Board Gender Diversity and Banks' Performance in Africa

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Abstract:
Purpose – This paper aims to examine whether gender diversity on boards of directors is associated to bank performance.
Methodology – This paper relies on a comprehensive sample of banks operating in the West African Economic and Monetary Union (WAEMU)
Results/findings- The study finds a negative and significant association between these variables, which is robust to a large set of sensitivity analyses and persists over several years. The negative effect is concentrated in firms that need more of an "advisory" board relative to a "monitoring" board, since women appear to be more monitoring oriented.
Limitations/Implications – Policies aimed at fostering greater gender diversity on boards can of course have beneficial aspects; however, arguments that these policies will improve company performance must be made with great caution.
Originality - Given that previous literature has generally provided mixed conclusions on the effect of board gender diversity on performance, our article provides evidence relevant to the public and academic debate about the use of gender diversity policies in corporate governance codes.

1. Introduction

"The African private sector can ensure that they improve their bottom line, if they invest more strategically in women leadership",

African Development Bank report, 2015[1]

The effect of board gender diversity on corporate performance remains a primary focus of academic research (Adams and Fereirra, 2009, Ahern and Dittmar 2012, Greene, Intintoli and Kahle, 2020). Constantly growing calls in the regulatory debate for improvement in representation of minorities, especially women, on senior management positions, contrast with mixed results from academic research in economics, accounting, finance, or management on the effects of board gender diversity on performance. In Africa, where women routinely face a variety of obstacles to climbing the corporate ladder, such an important research topic has been largely unexplored, even as regulators formulate related policies[2]. For example, in March 2022, the stock market of the West African Economic and Monetary Union (WAEMU) established its first Governance Code, which should be mandatory by 2025 for all listed firms operating in this region. One of the key features of this corporate governance code is the requirement that any gender should not represent more than 2/3 of the board. Thus, in this paper, we aim to fill somehow the gap of the lack of research on board diversity and corporate performance in Africa. We do this by investigating the effect of board gender diversity in a comprehensive sample of banks operating in the eight West African countries forming the WAEMU.

There is rich literature across disciplines on the effects of gender diversity on corporate performance (Terjesen, Sealy, and Singh, 2009)[3]. What is striking in this substantial body of work is how mixed the results are across time and context. On one hand, boards with higher gender diversity generate firm value as these boards tap broader talent pools for their directors. In addition, women brought on boards are unlikely to be part of the directors' close-knit "clubs" and could therefore have independent views on the decisions of those firms. On the other hand, higher diversity could negatively affect firm value through interpersonal traits and decision making of directors (e.g., risk aversion). Diversity can also lead to frictions in communication and coordination, impeding the ability of the board to work as a team. The effect of board gender diversity has therefore become a pertinent empirical question, with some studies finding a positive effect of diversity on firm value (Gianetti and Zhao, 2016; Bernile, Baghwat, and Yonker, 2018, Griffin, Li, and Xu, 2021), while others find an opposite relationship (Adams and Ferreira, 2009, Ahern and Dittmar 2012, Adams, Akyol, and Verwijmeren, 2018; Donaldson, Malenko, Piacentino, 2020).

[1] "*Where are the women: Inclusive Boardrooms in Africa's top listed companies?*" African Development Bank report, 2015.

[2] The appendix A presents excerpts from the business press and international organizations articles on the growing interest on gender diversity in senior corporate positions in Africa.

[3] For the effects of board gender diversity on other corporate policies, see for instance: Atif et al. (2021) on diversity and renewable energy consumption, Ye and al. (2019) on dividend payouts, Carter, Franco, and Gine (2017) on executive gender pay gap, or Lai et al. (2017) on audit quality.

Based on the previous arguments and findings, we believe that the effect of board gender diversity on corporate performance could be heavily context-specific; therefore, an examination of the African context could add relevant insights to the academic and public debate on such an important topic. Therefore, in this article, we examine the key question of whether the increased presence of women on corporate boards affects bank performance, especially in a setting composed only of African countries. For our empirical analysis, we collect available board composition data from the website of the *Banque Centrale des Etats de l'Afrique de l'Ouest* (BCEAO), the central bank of all the banks within the WAEMU. Our initial analysis shows that switching from an all-male board to a board with at least one female director is associated with a lower future return on assets for the bank. The effect is both statistically and economically significant as we document a negative effect comparable to the median bank performance in the sample. We find similar results if we measure the board gender diversity with a continuous variable: the percentage of women on the board.

Our next set of analyses assess the sensitivity of the results to a variety of research design choices and potential omitted correlated bias. Independent of the ways we define performance or the period to measure such performance, we continue to find a strong negative relation between board gender diversity and bank performance. We also explore a quasi-exogenous variation in board gender diversity coming from the ownership structure of the banks to alleviate concerns that the results could be driven by omitted correlated bias. Finally, we follow prior literature on the stricter monitoring role of gender diverse boards and provide evidence consistent with the hypothesis that the negative effect we document is mostly driven by banks that need more advisors than monitors on their boards.

This paper contributes to two strands of the literature. We contribute first to the established literature on board gender diversity and corporate performance exploring the largely understudied African context (Adams and Fereirra, 2009, Ahern and Dittmar 2012, Terjesen, Sealy, and Singh, 2009, Post and Byron, 2015). Women's access to corporate leadership positions in Africa has received substantial consideration by policymakers, with limited evidence backing those policies. This need for evidence in designing policies is especially relevant in the banking sector, which is a key contributor to economic development in those countries (Beck, Demirguc-Kunt, and Peria, 2007; Allen et al., 2016; European Investment Bank, 2013). The paper also contributes to a growing literature that examines the specific ways through which board composition affects organizational outcomes (Cai, Nguyen, and Walking, 2022; Gopalan, Gormley, and Kalda 2021; Chen et al., 2020). Related to board gender diversity, this literature sheds light on key mechanisms through which gender diversity could impact corporate outcomes (Van Peteghem, Bruynseels, and Gaeremynck, 2018). In our paper, we provide evidence that women directors are associated with better monitoring of banking institutions.

The rest of the paper is organized as follows: section 2 presents our institutional setting. Section 3 presents our sample selection and research design. Section 4 contains the results of our empirical analysis and section 5 concludes the paper.

2. Institutional setting

2.1 The WAEMU Banking sector

The WAEMU was created in 1994, as a means of economic and monetary integration for seven West African economies: Benin, Burkina Faso, Côte d'Ivoire, Mali, Niger, Senegal, and Togo. Guinea-Bissau joined the organization in 1997 and became the organization's eighth (and only non-francophone) member state. Figure 1 presents the geographical location of the WAEMU country members. This figure shows the countries members of the West African Economic and Monetary Union (WAEMU). The WAEMU established the BCEAO (*Banque Centrale des Etats de l'Afrique de l'Ouest*) as the central bank of the union[4], responsible for the administration of the coordinated monetary policy and the supervision of banking activity within the region.

The banking sector has grown steadily over the sample period (Figure 2). This figure shows the annual evolution of the number of banks active in the WAEMU and the total assets they represent. The left axis represents the number of banks, and the right axis the total assets in billions of FCFA XOF. The rise is mostly driven by the increasing number of pan-African banks entering the market. Other actors of the market are mainly branches of European banks and government-owned banks. This growth has intensified the competition, in a region where characteristically high levels of non-performing loans worsen exposure of private borrowers (IMF, 2022). Therefore, corporate governance of banks, and its impacts on banks' performance, are of paramount importance as the WAEMU is a bank-based economy. Banks represent the primary, and sometimes the unique, source of financing for companies and households (Kanga, Murinde, and Soumare, 2020; Fe and Kouton, 2022).

2.2 Women education in Africa

Exploration of board gender diversity in African companies necessitates reference to the broader and deeper gender gap in education on the continent. Despite significant gains in bridging the gender gap, the African continent still displays a notable inequality in schooling between boys and girls (Wodon, 2018)[5]. Research has shown that several factors contribute to this gap (Lewin, 2009; Nunn, 2014; Baten et al., 2021). For instance, a key determinant of girls' educational attainment in Africa is the socioeconomic status of their parents. Families with sufficient economic resources, or families with higher degree of education are more likely to let their girls attain higher degree of education. Programs

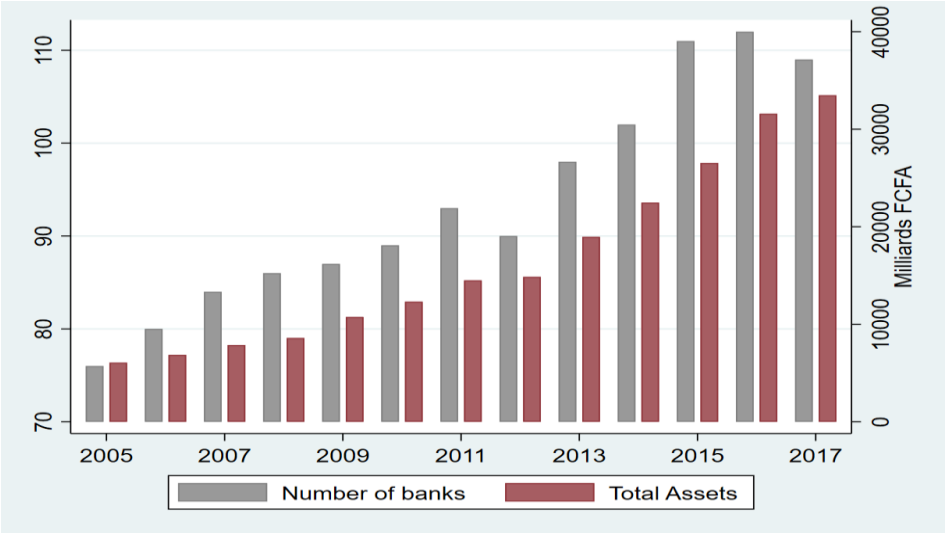
[4] We use interchangeably in the paper "BCEAO" or "central bank".

[5] Figure IA.1 in the Internet Appendix shows for instance the gender gap in literacy rate for the countries in the sample.

designed to reduce costs of education can provide positive outcomes on girls' enrollment and performance (Handa, 2002; Björkman-Nyqvist, 2013; Duflo, Dupas, and Kremer, 2015). Social norms, cultural practices and national policies also significantly affect girls' rates of education enrollment (Kazianga et al., 2013; Ashraf et al., 2020). All these features reinforce the importance of studying the effect of board gender diversity in an African context, as the drivers of demand and supply of women directors may be significantly different to the ones in the contexts studied by prior literature.

Figure 1: West African Economic and Monetary Union

Figure 2: Evolution of the number of banks and the total assets of the banking sector



3. Data selection and Research design

3.1 Data selection

To examine the association between board gender diversity and bank performance, we collect data from all banks in the WAEMU from 2005-2017. Our main sources of data are two specific annual central bank publications.

The first, "Directory of Banks and Financial Institutions of WAEMU" collects, for each bank active during a given year identification information, the ownership structure of the bank, the composition of the board of directors, the name of the CEO and the size of the bank's network (number of branches, cities with branches, etc.). This publication is available from 2005 and is one of the most comprehensive sources of information for banks active in the region. From this directory, we collect for each bank and each year, information on all members of the Board of Directors. We identified the gender of these directors using the French gender indicator directly available in the central bank's publication: "*M.*" for men and "*Mme*" for women. When the same person was mentioned with two different genders at different times, we verified identities and gender via internet searches on the names involved. Where we were unable to classify the director, we retained the gender used when the individual first appeared in the publication. We then aggregated this data at the bank level to calculate our variables of interest: the size of the board, which is the number of directors (*Boardsize*), an indicator which took the value 1 if there was at least one female member on the board, and 0 otherwise (*Indicator_Women*), and the percentage of women members of the board (*%Women*). The second publication, "Balance Sheets and Profit and Loss Accounts of Banks and Financial Institutions" brought together summaries of banks' balance sheets and profit and loss

accounts for each year. Although the summaries contained aggregate data at the bank level, we are able to identify the financial variables needed for our analyses such as total assets, total loans and net income.

The final sample contained 1,073 observations from 121 unique banks that were active at some point between 2005 and 2017. Our sample ended in 2017 because major accounting reforms affected the presentation of financial statements of banks from the year 2018. Table 1 shows the description of the sample by country. This table presents the sample selection and descriptive statistics of our sample. The sample spans from 2005 to 2017 and includes 1,071 observations for 121 distinct banks. Panel A presents the composition of the sample by country. Panel B presents the descriptive statistics of the main variables used in the econometric analyses. All variables are defined in detail in the Appendix B. Côte d'Ivoire and Senegal account for the highest proportions of observations in the sample, while Niger and Guinea-Bissau contribute the least.

With regard to gender balance on boards, Figure 3 shows that the presence of women on the boards of banks in the region has increased over time. This figure shows the evolution of the proportion of banks with at least one woman on the board of directors. In 2005, only 31% of banks had at least one woman on their board. In 2017, this percentage increased to approximately 58%. This growth in diversity provides relevant variation both over time and across banks to examine the consequences of increased gender diversity in boards on firm performance.

Figure 3: Percentage of banks with at least one woman on the board

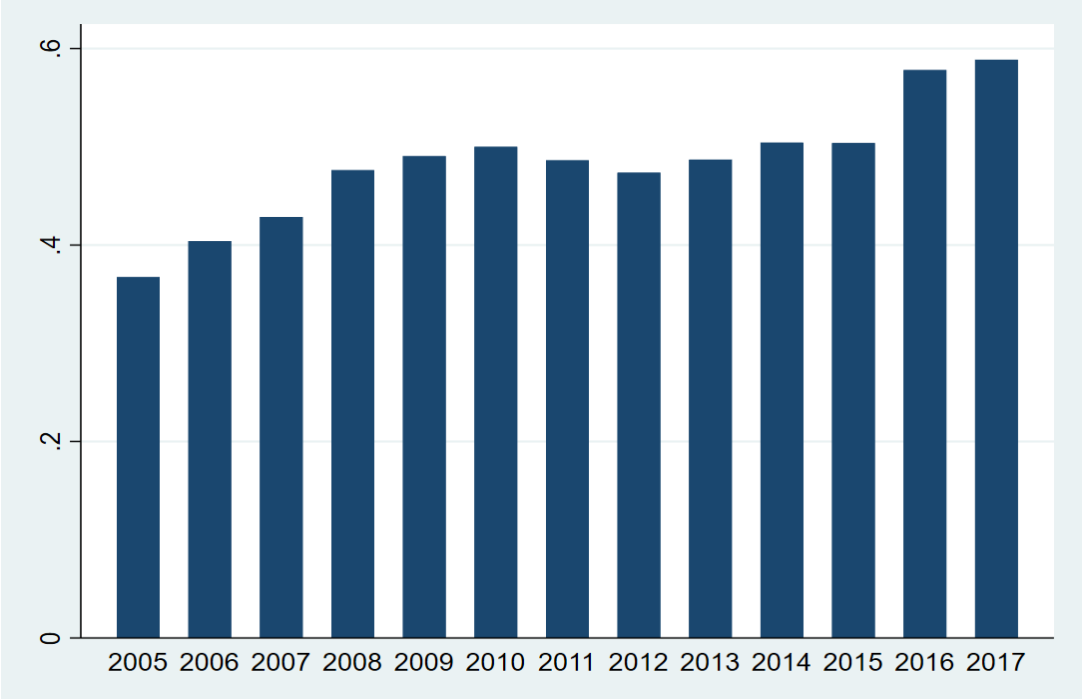


Table 1: Sample composition and descriptive statistics
Panel A: Country sample selection

Country	*# obs.*	*% obs.*	*# unique banks*
Benin	121	11.28	16
Burkina Faso	128	11.93	13
Côte d'Ivoire	220	20.50	25
Guinée-Bissau	36	3.35	4
Mali	144	13.42	14
Niger	102	9.50	11
Sénégal	191	17.80	23
Togo	131	12.21	15
Total	1,073	100	121

Panel B: Descriptive statistics

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	N	mean	sd	p25	p50	p75
Dependent variables						
ROA (t+1)	1,073	–0.006	0.053	–0.000	0.009	0.017
_ROA (t+1)	1,073	0.003	0.058	–0.005	0.001	0.008
Country-Year_Adjusted_ROA	1,073	0.002	0.053	–0.003	0.012	0.027
Year-Adjusted_ROA	1,073	0.002	0.053	0.005	0.017	0.025
_Loans (t+1)	1,073	0.004	0.096	–0.045	0.001	0.056
_Deposits (t+1)	1,050	0.001	0.019	–0.006	0.001	0.009
Investments (t+1)	1,070	0.006	0.016	–0.001	0.002	0.008
Independent variables						
%Women	1,073	0.102	0.130	0.000	0.000	0.167
Indicator_Women	1,073	0.478	0.500	0	0	1
Controls variables						
Boardsize	1,073	6.788	2.442	5	7	9
Total_Assets	1,073	11.42	1.218	10.60	11.53	12.34
Equity_Ratio	1,073	0.100	0.143	0.062	0.092	0.140
Market_Share	1,073	0.085	0.082	0.021	0.058	0.124
GDP_Growth	1,073	4.715	2.842	2.964	4.897	6.367
Credit_Private_Sector	1,073	17.61	7.083	12.73	16.15	22.00
Political_Stability	1,073	–0.571	0.678	–1.049	–0.354	–0.117

3.2 Research design

The central question answered in this article is whether the increased presence of women on corporate boards affects bank performance to any extent. To do this, we exploit the staggered variation in the presence of women on the boards of directors of WAEMU banks. The following equation (1) presents the specification of our basic model in panel data:

$$ROA_{it+1} = Indicator\_Women_{it} + Controls_{it} + a_g + \gamma_t + e_{it} \quad (1)$$

Our main dependent variable of interest is bank performance, measured through return on assets (*ROA*). We specifically assess the impact of board gender diversity on future performance of the bank *ROA (t+1)*. Since $Indicator\_Women_{it}$ is an indicator taking the value 1 if there is at least one woman seating on the board, 0 otherwise, it allows us to identify the specific effect on performance of switching from an "all-male" board to a board with "at least one woman".

Controls refer to a set of variables that we include in the specification to control for other determinants of banks' performance, both at the bank level and at the country level. First, we control for current bank performance to prevent temporal correlation or performance mean reversion from confounding the effects described. We include board size as a control to alleviate the concern that bigger boards would more likely include at least one woman. We thus addressed potential concerns about effects emanating from effects of board size. We also control for bank size, measured through the logarithm of the total assets (*Total_Assets*). *Equity_Ratio*, defined as total equity divided by total assets, proxied for the likelihood of the bank following regulatory requirements. *Market_Share* referred to the bank's share of total loans in its country of operation.

Finally, we add some macroeconomic control variables, as prior literature has shown that economic conditions of the country can significantly affect operations and performance of banks (Kanga, Murinde, Soumare, 2020). *GDP_Growth* is the percentage GDP growth of the country and proxies for economic activity. *Credit_Private_Sector* is the domestic credit to the private sector which described the importance of the banking sector for the country. These last two variables were retrieved from the World Bank's World Development Indicators. From the World Bank World Governance Indicators, we retrieve the countries' degrees of political stability, *Political_Stability*. a_g and γ_t represent respectively country fixed effects and year fixed effects. The country fixed effects control for time invariant country characteristics that could affect the participation of women on banks boards and the performance of those banks. The year fixed effects control for the overall economic conditions in the region for each year of the sample period, and alleviate the concerns that year-specific shocks impacting the performance of the banks would be driving the entirety of the results.

4. Econometric results

4.1 Baseline results

We estimated equation (1) with OLS and found that moving from an all-male board to a board with at least one woman is significantly and negatively associated with future performance. The results are Table 2. This table examines the association between gender diversity on boards and bank performance. In panel A, the diversity of the board of directors is measured through *Indicator_Women*, an indicator which takes the value 1 if there is at least one woman on the board of directors of the bank, 0 otherwise. In panel B, board gender is measured by %Women, the actual percentage of women on the bank's board. All variables are defined in detail in Appendix B. *t*-statistics are in parentheses, standard errors are clustered at the bank level. *, ** et *** denote significance at the 10 %, 5 % et 1 % (two-tail) respectively. Intercepts are omitted. Results in panel A of Table 2, model (1) show that compared to all-male boards, boards with at least one woman have a 1.1% lower future *ROA*. This is a sizeable effect given that the average *ROA* in the sample is around – 0.6%, and the median is around 1%. That is, the negative effect of adding a woman to a previous all-male board is similar in magnitude to the median performance within the sample. The results of adding more controls variables, models (2), (3) and (4) show that the documented negative effect was robust and constant.

One probable concern with the previous specification is that the indicator for at least one woman on the board does not distinguish between boards that appointed only one woman for window-dressing motives, and boards with more than one woman, where it could be more plausible to find some gender diversity effect (Konrad, Kramer and Erkut, 2008, Schwartz-Ziv, 2017). To somewhat alleviate this concern, we estimate the following equation (2):

$$ROA_{it+1} = \%Women_{it} + Controls_{it} + a_g + \gamma_t + e_{it} \qquad (2)$$

Equation (2) replaces the variable *Indicator_Women* of equation (1) with *%Women*, which measures the percentage of women on the boards. Again, the results in Table 2, panel B, show that an increase in the percentage of women of the boards is strongly and negatively associated with banks' future performance. Those results are unaffected by the inclusion of several bank- and country-level characteristics, as well as country and year fixed effects.

Table 2: Association between board gender diversity and bank performance

Panel A: Board gender diversity measured by a discrete variable

Dep. var.: *ROA(t+1)*	(1)	(2)	(3)	(4)
Indicator_Women	–0.011**	–0.009**	–0.010***	–0.011***
	(–2.09)	(–2.59)	(–2.93)	(–3.03)
ROA		0.430***	0.326***	0.314***
		(7.83)	(5.11)	(4.68)
Boardsize		0.002***	–0.000	–0.000
		(3.06)	(–0.07)	(–0.04)
Total_Assets			0.011***	0.015***

			(4.84)	(4.15)
Equity_Ratio			0.010	0.011
			(0.53)	(0.60)
Market_Share				–0.078**
				(–2.16)
GDP_Growth				0.000
				(0.41)
Credit_Private_Sector				–0.000
				(–0.44)
Political_Stability				–0.001
				(–0.26)
Year Fixed Effects	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes
adj R-squared	0.038	0.245	0.273	0.274
Observations	1,073	1,073	1,073	1,073

Panel B : Board gender diversity measured by a continuous variable

Dep. var.: *ROA(t+1)*	(1)	(2)	(3)	(4)
%Women	–0.068**	–0.038**	–0.046***	–0.047***
	(–2.43)	(–2.27)	(–2.69)	(–2.69)
ROA		0.424***	0.318***	0.307***
		(7.65)	(4.90)	(4.49)
Boardsize		0.001**	–0.001	–0.001
		(2.46)	(–0.89)	(–0.89)
Total_Assets			0.011***	0.015***
			(4.88)	(4.14)
Equity_Ratio			0.009	0.011
			(0.51)	(0.59)
Market_Share				–0.075**
				(–2.05)
GDP_Growth				0.000
				(0.41)
Credit_Private_Sector				–0.000
				(–0.45)
Political_Stability				–0.001
				(–0.41)
Year Fixed Effects	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes
adj R-squared	0.056	0.247	0.277	0.277
Observations	1,073	1,073	1,073	1,073

Increasingly, there have been calls in economic and social circles for higher representation of women on corporate boards. One reason supplied for this campaign is that a higher number of women in leadership positions would be positively associated with improvements in corporate performance. Our results so far do not seem to validate those

claims; or at least, we do not find a positive association between higher number of women directorships and performance, in the case of a large and comprehensive set of banks operating in the West African Monetary Union. Our results are also consistent with previous literature finding negative associations between increased gender diversity and corporate outcomes. In particular, Ahern and Dittmar (2012) explore a law that mandated Norwegian listed firms to have at least 40% of women on their boards and showed that the quota led to a decline in stock prices and the value of the firms that were most affected by the regulation.

Nevertheless, we do not interpret our results as evidence that there could not be a positive association between board gender diversity and bank performance. Only that our results call for more precise studies on the conditions and circumstances under which this positive association could materialize. That said, in the following section, we conduct an extensive set of additional robustness tests to alleviate concerns that our results are entirely driven by econometric misspecifications.

4.2 Robustness tests

In the first robustness test, we examine alternative definitions of future performance. Instead of considering only *ROA (t+1)*, we computed three different measures of performance: the change in *ROA* between t and t+1 (□*_ROA (t+1)*), the difference between *ROA (t+1)* and the average of *ROA* for all the banks in the same country for the same year (*Country_Year_Adjusted_ROA*), and the difference between *ROA (t+1)* and the average of *ROA* for all the banks for the same year (*Year_Adjusted_ROA*). These three additional performance measures increased the attributability of adjustments made to *ROA (t+1)* to performance benchmarks. Therefore, results could be interpreted in terms of whether banks with higher board gender diversity were more or less likely to outperform their previous year result, the previous year results of the banks in the same country, or the previous year results of all the banks in the sample.

As independent variables of interest, we use both *Indicator_Women* and *%Women* (Table 3). This table examines the association between gender diversity on boards and bank performance using alternative performance measures. All variables are defined in detail in Appendix B. t-statistics are in parentheses, standard errors are clustered at the bank level. *, ** et *** denote significance at the 10 %, 5 % et 1 % (two-tail) respectively. Intercepts are omitted. The results in Table 3, models (1) through (6), are consistent with the results in Table 2: the higher the proportion of women on the boards, the more likely the banks will underperform. Thus, independent of measuring performance in levels or in changes, we do find a negative effect of board gender diversity on bank performance.

Table 3: Alternative measures of performance

Dep. var. :	□_ROA (t+1)		Country_Year_Adjusted_ROA		Year_Adjusted_ROA	
	(1)	(2)	(3)	(4)	(5)	(6)
Indicator_Women	–0.012***		–0.011***		–0.011***	
	(–3.11)		(–3.09)		(–3.03)	
%Women		–0.051***		–0.049***		–0.047***
		(–2.72)		(–2.72)		(–2.69)
ROA	–0.647***	–0.655***	0.251***	0.243***	0.314***	0.307***
	(–9.30)	(–9.32)	(3.56)	(3.41)	(4.68)	(4.49)
Boardsize	–0.000	–0.001	0.000	–0.001	–0.000	–0.001
	(–0.12)	(–0.90)	(0.07)	(–0.79)	(–0.04)	(–0.89)
Total_Assets	0.015***	0.015***	0.017***	0.017***	0.015***	0.015***
	(3.00)	(3.01)	(4.19)	(4.17)	(4.15)	(4.14)
Equity_Ratio	–0.014	–0.014	0.016	0.016	0.011	0.011
	(–0.53)	(–0.55)	(0.85)	(0.84)	(0.60)	(0.59)
Market_Share	–0.077*	–0.074*	–0.081**	–0.078*	–0.078**	–0.075**
	(–1.81)	(–1.73)	(–2.03)	(–1.91)	(–2.16)	(–2.05)
GDP_Growth	0.000	0.000	–0.000	–0.000	0.000	0.000
	(0.19)	(0.19)	(–0.16)	(–0.15)	(0.41)	(0.41)
Credit_Private_Sector	–0.000	–0.000	0.000	0.000	–0.000	–0.000
	(–0.49)	(–0.50)	(0.53)	(0.53)	(–0.44)	(–0.45)
Political_Stability	–0.002	–0.003	0.000	–0.001	–0.001	–0.001
	(–0.58)	(–0.73)	(0.01)	(–0.15)	(–0.26)	(–0.41)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
adj R-squared	0.279	0.282	0.204	0.207	0.275	0.279
Observations	1,073	1,073	1,073	1,073	1,073	1,073

The second robustness test explores variation in number of countries in the sample (8 countries) and long time series (12 years) to examine robustness of the results to alternative fixed effects specifications (Table 4). This table examines the association between gender diversity on boards and bank performance using alternative fixed effects structures. All variables are defined in detail in Appendix B. t-statistics are in parentheses, standard errors are clustered at the bank level. *, ** et *** denote significance at the 10 %, 5 % et 1 % (two-tail) respectively. Intercepts are omitted. We first replace separate year and country fixed effects with unique country-year fixed effects. This refined econometric specification alleviates concerns that economic shocks in a given country in a given year would confound our analysis. In a similar vein, we use even stronger fixed effects characteristics: firm fixed effects and year fixed effects. This coarser specification limits the possibility of time invariant factors at the firm level confounding our results (Adams and Ferreira, 2009; Faccio et al., 2016). We obtain similar results as before. The results in Table 4 show that the stricter fixed effects structures still present a strong negative association between board gender diversity and corporate performance.

Table 4. Alternative fixed effects structures

Dep. var.: *ROA(t+1)*	(1)	(2)	(3)	(4)
Indicator_Women	–0.011***		–0.014***	
	(–3.10)		(–2.86)	
%Women		–0.049***		–0.064**
		(–2.77)		(–2.53)
ROA	0.329***	0.320***	0.149**	0.144**
	(5.17)	(4.94)	(2.06)	(2.01)
Boardsize	0.000	–0.001	0.001	0.000
	(0.07)	(–0.77)	(0.69)	(0.08)
Total_Assets	0.016***	0.016***	0.007	0.007
	(4.13)	(4.10)	(0.70)	(0.74)
Equity_Ratio	0.010	0.010	–0.032	–0.034
	(0.58)	(0.57)	(–0.76)	(–0.85)
Market_Share	–0.091**	–0.089**	–0.075	–0.068
	(–2.30)	(–2.18)	(–1.15)	(–1.09)
GDP_Growth			0.000	0.000
			(0.44)	(0.44)
Credit_Private_Sector			–0.001	–0.001
			(–0.84)	(–0.91)
Political_Stability			–0.002	–0.002
			(–0.42)	(–0.55)
Country-Year Fixed Effects	Yes	Yes		
Year Fixed Effects			Yes	Yes
Country Fixed Effects			Yes	Yes
adj R-squared	0.282	0.285	0.350	0.354
Observations	1,072	1,072	1,069	1,069

The last robustness test (Table 5) aims to alleviate concern that the time horizon considered could be limited. It would have been unhelpful to look for the effect of gender diversity on performance only one year ahead, since the period would have been too short to record an effect. We therefore extend our period of analysis two and three years ahead and still record a significant negative association in Table 5. The effect is lower in the third year, but the most important conclusion from the result is that we do not observe a positive effect during three years of switching from an all-male board to a board with at least one woman, or increasing the proportion of women on the board.

Table 5: Persistence of the board gender diversity effect

Dep. var. :	□_*ROA(t+2)*		□_*ROA(t+3)*	
	(1)	(2)	(3)	(4)
Indicator_Women	–0.009**		–0.007*	
	(–2.15)		(–1.72)	
%Women		–0.048**		–0.039*

		(–2.31)		(–1.88)
ROA	0.289***	0.276***	0.337***	0.325***
	(4.48)	(4.28)	(4.27)	(4.21)
Boardsize	–0.000	–0.001	–0.000	–0.001
	(–0.10)	(–0.91)	(–0.10)	(–0.64)
Total_Assets	0.017***	0.017***	0.012**	0.013**
	(5.35)	(5.39)	(2.46)	(2.50)
Equity_Ratio	0.035	0.034	–0.037	–0.037
	(1.54)	(1.49)	(–1.40)	(–1.37)
Market_Share	–0.092**	–0.089**	–0.067	–0.064
	(–2.58)	(–2.47)	(–1.25)	(–1.17)
GDP_Growth	–0.001	–0.001	–0.000	–0.000
	(–0.59)	(–0.59)	(–0.24)	(–0.23)
Credit_Private_Sector	–0.001	–0.001	0.000	0.000
	(–1.09)	(–1.12)	(0.12)	(0.07)
Political_Stability	0.005	0.004	0.007	0.006
	(0.72)	(0.64)	(0.92)	(0.86)
Year Fixed Effects	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes
adj R-squared	0.221	0.226	0.180	0.184
Observations	945	945	832	832

We reiterate that the foregoing tests should not be interpreted as evidence that having more women on corporate boards on African banks does not create value. The results rather suggest that assessing this value creation is not straightforward, and policymakers should consider regulations or legislations that mandate increased gender diversity with great caution.

4.3 Reverse causality

One important threat to identification of the effect presented is reverse causality (Hermalin and Weisbach, 1998, 2003), whereby rather than higher board gender diversity resulting in lower future performance, banks with expectations of poor future performance would be more likely to appoint women; hence the effect captured in our econometric specifications. We assess the above claim estimating the following equation (3):

$$\Delta\_Women_{it+1} = Performance_{it} + Controls_{it} + a_g + \gamma_t + e_{it} \quad (3)$$

Δ_Women (t+1) measures change in the number of women on boards between years t and t+1. This analysis examines whether women appointments to bank boards are related to bank performance over the last two or three years. *2Year_Performance* is defined as the average of *ROA* and *ROA (t-1)*, and *3Year_Performance* is defined as the average of *ROA*, *ROA (t-1)*, and *ROA (t-2)*.

Table 6 shows that we do not find evidence of poorly performing banks being more likely to appoint women on their boards. This table examines the association between bank performance and the decision to appoint women to the board. All variables are defined in detail in

Appendix B. t-statistics are in parentheses, standard errors are clustered at the bank level. *, ** et *** denote significance at the 10 %, 5 % et 1 % (two-tail) respectively. Intercepts are omitted. We actually find the opposite to be true; banks that had been performing well over the last three years are the ones more likely to appoint women on their boards. Overall, these results suggest that it is unlikely that our previous results from Table 2 to Table 5 would be entirely driven by reverse causality.

Table 6. Bank performance and appointment of women directors

Dep. var.: □_*Women*	(1)	(2)	(3)	(4)	(5)	(6)
Performance_2Years	0.702**		0.009		–0.045	
	(2.11)		(0.02)		(–0.12)	
Performance_3Years		1.587***		1.153**		1.094**
		(4.28)		(2.37)		(2.25)
Boardsize			–0.011*	–0.013*	–0.011*	–0.013*
			(–1.77)	(–1.93)	(–1.80)	(–1.97)
Total_Assets			0.038***	0.023	0.066**	0.046
			(2.71)	(1.31)	(2.36)	(1.39)
Equity_Ratio			0.336**	0.214	0.337**	0.220
			(1.99)	(1.15)	(2.03)	(1.19)
Market_Share					–0.482	–0.380
					(–1.25)	(–1.00)
GDP_Growth					–0.007	–0.006
					(–0.83)	(–0.68)
Credit_Private_Sector					–0.004	0.001
					(–0.60)	(0.18)
Political_Stability					0.034	0.031
					(0.89)	(0.64)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
adj R-squared	0.005	0.017	0.009	0.017	0.008	0.014
Observations	944	823	944	823	944	823

Furthermore, we conduct another analysis to alleviate more general concerns about the endogenous nature of the composition of the boards (Sila, Gonzalez, Hagendorff, 2016). The ownership structure of the banks of the region provides a possible source of exogenous variation in the selection of the directors, as many of the banks in the sample are subsidiaries of bigger international banks (e.g. Société Générale, BNP Paribas, Ecobank, etc.). We classify the bank-year observations according to their majority owner, creating thus a "family" of banks. Appendix C gives an example of families of banks in the sample. We then induce a quasi-exogenous variation in our setting through a 2-step procedure (Kim et al., 2014). In the first stage, we estimate through OLS the following equation (4a):

$$\%Women_{it} = Average\_Owner\_\%Women_{it-1} + e_{it} \qquad (4a)$$

We denote the predicted value of this estimation $Fitted\_\%Women_{it}$. This value is obviously not totally exogenous to the bank but suffers lower concerns related to the endogeneity of the banks' decisions about their boards' compositions. The following equation (4b) examines the association between the future performance of the bank and $Fitted\_\%Women_{it}$.

$$ROA_{it+1} = Fitted\_\%Women_{it} + Controls_{it} + a_g + \gamma_t + e_{it} \quad (4b)$$

Table 7 examines the association between gender diversity on boards of directors and bank performance by exploiting the exogenous variation resulting from the gender diversity policies of bank groups. All variables are defined in detail in Appendix B. t-statistics are in parentheses, standard errors are clustered at the bank level. *, ** et *** denote significance at the 10 %, 5 % et 1 % (two-tail) respectively. Intercepts are omitted. The results in Table 7, column 1, show as expected that owner average women ratio is a strong predictor of banks' women director ratio. More importantly, quasi-exogenous variation in gender diversity of the banks, with reference to the family of the banks, is negatively associated to performance (Table 7, columns 2, 3 and 4). This result is consistent with our main findings in Table 2 and suggested again that it is very unlikely that our results would be entirely driven by reverse causality or more generally by omitted correlated variable influencing the decision of directors' appointments at the bank level.

Table 7: Exogenous variation

Dep. var :	*%Women*		*_ROA(t+1)*	
	(1)	(2)	(3)	(4)
Average_Owner_%Women (t-1)	0.796***			
	(22.19)			
Fitted_%Women		–0.086**	–0.045*	–0.044*
		(–2.16)	(–1.81)	(–1.75)
ROA			0.331***	0.321***
			(4.97)	(4.61)
Boardsize			–0.000	–0.000
			(–0.67)	(–0.64)
Total_Assets			0.011***	0.015***
			(4.56)	(3.98)
Equity_Ratio			0.020	0.021
			(1.00)	(1.04)
Market_Share				–0.074*
				(–1.95)
GDP_Growth				0.000
				(0.56)
Credit_Private_Sector				–0.000
				(–0.27)
Political_Stability				–0.002
				(–0.45)

Year Fixed Effects	No	Yes	Yes	Yes
Country Fixed Effects	No	Yes	Yes	Yes
adj R-squared	0.331	0.039	0.268	0.269
Observations	993	993	993	993

4.4. Board gender diversity and other bank characteristics

4.4.1 Analysis of loans, deposits, and investments

Throughout the article, our main variable of interest was performance, as a key characteristic of the governance of banks and a crucial determinant of financial stability. However, one may claim first that performance is not the unique focus of banks' policies. Also, our main findings of negative association between performance and gender diversity could ignore other positive consequences. Therefore, we extend our analysis by looking at other relevant banking characteristics, mainly the lending, deposits, and investments policies of the banks in our sample and ask whether there is an association between the gender diversity and any of those alternative banking characteristics. Interestingly we do not find any relation between gender diversity and those measures (Table 8, panels A, B, and C). This table examines the association between gender diversity on boards and other bank policies. Panels A, B and C examine the effect of gender diversity on banks' loans, deposits and investments, respectively. All variables are defined in detail in Appendix B. t-statistics are in parentheses, standard errors are clustered at the bank level. *, ** et *** denote significance at the 10 %, 5 % et 1 % (two-tail) respectively. Intercepts are omitted.

Table 8. Board gender diversity and other banking policies

Panel A: Loans

Dep. var.:	□_*Loans (t+1)*		□_*Loans (t+2)*		□_*Loans (t+3)*	
	(1)	(2)	(3)	(4)	(5)	(6)
Indicator_Women	–0.006		–0.000		–0.002	
	(–1.29)		(–0.03)		(–0.23)	
%Women		–0.016		0.007		–0.009
		(–1.01)		(0.20)		(–0.23)
ROA	–0.154	–0.154	–0.328*	–0.324*	–0.357**	–0.359**
	(–1.26)	(–1.26)	(–1.96)	(–1.96)	(–2.28)	(–2.32)
Boardsize	0.002	0.002	0.004**	0.004**	0.006**	0.006**
	(1.65)	(1.46)	(2.16)	(2.12)	(2.28)	(2.19)
Total_Assets	0.005	0.005	0.011	0.011	0.013	0.013
	(0.77)	(0.74)	(1.10)	(1.09)	(0.98)	(0.98)
Equity_Ratio	0.107***	0.108***	0.185***	0.186***	0.171**	0.172**
	(3.02)	(3.05)	(3.12)	(3.13)	(2.30)	(2.30)
Market_Share	–0.225***	–0.223***	–0.402***	–0.402***	–0.538***	–0.537***
	(–3.42)	(–3.37)	(–3.71)	(–3.70)	(–2.98)	(–2.97)
GDP_Growth	0.002	0.002	0.003*	0.003*	0.004*	0.004*
	(1.17)	(1.17)	(1.75)	(1.75)	(1.87)	(1.88)
Credit_Private_Sector	0.000	0.000	–0.004**	–0.004**	–0.006**	–0.006**
	(0.16)	(0.18)	(–2.32)	(–2.31)	(–2.22)	(–2.23)
Political_Stability	–0.006	–0.006	–0.017	–0.017	–0.013	–0.013
	(–0.80)	(–0.84)	(–1.50)	(–1.50)	(–0.86)	(–0.87)

Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
adj R-squared	0.046	0.045	0.094	0.094	0.105	0.105
Observations	1,073	1,073	945	945	832	832

Panel B: Deposits

Dep. var.:	□_*Deposits (t+1)*		□_*Deposits (t+2)*		□_*Deposits (t+3)*	
	(1)	(2)	(3)	(4)	(5)	(6)
Indicator_Women	0.001		0.002		0.005	
	(0.70)		(0.98)		(1.54)	
%Women		0.006		0.015		0.024*
		(1.26)		(1.61)		(1.76)
ROA	–0.047*	–0.046*	–0.039	–0.034	0.004	0.010
	(–1.91)	(–1.81)	(–1.27)	(–1.12)	(0.10)	(0.28)
Boardsize	–0.000*	–0.000	–0.001	–0.000	–0.001	–0.001
	(–1.73)	(–1.39)	(–1.12)	(–0.69)	(–1.28)	(–0.79)
Total_Assets	0.002	0.002	0.001	0.001	0.000	0.000
	(1.22)	(1.20)	(0.41)	(0.38)	(0.04)	(0.04)
Equity_Ratio	0.010*	0.010*	0.017	0.017	0.027*	0.027*
	(1.83)	(1.89)	(1.56)	(1.60)	(1.71)	(1.71)
Market_Share	–0.014	–0.014	–0.019	–0.020	–0.030	–0.033
	(–0.85)	(–0.85)	(–0.57)	(–0.59)	(–0.63)	(–0.68)
GDP_Growth	0.000	0.000	0.001	0.001	0.000	0.000
	(0.07)	(0.07)	(1.37)	(1.38)	(0.65)	(0.65)
Credit_Private_Sector	–0.000	–0.000	0.000	0.000	0.001	0.001
	(–0.20)	(–0.18)	(0.84)	(0.88)	(1.36)	(1.41)
Political_Stability	–0.000	–0.000	–0.004	–0.004	–0.004	–0.004
	(–0.11)	(–0.08)	(–1.15)	(–1.12)	(–0.82)	(–0.77)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
adj R-squared	0.017	0.019	0.013	0.016	0.031	0.034
Observations	1,050	1,050	923	923	809	809

Panel C: Investments

Dep. var.:	□_*Investments (t+1)*		□_*Investments (t+2)*		□_*Investments (t+3)*	
	(1)	(2)	(3)	(4)	(5)	(6)
Indicator_Women	0.000		–0.001		–0.001	
	(0.08)		(–0.26)		(–0.27)	
%Women		–0.003		–0.010		–0.022
		(–0.62)		(–1.02)		(–1.37)
ROA	–0.004	–0.005	–0.059	–0.063	–0.081	–0.091
	(–0.15)	(–0.20)	(–1.01)	(–1.10)	(–1.35)	(–1.57)
Boardsize	–0.000	–0.000	–0.001	–0.001	–0.001	–0.001
	(–1.48)	(–1.59)	(–1.36)	(–1.61)	(–1.02)	(–1.31)
Total_Assets	0.000	0.000	0.001	0.001	0.001	0.001

	(0.10)	(0.16)	(0.60)	(0.67)	(0.28)	(0.38)
Equity_Ratio	0.012	0.011	0.025	0.024	0.029	0.028
	(1.38)	(1.34)	(1.20)	(1.18)	(1.10)	(1.09)
Market_Share	–0.017	–0.017*	–0.051**	–0.051**	–0.079**	–0.079*
	(–1.64)	(–1.66)	(–2.15)	(–2.16)	(–1.98)	(–1.98)
GDP_Growth	–0.000	–0.000	–0.000	–0.000	0.000	0.000
	(–0.63)	(–0.64)	(–0.38)	(–0.39)	(0.79)	(0.83)
Credit_Private_Sector	0.000	0.000	0.000	0.000	0.001	0.001
	(0.80)	(0.77)	(0.72)	(0.68)	(0.84)	(0.77)
Political_Stability	0.001	0.001	0.003	0.002	0.006	0.005
	(0.85)	(0.83)	(0.65)	(0.62)	(0.99)	(0.94)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
adj R-squared	0.037	0.037	0.062	0.064	0.088	0.092
Observations	1,070	1,070	942	942	829	829

4.4.2 Gender diversity and monitoring

There is abundant literature arguing that gender differences could affect economic outcomes through the effects of interpersonal traits. Without being conclusive, this literature provides some evidence that women could be more risk-averse (Hudgens and Fatkin, 1985, Croson and Gneezy, 2009, Bertrand, 2011), or are less likely to be overconfident (Huang and Kisgen, 2013)[6]. Indeed, Adams and Fereirra (2009) suggested that higher board gender diversity negatively affected the performance of US firms because female directors were usually stricter monitors than males. Female directors were more likely to join monitoring committees within the board, and gender-diverse boards usually allocate more time to monitoring. Additional papers in this literature have echoed the bigger monitoring role of female executives (Gul, Srinidhi, and Ng, 2011, Francis et al., 2014). In this section, we examine whether this hypothesis could help explain the negative association between gender diversity and bank performance.

First, as bank-level monitoring data is not publicly available in our setting, we explore annual reports of the BCEAO (the central bank overseeing all the banks in the sample) on country average indicators of banks' compliance measures. These indicators presented per year and WAEMU country, the proportion of banks that met several compliance criteria. Since the indicators evolved over time (some were discontinued, new indicators were measured), we focused on 3 indicators for which we had at least 9 years of data per country[7]: (i) bank loans to related parties (e.g., owners and managers), (ii) coverage of the bank liabilities with long term assets, and (iii) liquidity ratio of the bank. Table 9 examines the association between board gender diversity at the country level and the proportion of banks meeting central banks regulatory requirements. All

[6] In contrast, Eagly and Johnson (1990), Deaves et al. (2009), and Adams and Funk (2012) suggest that there are no differences in risk aversion or overconfidence between men, and women, especially in the specialized fields of economics and finance.

[7] The indicators are defined in detail in Appendix B.

variables are defined in detail in Appendix B. t-statistics are in parentheses, standard errors are clustered at the bank level. *, ** et *** denote significance at the 10 %, 5 % et 1 % (two-tail) respectively. Intercepts are omitted. The results in Table 9 indicate that the higher the proportion of female directors in the country, the likelier the banks were to meet the supervision criteria of the BCEAO.

Table 9: Board gender diversity and monitoring

Dep. var.:	*%Compliance_ LoansToManagers*		*%Compliance_ StableAssets*		*%Compliance_Liquidity*	
	(1)	(2)	(3)	(4)	(5)	(6)
Country_%Women (t-1)	0.659*	–0.142	1.020**	0.722	1.220***	0.660
	(1.99)	(–0.49)	(2.30)	(1.43)	(3.95)	(1.64)
GDP_Growth	–0.003	0.000	–0.001	–0.000	0.000	0.005
	(–0.42)	(0.06)	(–0.16)	(–0.00)	(0.04)	(0.78)
Credit_Private_Sector	–0.003	0.001	–0.000	0.005	–0.005*	–0.016***
	(–1.43)	(0.26)	(–0.10)	(1.12)	(–1.69)	(–2.88)
Political_Stability	0.022	0.020	–0.018	0.003	–0.011	–0.067*
	(0.87)	(0.86)	(–0.77)	(0.09)	(–0.39)	(–1.90)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	No	Yes	No	Yes	No	Yes
adj R-squared	0.256	0.615	0.504	0.668	0.226	0.507
Observations	80	80	80	80	80	80

Secondly, given the previous evidence that board gender diversity could strengthen monitoring, we examine whether our result on a negative performance effect of diversity could derive from banks that do not benefit from stricter monitoring (Faleye, Hoitash, and Hoistash, 2011; Field, Lowry, and Mkrtchyan, 2013; Schmidt, 2015). Prior literature has generally recognized advising and monitoring as the two broad functions of the board. The board advisory role matters most in defining and guiding in execution of strategy, acquisitions and other major investments. The board monitoring role mostly consists of management oversight and compliance to relevant regulatory and legal requirements (Adams et al., 2010). Faleye, Hoitash, and Hoistash, (2011) provide some evidence that monitoring intensive boards could be counterproductive for firms with high advising needs. For instance, in their study based on a sample of US firms, intense monitoring was associated with a reduction of 9.5% in firm value when advising needs were high, compared with a statistically insignificant reduction of 0.8% for firms with low advising needs. Based on this intuition, we distinguish between firms in our sample based on their market share. Our hypothesis is that firms with a dominant position on the market would benefit from higher monitoring to maintain their position. At the other end, firms with a lower market share would benefit more from the advisory role and connections of board

directors, rather than stricter monitoring (Larcker, So, Wang, 2013). Table 10 presents the results of this analysis. This table examines the association between bank performance and the degree of bank governance measured by the capital ratio. All variables are defined in detail in Appendix B. t-statistics are in parentheses, standard errors are clustered at the bank level. *, ** et *** denote significance at the 10 %, 5 % et 1 % (two-tail) respectively. Intercepts are omitted.

We partition the sample every year at the median of the average of current and previous year market share. Firms with high market share do not experience any effect of increasing board gender diversity. On the contrary, for firms with lower market shares, increasing the presence of women on the boards is related to lower future performance. This could be related to the stricter monitoring role of gender diverse boards, while those firms may have needed more advisors on their boards.

Table 10: Board gender diversity and market share

	High market share		Low market share	
Dep. var.: *ROA(t+1)*	(1)	(2)	(3)	(4)
Indicator_Women	–0.003		–0.019***	
	(–0.93)		(–2.79)	
%Women		0.003		–0.085***
		(0.34)		(–2.82)
ROA	0.142	0.135	0.284***	0.267***
	(1.31)	(1.24)	(3.36)	(3.07)
Boardsize	0.000	0.000	0.000	–0.000
	(0.59)	(0.80)	(0.17)	(–0.43)
Total_Assets	0.010	0.010	0.019**	0.019**
	(1.41)	(1.42)	(2.44)	(2.57)
Equity_Ratio	0.039	0.044	0.026	0.026
	(0.96)	(1.06)	(1.12)	(1.12)
Market_Share	–0.039	–0.039	–0.039	–0.057
	(–0.65)	(–0.64)	(–0.14)	(–0.22)
GDP_Growth	–0.000	–0.000	0.001	0.001
	(–0.47)	(–0.39)	(0.64)	(0.64)
Credit_Private_Sector	–0.000	–0.000	–0.000	–0.000
	(–0.44)	(–0.44)	(–0.25)	(–0.30)
Political_Stability	–0.006	–0.007	0.002	–0.000
	(–1.28)	(–1.31)	(0.40)	(–0.07)
Year Fixed Effects	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes
adj R-squared	0.054	0.052	0.297	0.307
Observations	472	472	476	476

5. Conclusion

The role of corporate governance regulations in shaping corporate policies is a growing topic of public and academic debate. In this paper, we take advantage of a comprehensive sample of banks operating in the

West African Economic and Monetary Union (WAEMU) to analyze a specific example of corporate governance issue: board gender diversity. Our results demonstrate that greater gender diversity on boards of directors is strongly and negatively correlated with bank performance. This negative association is robust despite a broad range of sensitivity analyses and persist over several years. The association remains negative even when we use stronger structures of fixed effects, or tighter econometric identification techniques that alleviate potential concerns on omitted correlated variables driving the results. Subsequent exploratory analyses suggest that higher percentages of women on boards could lead to higher monitoring of banks. Therefore, banks that may benefit more from the "advisory" role of directors could benefit less from having more women on their boards of directors.

Given that prior literature on corporate performance has generally provided mixed conclusions on the effect of gender diversity on corporate boards, our article provides insight for contextualizing the "*how and why"* of diversity policies. Indeed, policies that aim to foster greater gender diversity on boards can of course have beneficial aspects; however, arguments that these policies improve company performance must be made with great caution.

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Appendix A. Excerpts from press articles and international organizations' reports on gender diversity in Africa

1. Forbes, September 30th, 2021, "Investing In Africa? Invest In Women"

"The research shows not only that large companies with better gender balance in leadership outperform, so do companies founded by female entrepreneurs. Imagine when more funds, more investors and more governments get their strategies and their money aligned with the data. It's starting, but there is a long way to go. ***Africa, with its exceptionally entrepreneurial women and its huge gender gap in corporate business, has the most to gain from closing the gap. The region's enormous potential has been hard hit by the Covid crisis. Investing in the continent's women is a sure fire accelerator to recovery, and beyond****."*

Summary: The article presents novel initiatives to promote the appointment of more women on corporate boards in Africa.

Link:
https://www.forbes.com/sites/avivahwittenbergcox/2021/09/30/investing-in-africa-invest-in-women/?sh=47210059d097

2. **African Union, July 28th, 2021, "African Union priorities on Gender Equality and Women's Empowerment in Agenda 2063"**

"Africa is committed to resolve and ending violence against women and girls, and improving access to, and control of, finances, land, education, health, information, services, sciences and technology and decision-making in political governance and business enterprises in Agenda 2063 […] ***The Africa of 2063 promotes attainment of full gender parity with women occupy 50% of elected offices at state, regional and local bodies, and 50% of managerial positions in government and private sector****. The economic and political glass ceiling hindering women's progress would finally have been broken."*

Summary: The article describes the part of the African union policy (Agenda 2063) on gender parity.

Link: https://au.int/en/articles/au-priorities-gender-equality-and-womens-empowerment-agenda-2063

3. **African Development Bank, March 2020, "Africa Gender Index Report 2019"**

"In both the private and public sectors, senior decision-making remains substantially in the hands of men. The gender gap for managers, professionals and technicians is 41.4%, while gender gap for parliamentary representation is about 25.3%, and 22.9% top managers in firms. Yet, diversity in leadership roles matters. ***When companies have a greater share of women on their boards, they perform better financially. These result in virtuous circles, as women leaders provide role models for girls and young. Women. It is therefore important to take active steps to address gender inequality in public and private leadership – gender-based quotas have proven to be an important tool****."*

Summary: The article presents the introduction of a first index on gender equality in Africa, developed by the African Development Bank and the United Nations Economic Commission for Africa.

Link: https://www.afdb.org/en/documents/africa-gender-index-report-2019-analytical-report

4. **McKinsey Global Institute, November 24th, 2019, "The power of parity: Advancing women's equality in Africa"**

"Africa could add $316 billion or 10 percent to GDP in the period to 2025 if each country makes advances in women's equality to match the country in the region that has achieved the most progress towards parity*".*

Summary: The report presents results of the analysis of diversity dividends in Africa

Link: https://www.mckinsey.com/featured-insights/gender-equality/the-power-of-parity-advancing-womens-equality-in-africa

5. **Jeune Afrique July 9th, 2018, "Féminisons nos conseils d'administration!"**

"According to a study by the African Development Bank of the 307 largest companies on the continent, about a third of them have no women on their board of directors, another third have only one only. In all, only 12.7% of directors are women. With an average of 17%, the countries of Southern Africa and East Africa do better, while the three Maghreb countries barely reach 7.5%. The largest economy in UEMOA, Côte d'Ivoire, has only 5.1%. ***This situation, in addition***

to being unfair, is also not very rational: many studies highlight the economic and intellectual benefits of an increased presence of women on boards: better risk management, diversity of thoughts, increased return on investment …"

Summary: The article describes the gender gap on corporate boards in Africa and suggests measures to close such gap.

Link: https://www.jeuneafrique.com/mag/589423/economie/tribune-feminisons-nos-conseils-dadministration/

Appendix B: Variables definitions

This appendix defines the variables used in the empirical analysis.

Variable	Definition	Source
Dependent variables		
ROA (t+x)	Return on assets of year t + x, x = 1, 2, or 3	BCEAO
□*_ROA (t+1)*	Change in ROA from year t+1 to year t	BCEAO
Country_Year_Adjusted_ROA	Difference between ROA (t+1) and the average ROA (t) of all the banks operating in the same country	BCEAO
Year_Adjusted_ROA	Difference between ROA (t+1) and the average ROA (t) of all the banks in the sample	BCEAO
□*_Loans (t+x)*	Change in total loans from year t + x to year t, x = 1, 2, or 3	BCEAO
□*_Deposits (t+x)*	Change in total deposits from year t + x to year t, x = 1, 2, or 3	BCEAO
Investissements (t+x)	Change in total fixed assets from year t + x to year t, x = 1, 2, or 3	BCEAO
%Compliance_ LoansManagers	Proportion of banks in the country that meet the central bank requirements on loans to related parties	BCEAO
%Compliance_StableAssets	Proportion of banks in the country that meet the central bank requirements on the ratio between long term liabilities and long term assets	BCEAO
%Compliance_Liquidity	Proportion of banks in the country that meet the central bank requirements on short term liquidity	BCEAO
Independent variables		
%Women	Ratio of number of women to the total number of board members	BCEAO
Indicator_Women	Indicator that takes the value 1 if there is at least 1 woman on the board, 0 otherwise	BCEAO
Country_%Women	Average of *%Women* at the country level	BCEAO
Controls variables		
ROA	Return on assets t	BCEAO
Boardsize	Total number of members of the board of directors	BCEAO
Total_Assets	Logarithm of total assets	BCEAO
Equity_Ratio	Ratio of total equity to total assets with total equity defined as follows: *Total_Equity = Regulatory provisions + Earmarked funds+ Risk provisions + Equity + Equity premium + Reserves + Reevaluation differences + Retained earnings + Net income*	BCEAO
GDP_Growth	Country GDP growth from t-1 to t	World Bank WDI
Credit_Private_Sector	Country domestic credit to private sector as a percentage of GDP	World Bank WDI
Political_Stability	Index of political stability	World Bank WGI
Market_Share	Market share of the bank in terms of loans	BCEAO

Appendix C: Examples of banking groups

This appendix presents an example of three banking "groups" used for the analysis of exogenous variation in Section 4.3. The table shows the banks belonging to the "Ecobank", "Société Générale" and "BNP Paribas" groups for the year 2012.

"ECOBANK"	
ECOBANK - BENIN	Benin
ECOBANK - BURKINA	Burkina Faso
ECOBANK - COTE D'IVOIRE	Côte d'Ivoire
ECOBANK - GUINEE-BISSAU	Guinée-Bissau
ECOBANK - MALI	Mali
ECOBANK - NIGER	Niger
ECOBANK - SENEGAL	Senegal
ECOBANK - TOGO	Togo

"Société Générale"	
SOCIETE GENERALE - BENIN	Benin
SOCIETE GENERALE BURKINA FASO	Burkina Faso
SOCIETE GENERALE DE BANQUES EN CÔTE D'IVOIRE	Côte d'Ivoire
SOCIETE GENERALE DE BANQUES AU SENEGAL	Senegal

"BNP Paribas"	
BANQUE INTERNATIONALE POUR LE COMMERCE, L'INDUSTRIE ET L'AGRICULTURE DU BURKINA	Burkina Faso
BANQUE INTERNATIONALE POUR LE COMMERCE ETL'INDUSTRIE DE LA COTE D'IVOIRE	Côte d'Ivoire
BANQUE INTERNATIONALE POUR LE COMMERCE ET L'INDUSTRIE AU MALI	Mali
BANQUE INTERNATIONALE POUR LE COMMERCE ET L'INDUSTRIE DU SENEGAL	Senegal

Internet Appendix

Board Gender Diversity and Banks' Performance in Africa

Figure IA.1: Literacy rate of the sample countries by gender

This figure shows the literacy rate by gender of the sample countries. The literacy rate is defined as the percentage of people ages 15 and above who can both read and write with understanding a short simple statement about their everyday life. The data are retrieved from the World Bank's World Development Indicators for the last year available.

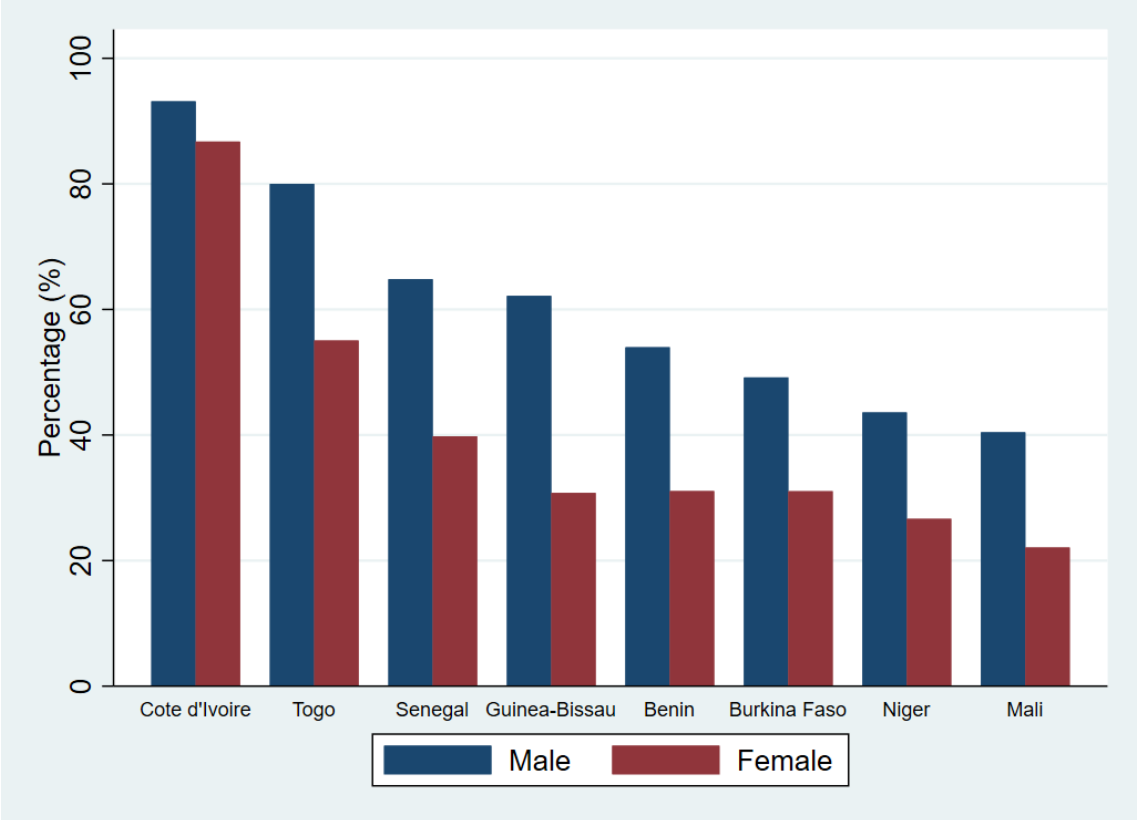

Table IA.1: Alternative independent variables

This table examines the sensitivity of the results in table 2 using alternative independent variables. In Panel A, the independent variable of interest is an indicator that takes the value 1 when there is at least two women on the board of the bank, 0 otherwise. In Panel B, the independent variable of interest is an indicator that takes the value 1 when there is only 1 woman on the board of the bank, 0 otherwise. All variables are defined in detail in Appendix B. t-statistics are in parentheses, standard errors are clustered at the bank level. *, ** et *** denote significance at the 10 %, 5 % et 1 % (two-tail) respectively. Intercepts are omitted.

Panel A: Independent variable is indicator for at least two women on boards

Dep. var.: *ROA (t+1)*	(1)	(2)	(3)	(4)
AtLeast2Women	–0.017*	–0.012*	–0.013**	–0.014**
	(–1.73)	(–1.93)	(–2.23)	(–2.30)
ROA		0.429***	0.326***	0.314***
		(7.78)	(5.08)	(4.63)
Boardsize		0.002***	–0.000	–0.000
		(3.08)	(–0.20)	(–0.17)
Total_Assets			0.011***	0.015***
			(4.91)	(4.12)
Equity_Ratio			0.011	0.013
			(0.64)	(0.72)
GDP_Growth				0.000
				(0.41)
Credit_Private_Sector				–0.000
				(–0.39)
Political_Stability				–0.001
				(–0.35)
Market_Share				–0.080**
				(–2.18)
Year Fixed Effects	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes
adj R-squared	0.040	0.245	0.272	0.273
Observations	1,073	1,073	1,073	1,073

Panel B: Independent variable is indicator for only 1 woman on boards

Dep. var.: *ROA (t+1)*	(1)	(2)	(3)	(4)
Only1Woman	–0.003	–0.003	–0.004	–0.004
	(–0.62)	(–0.86)	(–1.10)	(–1.10)
ROA		0.437***	0.335***	0.324***
		(8.00)	(5.29)	(4.88)
Boardsize		0.002***	–0.000	–0.000
		(2.81)	(–0.32)	(–0.30)
Total_Assets			0.011***	0.015***
			(4.81)	(4.01)
Equity_Ratio			0.012	0.014
			(0.66)	(0.73)
GDP_Growth				0.000
				(0.43)
Credit_Private_Sector				–0.000
				(–0.31)
Political_Stability				–0.001
				(–0.29)
Market_Share				–0.071**
				(–1.99)
Year Fixed Effects	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes
adj R-squared	0.028	0.239	0.265	0.266
Observations	1,073	1,073	1,073	1,073

Table IA.2 : Robustness to bank performance

This table examines the sensitivity of the results in table 2 by dropping the observations with the highest values of ROA. All variables are defined in detail in Appendix B. t-statistics are in parentheses, standard errors are clustered at the bank level. *, ** et *** denote significance at the 10 %, 5 % et 1 % (two-tail) respectively. Intercepts are omitted.

	Drop firms with ROA in highest quintile		Drop firms with ROA in highest decile		Drop firms with ROA in highest 20th percentile	
Dep. var.: *ROA (t+1)*	(1)	(2)	(3)	(4)	(5)	(6)
Indicator_Women	–0.010***		–0.011***		–0.012***	
	(–2.97)		(–3.01)		(–3.08)	
%Women		–0.046***		–0.050***		–0.058***
		(–2.76)		(–2.82)		(–3.05)
ROA	0.337***	0.330***	0.335***	0.328***	0.323***	0.314***
	(4.94)	(4.77)	(4.81)	(4.64)	(4.48)	(4.31)
Boardsize	0.000	–0.000	0.000	–0.000	0.000	–0.000
	(0.53)	(–0.43)	(0.49)	(–0.48)	(0.48)	(–0.53)
Total_Assets	0.013***	0.013***	0.013***	0.013***	0.013***	0.013***
	(3.41)	(3.42)	(3.23)	(3.23)	(3.20)	(3.19)
Equity_Ratio	0.010	0.009	0.011	0.010	0.011	0.010
	(0.51)	(0.48)	(0.55)	(0.51)	(0.56)	(0.51)
GDP_Growth	0.000	0.000	0.000	0.000	0.000	0.000
	(0.49)	(0.47)	(0.65)	(0.64)	(0.62)	(0.62)
Credit_Private_Sector	–0.000	–0.000	–0.000	–0.000	–0.000	–0.000
	(–0.57)	(–0.58)	(–0.47)	(–0.50)	(–0.56)	(–0.55)
Political_Stability	–0.001	–0.002	–0.002	–0.003	–0.002	–0.003
	(–0.35)	(–0.50)	(–0.48)	(–0.66)	(–0.38)	(–0.61)
Market_Share	–0.049	–0.046	–0.047	–0.043	–0.050	–0.043
	(–1.40)	(–1.32)	(–1.32)	(–1.21)	(–1.28)	(–1.11)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
adj R-squared	0.297	0.301	0.290	0.295	0.274	0.280
Observations	1,026	1,026	973	973	864	864

Table IA.3 Robustness by country

This table examines the sensitivity of the results in table 2 by dropping the observations of one sample country at a time. In panel A, board gender diversity is measured through *Indicator_Women*, an indicator that takes the value 1 if there is at least one woman on the board of the bank, 0 otherwise. In panel B, board gender diversity is measured through *%Women*, the actual percentage of women seating on the board of the bank.

Panel A: Independent variable is indicator for women on board

Dep. var.: *ROA (t+1)*	Without Benin (1)	Without Burkina-Faso (2)	Without Côte d'Ivoire (3)	Without Guinea-Bissau (4)	Without Mali (5)	Without Niger (6)	Without Senegal (7)	Without Togo (8)
Indicator_Women	–0.011***	–0.012***	–0.007**	–0.010***	–0.012***	–0.009***	–0.015***	–0.008**
	(–2.91)	(–3.18)	(–2.05)	(–2.94)	(–2.89)	(–2.72)	(–3.54)	(–2.26)
ROA	0.293***	0.308***	0.298***	0.329***	0.310***	0.294***	0.304***	0.363***
	(3.93)	(4.38)	(3.72)	(4.71)	(4.38)	(4.07)	(4.31)	(5.42)
Boardsize	0.000	–0.000	0.000	0.000	0.000	–0.000	–0.000	–0.000
	(0.12)	(–0.31)	(0.51)	(0.09)	(0.19)	(–0.32)	(–0.12)	(–0.15)
Total_Assets	0.016***	0.017***	0.012***	0.014***	0.016***	0.016***	0.017***	0.014***
	(3.85)	(4.38)	(3.70)	(3.57)	(3.98)	(4.01)	(4.13)	(3.59)
Equity_Ratio	0.015	0.006	–0.004	0.009	0.010	0.022	0.009	0.016
	(0.67)	(0.30)	(–0.24)	(0.50)	(0.46)	(1.27)	(0.42)	(0.81)
GDP_Growth	0.000	0.000	–0.000	0.000	0.000	0.000	0.000	0.000
	(0.32)	(0.38)	(–0.13)	(0.66)	(0.49)	(0.60)	(0.32)	(0.10)
Credit_Private_Sector	–0.000	–0.000	0.000	–0.001	–0.000	–0.000	–0.000	–0.000
	(–0.54)	(–0.23)	(0.19)	(–0.93)	(–0.17)	(–0.33)	(–0.60)	(–0.54)
Political_Stability	–0.001	–0.000	–0.003	–0.001	–0.001	–0.001	–0.001	–0.000
	(–0.39)	(–0.08)	(–0.76)	(–0.35)	(–0.10)	(–0.23)	(–0.14)	(–0.08)
Market_Share	–0.086**	–0.091**	–0.057	–0.063	–0.073*	–0.094**	–0.072*	–0.075*
	(–2.15)	(–2.45)	(–1.65)	(–1.53)	(–1.92)	(–2.51)	(–1.87)	(–1.89)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
adj R-squared	0.259	0.275	0.225	0.287	0.277	0.271	0.275	0.308

Observations	952	945	853	1,037	929	971	882	942

Panel B: Independent variable is the percentage of women on boards

Dep. var.: *ROA (t+1)*	Without Benin (1)	Without Burkina-Faso (2)	Without Côte d'Ivoire (3)	Without Guinea-Bissau (4)	Without Mali (5)	Without Niger (6)	Without Senegal (7)	Without Togo (8)
%Women	–0.047**	–0.052***	–0.017	–0.051***	–0.056***	–0.044**	–0.067***	–0.037**
	(–2.51)	(–2.73)	(–1.27)	(–2.82)	(–2.66)	(–2.44)	(–3.24)	(–2.12)
ROA	0.284***	0.300***	0.300***	0.319***	0.300***	0.286***	0.291***	0.356***
	(3.75)	(4.20)	(3.74)	(4.47)	(4.16)	(3.89)	(4.04)	(5.16)
Boardsize	–0.000	–0.001	0.000	–0.000	–0.000	–0.001	–0.001	–0.001
	(–0.70)	(–1.15)	(0.02)	(–0.73)	(–0.65)	(–1.02)	(–1.17)	(–0.77)
Total_Assets	0.016***	0.017***	0.012***	0.014***	0.016***	0.016***	0.017***	0.014***
	(3.84)	(4.34)	(3.61)	(3.62)	(3.98)	(4.03)	(4.16)	(3.57)
Equity_Ratio	0.015	0.006	–0.004	0.008	0.008	0.022	0.008	0.016
	(0.65)	(0.29)	(–0.22)	(0.46)	(0.39)	(1.28)	(0.40)	(0.81)
GDP_Growth	0.000	0.000	–0.000	0.000	0.000	0.000	0.000	0.000
	(0.34)	(0.34)	(–0.13)	(0.70)	(0.47)	(0.60)	(0.29)	(0.11)
Credit_Private_Sector	–0.000	–0.000	0.000	–0.001	–0.000	–0.000	–0.000	–0.001
	(–0.54)	(–0.20)	(0.25)	(–1.01)	(–0.19)	(–0.34)	(–0.59)	(–0.57)
Political_Stability	–0.002	–0.001	–0.004	–0.002	–0.001	–0.001	–0.001	–0.001
	(–0.54)	(–0.24)	(–0.81)	(–0.51)	(–0.23)	(–0.37)	(–0.31)	(–0.23)
Market_Share	–0.082**	–0.087**	–0.054	–0.062	–0.071*	–0.093**	–0.068*	–0.071*
	(–2.01)	(–2.28)	(–1.57)	(–1.50)	(–1.82)	(–2.44)	(–1.71)	(–1.76)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
adj R-squared	0.262	0.278	0.222	0.292	0.282	0.275	0.282	0.311
Observations	952	945	853	1,037	929	971	882	942