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Women's empowerment conditions, institutions and firm performance in the MENA region

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ABSTRACT

Women in corporate leadership roles are gaining recognition in business strategy decision-making. However, the impact of women's business leadership roles in the Middle East and North Africa (MENA) region has only recently gained attention due to the considerable gender equality reforms. This study explores the extent to which gender-empowerment institutions affect the performance of firms operating in the different countries of the MENA region. Using firm-level panel data, the study deploys a country-level measure of the women's empowerment conditions in eleven MENA countries and explores its impact on both the market-driven and accounting-driven measures of corporate performance. The results show that the institutional conditions promoting gender empowerment are a significant and positive predictor of corporate performance. The effect materialises directly and indirectly through board diversity. It is weaker with respect to the accounting-driven measures of performance and stronger with respect to the market-driven measures of performance. Institutions and culture mitigate the effect. Policymakers and private agents should coordinate their efforts to empower women's position in the whole MENA region with tangible benefits on corporate performance.

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1. Introduction

The women's rights movement has increased the number of women in workforce around the world (Ali et al., 2011). This has in turn raised the question of how an organisation's gender diversity affects its business decision-making and performance. Recent research has generally taken one of two broad approaches in answering the question. One approach focuses on the role of market forces external to the firm and suggests that gender diversity signals divergence in corporate strategy to investors and other stakeholders thereby influencing their perceptions of corporate value (Hannon & Milkovich, 1996; Roberson & Park, 2007). A second approach focuses on the role of gender diversity inside the firm. It emphasises both the positive effect of gender diversity in increasing innovative capacity and the breadth of knowledge as well as its negative effect in disrupting social cohesion (Ali et al., 2011; Richard et al., 2004; Yang & Konrad, 2011).

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Despite many studies using these two approaches, the empirical evidence has been mixed: some studies document a positive effect of gender diversity, whilst others find a negative or a null effect (see Hoobler et al., 2018; Kirsch, 2018; Post & Byron, 2015; for reviews). It remains largely unclear how gender diversity affects a firm's performance.

However, prior studies have paid little attention to the broader social and institutional context (Organization of Economic Cooperation and Development (OECD), 2015). This is an unfortunate omission given the ways that societal norms and institutional rules influence how individuals approach diversity (Shore et al., 2009). In fact, institutional theory has long suggested that the institutional environment determines how workers, managers and other stakeholders interpret and evaluate organisational practices and structures (DiMaggio & Powell, 1983; Powell & DiMaggio, 2012). Bringing the gender-empowerment institutional context may offer important insight into the diversity-performance association (Konrad et al., 2016; Yang & Konrad, 2011).

In this paper, we take an institutional perspective, proposing that the organisational performance effect of gender diversity depends on its institutionalisation. Gender refers to the social differences between women and men resulting from tradition and education; they are changeable over time and exhibit wide variations within and between cultures. Gender encompasses the rules, norms and practices by which the biological differences between men and women are interpreted to produce equal or unequal assessments, possibilities and opportunities in life (Nadal, 2017). Gender empowerment institutions are therefore instrumental in promoting gender equality in corporate leadership positions with considerable repercussions for the governance and performance of firms. The progressing feminisation of leadership roles in firms appears to evoke several benefits to them, including enhanced corporate governance practices (Adams & Ferreira, 2009; Kakabadse et al., 2015; Nielsen & Huse, 2010) and better corporate performance (Ali et al., 2014; Ben-Amar et al., 2013; Chapple & Humphrey, 2014; Dezsö & Ross, 2012; Kirsch, 2018).

Naturally, gender empowerment conditions in a country will influence the extent to which gender diversity materialises at the firm level and is expressed in corporate leadership positions and decision-making. Studies that analyse the role of gender diversity inside the firm emphasised the significant effect of gender diversity on innovative capacity and social cohesion (Ali et al., 2011; Richard et al., 2004; Yang & Konrad, 2011). However, they have provided mixed evidence regarding corporate performance: some document positive effect of gender diversity while others document negative or conditional effects (Bristy et al., 2020; Hoobler et al., 2018; Kirsch, 2018; Post & Byron, 2015). It remains largely unclear how gender diversity affects a firm's performance.

It appears that the current discussion needs a coherent theoretical framework that can help explain, first, the determinants of corporate board gender diversity in its width and different strength and, second, the institutional associations and interactions between the drivers that affect corporate board gender diversity. Societal norms and institutional rules influence how individuals utilise diversity in making decisions (Shore et al., 2009). Our study contributes to the understanding of the implications of the interaction between institutional conditions and corporate board gender diversity and their impact on corporate performance. Relying on emancipatory principles, the study argues that legal,

regulatory and other formal and informal arrangements in a country influence the effect of gender diversity on corporate decisions and performance.

Our study focuses on the MENA region, because it presents an interesting case study. Despite substantial investment in human development in recent years (Salloum et al., 2017), the region is not yet characterised by adequate rates of female participation in political governance and leadership, senior management positions and corporate boards in particular. This phenomenon is known as the “gender equality paradox” (Hegland, 2018; Jamali et al., 2007). Terjesen and Singh (2008) identified a variety of economic, environmental, political and social factors that affect gender equality at the corporate level. Specific MENA contextual factors, such as social norms and legal rules, have a powerful influence on the incentives, preferences, opportunities and the ability of women to participate in work and politics (Metcalf, 2007; Salloum et al., 2017; World Bank, 2013). The results of our analysis document a significant effect of institutional gender empowerment conditions on corporate performance in MENA.

More specifically, the study makes three key contributions to the existing literature. First, it considers the role of gender-specific institutions in affecting private sector firms operating in the low- and middle-income countries and especially in the under-researched MENA region, where the women’s empowerment conditions are constantly evolving but at different speeds among the different countries due to the complex socio-economic structures and in the region. A key novelty of the paper is the consideration of the performance effect of the Women Business and the Law (WBL) index (World Bank, 2021) to measure the economic empowerment of women throughout the world. Second, it applies a combined firm-specific and country-level approach to studying the association between gender empowerment conditions, corporate governance and corporate performance. To this end, it uses one of the largest samples of data currently available in the literature that includes 11 MENA region countries that combine data from three different sources, including firm-level financial performance and corporate governance information as well as country-level economic and institutional information for a 10-year period. It disaggregates the analysis by firm-size and income level and uses sensitivity and endogeneity analysis to produce unbiased inferences. Third, it uses largely unexplored institutional information on regulation and enforcement policies in the region to explore the mitigating impact of a variety of a country’s overall economic, enforcement and institutional environment, including its social structures and religious beliefs. In this respect, the paper takes a broader institutional perspective to the association between corporate governance and performance that goes beyond accounting information.

The rest of the paper is organised as follows. The next section reviews previous research, while the third section outlines the empirical strategy. In the fourth section, we assess and demonstrate the estimation results, followed by sensitivity and endogeneity analysis as well as additional robustness checks and the final section concludes the paper.

2. Related literature

We organise the literature review in three related sections. The first section analyses the trends in women’s empowerment conditions globally and in the MENA region specifically and offers some explanation of the latter’s conditions. The second section analyses

the association between board gender diversity and corporate outcomes, and the third section analyses the association of other firm-specific corporate governance characteristics on corporate outcomes.

2.1. Development of women's empowerment conditions in the MENA region

Studies on women's labour force participation have emphasised that sustainable economic growth cannot be maintained without social inclusiveness (World Bank, 2013). Women represent an unexploited resource in the world economy. Efforts to promote women's economic participation can only be effective if they are properly resourced and mindful of the interconnections between the three constituent pillars of gender equality and development: human endowments; economic opportunities; and voice and agency (World Bank, 2021). Addressing the challenge requires attention to several factors: first, the interaction between households, firms and markets and the extent to which they affect women's status. Second, the effect that social norms have on individuals, communities and organisations as well as the effect that implicit and explicit social biases have in determining gender roles and associated opportunities. Unless investments are made to contain gender biases and transform the "deep structures" of politics and organisations to enhance the effectiveness of gender equality policy, these deeply entrenched informal social norms will sabotage the best plans to advance gender equality at work. Biased social norms over time may become legalised discrimination associated with steep economic cost.

It is often the case that, while the underdeveloped state of labour market institutions in many countries constrains women's economic participation, powerful social networks often transcend this constraint further with exacerbated positive or negative effects depending on context. The women's empowerment conditions show historical progress but also considerable divergence among the world economies. We use the World Bank's *Women, Business and the Law* (WBL) index to illustrate the point (The World Bank, 2021). The WBL Index uses data reflecting the extent to which laws and regulations in a country restrict women's economic opportunities.

Table 1 shows the global trends by region (see also later in the text). The women's empowerment conditions have been best in the developed OECD countries. Europe & Central Asia shows the second highest value of the WBL Index. However, the development of the women's empowerment conditions has been rather recent even if substantial. Latin America & the Caribbean comes third. However, the region is associated with a rather small change in the WBL Index over time. While initial empowerment conditions are relatively decent, progress has been slower. The East Asia & Pacific region along with the Sub-Saharan Africa region comes next. While the improvement of the women's empowerment conditions has been moderate in the former region, it has been rather remarkable in the latter. The index for the Sub-Saharan Africa region has shown the largest cumulative improvement relative to all other regions, precipitating a positive outlook for Africa. However, more needs to be done. The South Asian region follows next. The WBL Index has improved rather moderately over the decades. While the women's empowerment conditions were initially at similar levels with those of the Sub-Saharan Africa, they evolved rather little.

Table 1. Evolution of the women's empowerment institutions around the world, 1991–2020.

WBL Index	1991–2000		2001–2010		2011–2020		1991–2020		
	Mean	Δ (%)	Mean	Δ (%)	Mean	Δ (%)	Mean	Δ (%)	Diff
OECD countries	75.52 (9.90)	11.0% (8.5%)	84.42 (9.33)	11.8% (5.7%)	93.08 (6.57)	10.3% (29.7%)	84.17 (11.63)	11.03% (14.2%)	17.56*** (25.47)
East Asia & Pacific	56.08 (8.45)	6.5% (11.7%)	61.18 (9.99)	9.1% (18.3%)	68.81 (11.94)	12.5% (19.5%)	61.98 (11.55)	9.37% (16.5%)	12.73*** (13.92)
Europe & Central Asia	63.71 (7.06)	6.9% (22.6%)	74.70 (9.08)	17.3% (28.7%)	82.91 (8.22)	11.0% (9.5%)	72.89 (10.59)	11.73% (19.7%)	19.19*** (26.30)
Latin America & Carib.	64.84 (7.17)	12.3% (9.6%)	72.82 (8.49)	12.3% (18.4%)	77.47 (8.48)	6.4% (0.1%)	71.76 (9.74)	10.33% (7.7%)	12.63*** (19.79)
Middle East & North Afr.	34.25 (11.37)	5.2% (10.7%)	38.30 (14.54)	11.8% (27.9%)	44.06 (16.39)	15.0% (12.7%)	38.45 (14.73)	−17.10% (17.2%)	9.81*** (6.88)
South Asia	45.07 (11.10)	1.0% (15.6%)	47.72 (12.54)	5.9% (13.0%)	57.13 (13.45)	19.7% (7.3%)	50.04 (13.47)	−11.97% (12.5%)	12.07*** (6.15)
Sub-Saharan Africa	49.53 (11.23)	11.8% (6.7%)	57.31 (13.38)	15.7% (19.1%)	66.31 (14.37)	15.7% (7.4%)	57.92 (14.61)	−11.07% (11.6%)	16.78*** (19.91)
World average	57.42 (15.49)	9.5% (10.0%)	64.88 (17.76)	13.0% (14.7%)	72.48 (18.19)	11.7% (2.4%)	64.91 (18.28)	−9.03% (10.02%)	−15.06*** (11.45)

Notes: The table reports the evolution of women empowerment conditions as defined in the law around the world. The table presents the mean value per decade and the percent change from the previous decade (standard deviation in parentheses) of the World Bank's *Women, Business and the Law (WBL)* Index (1–100 highest). The last column Diff indicates the significance of the WBL index mean change between the first (1991–2000) and last (2011–2020) decade. The parentheses include the *t*-test values.

Finally, the Middle East and North Africa region shows the weakest improvement in the women's empowerment conditions over the decades among all world regions. While progress has been achieved in the last two decades, it falls considerably short of that in other regions. The low index value in the MENA can to some extent be explained by the conservative stances on women's rights inherent in the prevalent Islamic party values (Alexander & Apell, 2016; Mhajne & Saxton, 2021). However, the lower levels of gender egalitarianism in the MENA region may not be the result of Islam, per se, but that of the strength of religiosity (Price, 2015) and prevalent patriarchic values (Salhi, 2008) in the region, influenced by traditional Arab cultures. In Islam, both women and men have equal rights for work and compensation (Hegland, 2018; Syed & Van Buren, 2014); both are bound to seek education as a religious duty (Majah, 1952); and both can establish their own business (Hassan, 1994). Nevertheless, women in Islamic countries still face relatively higher gender discrimination, because of the narrow interpretation of Islamic female modesty and gender segregation (Syed et al., 2005; Syed & Van Buren, 2014). Moreover, the assumed incompatibility between gender egalitarianism and Islam is based on a specific Western conceptualisation of feminism and the manner in which ideas transcend through diasporic practices (Hale, 2009). For instance, Muslim feminists may endorse women's empowerment through equality in education, but not necessarily through political inclusion. Although being active in politics may conflict with traditional views on motherhood, women's equality in education does not conflict in the same way. Indeed, women's empowerment through education is often framed by religious feminists in the MENA as the key to making better mothers (Glas et al., 2019). Another example is that, while the Moroccan Constitution granted women equal political rights with those of men, the Moroccan family law (Mudawana) inscribed them as essentially domestic beings with limited rights. Nevertheless, all MENA countries have ratified the *UN Convention on the Elimination of All Forms of*

Discrimination against Women, with certain reservations (CEDAW website). Finally, from an economic perspective, most companies in MENA countries have highly concentrated ownership structures dominated by state and family control (Al-Bassam et al., 2018; Hasan et al., 2014; Jamali et al., 2007; Mertzanis, 2017). Powerful families actively shape the composition of corporate boards by appointing directors from their own inner circle often at the expense of merit, which narrows women's opportunities to compete fairly for senior positions. In general, it appears that women's empowerment conditions in the MENA region are determined by the interaction of religious and cultural values that influence political processes, and therefore daily practices and relevant law, in diverse ways.

2.2. Gender diversity and corporate outcomes

The relation between gender diversity and corporate leadership and behaviour is analysed from various perspectives. Most studies use agency theory as their main theoretical background. The latter argues that women directors are relatively more independent and therefore may be better advisors and monitors of corporate managers (Bear et al., 2010; Cumming et al., 2015). Thus, higher board gender diversity reduces agency costs (Farag & Mallin, 2016).

Another approach focuses on the cultural and psychological precedents of gender development. For example, Constantin and Voicu (2015) focus on the role of culture in gender development. They state that cultural invariance can partially explain social attitudes towards gender roles. Paustin-Underdahl et al. (2014) use meta-analysis to address the potential advantage of female leadership. They stress the role of congruity theory for explaining female leadership behaviour. Eagly and Karau (2002) argue that women face prejudice in assuming actual and potential leadership positions due to a perceived incongruity between the female gender role and the stereotypical leadership roles. Women are perceived less favourably than men as actual and potential occupants of leadership roles and when evaluating leadership behaviour enacted by women. Koburtay et al. (2019) extend the congruity theory by identifying additional constructs (i.e. cultural, achievement versus communal; genetic versus social, etc.) that alleviate negative prejudicial evaluations and offer new insights into the potential alignment between feminine traits and leadership success. Going beyond prejudice, Özbilgin et al. (2012) show that gender inequality in Islamic societies, besides stemming from socio-cultural beliefs and traditions, is also strongly impacted by regulation and international agreements.

From an institutional perspective, gender diversity is more strongly associated with improved corporate performance in contexts with greater institutional gender equality; that is, in countries where women have more equal institutional access to opportunities in terms of education, economic participation, employment and political empowerment (Hausmann et al., 2012). In the latter countries, women are more likely to have developed the human capital required for board positions (Wright et al., 1995). Female directors' greater human capital and the legitimacy such human capital provides enhance their potential positive influence on decision-making processes and outcomes. Thus, it is likely that corporate boards in these countries may be more likely to leverage the experience, knowledge and values that female directors bring to decision-making. Lyness and Judiesch (2014) analysed the views of managers in 36 countries and found that in

egalitarian cultures, women and men have more equal opportunities to participate in the workplace, indicating emerging evidence of a female “premium” in leadership roles.

The upper echelons theory approach argues that board composition, by harnessing the experiences and knowledge of the people who make up the board, plays an important role in predicting decision-making strategy (Perryman et al., 2016; Post et al., 2015). Firms that appoint female directors improve board gender diversity thereby making more balanced and efficient decisions. A related perspective focuses on the critical mass of female directors. Torchia et al. (2011) examined whether a larger number of women in corporate boards results in a critical level of diversity, which significantly contributes to corporate innovation and performance.

Yet, another approach focuses on the association using experimental methods. For example, Filipiak (2016) conducted a study that offers new evidence on the effect of gender differences on corporate performance. She used a quasi-experimental framework to compare decision-making of people residing in a matrilineal and a patrilineal cultural environment in India. She found no significant gender diversity effects under matrilineal conditions on corporate performance. Sapienza et al. (2009) studied whether between- and within-gender differences in financial risk aversion are associated with biological and hormonal differences in a sample of more than 500 MBA students. They documented a nonlinear significant effect irrespective of gender. Appelbaum et al. (2003) studied the impact of gender-based leadership styles on corporate performance and whether women’s leadership effectiveness was fact- or perception-based. They documented significant leadership-style effects but with little differentiation.

Yet, another approach focuses on methodological questions. Ertan (2016) discusses the advantages and disadvantages of the various methodologies used to examine the gender equality policies and their economic effects. Wangnerud and Samanni (2009) study differences in gender equality and women empowerment and test the effect of five diversity measures – number of women in elected office, gender-sensitive legislation, corruption level, effectiveness of the government, democracy level in a country – on women empowerment. They find that the high number of women in elected office is associated with a higher level of gender equality.

Some studies focus on the organisational nature of the relation between gender diversity and corporate performance. For example, Strydom et al. (2017) found a significant positive effect of gender diversity on corporate earnings quality in Australian firms, only after a critical level of board diversity has been realised. Whitler and Henretta (2018) argue that, despite a rise of women leaders in corporate boards, the average corporate board in most firms is still made up of more men than women. They highlight that female corporate leadership advances through three layers of progress: women breaking into corporate boards, acquiring a critical mass of voting power and promoting more women in leadership roles. Rincon et al. (2017) study the determinants of women’s representation in corporate leadership positions and the key strategies to attain gender balance in decision-making positions. They found that most barriers towards female senior management are associated with gender stereotypes. Conyon and He (2017) used a quantile regression approach to examine the gender diversity effect on corporate performance. They find that gender diversity has a positive and progressive impact on corporate performance and the effect differs across productivity levels. Li and Chen (2018) find a positive significant effect of gender diversity on performance and the

effect depends on the characteristics of firms, especially firm size. Penttila (2016) documents a positive effect of women top managers on corporate financial performance that varies across firms in accordance with their organisational characteristics.

Over the years, the relation between gender diversity and various corporate outcomes has attracted considerable research interest from different perspectives. Several studies review the burgeoning literature. Earlier on, Terjesen et al. (2009) reviewed 400 studies that analysed how board gender diversity affect corporate performance until 2009. They examined different theoretical perspectives, characteristics and the influence of board gender diversity at the micro, meso and macro-levels. They found that board gender diversity contributed to effective corporate governance through better use of capital (e.g. individual interactions) and the creation of more inclusive and equitable business organisations, thereby satisfying the needs of stakeholders. De Vita et al. (2014) reviewed 70 studies published during 2000–2012 and identified the key characteristics of women directors in developing countries, such as greater self-confidence and education. Gabaldon et al. (2016) analysed 32 studies with respect to the factors that influenced the emergence of women as directors following a supply and demand perspective. However, they could not identify significant policies that removed the barriers preventing women from becoming corporate directors.

Some review studies carried out meta-analysis research on the influence of board gender diversity on accounting performance. Post and Byron (2015) analysed 140 empirical studies during 1989–2014 and found that women directors had no impact on corporate market valuation. By contrast, they found that women directors had a strong positive impact on accounting performance, in countries with stronger shareholder protection. Hoobler et al. (2018) conducted a similar meta-analysis of 78 studies and also found that female directors exert a positive effect on both accounting-based performance measures (e.g. sales revenue, ROA, ROE, ROI and ROC) and market-based performance (e.g. stock performance, market capitalisation and Tobin's Q). Jeong and Harrison (2017) examined 146 studies from 33 countries during 1983–2014 and employed a meta-analysis approach to compare the impact of board gender diversity on accounting performance within short- and long-term time-frames. They found that women directors have a weak and positive influence on long-term financial performance (e.g. ROA, ROE, ROS, Tobin's Q, market-to-book ratio and total shareholder returns), but a weak and negative impact on short-term market performance (e.g. cumulative abnormal market returns).

Other review studies examined the effects of board gender diversity on audit/disclosure quality and corporate social responsibility (CSR). For example, Byron and Post (2016) examined 84 studies and found that the positive impact of women directors on CSR, measured by CSR ratings, workforce diversity, environmental responsibility, philanthropy and codes of ethics, is higher in countries with stronger gender equality and shareholder protection. Rao and Tilt (2016) concluded that there is a lack of studies analysing the relationship between board gender diversity and CSR, suggesting that future researchers should consider using qualitative methods to capture new information. Khlif and Achek (2017) reviewed 64 studies on gender in accounting research and found that board gender diversity is associated with more conservative financial reporting, higher disclosure, higher audit fees and lower tax aggressiveness.

A few studies analysed the effect of board gender diversity from the sectoral and demographic perspectives. For example, Yang et al. (2017) reviewed 86 published studies in the tourism sector and found that the sector lacks an adequate investigation of gender diversity and risk. Kagzi and Guha (2018) analysed the literature on board demographic and gender diversity in top management journals during 1989–2015. They classified board gender diversity studies according to three perspectives – business case perspective, ethical and moral perspective, and theoretical perspective. According to the business case and theoretical perspectives, women directors affect corporate performance differently, while according to the ethical and moral perspective, the mere presence of women directors makes a difference. Pucheta-Martínez et al. (2018) carried out an extensive review of studies on the influence of female board representation on financial reporting quality, accounting performance and CSR during 1975–2017. Using only agency and stakeholder theories, they identified the advantages of board gender diversity in terms of making financial or non-financial decisions. They concluded too that mandatory gender quotas in firms have unclear effects on corporate performance because of the moderating role of external factors, such as corporate governance structures, financial scandals, financial crises and state interventions.

More recently, Kirsch (2018) carried out a broad review of 310 studies until 2017 to investigate both the antecedents and effects of board gender diversity on corporate financial and non-financial performance. She found that macro-level (e.g. institutions and actors), meso-level (e.g. boards, firms and industries) and micro-level (e.g. appointment processes) factors exert different impacts on the presence of board gender diversity. She also found that board gender diversity can influence board behaviour and thereby corporate performance, but the effect is not strong. Finally, Reddy and Jadhav (2019) review the impact of external factors (e.g. firm and board size) on board gender diversity and find a positive relation between board gender diversity and financial performance, but a mixed effect of mandatory gender quota on corporate performance. In contrast, Bennouri et al. (2020) found that the percentage of women on corporate boards in Europe increased after EU regulation and the effect is stronger in mandatory regimes.

There is no universally conclusive evidence on whether increasing female representation in corporate boards will improve corporate performance. There are large cross-country and cross-firm-group differences. However, after controlling for various firm-level variables and country-level factors, studies that support the value-adding female representation in corporate boards outweigh studies that support value-neutral or value-destroying notions.

In our institutional approach, the research hypothesis is whether women-empowerment institutions in the MENA countries affect the performance of firms operating in these countries. We will use the Women Business and the Law (WBL) index for measuring gender-empowerment institutions in the MENA region. The index captures institutional developments in the MENA countries that improve gender equality in the law. We expect a positive effect of higher women's empowerment in the law on the performance of firms. Thus, the first testable hypothesis is:

H1. There is a positive association between the gender-empowerment institutions and the performance of firms operating in the MENA countries.

2.3. Corporate governance and firm performance

Corporate governance is a key determinant of corporate performance (OECD, 2014). Corporate governance considerations include ownership structure and the role and functions of the corporate board, the rights of shareholders, information disclosure and managerial compensation. In what follows, we focus on the role of the board and ownership structures on corporate performance.

It has been extensively argued that more non-executive members in the corporate board improve board independence in monitoring executives (John & Senbet, 1998). Nevertheless, theoretical and empirical analysis shows that the relation between the composition of the corporate board and corporate performance is far from clear. On the one side, stewardship theory postulates that board executive members are better familiar with the corporate activities and, consequently, are better placed to control and monitor executive managers. CEOs are less enthusiastic to disclose important information with very independent corporate boards, which may eventually hamper market-driven shareholder valuation (Adams & Ferreira, 2009). On the other side, agency theory postulates that the inclusion of non-executive members of the board serves to ensure that competition in status among corporate insiders inspires behaviour that is consistent with the maximisation of shareholder value of firms (Demsetz & Lehn, 1985). Non-executive members can be instrumental in safeguarding owners' interests by exercising better monitoring and control of managerial decisions (Weisbach, 1988). Some studies find a positive effect of boards with higher non-executive composition on corporate performance (Huson et al., 2001), while others studies document a negative effect (Bhagat & Black, 2002). Other studies find that more independent boards have a positive effect on managerial control (Baysinger & Butler, 1985).

Considerable research emphasis is given to the willingness and competence of the board to monitor executive managers and disciplining or removing them if they do not perform. Some argue that the frequent failure of the corporate board to act timely in monitoring managerial executive decisions owes to incompetent and dependent leadership (Jensen & Meckling, 1976). An associated research question is the impact of CEO duality (proxy for corporate board leadership structure) on corporate performance. CEO duality implies that the top executive manager also serves as the chairperson of the board. CEO duality is deemed ineffective for the CEOs obtain too much power on the board over strategic decision-making (Brickley et al., 1997). Empirical evidence is inconclusive: CEO power duality may or may not improve corporate performance (Sanda et al., 2005). The evidence is even less clear in emerging markets. However, with respect to smaller firms, CEO duality may be beneficial for corporate performance in view of the small scale of corporate activities.

The structure of corporate ownership affects the control of decision-making and thereby corporate performance. The impact of corporate ownership concentration differs in accordance with the control structures and the institutional protection of minority-stake owners in different countries (La Porta et al., 1988). The relevant empirical evidence is extensive (Shleifer and Vishny, 1997). Broadly speaking, dispersed corporate ownership structures may be associated with improved corporate performance in countries with strong disclosure and shareholder protection mechanisms. On the other hand, concentrated corporate ownership and block-holding structures may be

associated with improved corporate performance in countries with strong protection of minority shareholders against market abuse (Mertzanis, 2002). In low- and middle-income countries, stock market discipline is weak and therefore high concentration of corporate ownership is common, with a positive effect on corporate performance. These studies explain this finding on the basis that the majority shareholders are in a better position to exercise effective monitoring of executive management's performance given the absence of strong disclosure and shareholder protection mechanisms (Sarkar & Sarkar, 2000; Shahwan, 2015).

Higher concentration of ownership by corporate insiders may increase the alignment of private interests between executive managers and owners and therefore reduce potential agency costs (Jensen & Meckling, 1976). Most studies found positive effects of inside corporate ownership on corporate performance (Cole & Mehran, 1998). However, insider corporate ownership may exert detrimental effects on corporate performance if it generates phenomena of market abuse and managerial entrenchment (Hermalin & Weisbach, 1991; Morck et al., 1998).

Institutional owners can act as potential mitigators of agency problems. This is because they have a stronger incentive to perform efficient monitoring of executive management's behaviour (Shleifer and Vishny, 1997; Demsetz & Lehn, 1985) and they have the means and competences for doing so (Shleifer and Vishny, 1997). Institutional owners have many voting rights and strong control power, which, properly exercised, can improve risk-taking decisions thereby improving corporate performance (Guercio & Hawkins, 1999; Maury, 2006).

Foreign corporate ownership, particularly institutional owners, affects corporate efficiency (Douma et al., 2006). The impact is stronger when foreign and domestic owners are active in similar industrial sectors because they share expertise and monitoring knowledge more effectively. Foreign ownership plays a role that goes beyond improvements in managerial expertise and technical collaboration. It facilitates the transfer of general and tacit competitive expertise, such as managerial skills and specific knowledge, that cannot be shared under competitive market conditions (Djankov and Hoekman, 2000). In emerging markets, foreign owners are in a better position than domestic owners of firms to capitalise on advances in labour, capital and technology (Sarkar & Sarkar, 2000) and therefore their presence is associated with better performance (Ben Naceur et al., 2007; Gurbuz & Aybars, 2010; Omran, 2009).

More generally, in the MENA region, better corporate governance is associated with better firm performance. For example, Mertzanis et al. (2019) document a positive effect of corporate governance on both accounting and market-based performance of firms in the MENA countries, which is stronger after accounting for institutional effects. Ramadan and Hassan (2021) find that board diversity in Egyptian firms positively affects their efficiency, measured by asset utilisation, while institutional ownership and board size have negative effects. Sarhan et al. (2019) find that board diversity, measured by director gender and nationality, has a positive effect on corporate financial performance, which is stronger in better-governed firms. Hassan and Halbouni (2013) found that voluntary disclosure, CEO duality and board size significantly influence the accounting performance of UAE firms, dependent on firm size and economic uncertainty. Arayssi and Jizi (2019) find that board independence of firms in MENA countries is negatively correlated with their profitability, but ownership concentration, board gender

diversification and board composition improve profitability. Oradi and E-Vahdati (2021) find that a higher portion of female directors on audit committees in Iranian firms is associated with fewer internal control weaknesses. Hassan et al. (2017) find that ethnic diversity in the top management of Malaysian firms had no significant effect on firm performance, but gender diversity in both top management and the board had a positive impact on performance (ROE). In general, using various data and methods, most MENA studies document a broadly positive association between corporate governance, board diversity and corporate performance. Thus, given prior evidence, better corporate governance of firms in the MENA countries are expected to improve their performance. Thus, our second testable hypothesis is:

H2. There is a positive association between corporate governance and the performance of firms operating in the MENA countries.

Most studies show that institutions affect the corporate governance's effect on performance. In our setting, it is likely that changes in gender empowerment institutions at the country level exert both a direct effect on firm performance and an indirect one through board diversity. The effect of legal empowerment on gender equality in corporate boards has been a key research consideration. Earlier studies analysed the experience of individual countries (i.e. Nordic countries) and examined whether mandatory gender quotas enhanced board monitoring effectiveness and firm performance, with mixed results (Ahern & Dittmar, 2012; Böhren & Staubo, 2015; Nielsen & Huse, 2010). The performance effect of mandatory gender quotas in the board has been questioned based on the alleged scarcity of qualified females and the risk of "over-boarding", that is, the appointment of quota-driven less qualified directors with an overall detrimental effect on board quality (Eckbo et al., 2016). Ferrari et al. (2016) found that mandatory quotas in Italy's corporate boards led to a higher share of female board directors, higher education and lower average age of board members, as well as a lower variability of stock market prices. More recently, mandatory gender quotas were found to have weak positive spill-over effects on the proportion of female CEOs in the UK (The Hampton Alexander Review, 2019). Bennouri et al. (2020) compared the impact on board and directors' characteristics of mandatory vs. advisory regulations on gender quotas in corporate boards in Europe and found that the percentage of women on boards increased after regulation and the effect is stronger in mandatory regimes. EU legislation introduced fixed female quotas, after securing government agreement and allowed certain corporate flexibility in implementing the law (Prat & Mueller, 2016). Mandatory gender quotas may have a self-perpetuating positive effect. Lippmann (2022) finds that legislation in France that raised the proportion of women in Parliament led to a higher interest of individual women legislators on gender issues and a concomitant shift in lawmaking towards their promotion. Finally, legislative initiatives in recent years have led to a considerable increase in board diversity in the Gulf Cooperation Countries (Hawkamah, 2020). We expect that stronger gender empowerment institutions will affect board diversity and likely exert an indirect positive effect on firm performance in the MENA countries. Thus, our third testable hypothesis is:

H3. There is a positive association between board diversity and firm performance, which will be enhanced by stronger gender-empowerment conditions in the MENA countries

3. Data and methodology

We carry out the analysis by drawing on a unique set of panel data comprising 2,425 non-financial firms, whose shares are traded on the equity exchanges in countries located across the MENA geographical region. We obtain the firm-level accounting data from the audited financial statements and the annual reports of firms through the ORBIS database and the corporate governance data from the BoardEx database. We further obtain information on women empowerment institutions from the WBL database administered by the World Bank as well as on other institutional factors. We merged the different firm-level and country-level sources of information to obtain an integrated dataset. Our post-merger final sample includes complete information on firms' characteristics and activity in 11 MENA region countries (i.e. Jordan, Egypt, Bahrain, Lebanon, Kuwait, Qatar, Oman, Tunisia, Morocco, the United Arab Emirates and Saudi Arabia) during the 2007–2017 period. Some MENA region countries are not included in the sample because either they do not have active exchanges and hence market information available or there are many missing observations in the data.

Following standard international practice, we use three different measures of corporate performance as outcomes. The first outcome variable is the accounting measure of each individual firm's return on assets (ROA); the second is the accounting measure of the firm's return to equity (ROE) and the third is the market-driven performance measure of Tobin's Q. Tobin's Q is measured as the ratio of the market value of the firm to the replacement value of a firm's total assets. We use the three alternative measures of corporate performance in order to assess the role of different factors in the association between the women's empowerment institutions, corporate governance and corporate performance, that takes into consideration the measurement inconsistencies addressed in the literature.

Our key independent variable is the Women Business and the Law (WBL) index produced by the World Bank to measure the economic empowerment of women throughout the world (WBLNDX). The WBL Index uses information on the countries' formal laws and regulations that have a bearing on women's economic participation, covering eight areas of interest (mobility, workplace, equality of pay, marriage, parenthood, entrepreneurship, assets and pensions). It tracks how laws and regulations across countries affect women at different stages in their working lives and focusing on those laws applicable in the main business city. The index varies between 0 and 100 (highest equality against the law). [Table 1](#) shows that the women-empowerment conditions have undergone considerable change. The world average WBL Index rose from 57.42 in the 1990s to 72.48 in the 2020s, indicating considerable progress but falling short from being fully satisfactory. The WBL index change across decades has been significant in all regions. It is further associated with large disparities among world regions. More specifically, in the MENA region the WBL Index increased from 34.25 in the 1990s to the 44.06 in 2020s. While still lagging in absolute terms, the latter percent increase exceeded that of the 3-decade world average, indicating that the MENA gender equality institutions are showing improvement. Nevertheless, the strength of the change remains lower relative to that of other regions. In all cases, the large standard deviation of the WBL Index implies considerable disparities among countries within regions.

Since the effect of women empowerment institutions on corporate performance is largely unobservable, we use additional firm-level control variables to account for difference in these firms. Relevant studies indicated a significant role of firm-level controls for the financial decisions of firms in the MENA region (Mertzanis et al., 2019, 2002; Sarhan et al., 2019; Ramadan and Hassan, 2021). Drawing on these studies, we include variables that capture the firm's corporate governance and corporate ownership structure and indicate their respective expected direction of influence. We thus include the corporate board independence (+), corporate board gender diversity (+), CEO power duality (?), size of corporate board (–), as well as corporate ownership by corporate insiders (+), foreign investors (+) and domestic institutional investors (+). We also include variables that capture firm age (+), firm size (+) and size growth (+) as well as the firm's degree of leverage (–). We obtain the data for these variables from the firms' financial statements and annual reports, as described in the data sources above.

However, it is not only the women's empowerment institutions in a country and the specific characteristics of firms that could explain corporate performance. Other economic and institutional influences play a role too. For example, different countries are at different phases of economic development and the business cycle, have different institutional and regulatory structures as well as characterised by different cultural and behavioural norms. All these economic, institutional and cultural influences may affect directly or indirectly the extent to which the women's empowerment institutions influence corporate performance. It is therefore conceivable that, once we control for these factors, the impact of women's empowerment institutions on corporate performance will vary. These control factors capture the role of unobservable and omitted factors in the MENA countries and therefore account for potential omitted variable effects. These control factors consider the effect of the macroeconomic environment (i.e. financial, economic and human development, income inequality and inflation); the institutional governance environment (i.e. freedom of expression and accountability, government effectiveness, the control of corruption, the rule of law, political stability and regulatory quality); the financial and corporate governance regulation conditions (i.e. director liability, corporate transparency, shareholder protection and rights); and the corporate governance enforcement conditions (corporate ownership of the equity exchange, enforcement experience of the regulator, compliance to a corporate governance code that the country or firm has adopted and the whether the “comply-or-explain” rule is complied with, from Amico 2014) on corporate governance enforcement and regulation practices in the whole MENA region. In order to account for the role of non-economic factors, we also include countrywide control variables that capture aspects of the social environment (i.e. social fractionalisation, strength of the family ties) and the religious environment (i.e. religiosity, religious composition of the population). Their effect is analysed in the online appendix.

Table 2 shows the descriptive statistics of all variables. These statistics show considerable variation among countries. The average value of ROA in our MENA region countries is 6.8 percent with a standard deviation of 9.3 percent, exhibiting moderate dispersion. The average value of ROE is 10.5 percent with a standard deviation of 24.9 percent, exhibiting high dispersion. The average value of Tobin's Q is 1.225 with a standard deviation of 1.109, exhibiting moderate dispersion. Finally, the average value of the WBL Index is 34.5 with a standard deviation of 11.4, exhibiting moderate dispersion.

Table 2. Summary statistics of all variables.

Variable	Mean	StDev	Median	Min	Max
ROA	0.068	0.093	0.060	−0.838	0.440
ROE	0.105	0.249	0.111	−4.007	0.767
TOBINQ	1.225	1.109	0.908	0.000	8.426
WBLNDEX	34.498	11.433	31.875	26.250	73.125
BDSIZE	8.442	2.319	8.000	4.000	19.000
BDINDP	0.527	0.228	0.455	0.000	0.900
BDDIV	0.025	0.065	0.000	0.000	0.400
DUALTY	0.964	0.186	1.000	0.000	1.000
OWNNSD	0.054	0.122	0.000	0.000	1.000
OWNINST	0.325	0.300	0.264	0.000	1.000
OWNFOR	0.056	0.146	0.000	0.000	1.000
CLEVERG	0.406	0.227	0.383	0.006	1.220
FRMAGE	2.965	0.865	3.091	0.000	5.094
FRSIZE	13.374	1.566	13.326	9.565	18.594
CREDITL	54.224	18.130	51.735	25.607	113.293
GDPCAPL	0.333	0.227	0.180	0.039	0.746
GINI	0.195	0.170	0.095	0.012	0.487
INFL	0.213	0.194	0.127	0.003	0.789
EFFGOV	0.146	0.436	0.073	−0.877	1.510
REGQUAL	0.131	0.348	0.083	−0.932	1.111
RULLAW	0.225	0.322	0.149	−0.867	0.959
CONTRCOR	0.121	0.470	0.041	−1.037	1.567
FRAETHN	46.775	6.625	50.000	29.800	55.000
FRALNG	0.793	0.058	0.804	0.589	0.865
FRARLG	4.740	3.655	3.711	−4.863	18.568
FMLTIES	0.430	0.047	0.410	0.393	0.592
RELIGIOSITY	93.296	1.992	93.000	89.500	98.000
CHRSTNIAN	0.066	0.05	0.044	0.001	0.381
MSLIM	0.881	0.097	0.928	0.61	0.993
HINDU	0.033	0.04	0.011	0.001	0.138
BUDDST	0.009	0.01	0.003	0.001	0.031
JEWISH	0.001	0.001	0.001	0	0.006
CORPTRANS	5.44	1.415	5	3.543	9
DIRLIAB	6.755	2.016	8	1	9
SHRRIGHT	3.923	0.981	3.842	1.772	7
INVPROT	3.751	3.594	5	0	11
EXCHOWN	1.516	0.812	1	1	3
REGEXPR	1.182	0.17	1.146	0.778	1.58
COMPEXPL	0.72	0.45	0	0	1
CGCODE	0.99	0.151	1.041	0.602	1.279

Moreover, the firms' corporate board of directors has an average size of 8 members with a maximum of 19 and a minimum of 4 members. This range is typical of size of corporate boards in most countries. The share of non-executive members in the corporate board is on average 53 percent with a maximum of 90 percent and a minimum of 0 percent. Thus, it appears that some firms go to the extreme in adopting very effective corporate governance practices whilst others do not appoint any non-executive members. The diversity of the corporate board has average value of 2.5 percent with a minimum value of 0 and a maximum value of 40 percent. Corporate boards in the MENA region are dominated by men rather than women or minorities. The CEO power duality in the sample is very high with an average of 96 percent value. It appears that firms in the whole MENA region tend to apply governance practices that favour the split of roles between the Chairman and the CEO of the corporate board. The average share of insider corporate ownership is 5 percent, foreign corporate ownership is 6 percent and the domestic institutional corporate ownership is 32 percent. All corporate ownership

variables have a maximum of 100 percent and a minimum of 0 percent. Most firms included in the sample are young with an average age of 2.96 years and a maximum of 5.09 years. Firms rely less on debt finance, with an average degree of leverage of 41 percent, generate an average return on assets of 7 percent and realise an average sales growth of 6 percent. The online appendix provides further analysis of the variables.

We fit a pooled OLS estimation model. We use country and year fixed effects to capture time-invariant (i.e. institutions, religion, etc.) and time-varying (i.e. crises) heterogeneity. The disadvantage of the OLS linear estimation is that it does not account for nonlinearities, has poor extrapolation properties, is sensitivity to outliers and may produce too low predicted values for the outcome variable, due to attenuation bias. However, the OLS estimation avoids the problem of incidental parameter bias that is embedded in nonlinear estimations using country-year fixed effects (Angrist & Pischke, 2009). The inclusion of country-year fixed effects in the analysis reduces the OLS estimation bias in relative terms. However, in order to check the robustness of the OLS baseline results, we deploy additional sensitivity and endogeneity analysis. In the regression, we consider only non-missing observations of our variables.

In our setting, we measure the key predictor variable (WBLNDX) at the country level whereas we measure the outcome variables at the firm level. Moulton (1986) identified the statistical bias that results from the attempt to measure the effect of aggregate policy variables on micro units. Consequently, we cluster the standard errors at the country level. In a given country and year, there are several different firm-level observations per one key predictor observation. The error term of the estimation might be large since it is difficult to fit all the outcome points at the same time thereby inducing a more conservative estimate of the effect of the key predictor variable.

Moreover, it is likely that changes in gender empowerment institutions at the country level exert both a direct effect on firm performance and an indirect one through board diversity. In order to delineate these possible effects, we include an interaction term between the WBL Index (WBLNDX) and the diversity of the board (BDDIV). Our estimation model is therefore given by the following equation:

$$Y_{ijt} = \alpha + \text{WBLNDX}_{jt}\beta_1 + X_{1ijt}\beta_2 + \text{WBLNDX}_{jt}*\text{BDDIV}_{ijt}\beta_3 + X_{2jt}\beta_4 + \mu_{ijt} \quad (1)$$

In the above regression Equation (1), the variable Y_{ijt} is the outcome variable (alternatively, ROA, ROE or Tobin's Q) calculated based on the financial statements of firm i in country j in year t . The independent variable WBLNDX_{jt} is the value of the WBL Index per country j in year t . The vector X_{1ijt} includes the corporate governance and other firm-level characteristics of firm i operating in the country j during in year t . The vector X_{2jt} includes the countrywide economic and institutional control factors in country j in year t . The final term μ_{ijt} represents the composite error term of the regression, which comprises the sum of γ_i , δ_t and $\epsilon_{i,t}$ terms. More specifically, the term γ_i accounts for the influence of country effects; the term δ_t accounts for the influence of year effects; and the remaining term $\epsilon_{i,t}$ is the error parameter assumed to vary across years and countries and be normally distributed. We provide diagnostic tests in the online Appendix.

4. Analysis of the results

Table 3 shows the estimated effects of a unit change in the WBLNDX and the firm-specific corporate governance characteristics on corporate performance. Models (1) to (3) analyse the impact of the WBLNDX and corporate governance characteristics separately on firms' return on assets (ROA), return on equity (ROE) and Tobin's Q, respectively. The results show that the WBLNDX coefficient is insignificant with respect to ROA, but it is significant and positive for ROE and Tobin's Q. Higher values of the WBLNDX are associated with higher values of the return on equity and higher Tobin Q ratios. Firms operating in the MENA countries characterised by stronger gender empowerment institutions appear to realise better equity performance. This implies that the women's empowerment conditions exert their effect through both the asset and liability sides of a firm's operations. Given the important role of ROE in the firm's growth rate, our finding implies that stronger women's empowerment institutions in a country will tend to improve sustainable growth rates and dividend growth rates of the firms operating in those countries. Further, firms operating in the MENA countries characterised by stronger gender empowerment institutions appear to realise better market valuations.

Table 3. Baseline results.

	Return on assets (ROA)	Return on equity (ROE)	Tobin's Q (TQ)
WBLNDX	0.002 (0.002)	0.009* (0.005)	0.005* (0.014)
BDDIV	0.312*** (0.100)	0.889** (0.401)	0.319* (0.879)
WBLNDX * BDDIV	0.009*** (0.002)	0.024*** (0.008)	0.031* (0.020)
BDSIZE	0.003*** (0.001)	0.004* (0.002)	0.001* (0.009)
BDINDP	−0.028*** (0.009)	0.090*** (0.027)	0.200** (0.090)
DUALTY	0.017** (0.007)	0.006 (0.019)	0.039 (0.116)
OWNINSD	0.074*** (0.014)	0.134*** (0.042)	0.677*** (0.192)
OWNINST	0.044*** (0.007)	0.071*** (0.019)	0.493*** (0.077)
OWNFOR	0.025** (0.013)	−0.005 (0.037)	0.171 (0.125)
CLEVERAG	−0.144*** (0.010)	−0.204*** (0.045)	−0.994*** (0.077)
FRMAGE	0.001 (0.003)	−0.006 (0.007)	−0.022 (0.024)
FRSIZE	0.004** (0.002)	0.007 (0.005)	−0.164*** (0.017)
Country effects	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
adj. R^2	0.197	0.109	0.286
F-test	16.303	6.761	33.825
N	2063	2063	2063

Notes: The table reports the baseline results. The outcome variables are the return on assets (ROA), the return of equity (ROE) and Tobin's Q (TOBINQ). The key independent variable is the composite measure of gender empowerment institutions (WBLNDX). Control variables include the specific corporate governance characteristics of firms. The parentheses report heteroscedasticity-robust standard errors. The pool sample period is 2007–2017. We use an OLS model. We do not report the fixed effects for reasons of space. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The Appendix provides the definitions of the variables.

Given the important role of market valuations for the firms' financing abilities, our finding implies that stronger women's empowerment institutions in a country will tend to improve the cost and availability of entrepreneurial finance of the firms in that country. Our hypothesis 1 is broadly confirmed. It may be the case that the insignificant WBLNDX effect on ROA is due to the complex nature of measuring accounting performance (Combs et al., 2005). For example, many assets, such as property, plant, equipment and intangibles, involve long-term technical and other acquisition decisions that institutional rules do not directly influence. Our findings support the view that societal norms and institutional rules influence individual diversity decisions and thereby economic outcomes (Shore et al., 2009) as well as the gender-empowerment view that the institutional context offers insight into the diversity-performance association (Konrad et al., 2016).

Moreover, the effect of the firm-specific characteristics on performance is mostly significant. Higher board diversity is associated with higher accounting performance and market valuation. This finding is in line with the finding of Yang et al. (2019) and Terjesen et al. (2009) who emphasise the various governance processes through which diversity affects performance. Interestingly, the associated interaction effect is also positive and significant for all performance measures. It appears that improvement of the gender empowerment institutions at the country level affects firm performance directly but also indirectly by influencing the gender composition of the board of firms in the MENA region in ways that exacerbate any positive effects on performance. Our hypothesis 3 is broadly confirmed and aligned with the Bennouri et al. (2020) findings.

Larger corporate boards are associated with higher corporate performance. The wider representation of interests in large boards appears to help firms contain conflicts of interest and improve managerial oversight thereby contributing to higher performance. This finding is in line with the ones of Huang (2010) for Taiwan but differs from those of more advanced countries. Stronger board independence involving a larger percentage of independent directors appears to be associated with a negative effect on ROA but a positive effect on ROE and Tobin's Q. CEO power duality has a significant and positive effect only on ROA but no significant effect on ROE and Tobin's Q. It appears that the split of roles between the Chairman and the CEO does not matter much for performance enhancement of the firms in the region. Higher levels of insider corporate ownership and domestic institutional corporate ownership of the firm are associated with better accounting and market performance of the firms. It appears that strong owners and institutional investors exert effective monitoring of management and reduce the risk of misappropriation thereby leading to better corporate performance. On the other hand, higher foreign corporate ownership appears to improve only ROA but not ROE and Tobin's Q. Higher levels of leverage are associated with lower accounting and market performance of the firms operating in the whole MENA region countries. Finally, the firm's age since establishment is not important for its performance, whilst the size of the firm matters. These results are broadly in line with those of Mertzanis et al. (2019) and Sarhan et al. (2019) regarding the effect of corporate governance characteristics on firm performance in the MENA region. Overall, the F statistic is large in all models implying that the fixed effects are significant. In order to check the robustness of results, we carry out several sensitivity tests that include alternative sample structures and variable measurement (see online appendix). These tests broadly confirm the baseline results.

5. Endogeneity analysis

We apply alternative estimation methods to check the robustness of the estimates. We first use an OLS model with random effects as a benchmark (OLS-RE). Further, to contain endogeneity bias, we implement an instrumental variables (IV) approach with two alternative estimators, i.e. the 2SLS and the two-step GMM estimator. We identify an external instrument, which correlates with the allegedly mis-measured gender-empowerment conditions, but not with the outcome variables. The selected external instrument is the average price of gold per year in a country (GOLD). The instrument correlates well with the key regressor WBLNDX (0.1549) and little with our outcome variables ROA (0.0291), ROE (0.0254) and TobinQ (−0.0449). There is also economic justification for it. For example, Anderson (2007) argued that in many developing countries, while dowry payments originally were a parents' bequest to daughters that afforded them post-marital financial protection, the property rights over dowry have evolved to become a key consideration of marriage and reproductive choice. Dowry imposes a considerable tax burden on girls' families, often representing a value that is often 4–8 times annual household income, thereby discouraging the birth and upbringing of female offspring. Moreover, Bhalotra et al. (2020) argue that, since gold is an essential part of dowries, the global price of gold affects the response of parents in India toward their gender preference of newly born children through sex determination technology as well as their support of female children during their life and employment.

Table 4 reports the results of the estimation after deploying the three alternative estimation techniques. The OLS-RE method produces significant and positive coefficients for ROA and TobinQ but not for ROE. These coefficients are higher than those of our benchmark model which includes fixed effects. This is the result of attenuation bias, which the inclusion of fixed effects has partly removed. On the other hand, the use of the two IV methods has produced a significant and positive coefficient for ROE and TobinQ but an insignificant one for ROA. In both IV methods, the effect of WBLNDX on ROE is lower relative to that of our benchmark model, whilst it is higher for TobinQ. Thus, the use of the IV methods has shown that after controlling for endogeneity bias, the effect for ROE was overestimated, whilst that for TobinQ was underestimated. The interaction term is also positive and significant indicating considerable indirect effects through board diversity. The non-zero values of the Sargan and Hansen J tests indicate that our instruments are broadly relevant and meet the instrument's exclusion restrictions for the 2SLS and GMM methods, respectively. The AR(2) test indicates no second-order Arellano-Bond autocorrelation at the 5% level of significance. The IV estimates show that most of the corporate governance variables remain significant, whilst age becomes insignificant and the importance of firm size less pronounced. After using instrumental variables analysis, our baseline results broadly hold with changes observed mainly in the size but not the direction or significance of the effect. Therefore, the effect of the WBL Index on corporate performance remains broadly robust.

Table 4. Endogeneity analysis.

	OLS-RE			IV-2SLS			IV-GMM		
	ROA	ROE	TOBINQ	ROA	ROE	TOBINQ	ROA	ROE	TOBINQ
WBLNDX	0.003* (0.001)	0.008 (0.001)	0.006** (0.003)	0.003 (0.002)	0.008* (0.007)	0.105*** (0.032)	0.004 (0.003)	0.007* (0.011)	0.088*** (0.033)
BDDIV	0.310*** (0.091)	0.936*** (0.346)	5.367*** (0.919)	0.823** (0.393)	2.259** (1.099)	20.34*** (5.008)	0.932** (0.438)	1.923 (1.877)	17.42*** (5.035)
WBLNDX*BDDIV	0.009*** (0.002)	0.026*** (0.008)	0.124*** (0.022)	0.024** (0.011)	0.064** (0.031)	0.555*** (0.141)	0.027** (0.012)	0.055 (0.052)	0.478*** (0.146)
BDSIZE	0.003*** (0.001)	0.006*** (0.002)	0.006 (0.010)	0.003*** (0.001)	0.006** (0.003)	0.005 (0.012)	0.003*** (0.001)	0.006** (0.003)	0.004 (0.015)
BDINDP	-0.022*** (0.008)	-0.075*** (0.024)	-0.011 (0.081)	-0.029*** (0.010)	-0.092*** (0.029)	-0.182 (0.131)	-0.029*** (0.010)	-0.088** (0.035)	-0.144 (0.126)
DUALTY	0.019*** (0.006)	0.014 (0.019)	0.144 (0.116)	0.004 (0.017)	-0.025 (0.047)	-0.348 (0.216)	0.001 (0.015)	-0.013 (0.063)	-0.230 (0.214)
OWNNSD	0.056*** (0.014)	0.085** (0.040)	0.518** (0.202)	0.048*** (0.017)	0.070 (0.048)	0.345 (0.218)	0.046*** (0.015)	0.076* (0.041)	0.353 (0.235)
OWNNST	0.037*** (0.007)	0.055*** (0.018)	0.269*** (0.078)	0.073*** (0.028)	0.147* (0.078)	1.344*** (0.353)	0.081*** (0.031)	0.124 (0.116)	1.151*** (0.361)
OWNFOR	-0.002 (0.013)	0.067* (0.036)	0.176 (0.133)	0.032 (0.030)	0.151* (0.083)	1.202*** (0.379)	0.039 (0.033)	0.126 (0.124)	1.088** (0.430)
CLEVERG	-0.146*** (0.010)	-0.220*** (0.046)	-1.062*** (0.080)	-0.128*** (0.016)	-0.177*** (0.046)	-0.534** (0.209)	-0.124*** (0.016)	-0.183*** (0.061)	-0.634*** (0.200)
FRMAGE	-0.001 (0.003)	-0.008 (0.007)	-0.003 (0.024)	0.005 (0.004)	0.004 (0.012)	0.133** (0.054)	0.006 (0.004)	0.002 (0.017)	0.117** (0.046)
FRSIZE	0.002 (0.002)	0.004 (0.004)	-0.161*** (0.017)	-0.004 (0.004)	-0.011 (0.012)	-0.332*** (0.057)	-0.005 (0.005)	-0.008 (0.018)	-0.304*** (0.059)
F-stat	28.738	8.537	50.423	26.736	10.086	22.420	23.542	6.446	26.057
Sargan (<i>p</i> -v)				1.294 (0.255)	0.279 (0.197)	5.844 (0.016)			
Hansen J (<i>p</i> -v)							0.333 (0.248)	0.588 (0.143)	0.373 (0.066)
AR(2)				1.99 (0.004)	1.61 (0.001)	3.48 (0.000)	2.30 (0.002)	2.16 (0.003)	2.26 (0.002)
N	2063	2063	2063	1969	1969	1969	1969	1969	1969

Notes: The parentheses include the standard errors of the regressions. The parentheses report the standard errors of the regressions. The outcome variables are the return on assets (ROA), the return of equity (ROE) and Tobin's Q (TOBINQ). The main predictor variable is the index value of the gender empowerment institutions (WBLNDX). Control variables include the specific characteristics of firms. The parentheses report heteroscedasticity-robust standard errors. The pool sample period is 2007–2017. The columns OLS-RE presents the results of fitting an OLS model with random effects. The columns IV-2SLS present the results of fitting an IV method that uses the 2SLS estimator with the number of external instruments exceeding that of potentially endogenous regressors. The columns IV-GMM column present the results of an IV method that uses the two-step GMM estimator. The external instrument used in the IV methods is the world price of gold (GOLD). The test for the relevance of external instruments for the 2SLS method is the Sargan statistic, whilst for the GMM method is the Hansen J statistic. AR(2) is the Arellano-Bond second order autocorrelation test. We do not report the fixed effects for reasons of space. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The Appendix provides the definition of variables.

6. Further robustness checks

The specific corporate governance structures of the firms may not explain adequately corporate performance. Other factors may be important too. For example, different countries are at different phases of economic development, have different institutional and regulatory structures as well as different dominant cultural and behavioural norms. All these economic and institutional influences may affect directly or indirectly the WBLNDX effect on corporate performance. We apply additional robustness tests to assess the impact of these conditions and institutions. We do not include interaction effects to keep the analysis manageable as their inclusion would produce many interactions. We first test for the role of the influence of human, financial and economic development conditions. Morck et al. (2002) found that increases in GDP per capita cause a reduction in the inherited value

Table 5. Role of the economic environment.

	Return of assets (ROA)	Return of equity (ROE)	Tobin's Q (TOBINQ)
WBLNDX	0.002 (0.002)	0.009* (0.005)	0.006* (0.015)
GDPCAPL	0.018 (0.021)	0.004* (0.050)	0.239* (0.155)
CREDITL	0.083 (0.051)	0.297** (0.149)	0.623* (0.403)
GINI	-0.426*** (0.159)	-1.254** (0.500)	-4.236*** (1.156)
INFL	0.123** (0.053)	0.235** (0.118)	0.052 (0.454)
BDDIV	0.310*** (0.101)	0.889** (0.400)	0.290* (0.878)
WBLNDX* BDDIV	0.009*** (0.002)	0.024*** (0.008)	0.030* (0.020)
BDSIZE	0.003*** (0.001)	0.004* (0.002)	-0.001 (0.009)
BDINDP	-0.028*** (0.009)	-0.090*** (0.027)	0.201** (0.090)
DUALTY	0.017** (0.007)	0.006 (0.019)	0.036 (0.116)
OWNINSD	0.074*** (0.014)	0.134*** (0.042)	0.679*** (0.192)
OWNINST	0.044*** (0.007)	0.071*** (0.019)	0.491*** (0.077)
OWNFOR	-0.025* (0.013)	-0.005 (0.037)	0.176 (0.124)
CLEVERG	-0.144*** (0.010)	-0.204*** (0.045)	-0.988*** (0.078)
FRMAGE	0.001 (0.003)	-0.006 (0.007)	-0.023 (0.024)
FRSIZE	0.004** (0.002)	0.007 (0.005)	-0.165*** (0.017)
	(0.065)	(0.244)	(0.662)
Country effects	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
adj. R^2	0.197	0.109	0.287
N	2063	2063	2063

Notes: The parentheses include the standard errors of the regressions. The outcome variables are the return on assets (ROA), return on equity (ROE) and Tobin's Q (TOBINQ). The main predictor variable is the index value of the gender empowerment institutions (WBLNDX). Control variables include the specific characteristics of firms. Additional controls include human development, economic development, income inequality, financial development and inflation. We use an OLS estimation method with country-year fixed effects. We do not report the fixed effects for reasons of space. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

of corporate organisations and an increase in the newly created corporate value. Existing dominant shareholders may enlarge their existing corporate affluence levels through tighter control over interrelated corporate organisations by deploying complex structures of pyramidal ownership. Aghion et al. (2013) found that, given market inefficiency, the inequality of national income weakens borrowers' incentives, decreases the availability of investment opportunities and increases economic risk and uncertainty. Frictions in the capital market often induce the dominant owners to invest relatively more and the minority owners to invest relatively less. We expand Equation (1) to include new predictor variables accounting for the impact of human, financial and economic development as well as of inflation and income inequality in the countries of the MENA region. Table 5 reports the new estimation results after having controlled for financial development (CREDITL), economic development (GDPCP), inequality of income (GINI) and the inflation rate (INFL). Indeed, the new results document that the coefficient of WBLNDX remains significant and positive for ROE and TobinQ but insignificant for ROA. The coefficients of economic and financial development are significant and positive for ROE and TobinQ but not for ROA. Higher levels of economic and financial development are associated with better corporate performance, especially market-driven. Income inequality is significant and negative in all models highlighting a negative effect on all measures of corporate performance. Finally, inflation exerts a significant positive effect on the accounting measures of corporate performance but not on market-driven performance. The corporate governance structures of firms remain significant in most models often with stronger effects than the baseline model. The interaction term remains positive and significant too. Overall, after accounting for the effect of macroeconomic conditions, our baseline results remain robust. The women's empowerment conditions and the corporate governance structures of firms are shown to be significant predictors of corporate performance in the countries of the MENA region. We apply several additional robustness checks that include the role of the corporate governance enforcement conditions as well as the social and religious environment. Due to space limitations, we include the results in the online appendix.

7. Conclusions

The study uses the country-level measure of the women's empowerment conditions in eleven MENA region countries and explores its impact on corporate performance. Since we cannot directly observe the country-level effect of the women's empowerment conditions on firm behaviour, the analysis uses additional firm-level and country-level control variables to account for any differences in the effect. We also control for time-invariant and time-varying effects of country and year heterogeneity. To ensure the robustness of the estimates, the analysis further applies several sensitivity tests based on alternative measures of the key variables and alternative sample structures. Further, to contain potential endogeneity problems arising out of omitted variables, measurement error or reverse causality, the analysis applies alternative estimation based on the use of instrumental variables methods.

The results show that the measure of women's empowerment conditions is a significant and positive predictor of corporate performance. However, the effect is weaker with respect to the accounting-driven measures of corporate performance and stronger with

respect to the market-driven measures of performance. The corporate governance and additional firm-level characteristics appear to be significant predictors in most models that influence the impact of the women's empowerment conditions on corporate performance. The size, independence and diversity of the corporate board and as well as insider and domestic institutional corporate ownership are strong predictors. The age of the firm is less important, but the size of the firm is more important. The results of the baseline analysis exhibit nonlinearities but not time sensitivity. The results also demonstrate a strong role of macroeconomic factors, regulatory and enforcement institutions and social conditions in mitigating the association between women's empowerment conditions performance of firms.

An important policy implication of the study is that both the state policymakers and the private sector practitioners must coordinate their efforts to empower the women's institutional position in the whole MENA region, for such an improvement could be associated with better performance in the private sector, especially market-driven performance. Such policies might encourage the wider and multi-gender participation of both retail and institutional investors in the capital market, thereby expanding the equity culture. This would improve the corporate financing conditions of firms, thereby increasing investment and economic growth in a more equitable and less conflictual gender environment.

Future research should strive to expand the analysis in the following directions. First, the sample size must increase to include a larger number of firms from different business sectors in more countries in the region. Second, given the special nature of the region, a wider range of cultural and other factors must be included in the analysis that capture different aspects of the social and economic complexity of the region. Third, alternative measures of gender equality should be explored and their effect on performance be studied. Fourth, the effect of the WBL Index must be analysed with respect to other corporate decisions such as capital structure, liquidity and investment to provide a better picture of the role of gender-empowerment in corporate decision-making.

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Appendix. Definition of variables.

Variable name	Expected effect	Description and source
ROA	*	Ratio of net income to average total assets, based on the companies' financial statement information, from ORBIS (outcome).
ROE	*	Ratio of net income to the value of equity, based on the companies' financial statement information, from ORBIS (outcome).
TOBINQ	*	The measure of Tobin's Q. We use Chung and Pruitt (1994) measure of Q as an approximation of Tobin Q, since it does not require an estimate of the market values of debt and preferred stock. Accounts are based on the companies' financial statement information, from ORBIS (outcome).
WBLNDX	(+)	The Women, Business and the Law (WBL) index, ranging from 0 to 100, from the World Bank. It measures women's institutional empowerment conditions based on the law. Higher values of the index imply lower barriers and higher gender equality at the law.
BDDIV	(+)	Percent of women in the corporate board, from ORBIS.
BDSIZE	(–)	The size (number of members) of the board of directors, from ORBIS.
BDINDP	(+)	Percent of non-executive members in, from BoardEx.
DUALTY	(?)	Dummy variable that takes the value of 1 when the powers of the Chairman and the CEO of the board are split and 0 otherwise, from BoardEx.
OWNINSD	(+)	Percent (%) of the firm's outstanding voting equity shares, that are owned by corporate insiders, from BoardEx.
OWNINST	(+)	Percent (%) of the firm's outstanding voting equity shares, that are owned by institutional investors, from BoardEx.
OWNFOR	(+)	Percent (%) of the firm's outstanding voting equity shares, that are owned by foreign private and institutional shareholders, from BoardEx.
CLEVERG	(–)	Ratio of long-term liabilities to total assets, based on companies' financial statement information from ORBIS.
FRMAGE	(+)	Logarithm of a firm's age (in years) since its establishment from ORBIS.
FRSIZE	(+)	Logarithm of a firm's value of total assets (USD) from ORBIS.
GDPICAPL	(+)	Logarithm of the value (current USD) of GDP per capita, from the World Bank Development Indicators. It measures a country's economic development.
CREDITL	(+)	Logarithm of domestic value of total credit provided to the private sector (percent of GDP), from the World Bank Development Indicators.
GINI	(–)	The GINI coefficient of income inequality, from the World Bank Development Indicators. It measures a country's income distribution and inequality.
INFL	(+)	The annual rate of change of consumer price index (percent), from the World Development Indicators.
GOLD	(+)	The average world price of gold, from the World Gold council. The variable is used as an instrument in the IV methods in endogeneity analysis.