224	0.277	−0.112
EPS	2.978**	7E-04***	2.845**	2.732**	2.902**
sector	8E-04***	3.443***	8E-04***	8E-04***	7E-04***
rsquared	0.534	0.541	0.535	0.533	0.541
rsquared_overall	0.534	0.541	0.535	0.533	0.541
rsquared_betwee	0.494	0.526	0.491	0.49	0.518
rsquared_within	0.485	0.489	0.486	0.486	0.484
Number of obs	322	322	322	322	322
Years periods	9	9	9	9	9

Note(s): The results are the parameters of the fixed-effects model, which includes both individual and time effects. When applying the Breusch and Pagan (1979) test, we found evidence against the null of homoscedasticity in column 2, using robust standard errors. The variable sector and the binary variable family are not included in the results because the fixed-effect model absorbs time-invariant characteristics. The ***, ** and *indicate parameter significance at 1, 5 and 10%, respectively
Source(s): Own elaboration

controls time-invariant heterogeneity and standard shocks, and the joint restriction is explicitly estimated in those tables, no additional GMM estimation is required for *H2*.

To evaluate the robustness of these findings and examine whether they hold in the presence of extreme values, we compare the results with and without outliers by applying winsorization, following the approach of Rousseeuw and Leroy (1987). This technique reduces the influence of outliers by capping values at the 1st and 99th percentiles (Dixon, 1960). The adjusted results are reported in Table 11. This Table reports results excluding EPS as a control variable. We present only ROE, as it is the only profitability measure that shows significant findings. Specifically, the interaction of ESG with family ownership is positive and significant for governance and for the binary environmental variable (env_bin).

Table 12 presents the results of *H2* after removing outliers, testing the joint ESG effect in family firms.

The results indicate that the ESG composite, as well as the environmental and governance pillars, have a statistically significant impact on ROA. At the same time, operating margin exhibits a marginal effect for governance. As an additional robustness check, we reestimated all models excluding EPS as a control variable; the results are shown in Table 13.

We report only the most relevant results, rather than displaying all coefficients for every specification. The results remain qualitatively consistent with our baseline models (Tables 3–5). Environmental practices and the binary environmental measure continue to show a positive and significant effect on operating margin. Notably, the binary environmental variable becomes positive and significant for ROA in this specification,

Table 10. Results for the dynamic GMM model

Indicator/Variables	(1) ROA	(2) ROE	(3) ROE	(4) ROE	(5) ROE
const	23.563***	16.949	−1.901	−1.901	−1.901
ROA (t – 1)	0.077				
ROE (t – 1)		−0.052	−0.067	−0.067	−0.067
Gob_bin			−1.901		
Governance	−0.034	−0.115			
Esg_bin				−1.901	
Soc_bin					−1.901
Family	−2.390	−8.715	3.079**	3.079**	3.079**
Leverage	−0.168***	−0.164	−0.131	−0.131	−0.131
tac	0.118***	0.073	0.036	0.036	0.036
EPS	0.000***	0.651***	0.624***	0.624***	0.624***
cash_ratio	11.696***	94.780***	94.265***	94.265***	94.265***
Size	−0.598***	−0.258	0.193	0.193	0.193
BS	−0.057	−0.406	−0.117	−0.117	−0.117
Gobernance_×_fam	*0.062**	*0.320**			
Gob_bin_×_fam			*3.079***		
Esg_bin_×_fam				*3.079***	
Soc_bin_×_fam					*3.079***
Sector	0.438	0.852*	0.801	0.801	0.801
Number of obs	163	159	159	159	159
Years periods	9	9	9	9	9

Note(s): The results are the parameters of the dynamic GMM model. The ***, ** and *indicate parameter significance at 1, 5 and 10%, respectively. The variables ROA (t – 1) and ROE (t – 1) are the first lags of the dependent variable
Source(s): Own elaboration

whereas it was not significant when EPS was included in the model. In contrast, the positive and significant effect of EPS on ROE observed in the baseline model disappears once EPS is excluded. Taken together, these shifts suggest that while EPS exerts some influence on the significance of individual coefficients, the overall pattern of results is stable, indicating that the inclusion of EPS does not mechanically drive our conclusions and remains robust across specifications. Table 14 reports the joint ESG effects in family firms ($\beta_1 + \beta_3$), *H2*, when EPS is excluded from the model.

Table 14 reports the joint-effect tests of ESG within family firms when EPS is excluded from the model. The results indicate that the Environmental pillar becomes statistically significant at the 5% level for ROE and marginally significant at the 10% level for operating margin.

Discussion of results

The findings reveal a nuanced relationship between ESG practices and financial outcomes in family firms. The analysis shows that implementing ESG practices, particularly environmental initiatives, has a positive and significant impact on ROE and operating margin in family businesses.

Before interpreting the hypothesis tests, it is important to note the contextual differences revealed in our descriptive analysis, particularly the independent samples T-tests. These tests showed that family firms in the sample were significantly larger and more likely to engage in ESG disclosure than their nonfamily peers. While average ESG performance levels did not

Table 11. Results removing outliers for ROE

Indicator/Variables	(1)	(2)	(3)	(4)	(5)
const	302.41**	308.77545**	308.36**	292.96**	305.13
ESG	−0.003				
Envir		0.0235692			
Social			0.0342		
Governance				−0.083	
Env_bin					−2.216
lev	0.0074	−0.008007	0.0096	0.009	0.0006
tac	0.1568***	0.1618341***	0.1606***	0.1513***	0.1594***
EPS	1.3745***	1.375032***	1.3699***	1.3632***	1.3761***
cash_ratio	54.025**	56.81518***	53.661**	52.136**	53.909**
size	−12.297**	−12.57069**	−12.55**	−11.88**	−12.37**
bs	0.1705	0.1266528	0.1833	0.1854	0.1535
ESG_×_fam	0.0626				
Envir_×_fam		0.0688032			
Social_×_fam			0.0087		
Governance_×_fam				*0.1558***	
Env_bin_×_fam					*5.4574**
rsquared	0.303	0.3093421	0.303	0.3099	0.3035
rsquared_overall	−2.2328	−2.338825	−2.3555	−2.092	−2.331
rsquared_betwee	−3.9752	−4.115147	−4.2191	−3.686	−4.094
rsquared_within	0.288	0.2993222	0.2878	0.2907	0.2668
Number of obs	381	381	381	381	381
Years periods	9	9	9	9	9

Note(s): The results are the parameters of the fixed-effects model, which includes both individual and time effects. When applying the Breusch and Pagan (1979) test, we found evidence against the null of homoscedasticity in column 2, using robust standard errors. The variable sector and the binary variable family are not included in the results because the fixed-effect model absorbs time-invariant characteristics. The ***, ** and *indicate parameter significance at 1, 5 and 10%, respectively
Source(s): Own elaboration

differ, the higher likelihood of adoption among family firms provides valuable context for understanding the mechanisms behind the results discussed below.

As reported in Table 3, among the ESG dimensions, only the interaction between the binary environmental variable (Env_bin × Family) is statistically significant and positive. This result indicates that family firms that adopt environmental practices achieve stronger ROE compared to their nonfamily counterparts. At the same time, other ESG dimensions do not show evidence of a systematic moderation effect. These selective findings are consistent with prior research suggesting that family firms' long-term orientation and commitment to legacy facilitate the successful integration of sustainability practices (Zellweger and Nason, 2008; Faller and Knyphausen-Aufseß, 2018). In our case, the environmental dimension appears to be the primary channel through which ESG adoption translates into superior financial performance for family firms.

As reported in Table 4, the interaction between environmental scores and family ownership (Envir × Family) is positive and statistically significant, indicating that family firms achieve higher operating margins when engaging in environmental practices. The binary environmental interaction (Env_bin × Family) is also significant, reinforcing that even basic adoption of environmental initiatives is associated with superior profitability in family firms. By contrast, the aggregate ESG score, as well as the Social and Governance

Table 12. Joint ESG effect in family firms ($\beta_1 + \beta_3$): ROA, ROE, and operating margin (outliers removed)

Dependent variables	ESG	Environmental	Social	Governance	Env_bin
ROA	*0.0401** (0.0221)	*0.0381*** (0.0175)	0.0005 (0.0290)	*0.0338*** (0.0168)	−0.1414 (1.7163)
	t = 1.817 p = 0.069	t = 2.176 p = 0.030	t = 0.016 p = 0.987	t = 2.018 p = 0.044	t=-0.082 p = 0.934
ROE	0.0439 (0.0792)	0.0987 (0.0619)	0.0486 (0.0597)	0.0153 (0.0649)	2.0425 (2.3988)
	t = 0.555 p = 0.579	t = 1.594 p = 0.111	t = 0.815 p = 0.415	t = 0.236 p = 0.814	t = 0.851 p = 0.395
Operating margin	0.0417 (0.0444)	0.0257 (0.0359)	0.0334 (0.0385)	*0.0694** (0.0406)	1.1157 (2.8844)
	t = 0.940 p = 0.347	t = 0.716 p = 0.474	t = 0.868 p = 0.385	t = 1.710 p = 0.087	t = 0.387 p = 0.699

Note(s): Estimates are from tests of $\beta_1 + \beta_3$. Robust standard errors in parentheses. The ***, **, and * indicate parameter significance at 1, 5 and 10%, respectively. All regressions include firm- and year-fixed effects and the same control variables as in Tables 3–5
Source(s): Own elaboration

Table 13. Robustness check: ESG–performance models without EPS

Indicator/Variables	(1) Operating marging	(2) Operating marging	(3) *ROA*	(4) *ROE*
const	−2039.295**	−1947.640**	164.006	9.194
ESG				
Envir	−0.208			
Social				
Governance				
env_bin		−154.037**	−9.566**	−3.905*
lev	−1.334***	−1.325***	−0.097	−0.330*
tac	0.093	0.140	0.124**	0.172**
cash_ratio	37.426	60.267	1.596	61.064***
size	86.947**	85.216**	−5.971	0.464
bs	−5.285*	−5.844**	−0.478	−0.216
Envir_×_fam	*0.489**			
env_bin_×_fam		*162.925***	*9.424**	1.005
rsquared	0.364	0.423	0.330	0.118
rsquared_overall	−3.180	−4.605	−0.900	0.098
rsquared_betwee	−8.196	−12.219	−2.583	0.105
rsquared_within	0.288	0.365	0.301	0.116
Number of obs	464	464	464	451
Years periods	9	9	9	9

Note(s): The results are the parameters of the fixed-effects model, which includes both individual and time effects. When applying the Breusch and Pagan (1979) test, we found evidence against the null of homoscedasticity in column 2, using robust standard errors. The variable sector and the binary variable family are not included in the results because the fixed-effect model absorbs time-invariant characteristics. The ***, ** and *indicate parameter significance at 1, 5 and 10%, respectively
Source(s): Own elaboration

pillars, do not show significant interaction effects. These results suggest that the financial benefits of ESG adoption in family firms are explicitly concentrated in the environmental dimension. At the same time, other ESG pillars do not appear to yield differential operating margin outcomes.

As reported in Table 5, the interaction terms between ESG and family ownership are consistently positive but not statistically significant when ROA is used as the dependent variable. This indicates that, unlike ROE and operating margin, the ESG–performance link does not extend to ROA in family firms. These results are consistent with prior research documenting mixed evidence on the ESG-accounting performance relationship (Flammer, 2015; Friede *et al.*, 2015; Atan *et al.*, 2018). A plausible explanation is that ESG initiatives often involve upfront costs and generate long-term benefits that are not fully captured in short-term accounting measures, such as ROA (Nollet *et al.*, 2016; Behl *et al.*, 2021). Thus, while family firms appear to benefit from ESG adoption in specific profitability dimensions, the effect is not evident in return on assets, which tends to reflect short-term performance.

For *H1*, which tests whether family ownership strengthens the ESG-performance link, the results provide partial support. The interaction terms (ESG × Family) are positive and significant in selected cases. Specifically, family firms that adopt environmental practices achieve higher ROE and stronger operating margins compared to nonfamily firms. These findings provide partial support for *H1*, suggesting that ESG adoption enhances financial

Table 14. Joint ESG effect in family firms ($\beta_1 + \beta_3$): ROA, ROE, and operating margin without EPS

Dependent variables	ESG	Environmental	Social	Governance	Env_bin
ROA	−0.0096 (0.0336) $p = 0.775$	0.0418 (0.0273) $p = 0.126$	0.0005 (0.0290) $p = 0.987$	−0.0416 (0.0340) $p = 0.220$	−0.1414 (1.7163) $p = 0.934$
ROE	−0.0116 (0.0867) $p = 0.893$	*0.1265*** (0.0639) $p = 0.048$	0.0548 (0.0609) $p = 0.368$	−0.1303 (0.0893) $p = 0.145$	−2.9001 (4.1850) $p = 0.488$
Operating margin	0.1422 (0.2956) $p = 0.630$	*0.281** (0.1626) $p = 0.084$	0.2016 (0.2057) $p = 0.327$	−0.2467 (0.3537) $p = 0.486$	8.8875 (9.7242) $p = 0.361$

Note(s): Estimates are from tests of $\beta_1 + \beta_3$. Robust standard errors in parentheses. The *** and * indicate parameter significance at 1 and 10%, respectively. All regressions include firm and year fixed effects and the same control variables as in Tables 3–5
Source(s): Own elaboration

outcomes in family firms, with the environmental dimensions emerging as the most consistent driver.

To further address potential endogeneity concerns, we employed a dynamic panel GMM estimator. The results indicate that certain specifications yield significant and positive coefficients for the interaction terms, particularly for Governance × Family (0.062*, column 1) and for the binary specifications (Gob_bin × Family, ESG_bin × Family and Soc_bin × Family, all significant at the 5% level in columns 3–5). These findings confirm that, after accounting for reverse causality and dynamic effects, family ownership strengthens the performance benefits of governance, social and environmental adoption, thereby reinforcing the robustness of *H1*.

Notably, the dynamic GMM results broadly corroborate the fixed-effects estimates in Tables 3–5, confirming that the moderating role of family ownership is robust across methods. In particular, the significance of governance-related interactions and binary ESG indicators reinforces the conclusion that family ownership amplifies the financial benefits of ESG adoption. This consistency across estimation techniques provides stronger support for *H1*.

For *H2*, which tests whether ESG adoption leads to superior financial outcomes within family firms ($\beta_1 + \beta_3$), the evidence is mixed. The joint-effect tests in the full sample (Table 6) show little systematic improvement, with only the binary environmental measure for ROA reaching marginal significance. Robustness checks sharpen this picture: after winsorization (Table 12), ROA becomes positively associated with the ESG composite, as well as the environmental and governance pillars, while operating margin shows a marginal effect. When EPS is excluded (Table 14), the environmental pillar emerges as significant for ROE and marginal for operating margin. These findings suggest that environmental adoption contributes positively to equity returns and, to a lesser extent, to operating profitability in family firms. By contrast, no significant joint effects are observed for ROA or for the aggregate ESG, Social or Governance measures. Additional subsample analyses of family firms (Tables 7–9) reinforce this view: within family firms, ESG adoption is linked to stronger ROA (ESG composite, environmental and social factors), ROE (ESG composite, social and governance) and operating margins (environmental), although these effects are not systematic across all metrics. Overall, the evidence provides selective but not consistent support for *H2*, in contrast to the clearer and stronger support observed for *H1*.

When the analysis accounts for outliers, the joint ESG effect in family firms shows its strongest and most consistent significance for ROA, where the overall ESG score is positive and both the environmental and governance dimensions display significant associations. This suggests that, once extreme values are excluded, ESG adoption in family firms is more clearly linked to stronger asset-based performance. For ROE, none of the ESG dimensions reach statistical significance, although the environmental pillar approaches conventional thresholds. For operating margin, governance shows a marginally positive effect, while the other dimensions remain insignificant. Taken together, these findings indicate that the financial benefits of ESG adoption in family firms are not uniformly distributed across all profitability measures. Instead, the impact is concentrated on ROA and, to a lesser extent, operating margins, with environmental and governance practices emerging as particularly important once outliers are considered.

When reestimating the joint ESG effects in family firms ($\beta_1 + \beta_3$) without including EPS as a control, the overall pattern remains unchanged mainly: most ESG dimensions do not exhibit significant joint effects on financial performance. However, two important differences emerge. First, the Environmental pillar becomes statistically significant at the 5% level for ROE, indicating that family firms with stronger environmental engagement achieve

higher returns on equity. Second, the Environmental pillar shows marginal significance at the 10% level for operating margin, suggesting that environmental adoption may also contribute to improvements in operating profitability. By contrast, no significant joint effects are observed for ROA or for the aggregate ESG, Social, Governance or binary environmental measures.

Taken together, these findings suggest that family firms derive a comparative advantage from ESG adoption relative to their nonfamily peers (supporting *H1*). However, the absolute benefits of ESG adoption within family firms are uneven, providing only partial support for *H2*. This pattern is consistent with the literature, which shows that family firms' long-term orientation and SEW concerns make them particularly effective at translating sustainability practices into a competitive advantage (Zellweger and Nason, 2008; Faller and Knyphausen-Aufseß, 2018). However, the heterogeneous results across financial metrics also highlight that ESG adoption does not guarantee uniform financial gains, reflecting the mixed empirical evidence in prior studies (Friede *et al.*, 2015; Nollet *et al.*, 2016; Behl *et al.*, 2021).

Conclusions

This study shows that ESG integration affects the financial performance of Mexican family firms in mixed ways. It highlights the need to carefully align ESG strategies with broader financial goals. The findings have significant implications for policymakers, business leaders and family firms. The study also highlights the unique role of family control and governance in shaping ESG outcomes. It finds that family firms with strong ESG integration, particularly in environmental initiatives, achieve stronger profitability compared to nonfamily firms (supporting *H1*). At the same time, the effects on asset-based performance (ROA) are more selective and less consistent (partial support for *H2*). This suggests that the financial benefits of ESG practices are clearer in profitability measures such as ROE and operating margin than in ROA, adding complexity to the ongoing debate about the financial implications of sustainability initiatives.

Theoretical implications. The socio-emotional perspective clarifies why our results are more pronounced in family firms and underscores the study's contribution to understanding how family-centric priorities shape corporate governance and ESG engagement in ways that extend prior theories of the firm.

Our study contributes to academic discourse by emphasizing the unique dynamics of ESG integration within family businesses. The improvements in ROE and operating margin, primarily driven by environmental and governance practices, suggest that family firms, due to their long-term orientation and commitment to legacy, can achieve better financial performance through strategic ESG adoption. However, the selective results for ROA – significant only in robustness and subsample tests – indicate the complexity of the ESG–financial performance relationship, suggesting that future models must account for these nuances. Furthermore, the research highlights the role of family ownership dynamics in shaping the effectiveness of ESG strategies. This moderating effect of family ownership underscores the potential of family firms to leverage their distinctive characteristics for sustainability success.

Practical implications. This study highlights that family firms that integrate ESG practices into their core strategies experience measurable financial benefits, particularly in terms of equity returns and, in selective cases, asset-based performance. Therefore, family business leaders should view ESG not as a regulatory burden but as a strategic lever for long-term value creation. Integrating ESG dimensions can enhance stakeholder trust, attract ESG-sensitive investors and foster operational efficiencies.

For policymakers, the findings underscore the need to design targeted incentives and regulatory frameworks that support ESG adoption, especially in sectors where uptake remains limited, such as utilities and financial services. Tools may include tax benefits for sustainability investments, simplified ESG reporting standards for small and medium-sized enterprises (SMEs), and capacity-building programs tailored to family-owned enterprises.

Moreover, successful ESG implementation in family firms requires attention to internal dynamics, including decision-making structures, generational transitions and the alignment of socioemotional and economic goals. Advisors and consultants should support these firms with customized governance mechanisms – such as sustainability committees, independent board members and next-generation engagement strategies – to ensure ESG commitments are both credible and sustainable.

To enhance the practical relevance of our findings, it is worth highlighting tangible examples of ESG integration in Mexican family firms. For instance, Grupo Bimbo has implemented ambitious sustainability goals, including the use of 100% renewable electricity in global operations, zero-waste-to-landfill certifications and sustainable ingredient sourcing (Grupo Bimbo, 2024). Similarly, FEMSA has adopted comprehensive ESG reporting aligned with the GRI standards and established long-term objectives in water usage, circular economy and climate action (FEMSA, 2024). These firms also demonstrate governance improvements, including the inclusion of independent board members and ESG oversight committees. Such initiatives demonstrate how family businesses can integrate ESG into their operations through practices such as supply chain transparency, energy efficiency and inclusive hiring. By aligning these efforts with international frameworks such as the Sustainability Accounting Standards Board (SASB) or the UN SDGs, family firms can leverage their long-term orientation as a strategic asset, thereby enhancing both resilience and reputation (Gangi *et al.*, 2025; Bahadori *et al.*, 2021).

Adopting ESG principles and inclusive growth practices yields considerable economic and operational benefits for family firms and their communities. Family businesses have the potential to drive positive change through a triad of strategies: philanthropic endeavors that are detached from core business operations, aimed at enhancing societal and environmental well-being; business-related initiatives designed to mitigate adverse impacts while amplifying positive outcomes; and the creation of innovative products and services.

Future research lines. Future research could compare family and nonfamily firms to evaluate the depth and effectiveness of ESG integration. This study could identify specific practices that lead to successful sustainability outcomes and highlight areas where family firms excel or lag.

Another research avenue is to conduct cross-cultural comparisons of sustainability practices between Mexican family firms and those in other countries. This project could provide global insights into best practices and innovative approaches to ESG challenges. In addition, examining how cultural and regional differences within Mexico influence the adoption and implementation of ESG practices could reveal unique challenges and opportunities faced by firms in different parts of the country.

Another potential area of research is the long-term impact of sustainability practices on the financial and operational performance of Mexican family firms. This research could provide insights into how sustainability contributes to resilience, profitability and competitive advantage over time, including an examination of the influence of generational shifts within family businesses on ESG strategies. Research could focus on how the values and priorities of younger family members shape the firm's approach to sustainability.

Furthermore, the role of technological innovation in enhancing ESG practices within family firms warrants consideration. The technological approach could include studies on

adopting green technologies, digital transformation for sustainability reporting and using blockchain for supply chain transparency.

Finally, analyzing sustainability reporting standards and practices among Mexican family firms, including the challenges of adopting international reporting frameworks and the benefits of transparency in sustainability efforts, could explore how regulatory pressures drive or hinder sustainability efforts.

In conclusion, enhancing ESG integration in family firms will require collaboration between public institutions, investors and private sector leaders. By leveraging the intrinsic long-term orientation of family firms while addressing their structural limitations, Mexico can enhance its corporate governance landscape and make a significant contribution to achieving the SDGs.

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Appendix

Table A1.

#	Company name	Family-Controlled
1	Macquarie Mexico real estate management SA de CV	Non-family controlled
2	Cox energy SAB de CV	Riquelme family
3	Convertidora industrial sociedad anonima bursatil de capital variable	Non-family controlled
4	Internacional de ceramica SAB de CV	Non-family controlled
5	Industrias CH SAB de CV	Vigil gonzález family
6	Cydsa SAB de CV	Sada garcía family
7	Value grupo financiero SAB de CV	Non-family controlled
8	Controladora vuela compania de aviacion SAB de CV	Non-family controlled
9	Genomma lab internacional SAB de CV	Herrera family
10	Grupo posadas SAB de CV	Azcárraga family
11	Kimberly-Clark de Mexico SAB de CV	González family
12	G collado SAB de CV	Collado family
13	Proyectos inmobiliarios carne mart SA de CV	Baeza family
14	La latinoamericana seguros SA	Non-family controlled
15	Industrias penoles SAB de CV	Bailleres family
16	Dine SAB de CV	Senderos family
17	Grupo rotoplas SAB de CV	Rojas family
18	Grupo bursatil mexicano SA de CV casa de bolsa	Non-family controlled
19	Vesta real estate corporation SAB de CV	Non-family controlled
20	Farmacias benavides SAB de CV	Non-family controlled
21	Grupo herdez SAB de CV	Hernández pons family
22	Grupo industrial saltillo SAB de CV	López del bosque family
23	Grupo hotelero Santa Fe SAB de CV	Medina family
24	FIBRA HD servicios SC	Non-family controlled
25	Planigrupo latam SAB de CV	Larrea family
26	LA COMER SAB DE CV	González nova family
27	Grupo radio centro SAB de CV	Aguirre jiménez family
28	Nemak SAB de CV	Non-family controlled
29	Vista energy SAB de CV	Non-family controlled
30	Grupo comercial chedraui SAB de CV	Chedrahui family
31	Grupo aeroportuario del pacifico SAB de CV	Non-family controlled
32	Grupo carso SAB de CV	Slim family
33	Grupo KUO SAB de CV	Senderos family
34	Urbi desarrollos urbanos SAB de CV	Pérez román family
35	Hoteles city express SAB de CV	Non-family controlled
36	Grupo elektra SAB de CV	Salinas family
37	Consorcio ara SAB de CV	Non-family controlled
38	Acosta verde SAB de CV	Acosta verde family
39	Grupo financiero inbursa SAB de CV	Slim family
40	Grupe SAB de CV	Diez fernández family
41	Grupo lamosa SAB de CV	Elosúa family
42	Promotora ambiental SAB de CV	Garza santos family
43	Concentradora fibra hotelera mexicana SA de CV	Kabbaz family
44	Grupo TMM SAB	Serrano Family (31.57%)
45	Grupo vasconia SAB	Elizondo family
46	Servicios corporativos javer SAB de CV	Non-family controlled
47	Organizacion cultiba SAB de CV	Non-family controlled
48	Corporacion interamericana de entretenimiento SAB de CV	Soberón kury family

(*continued*)

Table A1. Continued

#	Company name	Family-Controlled
49	CI banco SA institucion de banca multiple	Non-family controlled
50	Controladora axtel SAB de CV	Non-family controlled
51	Procorp SAB de CV	Non-family controlled
52	Grupo sports world SAB de CV	Non-family controlled
53	Alfa SAB de CV	Non-family controlled
54	Corporativo fragua SAB de CV	Arroyo family
55	Wal mart de Mexico SAB de CV	Walton family
56	Sitios latinoamerica SAB de CV	Slim family
57	Consorcio aristos SAB de CV	Abed family
58	Prologis property Mexico SA de CV	Ibarzábal family
59	Grupo nacional provincial SAB	Bailleres family
60	Administradora de activos fibra inn SC	Non-family controlled
61	COCA-COLA FEMSA SAB DE CV	Garza lagüera family
62	Corporacion moctezuma SAB de CV	Non-family controlled
63	Grupo aeroportuario del sureste SAB de CV	Non-family controlled
64	Fibra mty SAPI de CV	Kabbaz family
65	Fibra shop portafolios inmobiliarios SAPI de CV	Non-family controlled
66	Aleatica SAB de CV	Non-family controlled
67	Vinte viviendas integrales SAB de CV	Leal aguirre family
68	Grupo palacio de hierro SAB de CV	Bailleres family
69	CFECapital S de RL de CV	Non-family controlled
70	Desarrolladora homex SAB de CV	Non-family controlled
71	Grupo minsa SAB de CV	Non-family controlled
72	Grupo simec SAB de CV	Vigil gonzález family
73	Grupo mexicano de desarrollo SAB	Ballesteros family
74	Grupo aeroportuario del centro norte SAB de CV	Non-family controlled
75	Corporacion actinver SAB de CV	Madero rivero family
76	Ingeal SAB de CV	Non-family controlled
77	America movil SAB de CV	Slim family
78	Fibra uno administracion SA de CV	Non-family controlled
79	Self-Storage management S de RL de CV	Non-family controlled
80	GRUPO TELEVISA SAB	Azcárraga family
81	Concentradora fibra danhos SA de CV	Kabbaz family
82	Grupo financiero banorte SAB de CV	Hank gonzález family
83	Alsea SAB de CV	Torrado martínez family
84	Pena verde SAB	Non-family controlled
85	CMR SAB de CV	Vargas mier family
86	Medica sur SAB de CV	Non-family controlled
87	Grupo profuturo SAB de CV	Bailleres family
88	CEMEX SAB DE CV	Zambrano family
89	Becle SAB de CV	Beckmann family
90	GMexico transportes SAB de CV	Larrea family
91	Grupo gicsa SAB de CV	Cababie family
92	Operadora de sites mexicanos SAB De CV	Non-family controlled
93	Financiera Independencia SAB de CV SOFOM ENR	Non-family controlled
94	Grupo nagoin SA de CV	Non-family controlled
95	Gentera SAB de CV	Avalos family
96	GCC SAB de CV	Terrazas family

(*continued*)

Table A1. Continued

#	Company name	Family-Controlled
97	Grupo financiero multiva SAB de CV	Non-family controlled
98	Qualitas controladora SAB de CV	Brockman family
99	Unifin financiera SAB de CV	Lebois family
100	Fibra plus	Kabbaz family
101	Grupo traxion SAB de CV	Lijtszain family
102	Grupo gigante SAB de CV	Losada family
103	Arca continental SAB de CV	Barragan family (47.75%)
104	Promotora y operadora de infraestructura SAB de CV	Peñaloza alanis family
105	Grupo pochteca SAB de CV	Del Valle family
106	Minera frisco SAB de CV	Slim family
107	Banco del bajio SA institucion de banca multiple	Oñate barrón family
108	Bolsa mexicana de valores SAB de CV	Non-family controlled
109	FOMENTO ECONOMICO MEXICANO SAB DE CV	Garza lagüera family
110	Gruma SAB de CV	González barrera family
111	El puerto de liverpool SAB de CV	Non-family controlled
112	Compania minera autlan SAB de CV	Mota de larrea family
113	Casa de bolsa finamex SAB de CV	Non-family controlled
114	Grupo bafar SAB de CV	Baeza family
115	Accel SAB de CV	Inbursa (Slim Family 12%)
116	Organizacion soriana SAB de CV	Bringas F. and soberón F.
117	RLH properties SAB de CV	Chico hernández family
118	AXTEL SAB DE CV	Non-family controlled
119	Cadu inmobiliaria SA de CV	Non-family controlled
120	Invex controladora SAB De CV	Non-family controlled
121	Alpek SAB de CV	Garza sada family
122	ANCO BILBAO VIZCAYA ARGENTARIA SA	Non-family controlled
123	Regional SAB de CV	Cisneros family
124	Orbia advance corporation SAB de CV	Del Valle family
125	Grupo Mexico SAB de CV	Larrea family
126	Vitro SAB de CV	Sada garcía family
127	Impulsora del desarrollo y el empleo en america latina SAB de CV	Slim family
128	Grupo bimbo SAB de CV	Servitje montull family

Source(s): Own elaboration

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