Female leaders and gender gaps within the firm: Evidence from three Sub-Saharan African countries

Giulia La Mattina¹ | Gabriel Picone¹ | Alban Ahoure² | Jose Carlos Kimou²

¹University of South Florida, Tampa, Florida
²Université Félix Houphouët-Boigny de Cocody, Abidjan, Côte d’Ivoire

Abstract
We study the association between the gender of the highest-ranking manager (the CEO) and gender differences in employees’ outcomes using detailed linked employer–employee data from the formal sector in Cameroon, Côte d’Ivoire, and Senegal. Our empirical strategy relies on the inclusion of firm fixed effects and workers’ characteristics. Our results point toward a negative correlation between female CEOs and the relative wages and job satisfaction of female employees. However, female employees working under a female CEO who owns the firm are not paid less than their male colleagues.

1 | INTRODUCTION

Although women’s education and labor force participation have increased globally in recent decades, there are still differences in women’s earnings vs. men. In Sub-Saharan African countries, women earn between 6 and 30 percent less than men, even though women’s labor force participation rate is above 60 percent (Nopo, Daza, & Ramos, 2011; World Bank, 2012). Gender differences in the labor market may extend beyond earnings to other dimensions, including job satisfaction and opportunities for promotion (Clark, 1997; Kunze & Miller, 2014). Understanding the sources of gender differences in the labor market is necessary to improve women’s access to income, which has been linked to children’s outcomes (Duflo, 2000; Lundberg, Pollak, & Wales, 1997; Thomas, 1990).

This paper examines gender differences in wages, hours, and job satisfaction using linked employer–employee data from three French-speaking countries in Sub-Saharan Africa. We focus on the formal sector, where more than half of the workers have at least completed secondary...
education, and women make up about 30 percent of the labor force. Since women who work in the formal sector are likely positively selected, we expect a smaller earnings gap than in the informal sector (Arbache, Filipiak, & Kolev, 2010). Indeed, we observe that on average women work fewer hours and earn lower monthly income than men, but women and men receive similar wages (Table 2). Additionally, female employees are more satisfied with their job and salary than men.\textsuperscript{1} However, the observed unconditional gender parity in wages may mask differences in the relative performance of male and female employees across firms.

We posit that role models and mentors may be a factor affecting women’s progress in the labor market and test whether the gender of the highest-ranking manager (chief executive officer or CEO) is correlated with gender gaps within the firm.\textsuperscript{2} The expected impact of female managers on the performance of subordinated female workers is a priori ambiguous. On the one hand, if women discriminated less against female workers or were more willing to mentor female employees, female managers could help to reduce gender gaps (Aigner & Cain, 1977; Athey, Avery, & Zemsky, 2000). Female role models and mentors may be especially important in developing countries, where gender inequalities are pronounced and discriminatory gender norms are still common.\textsuperscript{3} On the other hand, female managers may act as “queen bees” and harm the careers of their female employees (Staines, Tavris, & Jayaratne, 1974).

The linked employer–employee survey used in this study provides detailed information on workers, CEOs, and firms’ characteristics, which allows us to study the impact of the CEO’s gender beyond the wage gap and look at gender differences in hours worked, earnings, and job satisfaction. Our empirical strategy rests on estimating the association between the CEO’s gender and gender gaps within the firm by controlling for several characteristics of the firm and the employee to reduce omitted variable bias. In some specifications, we include firm fixed effects in the regression to hold constant unobservable firm characteristics that may affect both the gender of the CEO and the labor outcomes of female employees.

The results are heterogeneous across countries, but overall point toward a small negative association between female CEOs and the relative outcomes of female employees. Female CEOs are associated with a larger gender gap in wages, job satisfaction, and salary satisfaction, and a smaller gender gap in hours worked. These results are robust to the inclusion of firm fixed effects and to the exclusion of firms in which the CEO has been in his/her position for less than 2 years, which helps to reduce concerns about reverse causality. All in all, the results provide support for the “queen bee” syndrome. However, when we look at the interaction between working under a female CEO and an indicator for the CEO being the owner of the firm, we find that the results are more nuanced. In the pooled sample, female employees working under female CEOs who own the firm are not paid less than their male colleagues. We speculate that when female CEOs do not have enough power within the firm, they may not be able to improve the relative performance of female employees.

Our paper contributes to the understanding of gender differences in the labor market of Cameroon, Côte d’Ivoire, and Senegal. The three countries are heterogeneous in terms of recent economic performance, female education and labor force participation, but they all have relatively low gender equality compared with other countries in Africa (African Development Bank Group, 2015).\textsuperscript{4} Quantitative research on the formal sector in Sub-Saharan Africa is scant, possibly because the formal sector is limited and provides work opportunities to a small fraction of the population (International Monetary Fund, 2017). Qualitative research is consistent with our results: For instance, Ngo Essounga (2016) argues that female managers in large corporations in Cameroon are not more likely to promote women than male managers. We start filling the vacuum in quantitative
research, and hope to inform policymakers who are interested in expanding both the formal sector and women’s role in the economy (International Monetary Fund, 2017; World Bank, 2017).

Second, our paper contributes to a growing literature on the determinants of the gender wage gap in Sub-Saharan Africa by showing new evidence of the association between female CEOs and the gender wage gap. Some of the previous studies use household and labor force surveys (Appleton, Hoddinott, & Krishnan, 1999; Glick & Sahn, 1997; Nordman & Roubaud, 2009; Nordman, Robilliard, & Roubaud, 2011). Since employment segregation by gender is one of the main sources of gender differences in earnings in developing countries, and firms that employ women differ from firms that employ men, examining the role of firm characteristics is crucial for a better understanding of the factors that contribute to the gender wage gap in developing countries (Borrowman & Klasen, 2015; World Bank, 2012). Those studies that use linked employer–employee data sets from developing countries focus on the glass ceiling effect, the role of workers’ sorting across jobs and firms, cognitive skills, and personality traits, but do not look at the role of female managers (Fafchamps, Soderbom, & Benhassine, 2009; Nordman, Sarr, & Sharma, 2015; Nordman & Wolff, 2009a,b).

Finally, this paper is related to studies that examine the relationship between female managers and gender pay gaps in developed countries (Cardoso & Winter-Ebmer, 2010; Hirsch, 2013; Flabbi, Macis, Moro, & Schivardi, 2014; Gagliarducci & Paserman, 2015). The findings of these papers are mixed but tend to point towards a positive effect of female managers on the relative outcomes of female employees. Our results provide a different picture, as they suggest that female CEOs may be associated with a worse relative performance of female employees unless they own the firm. Since the aforementioned papers use different data and methodology from ours, more research is needed to understand whether cultural and economic factors may explain the different results.

The remainder of the paper is organized as follows. Section 2 reviews the relevant literature. Section 3 presents the empirical strategy. Section 4 describes the data. Section 5 discusses the results, and Section 6 concludes.

2 | BACKGROUND

2.1 | The gender wage gap in Sub-Saharan Africa

An abundant literature studies the sources of the gender gap in earnings in developed countries and identifies occupational segregation, differences in human capital, discrimination, and social norms as potential factors (for a review, see Blau & Kahn, 2000). Here we focus on studies on the gender wage gap in Sub-Saharan Africa, as this is the region of interest of our study. Appleton, Hoddinott and Krishnan (1999) find that women in Côte d’Ivoire, Ethiopia, and Uganda are more likely to work in the (better-paying) public sector, thus narrowing the gender gap in earnings. Fafchamps, Soderbom, & Benhassine (2009) show that women tend to sort into low-paying jobs and firms. Nordman and Roubaud (2009) show the importance of measuring women’s actual experience in estimating the portion of the gender wage gap that is explained by observable characteristics. Nordman, Robilliard, & Roubaud (2011) analyze the gender gap in earnings in seven cities in West Africa and find that it is larger in the informal sector than in the public and private formal sectors. As these studies show that differences in workers, jobs, and firms’ characteristics affect the gender wage gap in Sub-Saharan Africa, we control for these variables in our empirical strategy.
2.2 | Female managers

Previous research examines the effect of female managers on gender gaps within the firm using linked employer–employee data from European countries. Hirsch (2013) analyzes a single cross-section from Germany and shows that a higher share of women in first- and second-level management is associated with a lower gender pay gap among employees. Hirsch’s data and empirical strategy are the closest to ours, although his data allow him to control for occupation/plant dummies, while we can include only (coarser) firm dummies.

Three studies investigate the effect of female managers on gender gaps within the firm using longitudinal linked employer–employee data. The authors exploit changes in the gender of managers over time to identify the effect of female managers on firms’ and employees’ outcomes holding constant unobservable time-invariant firm-level characteristics as well as observable time-varying factors. Cardoso and Winter-Ebmer (2010) find that the wages of female employees are higher in female-led firms than in male-led firms in Portugal. They define female leadership on the basis of the share of women among owners and managers. Flabbi, Macis, Moro, & Schivardi (2014) show that female CEOs in Italy decrease the wage gap for workers at the top of the wage distribution and increase it for those at the bottom. Gagliarducci and Paserman (2015) analyze longitudinal linked employer–employee data from Germany and find that the fraction of women among top managers is associated with lower wages for both male and female workers, but this result is not robust to the inclusion of firm fixed effects and firm-specific time trends. Hence, the authors interpret the OLS estimates as evidence of the sorting of female top managers into firms characterized by lower wages, lower investment, and more female-friendly policies. Related to this literature, Tate and Yang (2015) analyze gender differences in wage losses among displaced workers. They follow men and women who work in the same plant and are hired by the same firm after the plant closes. Women experience a larger reduction in wages relative to men, but the difference in wage losses between female and male workers is smaller for workers who are hired by firms with a female CEO.

A related literature looks at gender quotas in corporate boards, which were adopted by several European countries in the 2000s and 2010s. Bertrand, Black, Jensen, and Lleras-Muney (2014) study the effects of the reform in Norway on the gender wage gap in the corporate sector. They document an increase in the observable skills of women appointed to the boards as well as an increase in the proportion of female workers in the top 5 percent of the earnings distribution. However, in the short term they find no evidence of improvements in the labor market outcomes or career choices of women except among those who were appointed to the boards.

Our paper adds to this literature by exploring the association between CEO’s gender and gender gaps in developing countries. The literature on female managers in the developing world is scant and, to the best of our knowledge, there are no studies on the effects of female managers. A few studies look at the determinants of female CEOs in developing countries and show that the probability of having a female CEO is higher when there are women among board members (Flabbi, Piras, & Abraham, 2017) and when the dominant stakeholder is a woman (Sekkat, Szafarz, & Tojerow, 2015). Macchiavello, Menzel, Rabbani, and Woodruff (2015) try to open the black box of underrepresentation of women in leadership positions within the firm by zooming in on the selection process and the performance of female managers. After running a training program for male and female supervisors (the lowest level of managers), they randomly assign a female or male trainee to production lines in garment factories in Bangladesh. Their results suggest that firms that want to hire more female supervisors may incur substantial costs because female supervisors initially underperform relative to men (although they improve later on) and demotivate male workers.
2.3 Context

The three countries under study vary in terms of economic growth, human capital, and female participation in the workforce. At the time of the survey (2013 and 2014), economic growth was high in Côte d’Ivoire, which was catching up after a period of political instability, and more modest in Cameroon and Senegal. In the remainder of this section, we first provide a brief overview of gender differences in education and labor force participation for the overall population (and not just those working in the informal sector) of the three countries using nationally representative data. Second, we zero in on the formal sector, again using nationally representative data, to explore whether men and women work in different occupations.

Looking at education levels, in 2011 the proportion of women aged 15 to 49 with no education was 20 percent in Cameroon, 53.2 percent in Côte d’Ivoire, and 57.9 percent in Senegal (Demographic and Health Surveys). The fraction of women aged 15 to 49 who were currently working was highest in Côte d’Ivoire despite the low levels of education: 67.3 percent vs. 62.3 percent in Cameroon and 39.6 percent in Senegal. Differences in educational attainment, gender norms and religious affiliation may contribute to differences in female employment rates across the three countries. Turning to occupations, 10.37 percent of women aged 15 to 49 were working as skilled manual workers in Cameroon vs. 3.93 percent in Côte d’Ivoire and only 0.55 percent in Senegal.

To zoom in the formal sector, we analyze data from the 2005 Cameroonian Census, which is the only data set that contains information on industries and occupations. Women were significantly under-represented in nonagricultural sectors (31.9 percent of employed women vs. 51.3 percent of employed men), but we do not observe substantial occupational segregation within these sectors. The three most frequent occupations for women working in nonagricultural sectors were service workers and shop and market sales (45.1 percent), crafts and related trades workers (16.7 percent) and professionals (11.9 percent). For men, the three most common occupations were crafts and related trades workers (26.3 percent), service workers and shop and market sales (22.7 percent) and plant and machine operators and assemblers (14.5 percent).

3 EMPIRICAL STRATEGY

This paper aims to estimate the association between the gender of the CEO and gender gaps within the firm. As highlighted by Flabbi, Macis, Moro, & Schivardi (2014), the main challenge to obtaining causal estimates is nonrandom assignment of female CEOs to firms. For instance, unobserved variables at the firm level may affect both the probability that the CEO is a woman and the relative performance of female employees. Another challenge is reverse causality. For instance, female CEOs may be hired to reverse gender gaps in firms where female employees are performing poorly.

We estimate a set of regressions similar to the following equation:

\[ y_{ij} = \beta_0 + \beta_1 f_{emi} + \beta_2 f_{em_man} + \beta_3 f_{emi} \times f_{em_man} + \beta_4 X_i + \beta_5 Z_j + u_{ij}. \]  

(1)

Where \( y_{ij} \) is the outcome of interest for employee \( i \) working in firm \( j \); \( f_{emi} \) is a binary variable that equals 1 if the employee is a woman; \( f_{em_man} \) is a binary variable that equals 1 if the highest-ranking manager (CEO) is a woman; \( X_i \) is a vector of employee’s characteristics, including age, age squared, tenure (in months), tenure squared, highest level of education completed (dummies for secondary and college education), marital status, and occupation; and \( Z_j \) is a vector of firm’s characteristics, including firm’s age, size, location, legal form, and industry.
We estimate the regressions with and without occupation fixed effects. On the one hand, occupation fixed effects may be “bad controls” because the gender of the CEO may have a direct effect on the occupations of female employees, for example, by increasing their promotion rates (Kunze & Miller, 2014). On the other hand, occupation dummies may explain part of the gender gap in earnings because women are often more likely to work in low-paying occupations than men (World Bank, 2012). Hence, excluding occupation dummies may lead to overestimate the gender wage gap. Additionally, comparing estimates with and without occupation dummies provides useful information on whether the gender gaps are driven by occupational segregation or discrimination. Following the literature on the effect of female managers on firm performance (Flabbi, Macis, Moro, & Schivardi, 2014), we also estimate a specification with CEO’s characteristics including CEO’s age, age squared, tenure (in months), education (secondary and college), and marital status.

Additionally, in some specifications we include firm fixed effects \((v_i)\) to control for all firms’ characteristics that are correlated with both the probability of hiring a female CEO and gender gaps within the firm and are common to all employees within a firm. In the specification with firm fixed effects, the effect of female CEO for males is included in the constant term. The interaction term provides information of the effect of female CEO on the gender gap, but it does not allow us to estimate the effect of female managers on the wages of male and female employees. Comparing OLS and fixed effects estimates may convey useful information on whether and how female CEOs sort into firms with different characteristics (Gagliarducci & Paserman, 2015).9

\(\beta_3\) is our coefficient of interest: it measures the additional effect of having a female CEO on female workers’ outcomes relative to male workers’ outcomes (the gender gap). We expect this coefficient to be positive (negative) if having a female CEO increases (decreases) women’s outcomes relative to men’s, thus reducing (widening) the gender gap. Our dependent variables include log hourly wage, log monthly labor income, hours worked, and two measures of job satisfaction. We estimate separate regressions for each country. We use OLS and cluster the standard errors at the firm level to control for serial correlation of the errors within the firm.

Including firm fixed effects allows us to estimate the association between female CEOs and gender gaps holding constant some of the most obvious sources of potential omitted variable bias, namely that firms with female CEOs may be unobservably different in terms of their treatment of female employees. Although we do not have a panel of firms, our identification strategy is similar to the one used by Cardoso and Winter-Ebmer (2010) and Gagliarducci and Paserman (2015), who exploit within-firm variation in the proportion of female managers over time to identify the impact of female-led firms on the firm’s wage gap. However, we cannot study the dynamics of hiring a female CEO on gender gaps, control for trends in “firm culture” that may affect both the likelihood of having a female CEO and the gender gap, or estimate the effect of female CEOs on the levels of the dependent variables, because we have a single cross-section. Additionally, the specification with firm fixed effects requires the assumption that there is no reverse causality, meaning that firms do not hire a female CEO in response to pre-existing gender gaps.

4 | DATA AND SUMMARY STATISTICS

4.1 | Data

We use data from the “Les Déterminants de la Performance des Entreprises en Afrique Subsaharienne Francophone” survey, which was conducted between November 2013 and March 2014 in
Côte d’Ivoire, Cameroon, and Senegal. The data collection was funded by the International Development Research Center (IDRC) and implemented by the Centre d’Études et de Recherches en Economie et Gestion (CEREG) in Cameroon, the Cellule d’Analyse de Politiques Economiques du CIRES (CAPEC) in Côte d’Ivoire, and the Laboratoire de Recherches Economiques et Monétaires (LAREM) in Senegal.

For each country, the survey included firms in three cities. In Cameroon, the survey was conducted in the cities of Douala, Yaoundé, and Bafoussam, where more than 60 percent of Cameroonian firms were located in 2009. In Côte d’Ivoire, the survey was administered in Abidjan, Daloa, and San Pedro, where 60 percent of all formal firms in the country were located in 2012. In Senegal, the survey was run in Dakar, Saint-Louis, and Thiès.

The survey covered businesses in both the formal and informal sectors for a total of 780 firms in Cameroon, 560 firms in Côte d’Ivoire, and 480 firms in Senegal (overall, 1,820 CEOs and 2,579 employees were interviewed). Firm informality is defined as lack of fiscal identity. Lack of fiscal identity is not equivalent to not paying any taxes, as informal firms are still obliged to pay taxes to local authorities. Although firm formality is not mechanically related to firm size, meaning that firms are not forced by law to become formal when their size reaches a certain threshold, firms in the informal sector tend to have fewer employees. Since about 50 percent of firms in the informal sector have zero employees, we restrict our analysis to the formal sector.

The survey provides exceptionally rich information on CEOs, employees, firms, and production processes, collected using three separate questionnaires. For each firm, the highest-ranking manager (CEO), the production manager, and about five randomly chosen employees were interviewed. Our final sample includes about 450 workers and 130 firms in Côte d’Ivoire, 750 workers and 160 firms in Cameroon, and 750 workers and 260 firms in Senegal.

One advantage of the data is that the manager’s questionnaire was answered directly by the CEO of the firm. Having a separate module for managers allows us to identify the gender of the CEO without error. In addition, the manager’s module contains basic demographic characteristics of the CEO, as well as detailed information on the firm’s activities, revenues, management styles, and managers’ attitudes toward women.

The employee’s module contains basic demographic information on employees as well as their level of education, tenure within the company, occupation, number of hours worked, monthly labor income, and satisfaction with their job and salary. We calculate workers’ hourly wage by dividing monthly labor income by the number of hours worked in the previous month. Because monthly labor income includes all sources of labor income, the hourly wage is likely measured with error. Since wage is used as dependent variable in the regression, measurement error in the wage will not bias the coefficient estimates under the assumption that the error is not correlated with the dependent variables. Regarding job satisfaction, employees are asked how they think their salary is in comparison with their effort and whether they are satisfied with their work. We create two dummy variables that take the value of 1 if a worker thinks his/her salary is good and if he/she is satisfied with his/her work.

Finally, the production module, which was answered by the production manager, contains information on numerous firm’s characteristics including location, industry, number of employees, year in which the firm was created and legal structure of the firm. Additionally, the production module provides information on the gender composition of the workforce by rank. Employees are divided into five categories or occupations: senior managers, who are the highest-level managers right below the company’s CEO; middle managers; technicians/ supervisors; workers/apprentices; and other occupations. We calculate the fraction of workers in senior and middle management and estimate the correlation between women’s representation in these two categories of management and the performance of female technicians/supervisors, workers/apprentices, and other occupations.
**TABLE 1** Descriptive statistics

|                      | Cote d’Ivoire | Cameroon | Senegal |
|----------------------|---------------|----------|---------|
|                      | Mean          | SD       | Mean    | SD     | Mean    | SD     |
| **Dependent variables** |               |          |         |        |         |        |
| Log Hourly Wage ('000) | 2.343         | 7.074    | 1.57    | 2.72   | n.a.    | n.a.   |
| Log Monthly Labor Income ('000) | 374.2 | 1,173.2  | 236.4   | 290.9  | n.a.    | n.a.   |
| Hours Worked Per Week  | 44.15         | 12.10    | 46.34   | 12.41  | 46.28   | 14.51  |
| Job Satisfaction      | 0.831         | 0.376    | 0.608   | 0.489  | 0.818   | 0.386  |
| Salary is Good        | 0.304         | 0.460    | 0.217   | 0.413  | 0.464   | 0.499  |
| **Explanatory variables** |               |          |         |        |         |        |
| **Key variables**     |               |          |         |        |         |        |
| Female employee       | 0.351         | 0.478    | 0.308   | 0.462  | 0.268   | 0.443  |
| Female CEO            | 0.096         | 0.296    | 0.060   | 0.238  | 0.106   | 0.308  |
| **Employee’s characteristics** |           |          |         |        |         |        |
| Age (years)           | 36.07         | 8.28     | 36.08   | 8.70   | 37.30   | 10.39  |
| Married               | 0.301         | 0.450    | 0.527   | 0.500  | 0.677   | 0.468  |
| Tenure (months)       | 68.97         | 83.06    | 92.21   | 127.92 | 93.60   | 80.44  |
| Secondary education   | 0.206         | 0.405    | 0.546   | 0.498  | 0.113   | 0.317  |
| College education     | 0.197         | 0.399    | 0.036   | 0.187  | 0.262   | 0.440  |
| Occupation: senior manager | 0.125   | 0.331    | 0.137   | 0.344  | 0.121   | 0.327  |
| Occupation: middle manager | 0.235   | 0.424    | 0.220   | 0.414  | 0.226   | 0.418  |
| Occupation: technician/supervisor | 0.325 | 0.469    | 0.315   | 0.465  | 0.306   | 0.461  |
| Occupation: worker/apprentice | 0.232 | 0.423    | 0.304   | 0.460  | 0.338   | 0.473  |
| Occupation: in other occupations | 0.083 | 0.276    | 0.024   | 0.153  | 0.009   | 0.094  |
| **Firm’s characteristics** |           |          |         |        |         |        |
| Age: 0–5 years old    | 0.265         | 0.441    | 0.061   | 0.239  | 0.053   | 0.230  |
| Age: 6–10 years old   | 0.290         | 0.454    | 0.213   | 0.410  | 0.309   | 0.556  |
| Age: 11 or more years old | 0.445  | 0.498    | 0.726   | 0.446  | 0.638   | 0.799  |
| Size: 1–25 employees  | 0.640         | 0.480    | 0.301   | 0.459  | 0.645   | 0.479  |
| Size: 26–75 employees | 0.213         | 0.410    | 0.286   | 0.452  | 0.153   | 0.361  |
| Size: 76–150 employees| 0.103         | 0.304    | 0.202   | 0.402  | 0.071   | 0.256  |
| Size: 151 or more employees | 0.044  | 0.205    | 0.210   | 0.408  | 0.131   | 0.337  |
| Organization: Société à responsabilité limitée | 0.566 | 0.496    | 0.475   | 0.499  | 0.308   | 0.462  |
| Organization: Société anonyme | 0.202 | 0.402    | 0.348   | 0.477  | 0.332   | 0.471  |
| Organization: Entreprise Individuelle | 0.202 | 0.402    | 0.093   | 0.291  | 0.199   | 0.399  |
| Organization: Other   | 0.031         | 0.173    | 0.083   | 0.272  | 0.160   | 0.367  |
| Fraction of women in senior management | 0.199   | 0.273    | 0.175   | 0.242  | 0.194   | 0.201  |
| Fraction of women in middle management | 0.322   | 0.314    | 0.194   | 0.209  | 0.196   | 0.238  |
| Industry: Manufacturing| 0.171         | 0.377    | 0.207   | 0.406  | 0.136   | 0.343  |

(Continues)
4.2 Summary statistics

Table 1 displays summary statistics for the main variables used in the analysis. Looking at outcome variables, nominal wage is higher in Côte d’Ivoire than in Cameroon (data on income were not collected in Senegal), and average hours worked are similar in the three samples. The table indicates significant differences in job and salary satisfaction across countries: workers are more likely to be satisfied with their job and their salary in Côte d’Ivoire and Senegal than in Cameroon.

Looking at female representation within the firm, Figure 1 illustrates the gender composition of the workforce. The percentage of employees working under female CEOs ranges from 6 percent in Cameroon to 10.6 percent in Senegal. These numbers are more or less in line with those of Sekkat, Szafarz, & Tojerow (2015), who showed that Sub-Saharan Africa is the region with the lowest percentage of female CEOs (13 percent) in a large firm-level data set collected in 74 developing countries between 2009 and 2012. The fraction of women in middle management ranges from 19.4 percent in Cameroon to 32.2 percent in Côte d’Ivoire. The fraction of women in senior management ranges from 17.5 percent in Cameroon to 19.9 percent in Côte d’Ivoire. The fraction of female workers is highest for firms in Côte d’Ivoire (35 percent) and lowest for firms in Senegal (27 percent). For firms in Cameroon, 31 percent of employees are women.

Turning to CEO’s characteristics, Table 1 shows that CEOs have been working in the current firm for longer in Cameroon and Senegal (10.5 and 11 years, respectively) than in Côte d’Ivoire (7.2 years), which may be explained by the fact that firms have been in business for longer in Cameroon and Senegal than in Côte d’Ivoire. In Côte d’Ivoire, 67.7 percent of workers work in a firm where the CEO is also the owner. This fraction is lower in Cameroon and Senegal (55 percent). For firms in Cameroon, 31 percent of employees are women.

Looking at firm’s characteristics, we observe significant differences across the three countries. The firms in the sample have been in business for longer in Cameroon and Senegal than in Côte d’Ivoire: 26.5 percent of the firms in Côte d’Ivoire were created in the 5 years before the survey (compare with 6.1 percent in Cameroon and 5.3 percent in Senegal). Firms tend to have more employees in Cameroon than in Côte d’Ivoire and Senegal. Only 30.1 percent of firms in Cameroon have 25 employees or less, while the fraction was more than twice as high in Côte d’Ivoire and Senegal.

Note: Firm characteristics also include city and additional industry dummies. SD = standard deviation.
|                          | Cote d'Ivoire |            |     | Cameroon |            |     | Senegal |            |     |
|--------------------------|---------------|------------|-----|----------|------------|-----|---------|------------|-----|
|                          | Males | Females | Diff-1 | Diff-2t | Males | Females | Diff-1 | Diff-2t | Males | Females | Diff-1 | Diff-2t |
| Log Hourly Wage (‘000)   | 2.46  | 2.12    | 0.33  | 0.66    | 1.57  | 1.58    | 0.47  | 0.95    | n.a.  | n.a.    | n.a.  | n.a.    |
|                          | (0.46) | (0.63)  | (0.10) | (0.26)  |        |          |       |         |        |          |        |         |
| Log Monthly Labor Income (‘000) | 378.81 | 367.08 | 0.46  | 0.93    | 256.21 | 191.38 | 0.01  | 0.01    | n.a.  | n.a.    | n.a.  | n.a.    |
|                          | (69.55) | (119.85)| (15.66)| (13.15) |        |          |       |         |        |          |        |         |
| Hours per week            | 44.22 | 42.91   | 0.14  | 0.29    | 47.01 | 44.02   | 0.00  | 0.00    | 47.15 | 43.57   | 0.00  | 0.00    |
|                          | (0.76) | (0.90)  | (0.56) | (0.79)  | (0.68) | (0.81)  |       |         |        |          |        |         |
| Job Satisfaction          | 0.81  | 0.86    | 0.11  | 0.22    | 0.62  | 0.58    | 0.14  | 0.28    | 0.79  | 0.88    | 0.00  | 0.00    |
|                          | (0.02) | (0.03)  | (0.02) | (0.03)  | (0.40) | (0.32)  |       |         |        |          |        |         |
| Salary is Good            | 0.27  | 0.37    | 0.01  | 0.03    | 0.21  | 0.24    | 0.22  | 0.44    | 0.44  | 0.53    | 0.01  | 0.02    |
|                          | (0.03) | (0.04)  | (0.02) | (0.03)  | (0.02) | (0.03)  |       |         |        |          |        |         |

Note: The table reports *p*-values for tests of equality of means (one-tailed and two-tailed). Standard errors are reported in parenthesis. Hourly wage and monthly income are in Communauté Financière Africaine (CFA) francs. “Job Satisfaction” is a binary indicating whether the employee is satisfied with the job. “Salary is Good” is a binary indicating whether the employee thinks that his/her salary relative to his/her effort is fair or good.
We next turn to gender differences in various labor market outcomes, which are illustrated in Figures 2(a)–(e). Table 2 reports p values for tests of equality of means (one-tailed and two-tailed). Figure 2(a) indicates that male and female workers earn similar hourly wages in Côte d’Ivoire and Cameroon. Figure 2(b) shows that monthly labor income is higher for men than for women in Cameroon, which is explained by men working three hours longer on average. Men work longer hours in Senegal as well, but not in Côte d’Ivoire (Figure 2c). Job satisfaction is similar for men and women in Côte d’Ivoire and Cameroon, while in Senegal female workers are more satisfied with their job (Figure 2d). The pattern observed in Senegal is consistent with previous findings by Hodson (1989), Mason (1995), and Clark (1997). Finally, in all three countries women are more likely to be satisfied with their salary than men (Figure 2e).

5 | RESULTS

5.1 | Main results

In this section, we discuss the association between female CEOs and gender differences in five outcome variables. Tables 3 to 7 report the estimates of Equation 1 for the coefficients on the female employee dummy, the female CEO dummy, and the interaction between these two variables. Column (1) controls for employee’s characteristics (age, education, and tenure) and firm’s characteristics (location, age, size, organization, and industry); column (2) adds occupation dummies; column (3) adds manager’s characteristics (age, tenure, and education); and column (4) includes interaction terms between all covariates (employee’s characteristics, firm’s characteristics and employee’s occupation dummies) and a dummy for female employee.12 Finally, column (5) controls for employee’s characteristics and firm fixed effects, and column (6) adds occupation dummies to the specification in column (5). Tables A1 to A3 in the Online Appendix (for access see Supporting Information at the end of this paper) report all the coefficients for specifications (2) and (6).13

FIGURE 1 Female representation among managers and employees
The gender gap for workers under male CEOs is given by the coefficient on the female employee dummy. The gender gap for workers under female CEOs is given by the sum of the coefficients on the female employee dummy and the interaction term between the female employee and the female CEO dummies. Thus, the interaction term measures the additional gender gap for female CEOs relative to male CEOs (our main parameter of interest). The coefficient on the female CEO dummy measures the association between female CEOs and male employees, while the sum of this coefficient and the interaction term measures the association between female CEOs and female employees.

**FIGURE 2** (a) Gender differences in average employees’ hourly wage (’000). (b) Gender differences in average employees’ monthly income (’000). (c) Gender differences in average employees’ hours per week. (d) Gender differences in average employees’ job satisfaction. (e) Gender differences in average employees’ salary satisfaction.
### Table 3 The effects of female CEOs on wages and the gender gap

|                      | OLS (1) | OLS (2) | OLS (3) | OLS (4) | Firm FE (5) | Firm FE (6) |
|----------------------|---------|---------|---------|---------|-------------|-------------|
|                      | Côte d’Ivoire |         |         |         | Cameroon    |             |
| Female employee      | 0.056   | 0.025   | 0.003   | -0.011  | 0.091       | 0.122       |
|                      | (0.128) | (0.118) | (0.125) | (0.120) | (0.090)     | (0.094)     |
| Female CEO           | 0.015   | 0.058   | -0.010  | 0.066   |             |             |
|                      | (0.178) | (0.181) | (0.202) | (0.212) |             |             |
| Female employee × Female CEO | -0.352 | -0.326  | -0.402  | 0.038   | -0.253      | -0.255      |
|                      | (0.302) | (0.290) | (0.284) | (0.358) | (0.231)     | (0.245)     |
| Observations         | 348     | 348     | 348     | 348     | 348         | 348         |
| $R^2$                | 0.266   | 0.280   | 0.292   | 0.340   | 0.155       | 0.166       |
| No. of firms         |         |         |         |         | 119         | 119         |
| Cameroon              |         |         |         |         |             |             |
| Female employee      | -0.076  | -0.083  | -0.074  | -0.104  | -0.051      | -0.051      |
|                      | (0.065) | (0.062) | (0.063) | (0.077) | (0.062)     | (0.055)     |
| Female CEO           | 0.113   | 0.097   | 0.137   | 0.155   |             |             |
|                      | (0.217) | (0.177) | (0.180) | (0.159) |             |             |
| Female employee × Female CEO | -0.482* | -0.235  | -0.250  | -0.219  | -0.442**    | -0.194      |
|                      | (0.276) | (0.254) | (0.256) | (0.220) | (0.200)     | (0.196)     |
| Observations         | 613     | 613     | 597     | 613     | 613         | 613         |
| $R^2$                | 0.416   | 0.535   | 0.548   | 0.566   | 0.254       | 0.398       |
| No. of firms         |         |         |         |         | 155         | 155         |
| Employee’s characteristics |       | x       | x       | x       | x           | x           |
| Employee’s occupation |         | x       | x       | x       |             |             |
| Firm’s characteristics |         | x       | x       | x       |             |             |
| CEO’s characteristics |         |         |         |         |             |             |

Note: Standard errors in parentheses are robust to clustering at the firm level. ***, **, * $p < 0.01$, $0.01 < p < 0.05$, $p < 0.1$. The dependent variable is log hourly wage. Employee’s characteristics include age, age squared, high school education, college education, tenure, tenure squared. Employee’s occupation include binaries for senior managers, middle manager, technician/supervisor, worker/apprentice. Firm’s characteristics include city, age of the firm, industry fixed effects, size, and organization. CEO’s characteristics include age, age squared, tenure, tenure squared, high school education, and college education.

### 5.1.1 Female CEOs and the gender gap in wages, income, and hours worked

Table 3 presents estimates of Equation 1 based on data from Côte d’Ivoire and Cameroon using log hourly wage as dependent variable. The interaction term between the female CEO and the female employee dummies is large and negative for both countries and across different specifications, but it is statistically significant only for Cameroon when occupation dummies are not included. This suggests that in both countries female CEOs are associated with a greater gender gap in hourly wages than male CEOs. In terms of magnitude, the specification in column (1)
suggests that working under a female CEO instead of a male CEO is associated with an increase in the gender gap in hourly wages of 48.2 percent in Cameroon and 35.2 percent in Côte d’Ivoire. Tables 4 and 5 show that these large effects come from the combination of lower monthly income and longer hours worked by female employees working for female CEOs. Controlling for firm fixed effects in column (5) reduces the interacted coefficient, suggesting the existence of unobserved time-invariant firm-level characteristics that are correlated with both the CEO’s gender and the gender gap in hourly wages. Interestingly, in both the OLS and FE models, the effect of female CEOs on the gender wage gap is reduced to less than half and becomes insignificant after controlling for occupation fixed effects. This suggests that the effect of female CEOs on the gender wage gap.

**Table 4** The effects of female CEOs on monthly income and the gender gap

|                      | OLS                | Firm FE          |
|----------------------|--------------------|------------------|
|                      | (1) (2) (3) (4)    | (5) (6)          |
| **Côte d’Ivoire**    |                    |                  |
| Female employee      | 0.027 (0.107)      | 0.014 (0.081)    |
| Female CEO           | -0.072 (0.157)     | -0.081 (0.091)   |
| Female employee ×    | -0.135 (0.263)     | -0.070 (0.260)   |
| Female CEO           | -0.128 (0.261)     | -0.067 (0.286)   |
| Observations         | 348 348 348 348    | 348 348          |
| \(R^2\)              | 0.269 0.281 0.290 0.336 | 0.161 0.172      |
| No. of firms         | 119 119            |                  |
| **Cameroon**         |                    |                  |
| Female employee      | -0.180*** (0.063)  | -0.158*** (0.055) |
| Female CEO           | 0.266 (0.198)      | -0.150*** (0.050) |
| Female employee ×    | -0.403 (0.247)     | -0.281 (0.179)   |
| Female CEO           | -0.136 (0.214)     | -0.051 (0.171)   |
| Observations         | 618 618 602 618    | 618 618          |
| \(R^2\)              | 0.446 0.574 0.580 0.598 | 0.306 0.478      |
| No. of firms         | 155 155            |                  |
| **Employee’s**       | x x x x x x       |                  |
| **Occupation**       | x x x x x x       |                  |
| **Firm’s characteristics** | x x x x x         |                  |
| **CEO’s characteristics** | x                 |                  |
| Interaction with female employee | x                 |                  |

*Note:* Standard errors in parentheses are robust to clustering at the firm level. \(**p < 0.01; **p < 0.05; *p < 0.1. The dependent variable is log monthly labor income. Employee’s characteristics include age, age squared, high school education, college education, tenure, tenure squared. Employee’s occupation include binaries for senior managers, middle manager, technician/technician, supervisor, worker/apprentice. Firm’s characteristics include city, age of the firm, industry fixed effects, size, and organization. CEO’s characteristics include age, age squared, tenure, tenure squared, high school education, and college education.
TABLE 5  The effects of female CEOs on hours worked per week and the gender gap

| Côte d’Ivoire |  |  |  |  |  |  |
|---------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Female employee | OLS (1) | (2) | (3) | (4) | Firm FE (5) | (6) |
|                | Female employee | –2.520* | –1.569 | –1.563 | –0.838 | –4.374*** | –3.890** |
|                | (1.450) | (1.372) | (1.392) | (1.210) | (1.562) | (1.528) |
| Female CEO     | –4.390 | –5.039* | –6.547* | –4.569 | (2.996) | (2.952) |
|                | (2.996) | (2.952) | (3.454) | (3.233) | |
| Female employee × Female CEO | 10.301*** | 9.736*** | 11.243*** | 5.787 | 9.743*** | 9.434*** |
|                | (3.404) | (3.424) | (3.093) | (4.154) | (3.607) | (3.681) |
| Observations   | 405 | 405 | 405 | 405 | 405 | 405 |
| R²             | 0.164 | 0.201 | 0.223 | 0.257 | 0.066 | 0.086 |
| No. of firms   | 130 | 130 |  |  |  |  |

| Cameroon       |  |  |  |  |  |  |
|---------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Female employee | OLS (1) | (2) | (3) | (4) | Firm FE (5) | (6) |
|                | Female employee | –2.990*** | –2.85*** | –2.683** | –2.292** | –2.877*** | –2.694** |
|                | (1.051) | (1.075) | (1.064) | (0.936) | (1.026) | (1.045) |
| Female CEO     | 3.305 | 3.380 | 2.148 | 3.516 | (2.225) | (2.212) |
|                | (2.225) | (2.212) | (2.289) | (2.348) | |
| Female employee × Female CEO | 0.312 | 0.067 | –0.040 | –1.286 | 1.281 | 0.841 |
|                | (2.046) | (2.369) | (2.591) | (2.958) | (2.197) | (2.546) |
| Observations   | 717 | 717 | 700 | 717 | 717 | 717 |
| R²             | 0.103 | 0.122 | 0.143 | 0.149 | 0.047 | 0.069 |
| No. of firms   | 165 | 165 |  |  |  |  |

| Senegal       |  |  |  |  |  |  |
|---------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Female employee | OLS (1) | (2) | (3) | (4) | Firm FE (5) | (6) |
|                | Female employee | –3.254*** | –3.148** | –2.958** | –3.883*** | –2.709*** | –2.494** |
|                | (1.184) | (1.228) | (1.248) | (1.399) | (1.079) | (1.126) |
| Female CEO     | –2.307 | –2.183 | –1.680 | –2.591 | (3.178) | (3.202) |
|                | (3.178) | (3.202) | (3.051) | (3.312) | |
| Female employee × Female CEO | 7.088** | 6.926** | 6.388** | 6.578* | 2.787 | 2.728 |
|                | (3.379) | (3.347) | (3.134) | (3.634) | (2.844) | (2.662) |
| Observations   | 705 | 705 | 705 | 705 | 705 | 705 |
| R²             | 0.141 | 0.143 | 0.159 | 0.170 | 0.037 | 0.043 |
| No. of firms   |  |  |  |  |  |  |

**Employee’s characteristics**
- x
- x
- x
- x
- x
- x

**Employee’s occupation**
- x
- x
- x
- x

**Firm’s characteristics**
- x
- x
- x
- x

(Continues)
gap is driven by occupational segregation of women in low-paying occupations rather than by wage discrimination. In firms that have female CEOs, women are over-represented in low-paying jobs, but within occupations there is no significant gender wage gap. Controlling for CEO’s characteristics (column 3) and allowing for returns to characteristics to vary by gender (column 4) do not change the coefficient on the interaction term between the female manager and the female employee dummies in a significant way. A notable exception is the specification in column (4) for Côte d’Ivoire: In this case, the sign flips from negative to positive but the coefficient remains small and statistically insignificant.

The coefficient on the female CEO dummy is consistently positive across different specifications and countries—with the exception of Côte d’Ivoire when we include CEO’s characteristics in column (3)—but it is always statistically insignificant. Therefore, men who work under a female CEO are not paid differently than men who work under a male CEO. However, women who work under a female CEO earn less than women who work under a male CEO, but the overall effect is only significant in column (1) for Cameroon (e.g., 0.113 – 0.482 = –0.369 with a p value of 0.085). Finally, the coefficient on the female employee dummy is positive for Côte d’Ivoire and negative for Cameroon but never statistically significant.

Table 4 displays the results for monthly labor income. Female CEOs are associated with a larger gender gap in income, but the coefficient on the interaction term is never statistically significant at standard levels. For Cameroon, the coefficient on the female employee dummy is negative and statistically significant, suggesting that female employees earn less than male employees under both male and female CEOs. Controlling for occupation and firm fixed effects, we find that a female employee who works for a male CEO earns 15 percent less than a male counterpart, and this difference in income between male and female workers is at least as large for those working under a female CEO. The association between female CEOs and the income of male employees is negative in Côte d’Ivoire, and positive in Cameroon, but the coefficient for the female CEO dummy is never statistically significant.

Table 5 shows the results for hours worked. The positive coefficient on the interaction term in Côte d’Ivoire and Senegal indicates that female CEOs are associated with longer hours worked by female employees relative to male employees. In terms of magnitude, female CEOs in Côte d’Ivoire are associated with 9.7 extra hours worked by female employees than by male employees when controlling for firm fixed effects. In Senegal and Côte d’Ivoire, male employees who work under female CEOs work fewer hours than male employees who work under male CEOs (statistically significant only for Côte d’Ivoire when occupation dummies are included). For female

| OLS | Firm FE |
|-----|---------|
| (1) | (2) | (3) | (4) | (5) | (6) |
| CEO’s characteristics | x | | | | |
| Interaction with female employee | x | | | | |

Note: Standard errors in parentheses are robust to clustering at the firm level. ***p < 0.01; **p < 0.05; *p < 0.1. The dependent variable is the number of hours worked weekly. Employee’s characteristics include age, age squared, high school education, college education, tenure, tenure squared. Employee’s occupation include binaries for senior managers, middle manager, technician/supervisor, worker/apprentice. Firm’s characteristics include city, age of the firm, industry fixed effects, size, and organization. CEO’s characteristics include age, age squared, tenure, tenure squared, high school education, and college education.
|               | OLS                                                                 | Firm FE                                                                 |
|---------------|---------------------------------------------------------------------|------------------------------------------------------------------------|
|               | (1)  (2)  (3)  (4)  (5)  (6)                                       | (5)  (6)                                                               |
|               | Côte d’Ivoire                                                       |                                                                        |
| Female employee| 0.041 0.052 0.065 0.038                                          | 0.070 0.069                                                          |
|               | (0.040) (0.043) (0.044) (0.038)                                     | (0.046) (0.046)                                                      |
| Female CEO    | –0.067 –0.075 –0.011 –0.094                                       | –0.125*** –0.138**                                                   |
|               | (0.143) (0.144) (0.134) (0.157)                                     | (0.054) (0.057)                                                     |
| Female employee × Female CEO | 0.009 –0.003 –0.056 –0.048                                    | –0.020 –0.029 –0.028 –0.074                                        |
|               | (0.084) (0.087) (0.085) (0.120)                                     | (0.083) (0.081) (0.081) (0.094)                                      |
| Observations  | 399 399 399 399                                                     | 399 399                                                              |
| \(R^2\)       | 0.098 0.104 0.140 0.188                                             | 0.040 0.060                                                          |
| No. of firms  | 129 129                                                            |                                                                        |
|               | Cameroon                                                            |                                                                        |
| Female employee| –0.047 –0.046 –0.047 –0.069                                       | –0.054 –0.054                                                       |
|               | (0.039) (0.038) (0.039) (0.042)                                     | (0.041) (0.041)                                                     |
| Female CEO    | 0.164*** 0.152*** 0.138** 0.190***                                   |                                                                        |
|               | (0.056) (0.055) (0.062) (0.062)                                     |                                                                        |
| Female employee × Female CEO | –0.088 –0.029 –0.031 –0.139                                    | –0.078 –0.024                                                       |
|               | (0.139) (0.136) (0.141) (0.139)                                     | (0.148) (0.147)                                                     |
| Observations  | 713 713 696 713                                                     | 713 713                                                              |
| \(R^2\)       | 0.136 0.155 0.175 0.206                                             | 0.019 0.043                                                          |
| No. of firms  | 165 165                                                            |                                                                        |
|               | Senegal                                                             |                                                                        |
| Female employee| 0.075** 0.082** 0.075** 0.082**                                     | 0.020 0.017                                                         |
|               | (0.035) (0.035) (0.035) (0.035)                                     | (0.039) (0.040)                                                     |
| Female CEO    | 0.092 0.102* 0.079 0.118*                                          |                                                                        |
|               | (0.059) (0.060) (0.057) (0.064)                                     |                                                                        |
| Female employee × Female CEO | –0.020 –0.029 –0.028 –0.074                                    | –0.055 –0.060                                                       |
|               | (0.083) (0.081) (0.081) (0.094)                                     | (0.079) (0.076)                                                     |
| Observations  | 718 718 718 718                                                    | 718 718                                                              |
| \(R^2\)       | 0.088 0.099 0.124 0.144                                             | 0.022 0.037                                                          |
| No. of firms  | 267 267                                                            |                                                                        |
| Employee’s characteristics | x  x  x  x  x  x                                                     |                                                                        |
| Employee’s occupation | x  x  x  x  x                                                       |                                                                        |
| Firm’s characteristics | x  x  x  x  x  x                                                     |                                                                        |
| CEO’s characteristics | x  x  x  x  x  x                                                    |                                                                        |

(Continues)
employees, the association between female CEOs and hours worked goes in the opposite direction. Women who work under female CEOs work longer hours than those who work under male CEOs. The sum of the coefficient on the female CEO dummy and the interaction term is always positive, and it is statistically significant for Senegal across all specifications and for Cameroon when occupation dummies are included. For all three countries, the coefficient on the female employee dummy is negative suggesting that women who work under male CEOs work fewer hours relative to their male counterparts. However, because the coefficient on the interaction term is always larger and positive, women who work for female CEOs work longer hours than male employees working under female CEOs. Controlling for occupation fixed effects, CEO’s characteristics, and allowing for returns to characteristics to vary by gender does not significantly change the results.

Coefficients on employee’s and firm’s characteristics are reported in Tables A1 to A3 in the Online Appendix (see Supporting Information) and appear to have the expected sign. The worker’s education and tenure are positively correlated with wages and monthly income for Côte d’Ivoire and Cameroon. In Senegal, worker’s education and age are associated with fewer hours worked. More recent firms and firms with fewer employees tend to pay lower wages in Cameroon.

### 5.1.2 Female CEOs and the gender gap in satisfaction with job and salary

In Table 6, the coefficient on the interaction term between the female CEO dummy and the female employee dummy is usually negative, but only statistically significant in Côte d’Ivoire when controlling for firm fixed effects. This suggests that female CEOs are associated with a greater gender gap in job satisfaction only for Côte d’Ivoire. In Cameroon and Senegal, female CEOs are associated with a higher probability of being satisfied with their job for male workers relative to male workers who work for male CEOs. However, the sum of the coefficient on the female CEO dummy and the coefficient on the interaction term is small and never significant, suggesting that there is no difference in job satisfaction between female employees who work for male CEOs and female employees who work for female CEOs. Interestingly, we find that in Senegal female employees who work for male CEOs are more satisfied with their job than their male counterparts when firm fixed effects are not included as controls.

Table 7 presents regression estimates when the binary “salary is good” is used as dependent variable. The coefficient on the interaction term between the female CEO dummy and the female employee dummy is large and negative, and it is statistically significant for Senegal across all
| TABLE 7 | The effects of female CEOs on salary is good and the gender gap |
|---------|----------------------------------------------------------------|
|         | **OLS** | **Firm FE** |
|         | (1)     | (2)     | (3)     | (4)     | (5)     | (6)     |
| **Côte d’Ivoire** |         |         |         |         |         |         |
| Female employee | 0.120** | 0.123** | 0.125** | 0.138** | 0.039   | 0.052   |
|               | (0.055) | (0.056) | (0.056) | (0.056) | (0.064) | (0.063) |
| Female CEO    | 0.048   | 0.043   | 0.060   | 0.032   |         |         |
|               | (0.141) | (0.144) | (0.154) | (0.157) |         |         |
| Female employee × Female CEO | –0.122 | –0.124 | –0.135 | –0.052 | –0.047 | –0.047 |
|               | (0.199) | (0.201) | (0.208) | (0.190) | (0.216) | (0.220) |
| Observations  | 399     | 399     | 399     | 399     | 399     | 399     |
| $R^2$         | 0.144   | 0.145   | 0.151   | 0.198   | 0.021   | 0.031   |
| No. of firms  | 130     | 130     |         |         |         |         |
| **Cameroon**  |         |         |         |         |         |         |
| Female employee | 0.043   | 0.053   | 0.061   | 0.064   | 0.083*  | 0.091** |
|               | (0.041) | (0.039) | (0.039) | (0.047) | (0.044) | (0.043) |
| Female CEO    | 0.208   | 0.196   | 0.217   | 0.170   |         |         |
|               | (0.139) | (0.140) | (0.147) | (0.136) |         |         |
| Female employee × Female CEO | –0.237 | –0.193 | –0.190 | –0.187 | –0.460** | –0.432** |
|               | (0.225) | (0.222) | (0.226) | (0.199) | (0.212) | (0.212) |
| Observations  | 577     | 577     | 565     | 577     | 577     | 577     |
| $R^2$         | 0.057   | 0.082   | 0.090   | 0.118   | 0.035   | 0.054   |
| No. of firms  | 154     | 154     |         |         |         |         |
| **Senegal**   |         |         |         |         |         |         |
| Female employee | 0.135***| 0.146***| 0.134***| 0.140***| 0.043   | 0.057   |
|               | (0.043) | (0.043) | (0.044) | (0.049) | (0.046) | (0.046) |
| Female CEO    | 0.140   | 0.144   | 0.128   | 0.156*  |         |         |
|               | (0.092) | (0.094) | (0.097) | (0.094) |         |         |
| Female employee × Female CEO | –0.429***| –0.439***| –0.424***| –0.436***| –0.346***| –0.360*** |
|               | (0.129) | (0.133) | (0.137) | (0.137) | (0.140) | (0.144) |
| Observations  | 713     | 713     | 713     | 713     | 713     | 713     |
| $R^2$         | 0.147   | 0.152   | 0.166   | 0.186   | 0.071   | 0.081   |
| No. of firms  | 267     | 267     |         |         |         |         |
| Employee’s characteristics | x | x | x | x | x |
| Employee’s occupation | x | x | x | x | |
| Firm’s characteristics | x | x | x | x | |
| CEO’s characteristics | x | | | | |
| Interaction with female employee | x | | | | |

**Note:** Standard errors in parentheses are robust to clustering at the firm level. ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$. The dependent variable is a binary that equals 1 if the worker is satisfied with his/her job. Employee’s characteristics include age, age squared, high school education, college education, tenure, tenure squared. Employee’s occupation include binaries for senior managers, middle manager, technician/supervisor, worker/apprentice. Firm’s characteristics include city, age of the firm, industry fixed effects, size, and organization. CEO’s characteristics include age, age squared, tenure, tenure squared, high school education, and college education.
TABLE 8 Additional results: Manager’s tenure, ownership, and compositions of the managerial

| Specification                  | Baseline | Long tenure | Ownership | Composition |
|-------------------------------|----------|-------------|-----------|-------------|
| Dependent variable            | A: Log Hourly Wage |
| Female                        | 0.002    | 0.001       | 0.069     | 0.217**     |
|                               | (0.052)  | (0.057)     | (0.079)   | (0.102)     |
| Female × Female CEO           | −0.331** | −0.246      | −0.847*** | −0.657***   |
|                               | (0.148)  | (0.152)     | (0.220)   | (0.234)     |
| Female × Owner                | −0.123   |             |           |             |
|                               | (0.101)  |             |           |             |
| Female × Owner × Female CEO   | 0.633**  |             |           |             |
|                               | (0.253)  |             |           |             |
| Female × Female               | 0.018    |             |           |             |
| Share Upper Managers          |          |             |           |             |
| Female × Female               | −0.493   |             |           |             |
| Share Middle Managers         |          |             |           |             |
| Observations                  | 961      | 796         | 961       | 384         |
| $R^2$                         | 0.189    | 0.208       | 0.190     | 0.276       |
| Dependent variable            | B: Log Monthly Labor Income |
| Female                        | −0.098** | −0.107**    | −0.089    | 0.102       |
|                               | (0.047)  | (0.053)     | (0.070)   | (0.094)     |
| Female × Female CEO           | −0.139   | −0.032      | −0.534**  | −0.533***   |
|                               | (0.156)  | (0.166)     | (0.254)   | (0.180)     |
| Female × Owner                | −0.016   |             |           |             |
|                               | (0.091)  |             |           |             |
| Female × Owner × Female CEO   | 0.452    |             |           |             |
|                               | (0.292)  |             |           |             |
| Female × Female               | 0.320    |             |           |             |
| Share Upper Managers          |          |             |           |             |
| Female × Female               | −0.896   |             |           |             |
| Share Middle Managers         |          |             |           |             |
| Observations                  | 966      | 801         | 966       | 388         |
| $R^2$                         | 0.213    | 0.229       | 0.214     | 0.273       |
| Dependent variable            | C: Hours Per Week |
| Female                        | −3.187***| −2.877***   | −3.439*** | −2.901*     |
|                               | (0.666)  | (0.711)     | (1.150)   | (1.537)     |
| Female × Female CEO           | 3.772**  | 5.227***    | 2.878     | 4.324**     |
|                               | (1.818)  | (1.908)     | (3.311)   | (1.983)     |
| Female × Owner                | 0.438    |             |           |             |
|                               | (1.359)  |             |           |             |

(Continues)
| Specification                                      | Baseline | Long tenure | Ownership | Composition |
|--------------------------------------------------|----------|-------------|-----------|-------------|
| Female × Owner                                   | 1.087    |             | 0.028     | 0.085       |
| × Female CEO                                     | (3.904)  |             | (0.049)   |             |
| Female × Female                                   |          |             | −2.238    |             |
| Share Upper Managers                             |          |             | (3.840)   |             |
| Female × Female                                   |          |             | 3.783     |             |
| Share Middle Managers                            |          |             | (5.782)   |             |
| Observations                                     | 1,827    | 1,534       | 1,827     | 624         |
| R²                                               | 0.028    | 0.029       | 0.028     | 0.085       |
| Dependent variable D: Job Satisfaction           |          |             |           |             |
| Female                                           | 0.001    | −0.004      | 0.017     | −0.012      |
|                                                 | (0.024)  | (0.026)     | (0.037)   | (0.068)     |
| Female × Female CEO                              | −0.062   | −0.077      | 0.047     | 0.075       |
|                                                 | (0.058)  | (0.072)     | (0.087)   | (0.189)     |
| Female × Owner                                    | −0.028   |             |           |             |
|                                                 | (0.049)  |             |           |             |
| Female × Owner × Female CEO                       | −0.142   |             |           |             |
|                                                 | (0.112)  |             |           |             |
| Female × Female                                   | −0.119   |             |           |             |
| Share Upper Managers                             | (0.181)  |             |           |             |
| Female × Female                                   | −0.073   |             |           |             |
| Share Middle Managers                            | (0.183)  |             |           |             |
| Observations                                     | 1,830    | 1,537       | 1,830     | 621         |
| R²                                               | 0.006    | 0.009       | 0.007     | 0.014       |
| Dependent variable E: Salary is Good             |          |             |           |             |
| Female                                           | 0.060**  | 0.031       | 0.097**   | −0.000      |
|                                                 | (0.029)  | (0.031)     | (0.044)   | (0.068)     |
| Female × Female CEO                              | −0.308***| −0.285**    | −0.337**  | −0.420      |
|                                                 | (0.107)  | (0.121)     | (0.171)   | (0.264)     |
| Female × Owner                                    | −0.064   |             |           |             |
|                                                 | (0.057)  |             |           |             |
| Female × Owner × Female CEO                       |           | 0.055       |           |             |
|                                                 |           | (0.214)     |           |             |
| Female × Female                                   | 0.055    |             |           |             |
| Share Upper Managers                             | (0.309)  |             |           |             |
| Female × Female                                   | 0.280    |             |           |             |
| Share Middle Managers                            | (0.257)  |             |           |             |

(Continues)
specifications and for Cameroon when firm fixed effects are included. Hence, female CEOs are associated with a greater gender gap in salary satisfaction. However, female CEOs are associated with a greater satisfaction with salary for male workers relative to male workers who work for male CEOs (not significant except for Senegal when returns to characteristics are allowed to vary by gender). The sum of the female CEO dummy and the interaction term is negative and statistically significant for Senegal, suggesting that female employees who work for a female CEO are less happy with their income than female employees who work for a male CEO. Also, for Senegal women who work for a male CEO are happier with their salary relative to their male counterparts.

5.2 Heterogeneity by manager’s characteristics

In this section, we examine how the correlation between female CEOs and gender gaps within the firm varies with managers’ characteristics such as their tenure in the job and whether they own the firm. Additionally, we estimate the correlation between the fraction of women in middle and senior management and gender gaps within the firm. Owing to statistical power limitations and for brevity, we report these results for the pooled sample and only for the specification with firm fixed effect without controlling for occupation dummies.

One of the main concerns for our estimation strategy is that the negative correlation between female CEOs and the relative outcomes of female employees may reflect reverse causality. For instance, if female employees were performing poorly relative to male employees, the owner of the firm might decide to hire a woman as a CEO with the intention of improving the relative outcomes of female workers. Thus, we would observe a negative correlation even though female CEOs may have the potential to reverse the gender gaps.

To understand whether our results could be exclusively driven by reverse causality, we restrict our analysis to firms where the highest-ranking manager has been working as CEO for at least 2 years. The rationale is that, even if a female CEO was hired as a consequence of large gender gaps, in 2 years she would have had enough time to try to reverse those gender gaps if she wanted to. If that were the case, we would expect the coefficient on the interaction term between the female CEO dummy and the female employee dummy to become zero or even positive (recall that on average we do not observe any gender gap in our sample). The results are reported in column (2) of Table 8.

For wages, the coefficient becomes slightly smaller and marginally insignificant but it is not statistically different from the baseline result in column (1) (Panel A) of Table 8. Women who work under female CEOs who have been in their position for at least 2 years tend to work longer hours (Panel C). The estimated correlation between female CEOs and gender gaps in monthly income, job satisfaction, and salary satisfaction does not vary with the CEO’s tenure in the firm. Although these results do not allow us to rule out reverse causality with certainty, they suggest that reverse causality is not the only driver of our findings.

| Specification | Baseline | Long tenure | Ownership | Composition |
|---------------|----------|-------------|-----------|-------------|
| Observations  | 1,689    | 1,414       | 1,689     | 549         |
| $R^2$         | 0.024    | 0.021       | 0.025     | 0.046       |

Note: Standard errors in parentheses are robust to clustering at the firm level. ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$. All regressions control for firm fixed effects, worker’s age (entered as a quadratic), marital status, tenure in the current job (entered as a quadratic) and worker’s education. For regressions that use wage and income as outcome, the sample includes firms from Côte d’Ivoire and Cameroon. For the other outcomes, the sample includes firms from the three countries (Côte d’Ivoire, Cameroon, and Senegal).
| Variable                                    | Log Hourly Wage (1) | Log Monthly Labor Income (2) | Hours per week (3) | Job satisfaction (4) | Salary is good (5) |
|--------------------------------------------|---------------------|-------------------------------|--------------------|----------------------|------------------|
| Female CEO                                 | -0.019              | -0.109                        | 1.419              | 0.177*               | 0.272            |
|                                            | (0.180)             | (0.249)                       | (5.097)            | (0.104)              | (0.330)          |
| CEO is owner                               | 0.098               | -0.308***                     | -3.676             | -0.016               | -0.002           |
|                                            | (0.192)             | (0.127)                       | (2.924)            | (0.092)              | (0.138)          |
| CEO’s age                                  | -0.002              | 0.008***                      | 0.165**            | 0.002                | 0.004*           |
|                                            | (0.003)             | (0.003)                       | (0.071)            | (0.002)              | (0.002)          |
| CEO’s secondary education                  | 0.188               | -0.177                        | -3.174             | 0.075                | 0.086            |
|                                            | (0.294)             | (0.332)                       | (6.148)            | (0.216)              | (0.205)          |
| CEO’s college education                    | 0.178               | -0.418**                      | -0.826             | 0.016                | -0.019           |
|                                            | (0.181)             | (0.163)                       | (4.128)            | (0.109)              | (0.161)          |
| Firm: 6–10 years old                       | -0.134              | -0.564                        | -4.625             | 0.098                | 0.451*           |
|                                            | (0.448)             | (0.400)                       | (5.176)            | (0.208)              | (0.259)          |
| Firm: more than 10 years old               | -0.574              | -0.799**                      | -0.299             | 0.022                | 0.516**          |
|                                            | (0.432)             | (0.378)                       | (5.012)            | (0.222)              | (0.240)          |
| Size: 1–25 employees                        | 0.268               | 0.639***                      | 0.529              | -0.122               | -0.212           |
|                                            | (0.270)             | (0.204)                       | (3.689)            | (0.123)              | (0.196)          |
| Size: 26–75 employees                       | -0.101              | 0.279                         | 1.298              | -0.014               | -0.262           |
|                                            | (0.244)             | (0.168)                       | (3.219)            | (0.110)              | (0.191)          |
| Size: 76 or more employees                 | 0.267               | 0.355**                       | -4.946             | -0.035               | 0.026            |
|                                            | (0.190)             | (0.149)                       | (3.290)            | (0.104)              | (0.206)          |
| Organization: Société à responsabilité limitée | 0.138               | -0.003                        | 1.802              | -0.078               | -0.081           |
|                                            | (0.245)             | (0.169)                       | (3.144)            | (0.101)              | (0.183)          |
| Organization: Société anonyme              | 0.209               | 0.051                         | -3.029             | -0.016               | -0.210           |
|                                            | (0.263)             | (0.163)                       | (2.699)            | (0.094)              | (0.207)          |
| Organization: Entreprise Individuelle       | 0.401               | 0.262                         | 4.191              | 0.181                | 0.242            |
|                                            | (0.277)             | (0.181)                       | (5.271)            | (0.131)              | (0.243)          |
| Manufacturing                              | -0.194              | 0.252                         | 7.102              | 0.007                | 0.224            |
|                                            | (0.242)             | (0.182)                       | (4.760)            | (0.123)              | (0.164)          |
| Service                                    | -0.464              | -0.314                        | 4.601              | -0.148               | 0.136            |
|                                            | (0.311)             | (0.257)                       | (3.337)            | (0.099)              | (0.160)          |
| Trade                                      | -0.020              | -0.080                        | 4.219              | -0.057               | 0.007            |
|                                            | (0.284)             | (0.180)                       | (3.683)            | (0.124)              | (0.151)          |
| Construction                               | -0.188              | 0.055                         | 6.110              | 0.045                | -0.614**         |
|                                            | (0.276)             | (0.252)                       | (5.608)            | (0.113)              | (0.255)          |
Next, we hypothesize that female CEOs may not have enough decision-making power to improve the relative outcomes of female employees. We explore this possibility in column (3) of Table 8, where we test whether the estimated association between a female CEO and gender gaps is different for female CEOs who are also owners of the firm. Interestingly, we find that the estimated negative correlation between a female CEO and the gender gap in wages is significantly attenuated for female CEOs who are also owners (Panel A): the coefficient on the triple interaction term between indicators for female employee, female CEO, and CEO who is also owner is positive, large, and statistically significant. For income, hours, and salary satisfaction, the triple interaction term is positive but insignificant (Panels B, C, and E).

In sum, women working under female CEOs who are also owners are paid as much as their male colleagues. This result suggests that the “queen bee” syndrome effect of female CEOs on the gender wage gap is driven by female CEOs who do not own the firm. We speculate that female CEOs who own the firm have more power than female CEOs who are not owners, and therefore are able to reduce gender wage gaps for their employees. On the contrary, female CEOs who are not owners may not have enough power to reduce gender wage gaps even if they wanted to.

Finally, there could be a concern that the direct manager, rather than the CEO, is responsible for setting employees’ wages. It would be interesting to examine the association between the gender of the direct manager and female employees’ relative performance within the firm, but our data do not allow us to do so. Instead, we restrict the sample to those employees who are not managers—that is, technicians/supervisors, workers/apprentices, and others—and examine the correlation between the share of women in senior and middle management and gender gaps. Column (4) of Table 8 reveals no meaningful association between the fraction of women among senior and middle managers and gender gaps in wages, income, hours, and job and salary satisfaction. However, the results are not definitive because of the small sample size.
5.3 Hierarchical model

As a robustness check, we follow Nordman, Sarr, & Sharma (2015) and apply a hierarchical model to examine the association between female CEOs and gender gaps within the firm (Bryk & Raudenbush, 1992; Meng, 2004; Nordman & Wolff, 2009a,b). As described by Nordman, Sarr, & Sharma (2015), this method consists of two steps. In the first step, we run regressions with labor market outcomes as dependent variables and worker’s characteristics and firm fixed effects as explanatory variables. We run these regressions separately for men and women. The difference between the estimated firm fixed effects in the men’s and women’s regressions provides an “estimate of the within firm gender gap” (Nordman, Sarr, & Sharma 2015, p. 15). In the second step, we run a regression with the “estimate of the within firm gender gap” as the dependent variable and numerous firm characteristics as explanatory variables. To apply this method, we need to restrict the sample to firms where at least two female employees and two male employees responded to the employee’s questionnaire. This restriction reduces the sample considerably (by about 95 percent).

The results, which are presented in Table 9, reveal that in this analysis the gender of the CEO matters only for workers’ satisfaction with their job. The positive coefficient estimate indicates that a female CEO is associated with a greater gender gap in job satisfaction, and it is consistent with the results presented in Table 7. The sign of the estimate of the association between a female CEO and wages, hours, and salary satisfaction is consistent with the results of the regressions but it is not precisely estimated, possibly because of the small sample size. Overall, the results of the hierarchical model are in line with the estimates obtained using firm fixed effects. However, they should be interpreted with caution owing to the small number of observations, which causes low statistical power and may lead to selection issues.

6 DISCUSSION AND CONCLUSIONS

This study investigates the association between female leadership, as measured by having a female CEO, and gender gaps within the firm in Cameroon, Côte d’Ivoire, and Senegal. We observe a small negative correlation between female CEOs and the relative labor outcomes of female workers. These findings are consistent with the “queen bee” syndrome and stand in contrast to evidence from developed countries showing that female managers improve outcomes for female employees (Cardoso & Winter-Ebmer, 2010; Kunze & Miller, 2014; Tate & Yang, 2015).

A possible explanation for the “queen bee” syndrome is that, in male-dominated fields, women in high positions may compete harder against other women and take on masculine traits to fit in with their male counterparts and legitimize their rights to their positions. Another possibility is that “queen bees” may prevent the advancement of women in lower positions to reduce the number of competitors and facilitate their own career advancement (Johnson & Mathur-Helm, 2011).

However, looking at heterogeneity by CEO’s characteristics gives a more nuanced picture. Our results indicate that the “queen bee” syndrome on wages is driven by female CEOs who are not owners of the firm: female employees in firms where the female CEO is also the owner are paid similarly to their male colleagues. This result suggests that female CEOs who are not owners may not have enough power to improve the relative wages of female employees.

One limitation of this study is the lack of longitudinal data, which are necessary to determine whether female CEOs sort into firms with larger gender gaps. Another caveat is that, by concentrating on the formal sector, we focus on high-skilled workers and ignore the gender wage gap
among low-skilled workers. Despite these limitations, this paper provides a first attempt to analyze the association between the gender of the highest-ranking manager and gender gaps within the firm in Sub-Saharan Africa.

As more women join the labor force in Sub-Saharan Africa, identifying the factors that contribute to gender gaps is important to reduce gender disparities. In this paper, we focused on a small set of outcomes owing to data limitations. A richer data set is needed to study the association between female leaders and other outcomes such as gender differences in promotion rates and the adoption of female-friendly policies (Gagliarducci & Paserman, 2015; Kunze & Miller, 2014). Future research is needed to pin down the mechanisms through which female CEOs may harm female employees in Sub-Saharan Africa.

DISCLAIMER

This study has been prepared within the UNU-WIDER project on “Gender and development”. The views expressed in this paper are those of the author(s), and do not necessarily reflect the views of the Institute or the United Nations University, nor the program/project donors.

ACKNOWLEDGMENTS

This paper was commissioned by UNU-WIDER, and we thank UNU-WIDER for its support. We are grateful to Kehinde Ajayi, Siwan Anderson, Jean-Marie Baland, Guilhem Cassan, Catherine Guirkinger, and, especially, Smriti Sharma, for their thoughtful comments. We are thankful to workshop participants at the University of Namur, UNU-WIDER, and University of South Florida for helpful comments and suggestions. Maysam Qadimi Rabbani provided excellent research assistance.

ENDNOTES

1 This finding is consistent with previous research (Clark, 1997; Hodson, 1989; Mason, 1995).
2 Throughout the paper, we refer to the gender gap as the difference in outcome between male and female employees.
3 For instance, Beaman, Duflo, Pande, and Topalova (2012) found that female politicians acted as role models in India and boosted girls’ aspirations and human capital investment.
4 The African Development Bank ranks countries using the “Africa gender equality index”, which combines economic opportunities, access to health and education, and legal rights. Senegal ranks 30th, Cameroon ranks 41st and Côte d’Ivoire ranks 43rd (out of 56 African countries).
5 In all countries women had substantially less education than men. Census data show that 20.7 percent of men and 30.1 percent of women aged 15 to 49 had no education in Cameroon in 2005, and 57.8 percent of men and 69.4 percent of women aged 15 to 49 had no education in Senegal in 2002 (Minnesota Population Center, 2017). For every 100 boys enrolled in primary school, fewer than 80 girls were enrolled in Côte d’Ivoire in 2006 (UNESCO, 2009).
6 Census data, which are available only for Cameroon and Senegal, show that the male employment rate—defined as the fraction of those in the labor force who are employed—was significantly higher in Senegal in 2002 (81.3 percent) than in Cameroon in 2005 (63.3 percent), but the female employment rate was higher in Cameroon than in Senegal (46.4 percent vs. 32.1 percent), which is consistent with the more recent DHS data.
7 Nonagricultural sectors include wholesale and retail, manufacturing, mining, transportation and storage, other services, and public administration, among the others.
We do not have information on actual experience in the survey and we refrain from using potential experience because we cannot obtain a reliable measure of completed years of schooling. Education variables are categorical, which, in addition to delayed school entry and grade repetition (Valdivia, Manacorda, Guarcello, Rosati, & Lyon, 2005), would create substantial noise in measures of completed years of education and therefore potential experience.

Studies that use panel data show that controlling for firm fixed effects changes the estimate of the effect of female managers on wages. Cardoso and Winter-Ebmer (2010) find that the estimated effect of female managers on female wages is negative and significant in the OLS regressions and becomes positive and significant when firm fixed effects are included. In Gagliarducci and Paserman (2015), positive and significant OLS coefficients of female managers on wages become insignificant when firm fixed effects are included as controls.

For example, a firm without a “Déclaration Fiscale d’Existence” (DFE) in Côte d’Ivoire or a “Numéro d’Identification National des Entreprises et Associations Assimilées” (NINEA) in Senegal.

Monthly hours are defined as weekly hours times four.

The coefficient on the dummy for female employee was estimated when employee characteristics, firm characteristics and employee occupation dummies are at the mean value using the “margins, dydx(var1) over(var2)” command in Stata.

In results not reported, we first examine whether there is a gender gap holding constant employee’s and firm’s characteristics, but without controlling for the gender of the manager. The monthly income of female employees is lower than those of male employees in Cameroon, hours worked are lower in Cameroon and Senegal, job satisfaction is higher in Senegal and salary satisfaction is higher in Côte d’Ivoire and Senegal.

The OLS coefficient is significantly smaller and statistically insignificant when we allow for the returns to characteristics to vary by gender in column (4).

This restriction reduced the sample significantly (from 961 to 384 observations). The results we have presented so far were for a sample of employees that included senior and middle managers. This was the relevant sample because we were looking at the gender of the highest-ranking manager or CEO.

REFERENCES

African Development Bank Group (2015). Empowering African Women: An Agenda for Action.
Aigner, D. J., & Cain, G. G. (1977). Statistical theories of discrimination in labour markets. Industrial and Labour Relations Review, 30(2), 175–187.
Appleton, S., Hoddinott, J., & Krishnan, P. (1999). The gender wage gap in three African countries. Economic Development and Cultural Change, 47(2), 289–312.
Arbache, J. S., Filipiak, E., & Kolev, A. (2010). Why study gender disparities in Africa’s labor markets? In J. S. Arbache, A. Kolev, & E. Filipiak (Eds.), Gender disparities in Africa’s labor market (p. 1). Washington, D.C.: World Bank.
Athey, S., Avery, C., & Zemsky, P. (2000). Mentoring and diversity. American Economic Review, 90(4), 765–786.
Beaman, L., Duflo, E., Pande, R., & Topalova, P. (2012). Female leadership raises aspirations and educational attainment for girls: A policy experiment in India. Science, 335(6068), 582–586.
Bertrand, M., Black, S. E., Jensen, S., & Lleras-Muney, A. (2014). Breaking the glass ceiling? The effect of board quotas on female labor market outcomes in Norway (NBER Working Paper No. 20256). Cambridge, MA: National Bureau of Economic Research.
Blau, F. D., & Kahn, L. M. (2000). Gender differences in pay. The Journal of Economic Perspectives, 14(4), 75–99.
Borrowman, M., & Klasing, S. (2015). Drivers of gendered occupational and sectoral segregation in developing countries (CRC Discussion Papers). Göttingen, Germany: Universität Göttingen.
Bryk, A., & Raudenbush, S. W. (1992). Hierarchical linear models for social and behavioral research: Applications and data analysis methods. Newbury Park, CA: Sage.
Cardoso, A. R., & Winter-Ebmer, R. (2010). Female-led firms and gender wage policies. Industrial & Labor Relations Review, 64(1), 143–163.
Clark, A. E. (1997). Job satisfaction and gender: Why are women so happy at work? Labour Economics, 4(4), 341–372.
Duflo, E. (2000). Child health and household resources in South Africa: Evidence from the old age pension program. *The American Economic Review*, 90(2), 393–398.

Fafchamps, M., Söderbom, M., & Benhassine, N. (2009). Wage gaps and job sorting in African manufacturing. *Journal of African Economies*, 18(5), 824–868.

Flabbi, L., Macis, M., Moro, A., & Schivardi, F. (2014). Do female executives make a difference? The impact of female leadership on gender gaps and firm performance (NBER Working Paper No. 22877). Cambridge, MA: National Bureau of Economic Research.

Flabbi, L., Piras, C., & Abrahams, S. (2017). Female corporate leadership in Latin America and the Caribbean Region: Representation and firm-level outcomes. *International Journal of Manpower*, 38(6), 790–818.

Gagliarducci, S., & Paserman, M. D. (2015). The effect of female leadership on establishment and employee outcomes: Evidence from linked employer–employee data. In S. W. Polachek, K. Tatsiramos, & K. F. Zimmermann (Eds.), *Gender convergence in the labor market* (pp. 343–375). Bradford, U.K.: Emerald Group.

Glick, P., & Sahn, D. E. (1997). Gender and education impacts on employment and earnings in West Africa: Evidence from Guinea. *Economic Development and Cultural Change*, 45(4), 793–823.

Hirsch, B. (2013). The impact of female managers on the gender pay gap: Evidence from linked employer–employee data for Germany. *Economics Letters*, 119(3), 348–350.

Hodson, R. (1989). Gender differences in job satisfaction. *The Sociological Quarterly*, 30(3), 385–399.

International Monetary Fund. (2017). *Sub-Saharan Africa. Regional Economic Outlook: Restarting the growth engine*. Washington, D.C.: IMF.

Johnson, Z., & Mathur-Helm, B. (2011). Experiences with queen bees: A South African study exploring the reluctance of women executives to promote other women in the workplace. *South African Journal of Business Management*, 42(4), 47–51.

Kunze, A., & Miller, A. R. (2014). *Women helping women? Evidence from private sector data on workplace hierarchies* (NBER Working Paper No. 20761). Cambridge, MA: National Bureau of Economic Research.

Lundberg, S. J., Pollak, R. A., & Wales, T. J. (1997). Do husbands and wives pool their resources? Evidence from the United Kingdom child benefit. *Journal of Human Resources*, 32(3), 463–480.

Macchiavello, R., Menzel, A., Rabbani, A., & Woodruff, C. (2015). *Challenges of change: An experiment training women to manage in the Bangladeshi garment sector*. Warwick, U.K.: University of Warwick. Retrieved from https://www2.warwick.ac.uk/fac/soc/economics/staff/cwoodruff/challenges_of_change_151115cw.pdf

Mason, E. S. (1995). Gender differences in job satisfaction. *The Journal of Social Psychology*, 135(2), 143–151.

Meng, X. (2004). Gender earnings gap: The role of firm-specific effects. *Labour Economics*, 11(5), 555–373.

Minnesota Population Center. (2017). *Integrated public use microdata series*. International: Version 6.5 [dataset]. Minneapolis, MN: University of Minnesota. https://doi.org/10.18128/d020.v6.5.

Ngo Essounga, A. R. (2016). Women at the summit of larger corporations in Cameroon. *International Journal of Gender and Women’s Studies*, 4(1), 74–81.

Nopo, H., Daza, N., & Ramos, I. (2011). *Gender earnings gaps in the world* (IZA Working Paper No. DP 5736). Bonn, Germany: IZA (Institute of Labor Economics).

Nordman, C. J., Robilliard, A.-S., & Roubaud, F. (2011). Gender and ethnic earnings gaps in seven West African cities. *Labour Economics*, 18(S1), S132–S145.

Nordman, C. J., & Roubaud, F. (2009). Reassessing the gender wage gap in Madagascar: Does labour force attachment really matter? *Economic Development and Cultural Change*, 57(4), 785–808.

Nordman, C. J., Sarr, L. R., & Sharma, S. (2015). Cognitive, non-cognitive skills and gender wage gaps: Evidence from linked employer–employee data in Bangladesh (IZA Working Paper No, DP 9132). Bonn, Germany: IZA (Institute of Labor Economics).

Nordman, C. J., & Wolff, F.-C. (2009a). Islands through the glass ceiling? Evidence of gender wage gaps in Madagascar and Mauritius. In R. Kanbur & J. Svejnar (Eds.), *Labour Markets and Economic Development* (pp. 521–544). Abingdon, U.K.: Routledge.

Nordman, C. J., & Wolff, F.-C. (2009b). Is there a glass ceiling in Morocco? Evidence from matched worker–firm data. *Journal of African Economies*, 18(4), 592–633.

Sekkat, K., Szafarz, A., & Tojerow, I. (2015). *Women at the top in developing countries: Evidence from firm-level data* (IZA Working Paper No. DP 9537). Bonn, Germany: IZA (Institute of Labor Economics).

Staines, G., Tavris, C., & Jayaratne, T. E. (1974). The queen bee syndrome. *Psychology Today*, 7(8), 55–60.
Tate, G., & Yang, L. (2015). Female leadership and gender equity: Evidence from plant closure. *Journal of Financial Economics, 117*(1), 77–97.

Thomas, D. (1990). Intra-household resource allocation: An inferential approach. *Journal of Human Resources, 25*(4), 635–664.

UNESCO. (2009). *Regional overview Sub-Saharan Africa. Education for all global monitoring report 2009*. Paris: UNESCO.

Valdivia, C., Manacorda, M., Guarcello, L., Rosati, F. C., & Lyon, S. (2005). *School to work transition in Sub-Saharan Africa: an overview* (Understanding Children’s Work Project Working Paper Series). Washington, D.C.: World Bank.

World Bank (2012). *World development report 2012: Gender equality and development*. Washington, D.C.: World Bank.

World Bank. (2017). *Are women the key to unlocking economic emergence in Côte d’Ivoire?* Washington, D.C.: World Bank. Retrieved from http://www.worldbank.org/en/country/cotedivoire/publication/are-women-the-key-tounlocking-economic-emergence-in-cote-divoire

**SUPPORTING INFORMATION**

Additional supporting information may be found online in the Supporting Information section at the end of the article.

---

**How to cite this article:** La Mattina G, Picone G, Ahoure A, Kimou JC. Female leaders and gender gaps within the firm: Evidence from three Sub-Saharan African countries. *Rev Dev Econ.* 2018;22:1432–1460. [https://doi.org/10.1111/rode.12403](https://doi.org/10.1111/rode.12403)