

Do Women in Top Management Enhance Firm Financial Sustainability? Evidence from a Large Sample of Emerging Economies

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The fifth of the 17 Sustainable Development Goals (SDGs) included in the Sustainable Development Agenda is gender equality. Despite advances in recognizing women's contributions in many areas of life, society has yet to fully appreciate women's positions and influence in business. Financial sustainability, on the other hand, has attracted scholarly attention for several decades as a crucial condition for sustainable growth. Therefore, the present study investigates the influence of women in top management on business financial sustainability. It uses a sample of 55158 firms from 82 developing countries from 2015 to 2022, World Bank Enterprise surveys, in order to examine whether firms' gender diversity influences financial sustainability. Findings document that firms with females' top managers are financially more sustainable than their male-led counterparts. Results also indicate that the effect of female in top management on firm sustainability varies between regions. The study's findings give critical management and policy insights into corporate financial sustainability. Gender diversity should be considered by managers and policymakers as a strategy for firms to achieve financial sustainability and ultimately to contribute to the sustainable development agenda.

Keywords: Developing countries, Gender diversity, Sustainability, World bank enterprise survey

Introduction

Financial sustainability is one of the important topics of the modern business world that authorities and investors have been paying close attention to. Financial sustainability is an essential component of business sustainability.¹ It is defined as the long-term compatibility of revenue growth with established operational and financial strategies. Long-term financial planning takes into account not just the firm's growth but also its sustainability. Most managers feel that strong growth is beneficial to business performance; but, if such growth is not sustainable, it may lead to financial troubles or financial hardship.² Every manager's goal is to increase the firm's worth through growing it.³ However, in order to reap long-term rewards, growth must be sustainable.

Women's empowerment and gender equity, on the other hand, have become key priority in global policy and development initiatives, thanks to the establishment of the Sustainable Development Goals (SDGs) and social movements that emphasize gender importance. Gender equality is the fifth of the 17

SDGs outlined in the Sustainable Development Agenda. Gender equality is inextricably tied to women's well-being and is promoted as both an aim in itself and a method of accomplishing other global development goals.

Gender diversity, a major part of women's empowerment in this context, has enormous potential to greatly impact board choices and, as a result, the businesses' long-term performance. In an effort to improve financial sustainability, some businesses have shown a growing interest in corporate governance during the past ten years.⁴ Corporate governance attempts to accomplish the company's goals, which results in the financial sustainability of the business.^{5,6} Previous research has found that gender diversity promotes corporate financial sustainability. Women CEOs and directors frequently have a favorable impact on board effectiveness.^{7,8} Gender diversity on the board raises expectations for effectiveness, productivity, and value generation.⁹

Similarly, women directors are seen to be more concerned with the organization's environmental¹⁰, social¹¹, and overall sustainable¹² issues. The attributes that these female directors have, such as emotionality and empathy, as well as their expertise,

make them more willing to invest in sustainable projects.¹³ Women's participation in decision-making processes contributes to extra benefits like as new ideas, supplemental knowledge, and improved problem-solving tactics, all of which have a beneficial influence on company financial sustainability.¹⁴ Several research in established and developing markets have been undertaken to determine the importance of corporate governance on financial sustainability.^{5,15-17} According to a study of the literature, various research on the notion of corporate governance and financial sustainability have been done, but little has been accomplished in linking the two variables. The bulk of empirical research, in particular, have proven the association between corporate governance and financial sustainability for microfinance enterprises.¹⁷⁻²⁰ Between 1996 and 2019, thirteen studies in the microfinance industry were published.²¹ Besides, some authors²² found that the overall empirical results of a meta-analysis are ambiguous which suggests further researches need to be conducted. However, the topic of corporate financial sustainability is a challenge and a worry for all types and sizes of businesses since it has an impact on the broader financial system.^{23,24} No research has been published, as far as the author is aware, that explicitly assesses the link between gender diversity, particularly among female senior executives, and financial sustainability of firms in emerging countries.

Previous researches have suggested that gender diversity promotes business financial sustainability. Women CEOs and directors have a beneficial impact on board effectiveness.^{7,8} Increased expectations for efficiency, productivity, and value creation come from gender diversity on the board.⁹ In addition, it is asserted that women have higher expectations for their duties as directors, which might affect how productive the board operates. Gender diversity on boards is good since it is believed that women directors are more engaged and provide substantial results that might be beneficial to a range of external parties.²⁵ Having a sizable percentage of women on the board, in the opinion of some authors⁸, can aid in customer attraction and retention. Therefore, it is anticipated that having more female directors will enhance financial performance and sustainability.^{9,26}

Similar to how having female representation in senior management helps the business make better judgments. This is due to the fact that women are perceived as being more cooperative and exercising

more inclusive leadership than men, allowing for the consideration of all points of view before making choices.²⁷ Female leadership is so democratic and interactive, allowing for more complex viewpoints and perspectives. Additionally, women are renowned to think very creatively and to be able to germinate new ideas.²⁸ Second, women may quickly and readily get reliable information. Females are also thought to be quite adaptable in circumstances where both men and women predominate.²⁷ Women are more adept at getting to know and comprehending clients and consumers, as well as providing them with appropriate and effective service. Third, because of their dynamism, females are known to have strong monitoring and management skills.²⁶ Any entity's monitoring and management systems have a significant role in determining how effectively its activities are conducted. Additionally, women place higher value on qualitative concerns like charitable interests and social duty.²⁹ It is said that men are hence more inclined than women to act unethically.³⁰ Men tend to make hastier and riskier decisions than women, which can lead to lower long-term profits for a corporation and weaker financial sustainability. Men are also probably more competitive and overconfident than women.³⁰

Empirical literature on the relationship between gender diversity and financial sustainability has been mainly focused on microfinance institutions. For instance, authors¹⁸ evaluated twenty microfinance firms listed on the Palestine Stock Exchange and their financial sustainability as a result of strong corporate governance. As indicators of financial sustainability, return on investment, market value to book value, and return on equity were employed, while board size, gender diversity, board composition, and institutional ownership were utilized as corporate governance proxies. The efficacy of corporate governance and financial sustainability were shown to be positively and statistically significantly correlated. The impact of corporate governance on the financial viability of 42 Kenyan microfinance firms was experimentally studied between 2000 and 2011.⁽⁵⁾ The authors assessed the importance of board size, board diversity, and CEO duality, among other factors. Findings indicated that corporate governance is important in guaranteeing the financial sustainability of MFIs. Results revealed that a moderately sized, diversified board of directors is better positioned to ensure board independence, hence enhancing financial

sustainability. A diversified board of directors with various talents and expertise fosters better decision making and a better engagement with other stakeholders.

Other authors³¹ investigated the sustainability of microfinance institutions in Nigeria. As a sustainability indicator, the study used Return on Assets (ROA). Their findings indicate a low sustainability in terms of aggregate ROA values. Likewise³² looked on the connection between corporate governance and financial performance in microfinance companies in Central and Eastern Europe. The study examined manager remuneration, board diversity, and board independence as corporate governance factors. The study found that while big independent boards have a tendency to decrease financial sustainability, board diversity tends to increase it. Authors¹⁹ looked at the sustainability and corporate governance of Jordanian microfinance institutions from 2002 to 2007 throughout the course of five years. Seven governance factors—justice, accountability, social awareness, independence, disciplinary management, responsibility, and openness—were utilized to evaluate various aspects of corporate governance. The results imply that corporate governance practices have an impact on the survival of Jordanian microfinance organizations. Additionally, the study demonstrates that good corporate governance is a powerful predictor of economic success.

According to some authors¹², sustainability reporting in 333 UK-listed companies is favorably correlated with the proportion of female board members. Based on a study³³ of 296 US publicly traded firms, having female board members improves the environmental performance of the business.

On the other hand, some other researches^{34,35} found no significant association between the number of women on corporate boards and financial or non-financial success. The most commonly cited cause, among others, is the under-representation of women on corporate boards in comparison to their male counterparts.^{13,35} Furthermore, it was observed that women directors endure stereotype prejudices as a result of their gender, which prevents them from influencing board choices. Another important problem is that there aren't enough women on the board because women leadership is an emerging trend in the boardroom. Additionally, this does not provide them sufficient power or resources to influence the

way decisions are made in the company.³⁶ According to the aforementioned theoretical and empirical research, it may be postulated that gender diversity has a favorable relationship with a company's financial sustainability.

The three perspectives given below serve as a summary of our contributions. The database used to study the connection between female top managers and the dependent variable provides the first contribution. The World Bank Enterprise Survey (WBES) figures include over 130,000 distinct firms in 146 countries from 2008 to 2022. Second, another important distinction between our analysis and the past literature is that our study looks at corporations, whereas most previous studies look at microfinance enterprises. Finally, the emphasis on financial sustainability is becoming increasingly significant in developing nations while having a minor influence on industrialized markets (Crifo *et al.*, 2019). These larger changes allow us to more precisely assess correlations between variables and extrapolate our findings to a global setting.

Experimental Details

The study makes use of data from the recent (WBES) which ranges from 2015 to 2022. The sample consists of 55158 businesses from 82 developing countries. The sample of countries, firms, and the percent of firms with female top managers are shown in Table 1.

Various measures of financial sustainability have been offered in previous research. Net profit, debt, and profitability ratios were the most commonly employed factors.²¹ However, we are bound by data, and the financial sustainability metric we choose is dictated by the available data. We quantify financial sustainability using two variables, as in prior research³⁷, sales growth (S-growth) and labor productivity growth (Labor). Real annual sales growth percentage is evaluated as a percentage change in sales between the most recently completed fiscal year and the prior period. The annual percentage rise in labor productivity is calculated as the percentage change in labor productivity between the most recently completed fiscal year and the prior period, where labor productivity is calculated as sales divided by the number of full-time permanent workers.

The study's independent variable is gender diversity inside the company. The first measure is the

Table 1 — Sample of firms and countries

Countries	Total number of firms	% of Firms with female top manager
Albania	377	18.1
Argentina	991	8
Armenia	546	19.1
Azerbaijan	225	16.5
Belarus	600	21.1
Bhutan	253	26.3
Bolivia	364	26.3
Bosnia and Herzegovina	362	16.6
Cambodia	373	57.3
Cameroon	361	22.9
Chad	153	12
Colombia	993	18.9
Croatia	404	27
Cyprus	240	8.2
Czech Republic	502	16.1
Cote d'Ivoire	361	14.3
Dominican Republic	359	21.2
Ecuador	361	22.9
Egypt, Arab Rep.	4889	5.6
El Salvador	719	28
Estonia	360	22.5
Eswatini	150	27.4
Ethiopia	848	4.5
Gambia, The	151	9.6
Georgia	581	16.5
Guatemala	345	18.5
Guinea	150	5.8
Haiti	149	0
Honduras	332	28
Hungary	805	22.1
Indonesia	1320	22.1
Jordan	601	3.1
Kazakhstan	1446	26
Kenya	1001	18.1
Kosovo	271	2.7
Kyrgyz Republic	360	32.9
Lao PDR	700	44.2
Latvia	359	32.6
Lebanon	532	5.9
Lesotho	150	36.2
Liberia	151	20.4
Lithuania	358	30.7
Malaysia	2221	26.3
Mali	185	11.6
Malta	242	11.3
Moldova	360	18.6
Mongolia	360	38.9

*(Contd.)*Table 1 — Sample of firms and countries (*Contd.*)

Countries	Total number of firms	% of Firms with female top manager
Montenegro	150	15
Morocco	1096	5.4
Mozambique	601	15.6
Myanmar	607	41.1
Nicaragua	333	27
Niger	151	10.6
North Macedonia	360	21.3
Papua New Guinea	65	13.8
Paraguay	364	19.6
Peru	1003	19.9
Poland	1369	27.8
Romania	814	17.2
Russian Federation	1323	24.3
Rwanda	360	21.8
Serbia	361	18.2
Sierra Leone	152	15.9
Slovak Republic	429	22.9
Slovenia	409	18.8
Solomon Islands	151	22.6
Somalia (Bosaso and Mogadishu)	250	0
South Africa	1426	38.5
Suriname	233	11.9
Sweden	591	14
Tajikistan	352	6.6
Thailand	1000	64.8
Timor-Leste	364	27
Togo	150	11.4
Tunisia	615	10.4
Turkiye	7669	3.9
Ukraine	1337	17.7
Uruguay	347	10.6
Uzbekistan	1239	12.4
West Bank and Gaza	365	0.9
Zambia	601	12.9
Zimbabwe	600	16.3
Total	55158	

percent of firms with a Female Top Manager (FTM). This refers to the percentage of women in a company's senior management. The second measure is a dummy variable that takes a unit value if the top manager is a female and 0 otherwise (FTM-dummy).

We incorporate a variety of other control factors, as in prior research.³⁸ We particularly use firm control and country control variables. Firm control variables include: age (Firm-age), which refers to the number of years the firm has been in existence; Size (Firm-size) which is proxied by the number of permanent workers

of the firm; Access to finance (Access-Finance) which is a binary variable with the value of one when the business can receive loans from financial institutions and zero otherwise; Export (Export) is a binary variable that denotes whether or not the company exports its goods; and years of industrial experience of the top management (Experience). We additionally account for macroeconomic indicators at the country level, such as GDP (GDP), GDP Growth (GDP-Growth), GDP per Capita (GDP-Capita), Inflation (Inf) and the percentage of people who are in the labor force (LFP). These variables are obtained from the World Development Indicators and are presented in the Table 2.

We use the following model:

$$\text{Financial sustainability}_{i,t} = \beta_0 + \beta_1 \text{FTM}_i + \text{firm controls}_{i,t} + \text{country controls}_{i,t} + \varepsilon_{i,t} \quad \dots (1)$$

Table 2 — Descriptive statistics

Variable	Mean	Std	Min	Max
S-Growth	0.07	0.44	-4.88	5.34
Labor	5.22	2.10	-5.76	15.66
FTM-Dummy	0.97	0.22	0	1
FTM	19.76%	0.15	0.9%	64.8%
Ln(Firm-Size)	2.56	0.92	0	12.02
Ln(Firm-Age)	2.32	0.66	0	5.21
Ln(Experience)	2.32	0.53	0	4.02
Export	0.26	0.21	0	1
Access-Finance	0.29	0.38	0	1
Ln(GDP)	24.56	2.32	18.02	28.65
GDP-Growth	3.23	4.09	-24.02	28.21
GDP-Capita	7.01	0.76	5.32	11.44
Inf	8.97	5.32	-33.90	61.02
LP	41.78	11.27	20.02	72.76

Table 3 — Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	VIF
S-Growth	1	—	—	—	—	—	—	—	—	—	—	—	—	—	2.38
Labor	0.23	1	—	—	—	—	—	—	—	—	—	—	—	—	3.55
FTM	0.42	0.56	1	—	—	—	—	—	—	—	—	—	—	—	2.01
FTM-Dummy	0.33	0.48	0.45	1	—	—	—	—	—	—	—	—	—	—	2.55
Firm-Size	0.25	0.32	0.14	0.16	1	—	—	—	—	—	—	—	—	—	1.02
Firm-Age	0.32	0.40	0.05	0.03	0.45	1	—	—	—	—	—	—	—	—	2.09
Experience	0.61	0.50	0.03	0.04	0.04	0.08	1	—	—	—	—	—	—	—	2.34
Export	0.42	0.42	0.13	0.14	0.42	0.48	-0.02	1	—	—	—	—	—	—	1.66
Access-Finance	0.86	0.77	0.16	0.21	0.51	0.39	0.28	0.48	1	—	—	—	—	—	2.05
GDP	0.67	0.54	0.05	0.06	0.04	0.02	0.31	0.22	0.10	1	—	—	—	—	1.54
GDP-Growth	0.43	0.56	0.22	0.27	0.03	0.07	0.26	0.12	0.02	0.42	1	—	—	—	2.35
GDP-Capita	0.55	0.43	0.19	0.01	0.12	0.10	0.22	0.13	0.03	0.33	0.05	1	—	—	3.23
Inf	-0.38	-0.39	0.06	0.04	0.11	0.09	0.13	0.10	0.03	-0.37	-0.44	-0.47	1	—	2.91
LP	0.25	0.31	0.33	0.22	0.36	0.29	0.41	0.33	0.26	0.02	0.28	0.02	0.02	1	2.66

Financial sustainability is proxied by *variables discussed above*. FTM is the gender diversity measure. All regressions contain controls at the firm and country levels. Econometric estimations will be performed using cross-sectional regressions.³⁹

Results and Discussion

An overview of the variables employed in our study as well as the correlation matrix are provided in Tables 2 and 3. From Table 2, it seems that the average proportion of FTP for all periods and countries is close to 19.76% with a standard deviation of 0.15. The correlation matrix is shown in Table 3. There are no independent variables that have correlation coefficients between them greater than 0.50. Additionally, our data's variance inflation factor (VIF), which is less than the standard criteria of 10, ranges from 1.54 to 3.55 across our model. This shows that multicollinearity probably won't cause any issues.

Estimation results of Eq. (1) are reported in Table 4. For all financial sustainability indicators, the FTM and FTM-Dummy coefficients are positive and statistically significant. A female CEO is related with 10.2% greater sales growth and 10.4% higher labor productivity on average. As discussed in the literature review, stakeholder and resource dependence theories contend that gender diversity in the workplace can put pressure on organizations to adopt various environmentally and sustainably friendly practices in order to meet the expectations and demands of shareholders, with positive effects on firms' financial sustainability.⁴⁰ As a result, women directors are expected to improve the firm's environmental, social,

Table 4 — Estimation results

	(1) S-Growth	(2) Labor	(3) S-Growth	(4) Labor
FTM	0.102*** (0.063)	0.104* (0.133)	NA	NA
FTM-Dummy	NA	NA	0.115*** (0.210)	0.101** (0.592)
Firm controls				
Firm-Age	0.218** (0.770)	0.115* (0.876)	0.266* (0.733)	-0.109 (0.766)
Firm-Size	0.303 (0.403)	0.298* (0.552)	0.332* (0.628)	0.176** (0.598)
Access-Finance	0.209*** (0.103)	0.165* (0.243)	0.308*** (0.178)	0.155** (0.188)
Export	0.232* (0.070)	0.101 (0.186)	0.198** (0.093)	0.169 (0.046)
Experience	0.062* (0.032)	0.098* (0.110)	-0.043* (0.050)	0.004* (0.096)
Country controls				
GDP	0.055*** (0.055)	0.001*** (0.120)	0.120*** (0.090)	0.003*** (0.008)
GDP-Growth	0.030** (0.125)	-0.021 (0.090)	0.036*** (0.170)	0.086* (0.118)
GDP-Capita	0.066 (0.022)	0.178* (0.170)	0.045* (0.044)	-0.177* (0.202)
Inf	-0.195*** (0.098)	-0.105*** (0.139)	-0.286*** (0.160)	0.147*** (0.054)
LP	0.205** (0.245)	0.319* (0.190)	0.371** (0.023)	0.193* (0.198)
N	51,234	49,298	51,234	49,298
R ²	0.33	0.23	0.34	0.23

Note: Sales growth and labor productivity are two sets of dependent variables related to financial sustainability. The table shows the coefficients for the percentage of female top managers and an indicator variable that equals 1 if the top manager is female. All models include firm-level and country-level control variables. The standard errors (in parentheses) are heteroscedasticity-adjusted; *, **, and *** denote significance levels at 10, 5, and 1%, respectively.

and corporate sustainability performance.¹² Gender diversity ensures that different stakeholders are represented for equity and fairness; the presence of women on boards and in top management positions improves governance quality by assisting the firm in effectively fulfilling its fiduciary obligations in accordance with the interests of the owners.^{26,41} This will boost the company's financial sustainability. Similarly, when there are more women in top management, the company benefits from their superior judgment. This is due to the fact that women are recognized to consider various points of view before making decisions.²⁷ This will increase the company's capacity to sustain its financial position.

Africa (AFR), East Asia and the Pacific (EAP), Europe and Central Asia (ECA), Latin America and the Caribbean (LAC), the Middle East and North Africa (MENA), and the South Asia Region (SAR) are the six geographical subsamples that make up the WBES sample. For each location independently,

we re-estimate Eq. (1), and Table 5 contains the findings.

Interesting results appear in Table 5. The positive FTM–financial sustainability relation remains positive in EAP, ECA, LAC, AFR and SAR countries. It is particularly stronger in ECA countries. However, For MENA nations, results in Table 4 are irrelevant where the relationship becomes negative. This result is predicted since MENA countries are characterized by a low level of female top managers as shown in Table 1. This conclusion might be explained by the fact that the influence of societal norms, institutional development, and uneven implementation of legal frameworks on women in business varies greatly within and between regions. Furthermore, as indicated by the Table 1, MENA countries' cultural standards are significantly friendlier to male entrepreneurs. As a result, deep-rooted societal norms are expected to have a negative influence on female-led firms in MENA nations. Therefore, these findings show that

Table 5 — Estimation results by region subsamples

	(1)	(2)
Panel A: ECA		
FTM	0.111** (0.012)	0.016** (0.103)
FTM-Dummy	0.463*** (0.230)	0.464** (0.402)
N	24,081	24,000
R ²	0.34	0.31
Panel B: LAC		
FTM	0.010*** (0.063)	0.007* (0.033)
FTM-Dummy	0.315** (0.111)	0.438** (0.091)
N	6800	6100
R ²	0.29	0.23
Panel C: AFR		
FTM	0.086*** (0.103)	0.065* (0.073)
FTM-Dummy	0.200*** (0.201)	0.270** (0.041)
N	7250	7050
R ²	0.42	0.39
Panel D: MNA		
FTM	-0.203* (0.093)	-0.104* (0.073)
FTM-Dummy	-0.380* (0.091)	-0.411** (0.071)
N	7950	7952
R ²	0.26	0.33
Panel E: EAP		
FTM	0.012* (0.187)	0.044** (0.166)
FTM-Dummy	0.111** (0.284)	0.204* (0.041)
N	4900	3946
R ²	0.23	0.24
Panel F: SAR		
FTM	0.003* (0.023)	0.044* (0.093)
FTM-Dummy	0.003* (0.081)	0.064** (0.111)
N	253	250
R ²	0.02	0.03

Note: Standard errors (in parentheses) are corrected for heteroscedasticity. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$; values in parentheses are standard errors.

the development of regional institutions and societal norms have a big influence on the FTM-sustainability relationship.

To ensure the validity of our findings, we run three robustness tests. First, our sample's observations are unequally concentrated in Egypt, Malaysia, and Turkey, according to the descriptive statistics in Table 1. We take these nations out and re-estimate Eq. (1) to rule out the possibility that they are the ones influencing our key results. The Panel A results are displayed in Table 6. Second, we re-estimate Eq. (1) by substituting nation dummies for country-level controls. Panel B in Table 6 presents the findings. Third, the level of institutional development in a nation has a big influence on business success.⁴² The Worldwide Governance Indicators (WGI) of the

Table 6 — Robustness results

	(1)	(2)
Panel A: remove outlier Countries		
FTM	0.117*** (0.062)	0.126* (0.123)
FTM-Dummy	0.464*** (0.200)	0.511** (0.432)
N	40,243	38,298
R ²	0.33	0.23
Panel B: Country indicators		
FTM	0.127*** (0.053)	0.197* (0.233)
FTM-Dummy	0.115*** (0.211)	0.101** (0.591)
N	51,234	49,298
R ²	0.33	0.23
Panel C: Institutional Dev.		
FTM	0.013*** (0.123)	0.054* (0.173)
FTM-Dummy	0.510*** (0.281)	0.594** (0.541)
N	51,234	49,298
R ²	0.43	0.34

Note: we estimate results for Models 1 and 2 using separately each female leadership variable.*** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$; values in parentheses are standard errors.

World Bank are used to gauge the strength and growth of an individual nation's institutions. The WGI incorporates six institutional metrics that have been aggregated to assess the institutional development of a nation. Regression findings after adjusting for institutional quality (Panel C) are given in Table 6. As shown in Table 6, all robustness test results confirm earlier findings.

Conclusions

This study fills a knowledge gap about the association between female leadership and business financial sustainability. Findings give two critical insights into the financial sustainability of enterprises in emerging economies. We show that female-led enterprises outperform male-led firms in terms of financial sustainability. Our subsample analyses show that the positive effect of female leadership is particularly stronger in ECA countries. However, women in top managerial positions seem to have a negative impact on firms' financial sustainability in the MENA region. Findings suggest that organizations should explore hiring more women as top executives as long as their presence has a beneficial impact on the firm's financial viability. Increased diversity may also boost sales and labor productivity growth. Similarly, governments and market regulators in emerging countries are pushed to set gender quotas for women in businesses.

Mandatory rules should be a key part of any effort to increase gender diversity. This might constitute a future research area.

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