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Board gender diversity and intellectual capital disclosure as strategic resources. Insights from family and non-family firms

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ABSTRACT

PURPOSE. This research examines the short-term connection between intellectual capital disclosure (ICD) and gender diversity within the board of directors, specifically considering the role of family status. This study highlights the distinctive features of family-owned firms, which tend to adopt a different approach to diversity than non-family firms, impacting their ICD practices. **METHODOLOGY.** A mixed-method approach is adopted. First, content analysis is conducted on non-financial reports of Italian-listed firms to generate an ICD index. The second part involves an OLS regression to test the relationship between the ICD and board gender diversity (proxied by the *BLAU* index) by considering the moderation role played by a dummy variable for family ownership. **FINDINGS.** The results demonstrate that board gender diversity affects ICD differently, depending on the firm family status. Specifically, while diversity is positively associated with ICD in family firms, this effect is negatively moderated in non-family ones. **IMPLICATIONS.** From a managerial perspective, this study provides recommendations for family firms to improve the integration of diverse perspectives within their boards, enhancing their ICD practices. From a theoretical perspective, results support the “resource dependency theory”, which posits that diverse boards provide critical external resources, improving disclosure.

SCOPO. Questa ricerca esamina la connessione a breve termine tra la divulgazione del capitale intellettuale (ICD) e la diversità di genere all'interno del consiglio di amministrazione, considerando in particolare il ruolo dello stato di famiglia. Questa ricerca evidenzia le caratteristiche distintive delle imprese a conduzione familiare, che tendono ad adottare un approccio diverso alla diversità rispetto alle imprese non familiari, influenzando le loro pratiche ICD. **METODOLOGIA.** Viene adottato un approccio con metodo misto. In primo luogo, l'analisi dei contenuti viene condotta sulle relazioni non finanziarie delle società quotate in Italia per generare un indice ICD. La seconda parte prevede una regressione OLS per testare la relazione tra l'ICD e la diversità di genere del consiglio di amministrazione (rappresentata dall'indice *BLAU*) considerando il ruolo di moderazione svolto da una variabile fittizia per la proprietà familiare. **RISULTATI.** I risultati dimostrano che la diversità di genere nei consigli di amministrazione influisce in modo diverso sull'ICD, a seconda dello stato di famiglia dell'azienda. In particolare, mentre la diversità è positivamente associata all'ICD nelle aziende familiari, questo

effetto è negativamente moderato in quelle non familiari. IMPLICAZIONI. Da un punto di vista manageriale, questo studio fornisce raccomandazioni alle aziende familiari per migliorare l'integrazione di prospettive diverse all'interno dei loro consigli di amministrazione, migliorando le loro pratiche ICD. Da un punto di vista teorico, i risultati supportano la validità della "resource dependency theory", che postula che i consigli di amministrazione diversificati forniscono risorse esterne critiche, migliorando la disclosure.

Keywords: Intellectual capital disclosure, Family firm, Gender diversity, Agency theory, Resource-dependency theory

1 – Introduction

The transition from a manufacturing-based economy to a knowledge-based one has significantly elevated the importance of intellectual capital (IC) in driving corporate value creation (J. Dumay & Roslender, 2013; Fontana, 2013; Petty & Guthrie, 2000). Today, IC stands as a fundamental strategic asset that ensures firms can establish and sustain a competitive edge, thereby supporting the attainment of strategic business goals (Demartini & Beretta, 2023; Guthrie & Petty, 2000). This evolution has further enhanced the significance of IC-related information in corporate contexts (Paoloni et al., 2023; Salvi et al., 2020).

Intellectual capital disclosure (ICD) has become increasingly crucial as stakeholders demand greater transparency regarding how firms create value through intangible assets (Cuozzo et al., 2017). Intellectual capital disclosure provides insights into key value drivers, such as human, structural, and relational capital, which collectively enhance corporate value (Li et al., 2008). By improving the transparency and communication of IC, firms are better positioned to strengthen trust and maintain legitimacy in the eyes of stakeholders (Singhal & Gupta, 2024). Previous studies have highlighted that effective ICD can mitigate information asymmetry, thereby reducing the cost of capital and enhancing corporate reputation (Baldini & Liberatore, 2016; Cerbioni & Parbonetti, 2007; Singhal & Gupta, 2024). Consequently, the ICD is not only a tool for information sharing (Veltri & Nardo, 2013), but also a strategic mechanism for value creation in the knowledge economy (J. C. Dumay, 2012).

An effective governance framework can assist firms in safeguarding their values by engaging decision-makers in developing intellectual capital (Hesniati, 2021). The extent of ICD is influenced by corporate governance practices, which also improve the quality of IC reporting, reflecting the firm's capability in managing its assets and overall value (Al-Sartawi, 2018). In this context, Agency theory (Berle & Means, 1932; Jensen & Meckling, 1976) suggests that companies facing elevated agency costs often seek to mitigate these costs by enhancing corporate governance mechanisms, particularly through increased monitoring activities and expanding the scope of voluntary disclosure (Cerbioni & Parbonetti, 2007).

Gender diversity in corporate governance has emerged as a critical factor influencing ICD (Ali et al., 2024; Chiucchi et al., 2018; Nicolò et al., 2022). The presence of women on boards has been associated with more effective decision-making and increased transparency, which can positively impact IC disclosure practices (Nicolò et al., 2022). Diverse boards are believed to provide varied perspectives, enhancing the quality of corporate disclosure (Nadeem, 2020). The inclusion of female directors has been found to improve the voluntary disclosure of intellectual capital, suggesting that gender diversity acts as a key driver of enhanced reporting practices

(Ali et al., 2024). According to the resource dependency theory, gender-diverse boards bring unique skills and networks that are crucial for better governance, ultimately contributing to improved ICD (Rhode & Packel, 2010).

Moving ahead from the agency theory's perspective, family ownership plays a critical role in shaping the relationship between ICD and board diversity (Ali et al., 2024). On one hand, family owners, as large shareholders, often reduce agency conflicts through stricter oversight and lower information asymmetry (Montemerlo, 2024; Srivastava & Bhatia, 2022). However, the occurrence of family ownership may also limit the positive impact of diverse boards on ICD, as family owners prioritize their interests, which can lead to principal-principal conflicts that hinder transparent disclosure practices (Ali et al., 2024).

This paper contributes to the ongoing debate on ICD, gender diversity, and family ownership, by providing intriguing insights on the Italian sample, as the first investigation up to now. The choice of the sample is justified by the significant presence of family ownership in Italy, where approximately 65% of companies are family-owned (AIDAF, 2024). To reach the target, various regression models have been performed to test the influence of corporate governance characteristics on ICD, with a specific focus on gender diversity. Furthermore, the role of family ownership in moderating the relationship between gender diversity and ICD has been tested.

The structure of this study is as follows: *Section 2* offers an in-depth literature review covering intellectual capital disclosure (ICD), gender diversity, and family ownership. *Section 3* outlines the sample and details the methodological approach. *Section 4* presents the research findings, while *Section 5* delivers the discussion and conclusions.

2 – Literature review and hypotheses development

This section focuses on discussing the study's theoretical framework and the key literature on intellectual capital disclosure, gender diversity, and family firms. The research is primarily grounded in two theoretical perspectives: Agency Theory and Resource Dependency Theory. Firstly, Agency Theory (Jensen & Meckling, 1976) provides insights into the conflicts of interest that arise between owners (principals) and managers (agents), particularly in the context of corporate governance mechanisms. In family firms, agency conflicts are typically reduced due to aligned interests between owners and managers, leading to lower information asymmetry (Srivastava & Bhatia, 2022). However, family control can also lead to principal-principal conflicts, affecting transparency and company disclosure (Solarino & Boyd, 2020). Resource Dependency Theory (Pfeffer & Salancik, 1978) highlights how board diversity enriches a firm's access to resources, improving governance outcomes. Diverse boards, especially with female representation, contribute valuable skills and perspectives that can enhance ICD practices (Nicolò et al., 2022; Rhode & Packel, 2010).

2.1 – Intellectual capital disclosure

IC encompasses the intangible assets that play a crucial role in the value-creation process (Barney, 1991; Wernerfelt, 1984), surpassing financial and physical capital as the primary driver of corporate value (Singhal & Gupta, 2024).

According to Stewart (1997), IC incorporates elements such as knowledge, skills, professional expertise, relationships, and technological capacities that provide a competitive edge to an organization (Li et al., 2008). IC is broadly categorized into three types: human capital

(skills and knowledge of employees), structural capital (organizational routines, processes, and databases), and relational capital (relationships with customers, suppliers, and other stakeholders) (Edvinsson & Malone, 1997; Guthrie, 2001; Stewart, 1997).

The relevance of IC has grown significantly in recent years due to the transition from a manufacturing-based to a knowledge-based economy (Demartini & Beretta, 2023; J. Dumay & Roslender, 2013). Following a Resource-Based perspective, IC is a key element for sustaining competitive advantage, and boosting long-term performance (Barney, 1991; Petty & Guthrie, 2000). Drawing upon previous literature, IC dimensions serve as a driver for knowledge sharing, innovativeness, competitiveness, and sustainability, generating impact on corporate performance (Demartini & Beretta, 2023). Traditional financial reports often fail to capture the full spectrum of IC, leading to information asymmetry between firms and stakeholders, which affects firm valuation (Lev & Zambon, 2003). Therefore, effective IC management and disclosure are critical in ensuring that investors and other stakeholders receive a comprehensive understanding of firm's value-creation mechanisms, thereby enhancing corporate transparency (J. C. Dumay, 2012).

Furthermore, in a knowledge-based economy, the guidance and monitoring of intellectual capital has attracted wide interest from academics and policymakers (Fontana, 2013), revealing the key role of IC disclosure (Veltri & Nardo, 2013). ICD involves the reporting of IC-related information to stakeholders through annual reports, integrated reports, or standalone IC statements. The disclosure of IC serves multiple purposes: it helps to reduce information asymmetry, improve corporate reputation, and attract investment by providing a transparent view of the intangible assets driving firm value (Salvi et al., 2020; Singhal & Gupta, 2024; Veltri & Nardo, 2013). ICD practices are closely tied to stakeholder theory and legitimacy theory, which emphasize the importance of transparent communication with stakeholders to maintain organizational legitimacy (Freeman, 1984; Guthrie et al., 2012; Schiopoiu Burlea & Popa, 2013). The transition to integrated reporting, which includes IC information as part of a comprehensive view of the firm, represents a recent innovation in corporate reporting aimed at addressing the limitations of traditional disclosures (Salvi et al., 2020).

Despite its importance, the extent and quality of ICD vary significantly across firms and regions. Literature has highlighted that ICD research often remains Eurocentric, with a lack of significant innovation in its evolution (Cuozzo et al., 2017). Moreover, voluntary ICD practices differ widely, influenced by factors such as corporate governance, firm characteristics, and cultural context (Li et al., 2008; Singhal & Gupta, 2024). Therefore, it is of interest in the literature, to study ICD practices and what these are influenced by.

2.2 – Gender diversity and ICD

Gender diversity, referring to the heterogeneity of gender within the boardroom, has gained importance due to its positive influence on transparency and decision-making (Nadeem, 2020; Nicolò et al., 2022; Zaid et al., 2024). Governments and institutions, particularly in the EU, have promoted policies to ensure gender balance on corporate boards. In this context, Agency theory and resource dependence theory providing frameworks to understand the benefits of diverse boards (Nicolò et al., 2022; Paoloni et al., 2023; Pfeffer & Salancik, 1978).

Corporate governance mechanisms, such as board composition, play a crucial role in determining ICD (Li et al., 2008) and gender diversity, as a corporate governance aspect, positively influences both financial and non-financial disclosures, improving transparency and

reducing information asymmetry (Hidalgo et al., 2011). Female directors contribute to enhancing ICD by bringing diverse perspectives and fostering a culture of openness (Nicolò et al., 2022; Zaid et al., 2024). As an instance, Zaid et al. (2024) show that a board with greater gender diversity can improve ICD, with this effect being more pronounced when the audit committee possesses a high level of financial literacy. Studies have shown that board gender diversity enhances organization transparency and reduces information asymmetry (Nadeem, 2020).

Following previous literature, the following null hypothesis is proposed:

H1. *Gender diversity has a positive impact on ICD*

2.3 – Family firms and IC

Family ownership plays a critical role in shaping corporate governance practices, as well as in ICD practices (Ali et al., 2024).

Ever since the origin of the meaning of family business in the late 1980s – jointly with the birth of the first scientific journal dedicated to family businesses, namely *Family Business Review* – issues related to (family) corporate governance have been heavily debated in the literature (Montemerlo, 2024; Ward, 1997). Accordingly, family ownership plays a critical role in shaping corporate governance practices, as well as in ICD practices (Ali et al., 2024).

Family firms are often defined by a concentrated ownership structure, where family members are heavily involved in the decision-making process and hold significant control over strategic initiatives (Ali et al., 2024; Anderson & Reeb, 2003; Daspit et al., 2021). This ownership structure tends to foster a long-term vision but may also lead to conservative approaches regarding corporate transparency and board diversity (Chen et al., 2008).

From an agency theory perspective, family ownership can mitigate traditional principal-agent conflicts due to the alignment of ownership and management (Jensen & Meckling, 1976). However, it may give rise to principal-principal conflicts between family and minority shareholders, particularly regarding disclosure practices (Ali et al., 2024; Villalonga & Amit, 2006). Family owners may prefer less disclosure to retain control and limit external scrutiny, which can adversely affect ICD levels.

The firm's ownership structure influences the corporate governance environment and the female directors' role in strategic decisions (Montemerlo, 2024), as well as in intellectual capital management. According to Harrison & Klein (2007) family businesses should strategically manage governance structures, moreover, valuing their diversity (so-called *variety* according to the authors). Saeed et al. (2021) noted that the impact of female directors depends on the firm's ownership structure. In family firms, their interests often align with family owners, but issues like nepotism and entrenchment make independent oversight challenging (Sarkar & Selarka, 2021).

Despite these challenges, Adams & Funk (2012) argued that female directors can act as effective monitors, bringing distinct leadership and ethical standards. Rhode & Packel (2010) also highlighted their objectivity and willingness to question management. Empirical evidence is mixed: Amin et al. (2024) found a positive influence of female directors in family firms, while Mustafa et al. (2020) and Sarkar & Selarka (2021) reported weaker impacts.

Concerning gender-diverse boards, family firms tend to be more resistant to incorporating diverse perspectives compared to non-family firms (Adams & Ferreira, 2009; Ali et al., 2024).

This reluctance can limit the potential benefits that gender diversity brings, such as enhanced monitoring and advisory capabilities, which are crucial for effective ICD.

Hence, this further hypothesis is proposed:

H2. *Family ownership produces a significant moderation in ICD and gender diversity relationship.*

3 – Methodology

3.1 – Sample

The dataset is retrieved from AIDA by Bureau Dijk. The initial sample consists of 131 companies listed on the FTSE Italy Mid Cap Index, FTSE Italy Star, and FTSE MIB Index from 2020 to 2022. From this sample, 31 financial companies are excluded due to their unique governance characteristics, as highlighted by the literature. Additionally, companies with year-specific missing financial data or non-financial statements are removed. Thus, the final sample comprises an average of 54 companies per year.

3.2 – Variables

3.2.1 – ICD Index

The ICD variable is generated by following the broader literature on intellectual capital disclosure using the content analysis approach (Cerbioni & Parbonetti, 2007; Cuozzo et al., 2017; Krippendorff, 1980; Singhal & Gupta, 2024). Accordingly, the set of items includes 103 different items (Structural capital = 28; Relational capital = 42; Human capital = 33).

Specifically, a set of items derived from previous ICD studies is used to content-analyze the non-financial statements of the sampled firms through the NVIVO software. This process involves coding the presence or absence of specific IC-related elements to generate a disclosure index.

The coding is conducted using a dichotomous approach, assigning a value of 1 if an item is disclosed at least once, while 0 otherwise. This method, as advocated by April et al. (2003), is preferable to word-counting, as it effectively captures the discursive nature of IC disclosures, which often do not lend themselves to simple quantification.

The overall ICD index is then computed as the sum of these dummy values divided by the total number of items considered, resulting in an index ranging from 0 to 1. The algebraic formula for this calculation is:

$$ICD = \frac{\sum_{i=1}^n Item_i}{n}$$

where *Item* represents the disclosure status of item and *n* is the total number of items.

3.2.2 – Independent variables

The primary explanatory variable is the *BLAU* index (Blau, 1977), which measures the degree of overall gender diversity on the board. The *BLAU* index ranges from 0 to 0.5, with 0.5

representing maximum heterogeneity. The formula used to calculate the *BLAU* index is as follows:

$$BLAU = 1 - \sum_{i=1}^n p_i^2$$

where p_i^2 represents the proportion of board members belonging to each gender group (male and female), and n is the number of gender categories. This approach aligns with previous literature on gender diversity (Nadeem et al., 2017; Vafaei et al., 2015). The second key explanatory variable is family firm status, represented as a dummy variable that equals 1 if the firm is family-owned and 0 otherwise.

This variable is generated in line with previous research, which defines a family firm based on active family involvement in ownership or management (Ali et al., 2024; Anderson & Reeb, 2003; Villalonga & Amit, 2006). To better capture the variability in *ICD*, a set of control variables is included based on existing literature. Specifically, corporate governance variables are added, given their significant impact on *ICD*, as suggested by the literature (Cerbioni & Parbonetti, 2007):

- CEO Female: a dummy variable equal to 1 if the CEO is female, and 0 otherwise;
- Board Size: the number of members on the board;
- ROE (Return on Equity): the profitability of the firm;
- Firm Size: the natural logarithm of total sales;
- Leverage: the proportion of total liabilities relative to total assets.

Finally, as suggested by the literature (Wooldridge, 2010), year-specific dummy variables are introduced to control for unobserved temporal effects and mitigate potential biases to address common variability among sampled units and enhance the robustness of estimates.

3.3 – Econometric models

The following model is estimated to test the research hypotheses. OLS regression has been preferred for two reasons.

- *First*, the inclusion of year-specific dummy variables allows for control for potential temporal heterogeneity, as suggested by econometric literature (Wooldridge, 2010).
- *Second*, the short timeframe of the panel (three years) limits the benefits of using fixed or random effects models, as the relatively brief period may not provide sufficient within-entity variability to justify their use (Baltagi, 2005).

$$ICD_i = \beta_0 + \beta_1 BLAU + \beta_2 family + \beta_3 CEO_{FEM} + \beta_4 BOD + \beta_5 SIZE + \beta_6 ROE + \beta_7 LEV + \sum years + \gamma_1 (BLAU * family)$$

4 – Findings

4.1 – Descriptive statistics

Table 1 reports the descriptive statistics of the sample. It reveals solid gender diversity levels on boards, with an average *BLAU* index of 0.465, indicating that diversity is generally well-

represented across firms. The average ICD of 0.251, generally, points to low levels of disclosure, with significant variation across firms, suggesting differing priorities or resource limitations.

Family ownership is present in 43% of the sample, indicating its importance in the Italian market. The average board size is around 10 members, which suggests that most firms have sufficiently large boards to potentially benefit from diverse expertise.

To ensure the reliability of the measurement scales employed for the constructs, multiple reliability tests were conducted using Cronbach's alpha coefficient (Cronbach, 1951). The results consistently yielded values exceeding the generally accepted threshold of 0.7, thereby confirming the scales' internal consistency and robustness. Specifically, the alpha values for structural capital, relational capital, human capital, and intellectual capital disclosure demonstrate a satisfactory reliability level of each construct. These findings add sustenance to the validity of the proposed framework, ensuring that the items effectively capture the underlying theoretical dimensions (see Appendix I – Table A1).

Table 1 – Descriptive statistics

Variable	Obs	Mean	Std. dev.	Min	Max
<i>ICD</i>	297	0.2512831	0.1065048	0.0097087	0.6699029
<i>BLAU</i>	199	0.4648642	0.060647	0	0.5
family	199	0.4321608	0.4966258	0	1
CEO_FEM	210	0.0380952	0.1918836	0	1
Board_size	211	9.952607	2.343711	5	16
SIZE	267	18.87624	2.126172	13.49668	25.03648
ROE	265	8.110528	17.90894	-143.27	107.45
LEV	270	3.281444	3.254859	1.03	30.86

4.2 – Correlation analysis

The correlation matrix, displayed in Table 2, indicates that there are no worrying correlations among the set of regressors, suggesting the absence of significant multicollinearity issues. Specifically, the correlation between ICD and BLAU is minimal (-0.0087), indicating that board diversity does not have a direct linear relationship with ICD. Additionally, the correlation between ICD and family status is moderately negative (-0.1766), implying that family ownership may play a role in reducing intellectual capital disclosure.

Table 2 – Correlation matrix

Variable	ICD	BLAU	family	CEO_FEM	Board_size	SIZE	ROE	LEV
<i>ICD</i>	1							
<i>BLAU</i>	-0.0087	1						
family	-0.1766	-0.0439	1					
CEO_FEM	-0.1886	0.0808	0.0826	1				

Board size	0.2669	-0.0411	-0.1458	-0.1446	1			
SIZE	0.4157	0.0696	-0.0619	-0.1056	0.0678	1		
ROE	-0.0381	0.1072	0.0156	0.0305	0.0197	-0.003	1	
LEV	0.2591	-0.0353	0.0149	-0.0946	-0.1184	0.2323	0.0813	1

4.3 – Regression results

The results of the OLS regression analyses for family and non-family firms are presented in Table 3. To assess potential multicollinearity issues, variance inflation factors (VIFs) were calculated for both models, with average values of 1.20 for family firms and 1.24 for non-family firms.

Table 3 – Regression results

Y = ICD	family = 1		family = 0	
Variable	Coeff.	p. value	Coeff.	p- value
<i>BLAU</i>	0.3145	0.008	-0.3474	0.013
CEO_FEM	-0.0153	0.472	-0.0503	0.014
Board_size	0.0168	0.001	0.0026	0.451
SIZE	0.001	0.893	0.0041	0.533
ROE	0.0005	0.282	0.0015	0.000
LEV	0.0059	0.592	0.017	0.002
year 21	-0.0156	0.545	0.0087	0.619
year 22	0.0307	0.224	-0.0294	0.2
_cons	-0.1097	0.458	0.2726	0.057
F-statistic	6.82		11.31	
Prob > F	0.000		0.000	
R-squared	0.2681		0.2695	
Root MSE	0.0826		0.0816	
N. obs.	68		96	

These VIF values fall significantly below the commonly accepted threshold of 5, suggesting that data do not suffer from multicollinearity (Weisberg, 2005). Moreover, robust standard errors are employed in each estimation to avoid heteroskedasticity issues (White, 1980). The regression results reveal contrasting influences of board gender diversity (*BLAU*) on ICD between family and non-family firms. For non-family firms, the coefficient of *BLAU* is negative and statistically significant ($\beta = -0.347$, $p < 0.05$), suggesting that increased board diversity is associated with lower ICD levels. In the context of family firms, findings reveal an opposite

direction as gender diversity tends to boost ICD, showing a strong significance ($\beta = 0.314$, $p < 0.01$).

Among the control variables, CEO_FEM shows a significant negative effect on ICD in non-family firms ($\beta = -0.050$, $p < 0.05$), but this effect is not significant in family ones. Board_size is positively significant only for family firms ($\beta = 0.017$, $p < 0.01$), suggesting that a larger board contributes to increased ICD in these contexts. The financial variables, such as ROE and LEV, are significant in non-family firms, indicating their relevance in driving disclosure practices in these organizations. The R-squared values for the family and non-family models are 0.268 and 0.270, respectively, indicating that the explanatory variables account for approximately 27% of the variation in ICD for both types of firms. The F-statistics are highly significant ($p < 0.001$) in both models, suggesting that the overall models are statistically significant and that the explanatory variables jointly contribute to explaining variations in ICD.

4.4 – Robustness checks

To test the robustness of the previous results, a moderation model was estimated using an OLS estimator, as shown in Table 4.

Table 4 – Moderation analysis

Variable	Coeff.	p. value
BLAU	-0.2593	0.015
family	-0.277	0
c.BLAU#c.family	0.5507	0
CEO_FEM	-0.0371	0.002
Board_size	0.0086	0.007
SIZE	0.0026	0.621
ROE	0.0011	0.001
LEV	0.0137	0.01
year 21	-0.0004	0.956
year 22	-0.0055	0.748
_cons	0.2088	0.067
F-statistic	10.36	
Prob > F	0.000	
R-squared	0.2038	
Root MSE	0.0846	

The findings highlight a notable interaction between board gender diversity and the family status of a firm, underscoring that the influence of gender diversity on ICD differs significantly based on the firm's classification as family or non-family. Specifically, the analysis shows that in family firms, greater board gender diversity positively contributes to enhanced ICD practices.

Conversely, in non-family firms, an increase in gender diversity appears to have a detrimental effect on ICD. These results provide further validation by demonstrating that family status plays a crucial moderating role in shaping the relationship between board gender diversity and ICD. This conclusion aligns with the separate models applied to family and non-family firms, reinforcing the robustness and consistency of the findings across the different analytical approaches.

A further robustness check has been employed. Based on the Chow test results, the robustness of our findings is supported by the significant differences observed between family and non-family firms. The F-statistic ($F(6, 149) = 2.54, p = 0.0226$) indicates that the coefficients for key governance and financial variables, such as *BLAU*, CEO gender, and board size, vary significantly between the two groups. This further test confirms the crucial role of family status in shaping these variables' impact on the ICD level.

The final stage of robustness checks consists of further estimations involving the tripartition of ICD into its three components: structural capital disclosure (SCD), relational capital disclosure (RCD), and human capital disclosure (HCD). Results confirm previous estimations on each regression model, except for the effect of *BLAU* on RCD in non-family firms. Moreover, these additional models allow us to understand more in detail the magnitude and sign of the relationship between diversity and each ICD component, contributing to further practical implications (Appendix I – Tables A2 and A3). Accordingly, board gender diversity produces the strongest association with SCD in family and non-family firms.

5 – Discussion and conclusion

The growing interest among scholars and managers in ICD and gender diversity practices has become a distinctive element of the knowledge-based economy (Cuozzo et al., 2017; Demartini & Beretta, 2023; Nadeem, 2020; Paoloni et al., 2023). In this context, intellectual capital has been widely recognized as a critical driver of competitive advantage in modern firms, contributing significantly to corporate value creation (J. C. Dumay, 2012; Petty & Guthrie, 2000). Starting from the theoretical conceptualization of Agency and Resource dependency theories, and considering the relevance of diversity in family firms (Harrison & Klein, 2007; Montemerlo, 2024), this study aims to understand the dynamics of ICD and board gender diversity in the contexts of family and non-family firms.

Employing a mixed-method approach that included content analysis of non-financial reports and OLS regression, the study examined ICD practices among listed Italian firms. Findings highlight that family-owned firms exhibit distinct behaviors regarding ICD compared to non-family ones, with board diversity playing a differentiated role.

The results align with Nicolò et al. (2022) and Rhode & Packel (2010), who argue that gender-diverse boards contribute to improved transparency and disclosure practices. Moreover, the positive impact of board diversity on ICD in family firms supports the Resource Dependency Theory, which suggests that diverse boards bring valuable resources that enhance corporate outcomes (Pfeffer & Salancik, 1978). However, findings also contradict Nadeem (2020), who found that board diversity can complicate decision-making and reduce efficiency in non-family firms, highlighting the complexity of the relationship between diversity and ICD.

In addition, findings confirm earlier suggestions by Ali et al. (2024) regarding the moderating role of family ownership, which can either enhance or limit the positive effects of board diversity, depending on the governance structure and strategic long-run goals. These

mixed results underline the importance of considering ownership structures when examining the influence of board characteristics on ICD.

5.1 – *Theoretical and practical implications*

The findings of this study contribute significantly to both theory and practice in the field of corporate governance and ICD. From a theoretical perspective, the study extends Agency Theory (Jensen & Meckling, 1976) by illustrating the role of family ownership in influencing ICD practices. The results suggest that family firms exhibit lower levels of ICD compared to non-family ones, consistent with literature highlighting the conservative nature of family firms in disclosing strategic information to protect family interests (Ali et al., 2024; Solarino & Boyd, 2020). This underscores the dual nature of agency costs, where family firms might reduce principal-agent conflicts but can simultaneously generate principal-principal conflicts, limiting transparency.

The findings also add to the Resource Dependency Theory (Pfeffer & Salancik, 1978) by highlighting the role of gender diversity in enhancing ICD. The positive effect of board diversity on ICD in family firms implies that gender-diverse boards are able to act as a valuable resource, providing the necessary skills and perspectives to improve disclosure practices (Nicolò et al., 2022; Rhode & Packel, 2010).

From a practical standpoint, the study provides important implications for family firms. Family-owned businesses should consider increasing board diversity to enhance transparency and ICD. The findings indicate that gender-diverse boards have the potential to enhance ICD, particularly within family firms, where such diversity can offer new perspectives that mitigate entrenched family interests and promote greater openness. Corporate policymakers should, therefore, promote governance reforms that encourage gender diversity on boards, particularly in family-owned enterprises.

Additionally, the study suggests that improved ICD can reduce information asymmetry and bolster investor confidence. As stakeholders increasingly demand transparency, family firms must balance their preference for privacy with the need for enhanced disclosure to maintain legitimacy and attract investment (Singhal & Gupta, 2024).

The last implication relates to the strategic role played by diversity. Although the literature has largely agreed with the strategic meaning of ICD, this study shows that diversity also becomes a resource to be managed strategically aimed at managing the disclosure level.

5.2 – *Limitations*

This study is subject to several limitations. First, the regulatory framework for ICD in Italy is undergoing significant changes, transitioning from the Legislative Decree No. 254/2016 on non-financial disclosures (NFD) to the Corporate Sustainability Reporting Directive (CSRD), which may influence ICD practices over time. Secondly, the sample focuses exclusively on publicly listed companies, thereby excluding the wider spectrum of small and medium-sized enterprises (SMEs), which constitute a substantial part of the Italian economic fabric. This limits the generalizability of the findings to the overall corporate environment. Third, the mandatory gender quotas in Italy, which require a certain level of female representation on boards, may have induced a uniform effect on gender diversity, potentially masking firm-specific variations and influencing the relationship between board diversity and ICD.

5.3 – Further research directions

Future research could expand the sample to include SMEs to capture a more comprehensive view of ICD practices. Additionally, intellectual capital could be assessed through direct surveys instead of solely relying on disclosures, providing richer insights into IC management. Further studies could also explore new moderating variables, such as cultural factors or board independence, to better understand the dynamics influencing ICD.

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APPENDIX

Table A1 – Cronbach alpha tests

Construct	N. of items	Alpha test
Structural capital (SC)	28	0.77
Relational capital (RC)	42	0.8
Human capital (HC)	33	0.79
Intellectual capital disclosure (ICD)	103	0.91

Table A2 – Regression results for robustness checks (y = SCD, RCD, HCD) for family firms

	family = 1					
	y = SCD		y = RCD		y = HCD	
Variable	Coeff.	p. value	Coeff.	p. value	Coeff.	p. value
<i>BLAU</i>	0.4296	0.000	0.2854	0.038	0.154	0.063
CEO_FEM	0.0112	0.701	-0.0686	0.033	0.003	0.892
Board_size	0.0217	0.002	0.0132	0.013	0.017	0.001
SIZE	0.0046	0.629	0.0005	0.935	0.003	0.758
ROE	0.0011	0.122	-0.0001	0.936	0.0002	0.563
LEV	-0.0002	0.987	0.0158	0.237	-0.0053	0.656
_cons	-0.2037	0.246	-0.0649	0.659	-0.1132	0.535
F-statistic	6.82		4.34		4.05	
Prob > F	0.000		0.001		0.001	
R-squared	0.26		0.18		0.20	
N. obs	68		68		68	

Table A3 – Regression results for robustness checks (y = SCD, RCD, HCD) for non-family firms

	family = 0					
	y = SCD		y = RCD		y = HCD	
Variable	Coeff.	p. value	Coeff.	p. value	Coeff.	p. value
<i>BLAU</i>	-0.5163	0.003	-0.1821	0.215	-0.2535	0.054
CEO_FEM	-0.0749	0.097	-0.0100	0.718	-0.1260	0.000
Board_size	0.0013	0.788	0.0032	0.415	0.0010	0.791
SIZE	0.0052	0.471	-0.0006	0.925	0.0110	0.195
ROE	0.0018	0.000	0.0012	0.002	0.0017	0.000
LEV	0.0152	0.013	0.0158	0.004	0.0187	0.027
_cons	0.4167	0.015	0.2804	0.044	0.0343	0.835
F-statistic	7.87		3.26		24.19	
Prob > F	0.000		0.006		0.000	
R-squared	0.21		0.13		0.28	
N. obs	96		96		96	