

Where gender matters most: divergent patterns linking diversity and patriarchy to operating and financial performance

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Abstract

Purpose – This study analyzes the associations between board gender diversity (BGD) and firms' operating and financial performance, and examines how these associations vary with patriarchal cultural attitudes. Drawing on social role theory and role congruity theory, we argue that BGD relates to firm outcomes through negotiation-based mechanisms that differ across operating and financial activities.

Design/methodology/approach – Using an international sample of 916 listed firms from 18 European countries over 2005–2022, we employ pure measures of operating and financial profitability to isolate the components through which BGD is linked to revenues and expenses.

Findings – The results show that greater BGD is associated with higher pure operating profitability, through higher operating revenues and lower operating expenses, and with lower pure financial profitability, through lower financial revenues and higher financial expenses. Patriarchal attitudes moderate these patterns by weakening the positive associations between BGD and operating outcomes and attenuating the negative associations with financial outcomes.

Originality/value – The study contributes to corporate governance research by demonstrating the value of disaggregating performance into operating and financial components and by showing how cultural norms shape the extent to which women directors' skills and monitoring behaviors translate into firm performance.

Keywords Board gender diversity, Operating and financial profitability, Patriarchal attitudes, Negotiation

Paper type Research article

1. Introduction

The *Gender Balance on Corporate Boards Directive* enacted in the European Union (EU) in 2022 [1], aims to achieve gender-balanced representation in top management positions of listed firms. Although it entered application at the end of 2024, companies must meet the targets by June 2026. As part of its justification, the Directive cites numerous studies reporting positive associations between top-management gender diversity and firms' financial performance and long-term competitiveness.

The presence of women on boards is driven not only by ethical or regulatory considerations but also by evidence that gender diversity is associated with improved financial and nonfinancial outcomes (Nguyen *et al.*, 2020), including corporate social responsibility (CSR) and environmental performance (Hussain *et al.*, 2024; Post and Byron, 2015; Shaukat *et al.*, 2016). Because profitability is central to firm value, prior research has examined how gender

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diversity on boards relates to profitability as a proxy for financial performance (Brahma *et al.*, 2021; Campbell and Minguez-Vera, 2008; Carter *et al.*, 2010; Hoobler *et al.*, 2018; Post and Byron, 2015; Reguera-Alvarado *et al.*, 2017). Yet empirical findings remain inconclusive: alongside positive associations, studies report negative, non-linear, and non-significant relationships (Nguyen *et al.*, 2020), particularly in financial contexts (Del Prete *et al.*, 2024). These mixed results suggest that the mechanisms linking BGD to firm outcomes operate through more nuanced behavioral channels than previously assumed.

We argue that personal relationships and negotiation processes among board members, and between them and other stakeholders, can be used to interpret how gender diversity and patriarchal culture relate to distinct components of firm financial performance. Negotiation is both an economic and a social process. It shapes how directors allocate resources, manage conflicts, and interact with internal and external counterparts (Bowles *et al.*, 2022), making it a relevant mechanism through which gendered expectations may influence operating and financial outcomes. Consistent with prior research on social role expectations, and with evidence on how patriarchal attitudes affect counterparties' behavior across differently formalized transaction domains, gendered expectations also shape who is perceived as credible, authoritative, or entitled to claim value in negotiations (Mazei *et al.*, 2021). In this sense, patriarchal attitudes can plausibly amplify or constrain the extent to which women directors' contributions influence those outcomes.

Accordingly, our empirical approach disaggregates profitability into operational (core business activities) and financial (investment and financing activities) components. Drawing on social role theory (Eagly, 1987), in contexts where gender roles are differentiated, we posit that women directors may contribute distinct human capital, monitoring styles, and stakeholder-oriented values that can support operational efficiency, strengthen relationships with customers and suppliers, and reduce litigation and failure risks, thereby improving operating profitability. In contrast, prior research documents behavioral patterns such as greater financial conservatism, lower overconfidence, and more cautious risk-taking that are more frequently observed among women in financial decision-making contexts. These patterns are associated with more prudent investment and financing policies, reduced exposure to high-yield opportunities, and stricter internal controls. Such dynamics tend to lower financial revenues even as they reduce financial risk and improve reporting quality, generating mixed associations with financial expenses. Because these mechanisms point in opposite directions, analyzing operating and financial profitability separately is essential to capture the full range of channels through which gender diversity relates to firm outcomes.

Concerning the counterpart role in negotiations, social role theory suggests that gendered expectations shape how women directors are perceived and the extent of their influence (Hoobler *et al.*, 2018). In countries with stronger patriarchal attitudes, women's contributions may be discounted or resisted, weakening the mechanisms through which BGD relates to operating and financial performance. In less patriarchal environments, differences documented in prior research in women's human capital, monitoring style, and stakeholder orientation are more likely to translate into firm strategy. Given that operating transactions involve more relational and ambiguous negotiations than financial ones, patriarchal attitudes are expected to constrain the association between BGD and operating profitability more strongly.

Analyzing a sample of European listed firms, we find that BGD is associated with opposite patterns across operating and financial outcomes. Greater BGD is linked to higher operating revenues and lower operating expenses, resulting in a strongly significant positive association with operating profitability. In contrast, BGD is associated with lower financial revenues and higher financial expenses, producing a negative association with financial profitability. These findings underscore the value of distinguishing operating from financial performance and provide a basis for interpreting why board gender diversity shows contrasting associations across these two performance dimensions. Furthermore, using a recently introduced measure

of patriarchal attitudes (Castro *et al.*, 2023), we show that this cultural factor significantly weakens or even reverses gender diversity associations.

This study makes three main contributions. First, it examines how gender diversity relates to profitability through the lens of social role theory, emphasizing negotiation processes with internal and external counterparts when securing operating and financial resources. Second, by using performance measures that isolate pure operating and pure financial outcomes, it shows that aggregated profitability measures can mask countervailing patterns in how board gender diversity is associated with firm performance. Third, it extends emerging work on cultural determinants of corporate governance by showing that patriarchal attitudes significantly condition the effectiveness of gender-diverse boards. These dynamics help clarify contradictory evidence in this research stream and underscore the need for comprehensive gender-equality policies that combine board-level regulation with broader efforts to reduce patriarchal attitudes.

The remainder of this paper is organized as follows. Section 2 presents the theoretical framework and hypotheses. Section 3 describes the sample, research model, and methodology. Section 4 presents the results, and Section 5 offers the conclusions.

2. Literature review and hypotheses

The board of directors plays a central role in shaping firm strategy, and its composition can influence how resources are allocated, how conflicts are resolved, and how firms interact with stakeholders (Kim *et al.*, 2009). Gender diversity is a key board characteristic (Miller and Triana, 2009), reinforced by the EU Directive 2022/2381, which requires gender-balanced representation in listed firms. Prior research suggests that gender-diverse boards may enhance performance through broader human and relational capital that strengthens advisory effectiveness (Bennouri *et al.*, 2018; Reguera Alvarado *et al.*, 2017), more reflective and stakeholder-oriented decision making (Atif *et al.*, 2019), and stronger monitoring based on higher independence and accountability (Bennouri *et al.*, 2018). A parallel literature examines gender differences in financial decision making, documenting systematic patterns of financial conservatism and lower risk taking [2] among women in top positions (Abou El Sood, 2021; Datta *et al.*, 2021; Huang and Kisgen, 2013). These patterns may have opposite implications for operating and financial outcomes.

To disentangle these mechanisms, we distinguish between pure operating profitability, derived from core business activities, and pure financial profitability, which reflects investment and financing decisions. We also examine how patriarchal attitudes, as a cultural factor shaping gendered expectations, moderate these relationships.

2.1 Different patterns linking BGD with pure operating and financial profitabilities

Two complementary perspectives explain how board gender composition may relate to firm outcomes. The first concerns directors' contributions through their human capital (knowledge, skills, and experience), deliberative styles, and monitoring abilities (Atif *et al.*, 2019; Bennouri *et al.*, 2018). The second concerns how directors are perceived and treated by counterparts (Mazei *et al.*, 2015; Mozahem *et al.*, 2021) and how stakeholders who do not negotiate directly with the board react to the presence of women directors (Montgomery and Cowen, 2020), particularly in settings where gendered expectations may shape interactions and outcomes.

Both perspectives fall within social role theory (Eagly, 1987), which posits that gendered expectations [3] influence how individuals behave and how their behavior is interpreted (Eagly and Wood, 2012). These expectations may affect operating and financial decisions differently, especially when combined with varying degrees of ambiguity and formalization across transaction domains.

Given that operating and financial activities involve distinct negotiation environments and risk profiles, the mechanisms associated with gender diversity may point in opposite directions. We therefore expect contrasting associations between BGD and pure operating versus pure financial profitability.

H1. BGD has opposite associations with pure operating and financial profitabilities.

2.2 BGD and pure operating profitability

Research shows that gender-diverse boards bring broader human and relational capital, which is associated with improved understanding of markets and stakeholders (Carter *et al.*, 2003; Post and Byron, 2015) and foster innovation, creativity, and alternative views (Hsu *et al.*, 2019; Reguera Alvarado *et al.*, 2017; Torchia *et al.*, 2011). Diverse boards incorporate a wider range of values and deliberative styles (Jeong and Harrison, 2017), which can enhance information processing, accountability, and monitoring (Lai *et al.*, 2017; Brahma *et al.*, 2021). These attributes help resolve agency conflicts (Adams and Ferreira, 2009) and place firms closer to a wider range of stakeholders, facilitating access to critical operational resources (Carter *et al.*, 2010; Elmagrhi *et al.*, 2019; Post and Byron, 2015).

Regarding how board members are treated and perceived, stakeholders often respond to the gender composition of upper echelons even without direct interaction (Montgomery and Cowen, 2020). In negotiation settings, gendered expectations may shape how directors' contributions are interpreted (Mazei *et al.*, 2015, 2021), influencing outcomes in relational and less formalized negotiations. Thus, role congruity theory (Eagly and Karau, 2002) holds that agentic behaviors are essential for obtaining economic outcomes from negotiations but are not congruent with female gender roles (Amanatullah and Tinsley, 2013; Stuhlmacher and Linnabery, 2013). Recent research also indicates that men may display agentic behaviors in negotiations to signal masculinity and pursue social status (Mazei *et al.*, 2021).

BGD and operating revenues. Gender-diverse boards are better equipped to understand market needs (Carter *et al.*, 2010) and guide product development (Campbell and Minguez-Vera, 2008; Korenkiewicz and Maennig, 2024), which would increase sales (Arzubiaga *et al.*, 2018; Hoobler *et al.*, 2018). Broader networks and stakeholder-oriented values can facilitate access to market segments and suppliers (Ali *et al.*, 2014), while stronger CSR performance may differentiate firms from competitors (Bear *et al.*, 2010).

BGD and operating expenses. Gender-diverse boards may reduce operating expenses through improved internal efficiency, stronger monitoring, and reduced operational and litigation risks. Innovation, creativity, and alternative views contribute to greater efficiency (Hsu *et al.*, 2019; Reguera-Alvarado *et al.*, 2017; Torchia *et al.*, 2011). Behaviors associated with communal expectations may foster long-lasting relationships, reducing hiring and turnover costs (Terjesen *et al.*, 2016). Greater accountability and better resolution of agency conflicts (Adams and Ferreira, 2009; Adams *et al.*, 2011; Brahma *et al.*, 2021) can limit opportunistic behavior (Uzun *et al.*, 2004) while reducing costs in internal production and external transactions (Ali *et al.*, 2014; Chakrabarty and Bass, 2014; Ramly *et al.*, 2017). Empirical evidence also shows a reduction of operational, litigation, environmental, and failure risks (Campbell and Minguez-Vera, 2008; Hurley and Choudhary, 2020; Teodosio *et al.*, 2021; Dimitropoulos *et al.*, 2026).

Taken together, these mechanisms indicate that BGD is associated with enhanced operating activities through mutually reinforcing internal and external channels. Internally, broader human and relational capital may strengthen information processing, deliberation, monitoring, and resource allocation. Externally, reputational effects, stakeholder-oriented values, and negotiation dynamics may foster trust, legitimacy, and favorable exchange conditions. These internal and external mechanisms are jointly associated with higher operating revenues and lower operating expenses. As both pathways point in the same direction, the overall effect of BGD is expected to be a net improvement in pure operating profitability.

H2. BGD is positively associated with pure operating profitability.

2.3 BGD, patriarchal attitudes, and pure operating profitability

Cultural norms shape expectations about appropriate behavior for women and men in professional settings (Eagly and Wood, 2012). Patriarchal attitudes, in particular, influence how women's contributions are perceived and how negotiation counterparts respond to them. Empirical evidence documents that women tend to obtain less favorable negotiation outcomes, largely due to counterpart reactions shaped by gendered social roles (Mozahem *et al.*, 2021). As negotiation outcomes are co-determined by both parties, the counterpart's attitudes and behaviors may influence these results (Mazei *et al.*, 2021). Gender stereotypes derived from patriarchal attitudes have cognitive and motivational effects, shaping how information is attended to, interpreted, and recalled depending on the gender of the communicators (Ellemers, 2018; Heilman, 2012).

To test the salience of gender in negotiations related to operating transactions (Bowles *et al.*, 2022), we consider the proportion of women on the board and the sociocultural context by interacting BGD with country-level patriarchal attitudes. Using four measures of patriarchal attitudes, Castro *et al.* (2023) found that in highly patriarchal environments, the positive association between BGD on financial performance is mitigated or reversed. This may occur because women's contributions may be discounted or overlooked due to the cognitive and motivational biases mentioned earlier (Uribe; Bohorquez *et al.*, 2019; Diehl *et al.*, 2020). Consequently, patriarchal attitudes may also alter the association between gender diversity and operating profitability, the main driver of financial performance.

A separate analysis of operating revenues and expenses is justified by the levels of formalization, standardization, and professionalization of negotiation counterparts. Reducing ambiguity in negotiations, for example by clarifying the bargaining range, can limit gender-biased inferences (Koch *et al.*, 2015; Mazei *et al.*, 2015). In contrast, unclear standards allow parties to rely more heavily on social norms (Bowles *et al.*, 2022; Mazei *et al.*, 2015). Personnel-related negotiations, which represent a major component of operating expenses, are more regulated and structured, reducing the influence of patriarchal culture (Huffman *et al.*, 2010). By contrast, negotiations related to operating revenues, such as those with customers and suppliers, tend to be more relational and less formalized, leaving greater room for subjective judgments and gender-biased expectations. Therefore, in highly patriarchal contexts, gendered expectations are likely to influence revenue-related negotiations more strongly than expense-related ones. As a result, patriarchal attitudes are expected to weaken or reverse the positive association between BGD and operating revenues, while exerting a smaller attenuating effect on the negative association between BGD and operating expenses.

Taken together, this reasoning suggests that patriarchal attitudes may constrain the mechanisms through which gender-diverse boards enhance operating performance. Because patriarchal attitudes are more salient in ambiguous and relational negotiation environments, they may attenuate or reverse the positive association between BGD and operating profitability, especially through revenue-related channels.

H3. High patriarchal attitudes weaken or reverse the positive association between BGD and pure operating profitability.

2.4 BGD and pure financial profitability

To analyze how BGD relates to firms' financial activities, we draw on the same two complementary perspectives. The first concerns the financial human capital, decision-making style, and monitoring abilities of directors. The second relates to how women directors are perceived and treated by financial stakeholders, which may shape negotiation dynamics, access to external finance, and the credibility of financial information.

From the first perspective, gender-diverse boards incorporate broader human and relational capital, which is associated with enhanced understanding of complex environments and stakeholder expectations (Carter *et al.*, 2003; Post and Byron, 2015). These attributes are also relevant for financial decisions. Empirical studies document that women in top financial roles are associated with more conservative financial policies, including higher cash holdings, lower leverage, and fewer risky investments (Adhikari, 2018; Faccio *et al.*, 2016; Huang and Kisgen, 2013). These patterns reflect documented differences in how financial risk is perceived and weighted, even under equal conditions of training and experience (Olsen and Cox, 2001). Differences are also documented in levels of overconfidence regarding complex financial tasks (Endres *et al.*, 2008).

The diversity of values and deliberative styles observed in gender-diverse boards (Jeong and Harrison, 2017; Post and Byron, 2015) is also expected to influence financial decision making. Values associated with self-transcendent orientations (Adams and Funk, 2012) and concern for long-term stakeholder welfare (Uribe-Bohorquez *et al.*, 2019) may translate into more cautious financial strategies that prioritize liquidity, stability, and compliance. These orientations may strengthen the monitoring role of the board, reducing agency conflicts (Adams and Ferreira, 2009; Atif *et al.*, 2019; Brahma *et al.*, 2021) and improving the reliability of financial reporting (Francis *et al.*, 2015). Gender diversity has also been associated with lower litigation, operational, and failure risks (Teodósio *et al.*, 2021), which are closely linked to financial risk and the firm's cost of capital.

Regarding how women directors are perceived and treated by financial stakeholders, negotiations with creditors—over interest rates, fees, collateral, covenants, and maturities—occur within more formalized and regulated environments. Even so, gendered expectations may influence bargaining dynamics (Bowles *et al.*, 2022; Kray, 2007; Mazei *et al.*, 2015, 2021). Role congruity theory (Eagly and Karau, 2002) suggests that agentic behaviors required to obtain favorable financial terms are less congruent with female gender roles (Amanatullah and Tinsley, 2013; Stuhlmacher and Linnabery, 2013), potentially affecting negotiation outcomes.

Nevertheless, creditors often perceive female financial executives as more reliable and less risky. Firms with female CFOs have been found to obtain lower loan prices, longer maturities, and fewer collateral requirements (Francis *et al.*, 2013), reflecting creditors' recognition of more conservative reporting and lower default risk (Francis *et al.*, 2015). The broader relational capital of gender-diverse boards (Bennouri *et al.*, 2018) and their stakeholder-oriented values (Post and Byron, 2015) may enhance trust and legitimacy, facilitating access to financial resources. At the same time, persistent stereotypes about financial expertise may limit access to certain financial opportunities (Coleman and Robb, 2009), making the signal sent by gender diversity potentially ambiguous.

BGD and financial revenues. Financial revenues depend on investment decisions and the risk–return trade-offs embedded in financial strategies. Gender-diverse boards, due to their more conservative decision-making style, tend to favor liquidity and lower-risk investments. Higher cash holdings and lower leverage reduce exposure to risky assets but may limit opportunities for high returns (Adhikari, 2018; Faccio *et al.*, 2016). Although the empirical relation between risk and return is often weak or negative (Guo and Pai, 2021), lower risk is generally associated with lower expected returns. The more reflective and accountable decision-making style of gender diverse boards (Lai *et al.*, 2017) may also reduce the range of aggressive financial strategies pursued, while the underrepresentation of women in financial roles (Valls Martínez *et al.*, 2019) may limit their influence on financial strategy.

BGD and financial expenses. Financial expenses relate to the cost of debt, fees, and other costs associated with financial transactions. Although the financial industry is highly professionalized and standardized, some negotiation remains in interest rates, collateral, and covenants. The presence of women in financial leadership could reduce financial expenses through several channels. First, lower firm risk resulting from conservative financial policies is associated with lower borrowing costs (Francis *et al.*, 2013; Teodósio *et al.*, 2021). Second, creditors perceive female CFOs as providing more reliable financial information and reducing

default risk, leading to more favorable loan terms (Francis *et al.*, 2013). Third, the stakeholder-oriented values and reputational benefits associated with gender diverse boards (Liu *et al.*, 2025; Nguyen *et al.*, 2020; Post and Byron, 2015) may enhance trust and legitimacy in the eyes of creditors (Eliwa *et al.*, 2021). However, costly investments in social and environmental initiatives, often championed by gender-diverse leadership, may reduce cash inflows or increase cash outflows, partially offsetting these benefits (Gerwanski, 2020).

Taken together, these internal and external mechanisms suggest that BGD is associated with differences in firms' financial activities through more conservative financial decision-making, enhanced monitoring and reporting quality, and differentiated treatment by financial stakeholders. Internally, gender diverse boards bring broader human and relational capital that may improve information processing, deliberation, and monitoring, which tends to reduce financial expenses but also constrains firms' willingness to pursue high-yield, higher-risk opportunities. Externally, the reputational effects associated with gender-diverse boards, stakeholder-oriented values, and negotiation dynamics may strengthen trust and credibility with creditors, lowering the cost of finance and improving other financial conditions, although persistent stereotypes may still limit access to certain financial opportunities. As these pathways point in opposite directions, with lower financial expenses but also lower financial revenues, the overall effect of BGD on pure financial profitability is theoretically indeterminate. However, because the mechanisms reducing financial revenues stem from systematic patterns of financial conservatism, while the mechanisms lowering financial expenses depend more on stakeholder perceptions, the balance of evidence suggests that the revenue-reducing effects are likely to dominate.

H4. BGD and pure financial profitability are negatively related.

2.5 Patriarchal attitudes and operating versus financial profitability

Finally, we examine how the patriarchal context may influence operating versus financial profitability. Because operating and financing transactions differ in nature, the potential influence of gender diversity in personal relations and negotiation depends on two elements: the salience and relevance of gender in the negotiating context, and the ambiguity of the object, methods, and parties involved (Bowles *et al.*, 2022). Operating transactions related to revenues and expenses are often less structured and professionalized, with greater ambiguity in terms and negotiation processes. By contrast, financial transactions are more formalized, benchmarked, and governed by regulatory and quantitative criteria. Credit agreements, interest rates, collateral requirements, and other financial terms are negotiated within structured frameworks that reduce discretion and may limit subjective biases, such as those resulting from patriarchal attitudes.

Taken together, these differences imply that patriarchal attitudes would weaken the association between BGD and operating profitability, while the greater formalization of financial transactions would make the association between BGD and financial profitability comparatively smaller.

H5. High patriarchal attitudes reverse the positive association between BGD and pure operating profitability more strongly than between BGD and pure financial profitability.

3. Empirical research

3.1 Data

Our sample consists of 7,274 firm-year observations of 916 listed companies from 18 European countries (Austria, Cyprus, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, the Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden, and the United Kingdom) over the period 2005–2022. Financial and corporate governance data for each firm were collected from Thomson Reuters Eikon. To analyze culture, patriarchal attitudes were calculated from data collected from the World Values

SAR Survey (WVS) through its different waves to obtain more current and diverse values over the study period (Inglehart *et al.*, 2020a, b, c).

3.2 Model and methodology

We employ a dynamic approach in our research framework, as we consider it the most appropriate methodology for analyzing the association between BGD and firms' operating performance, given the persistence of firm profitability (Amir *et al.*, 2011; Fama and French, 2000) and the gradual adjustment of profitability and its components to board decisions and cultural constraints, such as patriarchal attitudes. This dynamic specification also helps address several potential problems associated with the variables used in our analysis. To address unobserved heterogeneity, mitigate potential collinearity problems between the variables used in our study, and account for possible reverse causality between the dependent variable (profitability and its subcomponents) and the explanatory variables, we apply the Generalized Method of Moments (GMM) following Arellano (2003). Specifically, we use the two-step system approach of GMM, which allows us to control for potential endogeneity (Arellano and Bover, 1995; Blundell and Bond, 1998). Firm-level right-hand side variables were instrumented using their lagged values from one to five periods (t-1 to t-5). This lag restriction effectively avoids instrument proliferation, ensuring that the total number of instruments remains strictly below the number of firms to preserve the validity of the Hansen test. Finally, strictly exogenous variables, such as macroeconomic indicators and dummies, were included as standard instruments.

Profitability is disaggregated into two main pure components—operating and financial (Amor-Tapia and Tascón, 2014; Nissim and Penman, 2001). Nissim and Penman (2001, 2003) extend the standard profitability analysis by distinguishing between operating and financing activities to gain a more complete understanding of the underlying determinants of profitability. Generally, operating activities involve the production of goods and services, whereas financing activities involve raising the required cash for operations and disposing of cash returned from operations. After careful separation of the items in the financial statements, the refined ratio of operating profitability is computed as operating net income to net operating assets, making it free from financial items [4]. In parallel, financial profitability is computed as the net interest income to net financial assets [5]. We then disaggregate both operating and financial net income into revenues and expenses, and analyze each component separately. The primary difference from commonly used measures of accounting financial performance, such as return on equity (ROE) and return on assets (ROA), is remarkable. ROE is a comprehensive measure that relates a firm's total return to its total equity and encompasses both operating and financial items. ROA can be computed in various ways, resulting in a more or less "operating" proxy. Still, in the best case, common specifications such as earnings before interest, taxes, depreciation, and amortization (EBITDA) to total assets relate operating components in the numerator with a mixture of operating and financial assets, thus biasing the intended analysis of operating performance.

To test H1, H2, and H4 we regress six variables of financial performance (FP), pure financial profitability (FI_PROF), pure operating profitability (OP_PROF), operating revenues (OP_REV), operating expenses (OP_EXP), financial revenues (FI_REV), and financial expenses (FI_EXP) on BGD, including several control variables. Model (1) is as follows:

$$\begin{aligned}
 FP_{it} = & \alpha_0 + \alpha_1 FP_{it-1} + \alpha_2 WOM_BOARD_{it} + \alpha_3 DEBT_{it} + \alpha_4 VARSALES_{it} + \alpha_5 RDA_{it} \\
 & + \alpha_6 SIZE_{it} + \alpha_7 AGE_{it} + \alpha_8 BSIZE_{it} + \alpha_9 BIND_{it} + \alpha_{10} CEO_{it} + \alpha_{11} QUOTA_{it} \\
 & + \alpha_{12} GGDP_{it} + \sum_{k=1}^{12} S_k + \sum_{k=1}^{18} C_k + \sum_{t=2005}^{2022} Y_t + \varepsilon_{it}
 \end{aligned} \tag{1}$$

To avoid potential endogeneity issues and fit the methodology, each dependent variable was introduced as an independent variable lagged by one period. Gender diversity (WOM_BOARD) is measured by the proportion of women on a firm's board of directors (Abad *et al.*, 2017; Campbell and Minguez-Vera, 2008).

We include firm leverage (DEBT), sales growth (VARSALES), R&D expenses (RDA), firm size (SIZE), and firm age (AGE) as control variables for firm characteristics (Brahma *et al.*, 2021; Uribe-Bohorquez *et al.*, 2019). We also include board size (BSIZE), board independence (BIND), and the duality of the chief executive officer (CEO) as governance control variables (Liu *et al.*, 2014; Nguyen *et al.*, 2015). In addition, we include the gender quota law (QUOTA) as a regulatory control variable. Finally, we include the growth of the Gross Domestic Product (GGDP) as a macro control variable and a set of dummies to control for the effects related to sector, country, and year. In addition, to avoid outliers, we winsorize all continuous variables at the 1st and 99th percentiles. The definitions of these variables are listed in Table S1 in the Online Supplementary Material.

To test H3 and H5, we modify Model (1) by introducing four patriarchal attitude variables as additional moderators to interact with BGD:

$$\begin{aligned}
 FP_{it} = & \alpha_0 + \alpha_1 FP_{it-1} + \alpha_2 WOM_BOARD_{it} + \alpha_3 PA_{it} + \alpha_4 WOM_BOARD_{it} * PA_{it} \\
 & + \alpha_5 DEBT_{it} + \alpha_6 VARSALES_{it} + \alpha_7 RDA_{it} + \alpha_8 SIZE_{it} + \alpha_9 AGE_{it} + \alpha_{10} BSIZE_{it} \\
 & + \alpha_{11} BIND_{it} + \alpha_{12} CEO_{it} + \alpha_{13} QUOTA_{it} + \alpha_{14} GGDP_{it} + \sum_{k=1}^{12} S_k + \sum_{k=1}^{18} C_k \\
 & + \sum_{t=2005}^{2022} Y_t + \varepsilon_{it}
 \end{aligned} \tag{2}$$

Four levels of patriarchal attitudes (PA) are measured following Davis and Williamson (2019) including the proportion of people who agree or strongly agree with the following statements: “University is more important for a boy than for a girl” (University_boy), “Job scarce: Men should have more right to a job than women” (Men_job_right), “Men make better business executives than women do” (Men_executives), and “Men make better political leaders than women do” (Men_politician). These items capture patriarchal beliefs across progressively more influential social domains, from education and access to employment to leadership in business and politics, thus reflecting increasing levels of authority and decision-making power. In this sense, they represent successive rungs of a power pyramid (Castro *et al.*, 2023), where higher positions correspond to roles with greater societal influence. Stronger patriarchal attitudes at these higher positions are consistent with the existence of glass ceilings (Diehl *et al.*, 2020).

4. Empirical results

4.1 Descriptive results

This section summarizes the main descriptive findings of the study. For brevity, the complete set of results, including the sample distribution by country, detailed descriptive statistics, and the correlation matrix, is reported and briefly discussed in the Online Supplementary Material (Tables S2–S4).

4.2 Multivariate results

Table 1 reports the associations between BGD (WOM_BOARD) and ROA, pure financial profitability, pure operating profitability, operating revenues, and operating expenses. Consistent with dominant findings in the literature, the relationship between BGD and financial performance, proxied by ROA, is positive (column 1). The significant opposite signs

Table 1. ROA, pure financial profitability, pure operating profitability, operating revenues, operating expenses, and BGD

	(1)	(2)	(3)	(4)	(5)
ROA _{t-1}	0.6299*** [0.0011]				
FI_PROF _{t-1}		0.5339*** [0.0002]			
OP_PROF _{t-1}			0.3710*** [0.0001]		
OP_REV _{t-1}				0.6907*** [0.0001]	
OP_EXP _{t-1}					0.5811*** [0.0013]
WOM_BOARD	0.0217*** [0.0008]	−0.1489*** [0.0032]	0.0236*** [0.0021]	0.4056*** [0.0026]	−0.0532*** [0.0037]
DEBT	−0.0024*** [0.0000]	−0.0078*** [0.0001]	−0.0195*** [0.0001]	−0.0128*** [0.0001]	−0.0025*** [0.0001]
VARSALES	0.8829*** [0.0050]	−0.4797*** [0.0101]	6.7694*** [0.0141]	13.6297*** [0.0267]	0.1356*** [0.0187]
RDA	0.0969*** [0.0025]	0.2840*** [0.0082]	−1.5669*** [0.0257]	−0.4070*** [0.0314]	1.1303*** [0.0145]
SIZE	−0.0017*** [0.0001]	0.0096*** [0.0005]	0.0236*** [0.0004]	−0.0904*** [0.0005]	−0.0281*** [0.0005]
AGE	0.0001*** [0.0000]	0.0014*** [0.0000]	0.0020*** [0.0000]	0.0064*** [0.0001]	0.0003*** [0.0000]
BSIZE	0.0007*** [0.0000]	−0.0064*** [0.0002]	−0.0046*** [0.0002]	0.0054*** [0.0001]	−0.0024*** [0.0002]
BIND	0.0169*** [0.0006]	0.0061*** [0.0015]	0.2051*** [0.0024]	0.6119*** [0.0027]	0.2197*** [0.0034]
CEO	0.0007** [0.0003]	−0.0051*** [0.0010]	0.0985*** [0.0010]	0.0200*** [0.0016]	−0.0530*** [0.0016]
QUOTA	0.0029*** [0.0003]	−0.0017 [0.0011]	−0.0316*** [0.0013]	−0.0244*** [0.0017]	0.0195*** [0.0016]
GGDP	0.1784*** [0.0077]	0.4420*** [0.0138]	2.1051*** [0.0148]	−0.1445*** [0.0209]	−0.1876*** [0.0242]
Constant	0.0466*** [0.0026]	−0.2823*** [0.0093]	−0.7247*** [0.0097]	1.3973*** [0.0103]	0.6254*** [0.0129]
Observations	7,240	5,349	7,274	7,274	7,274
Number of firms	907	702	916	916	916
Country dummies	YES	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES	YES
Industry dummies	YES	YES	YES	YES	YES
Freedom degrees	621	525	759	759	591
Hansen test	634.7	528.9	765.1	727.1	625.6
Sig. Hansen	0.343	0.444	0.431	0.792	0.157
AR2	−1.250	1.218	−1.211	−1.119	−0.789
Sig. AR2	0.211	0.223	0.226	0.263	0.430

Note(s): Variable definitions in [Table S1 of the Online Supplementary Material](#). Standard errors are shown in brackets. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively

[6] in columns 2 and 3 support H1 and suggest that this relationship operates through BGD's influence on operating activities (H2). The positive and significant coefficient of operating revenues (OP_REV) (column 4) and the negative and significant coefficient of operating expenses (OP_EXP) (column 5) indicate that greater gender diversity on the board is associated with higher operating revenues and lower operating expenses, consistent with an overall positive association between BGD and pure operating profitability. The effect is

economically meaningful: a one-percentage-point increase in WOM_BOARD (i.e. from 17% to 18% at the sample mean) is associated with an improvement in pure operating profitability of about 0.09%. These findings align with social role theory (Eagly, 1987; Eagly and Wood, 2012), which posits that gendered expectations may shape how board members contribute to decision-making and how stakeholders interpret their actions. The presence of women on boards has been associated with broader human capital, more diverse deliberative styles, and stronger monitoring (Castro *et al.*, 2023). A wider understanding of markets and stakeholders (Post and Byron, 2015), together with relational capital valued by stakeholders, including those not directly interacting with the board (Montgomery and Cowen, 2020), may facilitate alignment in negotiations and more effective access to operating resources. These patterns are consistent with the positive association between BGD and operating revenues and the negative association between BGD and operating expenses observed in our results (H2).

To further address potential endogeneity concerns related to BGD, we estimated a Heckman selection model using the gender quota (LAW) as an exclusion restriction in the selection equation. As reported in Table 2, the quota law is positive and highly significant across all specifications ($p < 0.001$), confirming its relevance in explaining BGD. The second-stage results remain consistent with the baseline findings, showing that BGD is positively associated with ROA, operating profitability, and operating revenues, while negative coefficients are observed for financial profitability and operating expenses. Importantly, the estimated values of rho are equal to zero and the likelihood-ratio tests consistently fail to reject the null hypothesis of independent equations, indicating that sample-selection bias is not a significant concern. Overall, the Heckman analysis supports the robustness of our main results after explicitly accounting for potential self-selection effects in the appointment of female directors.

The results in columns (1)–(4) of Panel A of Table 3 show that under patriarchal attitudes, having a higher proportion of women on the board is negatively associated with operating profitability, thereby supporting H3. The positive main effect of BGD indicates that gender-diverse boards are associated with higher operating profitability when patriarchal attitudes are low. However, the negative interaction term reveals that this positive association weakens as patriarchal attitudes increase and becomes negative at higher levels. In economic terms, taking column (1) as an example, a one-percentage-point increase in WOM_BOARD is associated with an improvement in pure operating profitability of about 1.9% when patriarchal attitudes are absent (University_boy = 0), but only about 0.9% at the sample mean of University_boy. This pattern appears consistently across the four measures of patriarchal attitudes, in line with the results obtained for ROA in Castro *et al.* (2023). Consistent with social role and role congruity theories (Eagly and Karau, 2002), these results are in line with the idea that patriarchal attitudes may shape how counterparts interpret and respond to the contributions of women directors in negotiation settings (Ellemers, 2018; Heilman, 2012). Such attitudes may also influence other negotiation processes of the firm with its stakeholders, even if women board members are not directly involved (Montgomery and Cowen, 2020).

Table 2. Heckman selection model

	ROA	FI_PROF	OP_PROF	OP_REV	OP_EXP
WOM_BOARD	0.0343***	−0.0173**	0.4903***	0.4300***	−0.1899**
LAW (selection equation)	0.4229***	0.3980***	0.4212***	0.4212***	0.4212***
Rho	0.000	0.000	0.000	0.000	0.000
LR test p -value	1.000	1.000	1.000	1.000	1.000

Note(s): Control variables, year effects, country effects and industry effects are included but not reported. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively

Table 3. Operating and financial profitability, BGD, and patriarchal attitudes

Panel A: Regression analysis								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
OP_PROF _{t-1}	0.6316*** [0.0026]	0.3940*** [0.0027]	0.6799*** [0.0025]	0.6805*** [0.0024]				
FI_PROF _{t-1}					0.5325*** [0.0002]	0.5275*** [0.0009]	0.5330*** [0.0002]	0.5332*** [0.0002]
WOM_BOARD	0.4661*** [0.0971]	0.4646*** [0.0682]	0.6122*** [0.1453]	0.3685*** [0.1409]	−0.5453*** [0.0128]	−0.2359*** [0.0161]	−0.4307*** [0.0102]	−0.3673*** [0.0106]
University_boy	0.6294* [0.3301]				−0.4894*** [0.0434]			
WOM_BOARD*University_boy	−4.7015*** [1.7774]				7.9986*** [0.2292]			
Men_job_right		−0.3894** [0.1608]				−0.1678*** [0.0459]		
WOM_BOARD*Men_job_right		−3.5528*** [0.5895]				1.1784*** [0.1407]		
Men_executives			0.7000*** [0.2384]				−0.1439*** [0.0201]	
WOM_BOARD*Men_executives			−7.5388*** [1.1968]				2.4817*** [0.0871]	
Men_politicians				0.2410 [0.2321]				−0.1277*** [0.0193]
WOM_BOARD*Men_politicians				−4.3468*** [0.9667]				1.6414*** [0.0758]
Constant	0.1935** [0.0950]	−0.7305*** [0.1326]	−0.3450** [0.1359]	−0.3442*** [0.1318]	−0.2604*** [0.0108]	−0.1979*** [0.0321]	−0.2545*** [0.0104]	−0.2644*** [0.0097]
Observations	7,274	7,274	7,274	7,274	5,349	5,349	5,349	5,349
Number of firms	916	916	916	916	702	702	702	702
Country dummies	YES	YES	YES	YES	YES	YES	YES	YES
Time dummies	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummies	YES	YES	YES	YES	YES	YES	YES	YES

(continued)

Table 3. Continued

Panel A: Regression analysis								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Control variables	YES	YES	YES	YES	YES	YES	YES	YES
Freedom degrees	393	317	305	305	524	406	524	524
Hansen test	387.5	316.5	281.2	284	525.3	407.9	532.1	529.1
Sig. Hansen	0.569	0.497	0.832	0.800	0.476	0.464	0.394	0.429
AR2	−0.774	−1.125	−0.606	−0.601	1.214	1.219	1.213	1.216
Sig. AR2	0.439	0.261	0.545	0.548	0.225	0.223	0.225	0.224
Panel B: marginal effects								
Marginal effect at P25	0.2733***	0.2337***	−0.0889*	−0.1270***	−0.2174***	−0.1593***	−0.1999***	−0.1802***
Marginal effect at P75	0.1934***	0.0560*	−0.2623***	−0.2574***	−0.0254***	−0.0945***	−0.0808***	−0.1112***
Difference (P75 – P25)	−0.0799***	−0.1776***	−0.1734***	−0.1304***	0.1920***	0.0648***	0.1191***	0.0689***
Note(s): Variable definitions in Table S1 of the Online Supplementary Material . Standard errors are shown in brackets. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively								

Columns (5)–(8) show a parallel but opposite association between BGD and financial profitability. This pattern is consistent with the component-level results reported in the [Online Supplementary Material](#), where patriarchal attitudes may reduce the extent to which the contributions and signals associated with gender-diverse boards are attended to or valued in financial negotiations. In such contexts, the mechanisms through which BGD is associated with lower financial revenues, such as more conservative financial policies, and higher financial expenses are less likely to be recognized or acted upon by financial counterparts, thereby attenuating the reinforced negative association observed for pure financial profitability. The coefficients for patriarchal attitudes and their interactions with BGD are smaller and less significant for financial than for operating profitability, supporting [H5](#). This pattern is consistent with the characteristics of negotiations related to financial decisions, which typically involve higher levels of regulation, clearer terms and conditions, greater professionalization, and the presence of thresholds and benchmarks ([Bowles et al., 2022](#)).

The marginal effects analysis (Panel B) confirms that the relationship between BGD and firm performance varies with the surrounding cultural context. For operating profitability, the positive association between BGD and performance becomes weaker as patriarchal attitudes become more prevalent, whereas for financial profitability the negative association becomes significantly weaker. The statistically significant differences between the estimates at the 25th and 75th percentiles of each moderator suggest that gender-related social norms are associated with meaningful differences in the economic consequences of board gender diversity.

The baseline regressions focus on operating and financial profitability as the main dependent variables. For brevity, the full set of results for the components of profitability (including operating revenues, operating expenses, financial revenues, and financial expenses) is reported and briefly discussed in the [Online Supplementary Material \(Tables S5–S8\)](#). These results are consistent with the main findings.

4.3 Robustness analysis

This section presents additional analyses to assess the robustness of the main results. For brevity, the full set of robustness checks (including Critical mass, Women managers and women employees, and the Heckman two-step estimation addressing endogeneity and sample selection bias) is provided and briefly discussed in the [Online Supplementary Material \(Section 2, Tables S9–S14\)](#).

To further complement our primary findings, we conduct several additional robustness tests reported in the [Online Supplementary Material](#). First, we examine intermediate channel variables; the results in [Table S15](#) show that BGD is negatively associated with leverage and stock return volatility, suggesting that lower financial returns reflect a conservative, lower-risk strategy rather than inefficiency. Second, we evaluate heterogeneity across institutional contexts (gender quotas) and industries (manufacturing vs services). As presented in [Table S16 and Table S17](#), the core relationships between BGD and profitability remain consistent across different quota environments and business sectors.

5. Conclusion

Given the transition toward gender-balanced boards in the EU and the growing societal concern for gender equality, scholars have increasingly examined the relationship between gender diversity at the highest corporate levels and firms' financial performance. However, most studies have analyzed the association between BGD and profitability in an aggregate manner. Drawing on social role and role congruity theories, our study advances this literature by using pure measures of operating and financial performance to disentangle how BGD and patriarchal attitudes relate to the key components of firm profitability. First, we consider the potential channels through which diverse human capital, deliberative styles, monitoring abilities, and relational capital may shape internal and external negotiation processes

concerning operating versus financial resources. Second, we examine the moderating role of the patriarchal context, reflected in the attitudes and behaviors of negotiation counterparts and even stakeholders not directly interacting with board members.

Analyzing an international sample of 916 listed firms from 18 European countries over 2005–2022, we find that BGD is positively associated with pure operating profitability, through higher operating revenues and lower operating expenses, while being negatively associated with pure financial profitability, through lower financial revenues and higher financial expenses. These opposite patterns help explain the inconsistent signs and significance levels reported in prior studies relying on aggregate measures such as ROE or non-pure operating measures such as return on assets.

The findings on operating performance are consistent with research suggesting that gender-diverse boards may contribute to broader human and relational capital, more diverse deliberative styles, and enhanced monitoring, which can support more effective access to operating resources and more efficient management (Elmagrhi *et al.*, 2019; Terjesen *et al.*, 2016). The findings on financial performance align with documented patterns of more conservative financial decision-making in gender-diverse leadership teams, including lower leverage and reduced exposure to high-risk investments (Olsen and Cox, 2001; Schopohl *et al.*, 2021). The negative association with financial profitability is consistent with the lower risk premia typically associated with more conservative financial strategies. Patriarchal attitudes exhibit a significant moderating role, consistent with Castro *et al.* (2023). These results suggest that gender-related cultural aspects present in countries are transferred to the workplace (Diehl *et al.*, 2020), and that these cultural norms may shape how board contributions are interpreted and how negotiation processes unfold within firms.

The study contributes to theory by showing that the associations between BGD and firm performance cannot be fully understood without distinguishing between operating and financial activities. This disaggregation highlights behavioral and relational mechanisms rooted in negotiation dynamics and gendered expectations that help reconcile contradictory findings in prior research. By incorporating patriarchal attitudes as a cultural moderator, we extend emerging work on the sociocultural determinants of corporate governance and illustrate how cultural norms may condition the extent to which board characteristics translate into firm outcomes.

Our findings have practical implications for business managers, policymakers, and legislators seeking to reduce gender inequality. For directors and managers, the results help identify the areas of firm activity in which gender diversity on boards is more strongly associated with performance outcomes, guiding more informed decisions about board composition. In particular, firms may benefit from ensuring that gender-diverse boards are complemented by internal governance practices that support inclusive decision-making and reduce the influence of patriarchal norms in negotiation and coordination processes. This includes formalizing negotiation and decision protocols so that outcomes depend less on informal dynamics where cultural biases may operate. The findings also suggest that companies should strengthen gender diversity beyond the board, extending it to managerial and employee levels to enhance the transmission of women directors' contributions throughout the organization. For policymakers and legislators, the results underscore the importance of combining gender diversity policies with broader initiatives aimed at addressing patriarchal cultural norms, as firms operating in such contexts may otherwise struggle to translate board diversity into performance gains.

This study has several limitations that open avenues for future research. The most significant limitation is that, although it adopts a novel approach by distinguishing between pure operational and pure financial profitability, the analysis remains focused on quantitative financial indicators. This approach is suitable for isolating profitability components but does not allow direct observation of the mechanisms through which BGD influences decision-making, negotiation dynamics, or stakeholders interactions. Moreover, the European sample is heterogeneous and potentially unbalanced across countries, which may introduce bias given the substantial cross-country variation in patriarchal attitudes and institutional environments.

Additionally, the study does not explicitly consider that the relationship between gender diversity, risk preferences, and firm performance may vary across the business cycle. Prior research suggests that female directors' risk aversion intensifies during periods of heightened uncertainty, such as the 2007–2008 financial crisis (e.g. [Abou-El-Sood, 2021](#)). However, conservative financial strategies adopted during crises could help protect long-term profitability by preserving liquidity and avoiding excessive leverage.

Future research could complement these findings by incorporating qualitative or mixed-method approaches to better understand the behavioral and organizational channels underlying the observed effects. It would also be valuable to extend the analysis to non-listed firms and different institutional contexts. Future studies could examine how gender diversity interacts with other board attributes, such as expertise, tenure, or networks, or with firm-level diversity initiatives to shape the transmission of board decisions across organizational layers. Finally, a promising line of inquiry would be to explore how the heightened risk aversion associated with gender-diverse boards during crisis periods may influence firms' post-crisis profitability. Understanding the time horizon and conditions under which conservative strategies adopted in downturns translate into improved long-term performance would provide a more nuanced view of the interplay between BGD, risk-taking, and firm resilience.

Notes

1. Directive (EU) 2022/2381 of the European Parliament and of the Council on improving gender balance among directors of listed companies.
2. Greater risk aversion has been documented for both debt and financial investments ([Abou-El-Sood, 2021](#); [Datta et al., 2021](#)). This risk aversion increases the cost of capital when firms reduce leverage ([Schopohl et al., 2021](#)) and may lead to less efficient capital allocation ([Faccio et al., 2016](#)), resulting in lower returns on conservative financial assets ([Olsen and Cox, 2001](#)). Both factors negatively affect the firm's financial profitability and, thus, its comprehensive financial performance ([Huang and Kisgen, 2013](#)).
3. In the literature, roles attributed to men are typically described as agentic, emphasizing competitiveness, assertiveness, and profit orientation, whereas roles attributed to women are described as communal, emphasizing accommodation, concern for others, and relationship orientation.
4. For example, a basic ratio of operating profitability would consider the difference between operating revenues (e.g. sales) and operating expenses (e.g. personnel, supplies, administrative, marketing) in the numerator. The novelty of our approach lies in the denominator: instead of using total assets, we compute pure operating capital as the difference between operating assets (e.g. property, plant, and equipment, inventories, trade receivables) and operating liabilities (e.g. trade payables, tax payables). The specific computation of the variables used in the empirical analysis is explained in [Table S1 of the Online Supplementary Material](#).
5. Net operating (financial) assets is computed as operating (financial) assets minus operating (financial) liabilities.
6. Pure financial profitability is also significantly associated with BGD. As shown in the [Online Supplementary Material](#), BGD is negatively associated with financial revenues and positively associated with financial expenses. These opposite signs reinforce the overall negative association observed for pure financial profitability.

Supplementary material

The supplementary material for this article can be found online.

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