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Gender differences in pay in African manufacturing firms[#]

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***Abstract*:** Using matched employer-employee data collected in seven African countries, we present comparative evidence on the magnitude of the gender wage gap in African manufacturing sectors. Using OLS regressions, differences in male and female earnings are found both in Mauritius and Morocco, while the gender wage gap turns out to be insignificant in Benin, Kenya, Madagascar, Senegal and Uganda. Results from quantile regressions indicate that the wage gap remains not constant across the wage distribution. Finally, we study the role of firm characteristics and job segregation across firms as potential factors explaining the gender wage gaps.

JEL Classification: J24, J31, O12

Keywords: Gender wage gap, manufacturing firms, matched employer-employee data, quantile regressions, African countries

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1. Introduction

Many empirical studies have found that women and men face unequal treatment in the workplace, especially in terms of wages. Almost all developed countries' labor markets are characterized by a significant gender wage gap, whose explanations may be related to differences in the level of human capital between male and female employees or to discrimination from employers against the female workforce among other factors (see Blau and Kahn, 2000). More recently, several studies using data from Sweden, Spain and France have shown that the gender wage gap was unlikely to remain constant throughout the wage distribution (Albrecht et al., 2003; de la Rica et al., 2008; Jellal et al., 2008).

Contrary to the case of developed countries, less is known about gender wage differences in developing countries, especially with respect to the possible varying magnitude of the gender gap across the wage distribution. Gender-specific analyses using African data remain scarce, as it can be inferred from the meta-analysis of Weichselbaumer and Winter-Ebmer (2005). Results from previous studies on African countries indicate however that there is a wide consensus on the presence of substantial wage inequalities between men and women, both among salaried and self-employed workers[1]. This is somewhat worrying as reducing gender inequality is usually recommended as an efficient tool in the fight against poverty in poor countries. Furthermore, the decrease in gender inequalities is part of the third Millennium Development Goals.

Our purpose in this contribution is to add new comparative evidence on the magnitude of the gender wage gap in the African manufacturing sectors. In a context where wages remain usually low, it may be that employers tend to limit the use of discrimination against women. To investigate more closely the potential differences in the gender wage gap, we propose a comparative analysis of seven African countries using the recent Investment Climate Assessment (ICA hereafter) surveys, carried out in the framework of the World Bank RPED program[2]. These surveys have the particularity to gather information both on the

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[1] Studies on the gender wage gap in Africa include Glewwe (1990) for Ghana, Cohen and House (1993) for Sudan, Milne and Neitzert (1994) and Agesa (1999) for Kenya, Glick and Sahn (1997) for Guinea, Lachaud (1997) for Burkina and Cameroun, Armitage and Sabot (1991) for Kenya and Tanzania, Appleton et al. (1999) for Uganda, Côte d'Ivoire and Ethiopia, Isemonger and Roberts (1999) for South Africa, Siphambe and Thokweng-Bakwena (2001) for Botswana, Kabubo-Mariara (2003) for Kenya, Temesgen (2006) for Ethiopia, Nordman et al. (2009) for seven West African capitals using household data, Kolev and Suarez Robles (2009) for Ethiopia, Nordman et al. (2009) and Nordman and Roubaud (2009) for Madagascar, Nordman and Wolff (2009a) for Morocco and Nordman and Wolff (2009b) for a comparison between the formal sectors of Madagascar and Mauritius.

[2] The Africa Regional Program on Enterprise Development (RPED) is an ongoing research project with the overall purpose of generating business knowledge and policy advice useful to private sector manufacturing development in Sub-Saharan Africa. For further details, see www.worldbank.org/rped.

characteristics of manufacturing firms and on a sample of their workers, meaning that they provide matched employer-employee data.

To study gender inequalities in pay, researchers may either rely on household data with information on individual earnings or on such matched employer-employee data. In the former case, it is theoretically possible to account for selectivity issue since many women do not take part in the labor market and some of them work in informal sector jobs. However, correction of selectivity issue is often problematic as it raises methodological controversies regarding the choice of the appropriate instruments needed to identify selection properly[3]. In addition, in such household surveys, there is usually no detailed description of the respondent's job and of her workplace. This is a crucial feature when measuring experience for instance. While numerous studies rely on potential experience, this covariate is likely to be affected by measurement errors (Heywood, 1988; Nordman and Roubaud, 2009). The use of actual experience when it is available in the data, as is the case in this chapter, seems much more appropriate when studying gender wage differences.

Clearly, heterogeneity at the firm level is likely to bias the estimates of the gender wage gap if firms' characteristics influence wages of men and women differently[4]. The use of matched employer-employee data allows estimating fixed effects models which control for both observed and unobserved characteristics of the workplace. Although employer-employee data are unrepresentative of the population of interest at the country level, the matched data may offer more opportunities than household data to analyze gender differences in pay if we consider that the firms' characteristics matter in the wage formation process[5].

Recent findings from Morocco indicate that it matters to account for firm fixed effects in wage regression when explaining gender differences in pay (Nordman and Wolff, 2009a). In African manufacturing, Fafchamps et al. (2006) note that the gender wage gap may arise as a result of gender-specific sorting of workers across firms that pay different wages. This last explanation relates to the presence of gender segregation across firms. If there are high paying firms that hire more men than women and if there are at the same time low paying firms hiring more women than men, then firms' characteristics will deeply influence the gender differences in wages. Controlling for firm heterogeneity should therefore reduce the

[3] *Some studies using household data even end up relying essentially on estimates without selectivity correction to avoid this difficulty (Appleton et al., 1999; Nordman and Roubaud, 2009; Nordman et al., 2009).*

[4] *For instance, there may be differences in the wage levels offered to female workers respectively by female and male employers. Neglecting the sex of the managers will thus affect the various returns to individual characteristics when estimating wage regressions.*

[5] *There is thus a trade-off between accounting for selectivity in labor market entry with the use of household data and controlling for jobs and firms' heterogeneity with matched worker-firm data. In the absence of definite theoretical argument, this remains an unsettled question.*

magnitude of the gender wage gap. In the same vein, Hellerstein et al. (2002) study whether competitive market forces act to reduce discrimination. They show that among plants with high levels of product market power, those that employ relatively more women are more profitable, while the relationship is not significant for plants with low levels of market power. This result is consistent with sex discrimination in wages in markets where plants have product market power.

This discussion suggests that employer-employee data are ideally needed to study the gender pay gap, since such matched data allows purging the effect of firm heterogeneity on wage differentials (Meng, 2004; Meng and Meurs, 2004). As we have matched data from manufacturing firms in African countries, we are able in our empirical work to control for observed and unobserved heterogeneity at the firm level by estimating fixed effect wage models. In so doing, we show how controls of the firm wage policies in wage equations affect the estimated magnitude of the gender wage gap[6]. Furthermore, using information at the firm level (for instance the proportion of female employees in each enterprise), we explicitly account for the possibility of gender segregation across firms which may explain the varying magnitude of the gender gap across countries.

The seven African countries that we select for our econometric analysis, i.e. Benin, Kenya, Madagascar, Mauritius, Morocco, Senegal and Uganda, are particularly interesting in a comparative perspective. For instance, while Mauritius is perhaps the most interesting economic development success story of the decade of the 1980s[7], Benin, Kenya, Madagascar, Senegal and Uganda, by contrast, remain ones of the poorest countries in the world. According to the 2007-2008 Human Development Index (HDI) ranking of the UNDP, Mauritius stands at the 65th position while Benin, Kenya, Madagascar, Senegal and Uganda, appear far in the ranking, respectively at the 163rd, 148th, 143rd, 156th, and 154th place (out of 177 countries). In this respect, Morocco appears in an intermediate position, at the 126th place.

A comparative case study of these countries is worthwhile to assess whether gender inequalities in pay are somehow linked to the level of economic development. The fact that these countries have distinct economic performances and labor market features may be helpful in the understanding of the roots of gender wage differences. In our empirical analysis, we first estimate the gender wage gap using OLS earnings regressions and

[6] Unfortunately, due to data limitations, we are unable to disentangle the determinants of the within-firm wage gap across countries as in Nordman and Wolff (2009a) in Morocco. For a within-firm analysis, one would need larger datasets including a large number of firms with interviews of at least two male and two female employees.

[7] Its GDP per capita ($13,240 in 2005 in PPP) places the Mauritius Island in the category of newly industrialized country.

decompose the gender gap in two components, one due to differences in individual labor market characteristics and one due to differences in the returns to these characteristics. Then, using quantile regressions, we wonder whether the gender gap remains constant across the wage distribution. Finally, we focus more closely on the role of firm characteristics and job segregation across firms as potential factors explaining the gender wage gap. Do firms' characteristics matter when explaining wage differences between male and female employees in the African manufacturing sectors?

The remainder of this paper is organized as follows. In Section 2, we describe the ICA surveys and present descriptive statistics on workers, firms and wages. Our different econometric results based on OLS and quantile regressions, fixed effect models, and decomposition techniques are presented in Section 3. Finally, executive summary and concluding comments are in Section 4.

2. Data and descriptive statistics

2.1. The Investment Climate Assessment (ICA) surveys

The matched employer-employee data for Benin, Kenya, Madagascar, Mauritius, Senegal and Uganda stem from the Investment Climate Assessment (ICA) surveys conducted by the World Bank from to 2003 to 2005 in the framework of the African RPED program. The data for Morocco come from the Firm Analysis and Competitiveness Survey (FACS) conducted in 2000 by the World Bank and the Moroccan Ministry of Trade and Industry[8].

These surveys are based on the notion that the workplace is the micro-data unit where labor supply and labor demand meet. In that spirit, the ICAs and FACS collect data both on the firm characteristics and on a sample of employees in each workplace. The questionnaires addressed to both employers and employees are specifically adapted for each country, but they enable cross-country comparisons as they are made of very similar questions.

In these countries, the firms have been randomly selected among the population of formal establishments using a stratification based on sector, size and localization. Hence, they are not mainly located in capital cities, but they are representative of the various regions of each country. In each firm, up to ten employees have been randomly sampled following the idea advocated by Mairesse and Greenan (1999). Some sampling frames at the firm level contained constraints on the size of the firms to be investigated, for instance no firm with less

[8] *After deleting observations with missing values, the sizes of the worker samples are respectively 1574 for Benin, 1876 for Kenya, 1734 for Madagascar, 1363 for Mauritius, 7806 for Morocco, 1349 for Senegal and 1306 for Uganda.*

than ten employees in Madagascar, Morocco and Kenya, while some did not (Benin, Mauritius, Senegal and Uganda)[9]. Across countries, these firms belong to more or less ten manufacturing sectors[10] that we can regroup into broadly eight activities: (1) agro industry, (2) chemicals and related products, (3) materials for construction, (4) furniture, (5) metallic products, (6) Industry of paper, paper products and plastics products, (7) Textiles and leather, and (8) Wood.

2.2. Description of the samples

The questionnaires of the surveys allow us to construct identical human capital indicators for the workers in the selected countries. For each respondent, we compute the number of years of completed schooling, the number of years of actual experience off the current firm and the number of years of tenure in the incumbent firm. These different covariates, which provide good controls for the potential productivity advantage in the labor markets, will then be introduced into the wage regressions. We also make use of two demographic variables, i.e. a dummy for gender and a dummy indicating whether the individual is married or not.

As shown in Figure 1, there are large differences in the sex composition of the various samples. The female proportions in each sample are respectively 14.5%, 19%, 37%, 44%, 40%, 17.5% and 19% respectively for Benin, Kenya, Madagascar, Mauritius, Morocco, Senegal and Uganda. Then, for Benin, Senegal, Kenya and Uganda, a first point worth mentioning is the much lower proportion of female employees, which indicates that we are presumably in the presence of particular women with unusual observed and unobserved human capital characteristics.

The low proportion of women in some countries, which makes them a special case with particular human capital characteristics, is evidence of a selection effect on the labor market. Large inequalities in the access to the manufacturing sector are present, and they will certainly partly explain the cross-country differences observed in the magnitude of the wage gap. While our descriptive statistics suggest that access to manufacturing jobs is much more difficult for women living in Benin, Kenya, Senegal and Uganda, the use of matched employer-employee data offers no solution to account for this selection effect.

Insert Figure 1 here

[9] *For further details, see the RPED website: www.worldbank.org/rped.*
[10] *In the Moroccan FACS, there are seven sectors, i.e. electronics, textiles, garments, food, pharmaceuticals, leather and shoes products, and plastics.*

According to Table 1, Kenyan, Malagasy and Ugandan workers are the most educated with an average of more than 11 years of completed schooling. The least educated workers are those of Benin and Morocco (respectively 9.5 and 8.6 years) while Mauritian and Senegalese workers are in intermediate positions (10 and 10.5 years of schooling respectively). Given Kenya's, Madagascar's and Uganda's respective level of economic development compared to that of Mauritius and Morocco, this ranking could be surprising. Indeed, Sub-Saharan African countries are often believed to be less endowed in human capital compared to their North African neighbours, and notably relative to the newly industrialized Mauritius Island.

Insert Table 1 here

A first explanation is that an overwhelming proportion of poorly educated individuals actually work in the informal sectors of the countries under consideration here[11]. The latter are thus not in the sample design of the ICA surveys as the data we use stem from formal manufacturing firms and their workers. The formal private sectors in Benin, Kenya, Madagascar, Senegal and Uganda are highly selective and are thus reserved to the most educated workers. This is probably less true for Morocco and Mauritius where uneducated workers are also found in significant proportions in garment firms for instance[12].

Another interesting pattern of our samples, which may explain some differences in educational achievement across countries, is the sex distribution of education. While "only" two country samples exhibit a greater ratio of males' years of education to that of females (respectively, 103% and 103.5% for Mauritius and Morocco), the other samples reveal an education gap in favor of women with ratios amounting to 94.6%, 94.8%, 94.2%, 78.4% and 95.8% respectively for Benin, Kenya, Madagascar, Senegal and Uganda. In this respect, the Senegalese case is the most revealing of the specificity of our samples, as female employees in this country benefit on average from almost three additional years of education than their male counterparts (12.82 versus 10.05)[13].

In all countries, male workers offset their potential disadvantage in terms of education with greater average number of years of experience in the labor market. This is reflected both

[11] *For the Malagasy case, see Nordman et al. (2009). For the other countries, see DIAL (2007).*

[12] *Among other possible explanations, note that Madagascar has been one of the few low income countries to early recognize the importance of developing its educational system, and this country has made rapid progress in the development of public primary schools. Madagascar is also one of the few African countries to have achieved equal access to schooling between boys and girls, at least at low levels of the education system (World Bank, 2001).*

[13] *Using representative household surveys from seven West African capitals (including those of Benin and Senegal), Kuepie et al. (2009) show that the education gap is always largely in favor of men for paid-work participants.*

by the sex ratios of males' to females' experience off the current job (respectively, 115%, 213%, 155.4%, 137.7%, 147.6%, 163.2% and 161.4% for Benin, Kenya, Madagascar, Mauritius, Morocco, Senegal and Uganda) and the sex ratios of tenure in the incumbent firm (respectively, 107%, 129.4%, 109.8%, 135.2%, 134.8%, 124.9% and 107.1%). On average, Mauritian workers are the most experienced (15.1 years of total actual experience), followed by Kenyans and Senegalese (about 12 years), Malagasies (11 years), Beninese (9.5 years) and finally Moroccans and Ugandans (8.9 years).

The proportions of workers on top of the occupational distribution (owners, managers, professionals) are roughly similar across Madagascar and Mauritius. In Benin, Morocco and Uganda, we observe greater proportions of workers in higher occupations while employees in Kenya and Senegal are in intermediate positions. In all cases studied (with the exception of Benin), men have better occupations than women, since they are more likely to be owners or managers. Women, on the contrary, compete well with men in the occupation of professionals (with university degree), which is conform to the previous finding of a greater education level for females in five samples out of seven. Interestingly, women are always found in greater proportions than men in the category of health, office and sale workers. Finally, unskilled production workers are prevalent in Madagascar (44%), followed by Senegal (32%), Morocco and Uganda (about 29%), Mauritius (26%), Kenya (22%) and Benin (20%).

When considering the firm samples, they comprise respective 194 enterprises for Benin, 248 for Kenya, 281 for Madagascar, 189 for Mauritius, 842 for Morocco, 249 for Senegal and 264 for Uganda. As shown in Table 2, the average numbers of total employees in our firm samples range from 39 (Benin) to 227 (Kenya) salaried workers. Regarding the firm size, the Beninese sample stands out compared to the other countries as it contains a significant proportion of small-sized enterprises, 30% of the firms having less than 11 employees[14]. Similar average proportions of females in each firm are found (about 15%) for Benin, Kenya, Senegal and Uganda, while this share is more than twice higher for Moroccan, Malagasy and Mauritian firms. More firms are owned by a woman in Madagascar, 20% versus less than 10% in the other samples. This may affect the measure of the gender wage gap if female owners are less likely to offer lower wages to women than male ones.

Insert Table 2 here

[14] *Note that even if many Beninese firms a small, they still belong to the formal sector as defined by international standards of informal activities since, to be included in the sampling frame, they are necessarily registered businesses.*

Ugandan firms display a higher share of managers and executives compared to the other firms (28% versus 17%, 16% and 15% respectively for Benin, Kenya and Senegal, and less than 10% for the three other firm samples). More generally, these proportions are low as compared to those observed in developed countries. The share of exporting firms is important in Mauritius (64%), Morocco (57%), Kenya (51%) and Senegal (50%), while it is comparatively low in Madagascar (30%), Benin (22%) and Uganda (18%). Mauritian firms are thus the most concerned with international competition on their product markets. Finally, there are some important differences in the sectoral distribution of firms across countries. The sector of agro-industry is prevalent in Kenya, Senegal and Uganda, while these are the textile sectors in Morocco and the sector of metallic products in Madagascar. By contrast, firms are less concentrated in the Beninese sample[15].

To summarize, the firm samples are different in many respects, with particularly distinct sizes, female proportions, vocation to export and sectors of activity. It thus matters to account for firm heterogeneity in the empirical analysis[16]. As we have matched employer-employee data, we are able to control for both the characteristics of the workers and the firms. There are several ways to proceed. A first possibility would be to include in the regressions a large set of explanatory variables related to the firm in wage equations. The drawbacks of this method are that many firm characteristics are potentially collinear and that we do not account for the unobserved firm heterogeneity component. Another preferred strategy is thus to control for both observed and unobserved heterogeneity at the firm level using fixed effect models, which is easy to implement with linear wage regression. This implementation is also possible in the context of quantile regressions.

2.3. How large are gender wage differences?

Let us first describe the wage distributions by gender in the different countries. Our measure of wages is based on hourly earnings (including other monetary advantages and premiums) and thus takes into account the potential heterogeneity in hours worked between men and women. As shown in Table 2, we observe higher mean wages for men in five countries out of seven. The two exceptions are Senegal and Uganda, where women's average wages slightly exceed those of men.

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[15] In Mauritius, the data set that we have does not allow us to have a clear identification of the different sectors. This is not an important drawback as we can control for the firms' observed and unobserved characteristics thanks to the match employer-employee nature of the data.

[16] However, as we only have cross-sectional data, controlling for unobserved heterogeneity at the worker level is impossible.

Insert Figure 2 here

In Figure 2, we report histograms representing the magnitude of the gender wage gap respectively at the mean of the sample and at the 10^{th}, 25^{th}, 50^{th}, 75^{th} and 90^{th} percentiles of the wage distribution (respectively denoted by D1, Q1, Q2, Q3, D9). In all countries, the median wage (50^{th} percentile) is much lower than the mean wage. While the gap is important in Mauritius all along the wage distribution (the difference in log wages between men and women reaches about 50 percentage points of log), the gender gaps are insignificant at the mean point of the sample in the cases of Benin, Madagascar and Uganda. In Kenya, the gap amounts to about 11% at the mean (meaning that women earn on average 11% less than men), while this gap reaches 26% in Morocco and is highly significant. In the case of Senegal, as pointed out before, the gap is significantly in favor of women (at the 10 percent level) and reaches about 14% at the mean point of the sample.

Unfortunately, the data show that calculations at the sample means hide significant differences in the magnitude of the gaps along the wage distribution. This is particularly true for the cases of Benin, Morocco and Uganda where the gaps vary significantly depending on the workers' relative position in the wage distribution. In Benin for instance, the gap is significantly in favor of men in the lower part of the wage distribution while it is in favor of women in the upper part (from about the median of the distribution). By contrast, the reverse pattern holds true for Uganda where the gap changes sign and is detrimental to women in the upper part of the distribution. In Morocco, the large gap increases steadily all along the wage distribution, thereby revealing the potential existence of a glass ceiling effect against women on top of the distribution (Nordman and Wolff, 2009a). These preliminary statistics then justify turning to a distributional approach if one wants to have a proper view of the magnitude of the gender wage gaps in Africa.

So, we obtain very different profiles among workers in the selected African manufacturing firms. Albeit preliminary, these findings suggest that the gender wage gaps observed in the formal sectors of these countries are quite diverse. To further understand the factors that influence the magnitude of this gender gap, we turn in the next section to an econometric analysis using OLS, fixed effects and quantile regressions. We also rely on decomposition methods to examine whether the gender wage gap stems from differences in endowments between men and women or from differences in the returns to these characteristics. Finally, we assess the role of job segregation across firms in the magnitude of the gender wage gap.

3. Econometric results

3.1. Evidence on the mean gender wage gap

We begin our empirical analysis by assessing the magnitude of the gender wage gap in the seven African countries using OLS regressions with the log hourly wage as dependent variable (see the Appendix). For each country, the linear model is estimated on the pooled sample comprising both male and female employees. The different covariates introduced into the regressions are respectively marital status, the completed years of education, years of experience off the firm and years of tenure in the firm (with quadratic profile for the last three variables)[17]. We choose to use actual experience off the firm instead of the years of potential experience because the measurement of potential experience may lead to gender-specific measurement errors (errors being more likely for women)[18]. As women are more likely to be out of the labor market, a measure of potential experience is expected to systematically overstate the actual experience of women. Note that we do not include regional dummies in the various regressions. The geographical differences will implicitly be controlled for in the fixed effects regressions.

In what follows, we focus on the gender coefficient in the earnings equation (Table 3, columns 1A, 2A, 3A, 4A, 5A, 6A, 7A). A brief investigation suggests that we have to make a difference between two groups of countries. On the one hand, there is no significant difference in male and female earnings in Benin, Kenya, Madagascar, Senegal and Uganda. On the other hand, earnings are statistically different between men and women both in Mauritius and in Morocco. On average, women earn 12.4% less than men in Morocco and 35.3% in Mauritius. Several explanations, related to either employees' or firms' characteristics or to the functioning of the labor market, may be helpful to understand these differences.

Insert Table 3 here

An interesting feature of our comparative data is the apparent correlation between the proportion of female employees within firms and the gender wage gap. In the first group of countries (no gap), the share of women in the manufacturing sectors is somewhat low. It amounts to 14.5% in Benin, 18.9% in Kenya, 17.6% in Senegal and 19.0% in Uganda. The

[17] *For the purpose of comparability of the covariates, the marital status variable is approximated in the case of Morocco where, like in Kenya and Uganda, the marital status was not collected from the workers. Instead, we use the fact of having declared children where information on children is available. In Africa, it is reasonable to assume that all individuals who have declared children are (or have been) married because of the social norms in force.*

[18] *See the results of using potential versus actual experience in Nordman and Roubaud (2009) for the case of Madagascar. In the case of Morocco, the actual experience variable concerns experience accumulated in the preceding job only.*

situation of Madagascar is different since the proportion of women is much higher (37%), which is not far from the cases of Mauritius and Morocco (respectively 43.9% and 40%). So, the differences among the seven African countries are certainly due to some selection effects, i.e. the idea of different access of workers to jobs. As there are few women working in the formal manufacturing sectors in Benin, Kenya, Senegal, and Uganda, these women are likely to have unobserved characteristics positively correlated with their productivity. This is expected to strongly reduce differences in earnings between men and women.

Another difference between the selected African countries may lie in the composition of occupations within firms, which are not controlled for in the first columns of each set of country-specific regressions. Nevertheless, a difficulty with occupations is that they may be endogenous if employers discriminate between male and female workers on the basis of the type of job they do (Albrecht et al., 2003). Despite of this shortcoming, we add in columns (1B), (2B), (3B), (4B), (5B), (6B) and (7B) a set of occupational dummies[19]. As shown in Table 3, this has little effect on the magnitude of the gender wage gap. Again, there is no significant difference in earnings between men and women in Benin, Kenya, Senegal and Uganda. The gender gap is now slightly higher in Mauritius (39.7% instead of 35.3%) and slightly lower in Morocco (8.6% instead of 12.4%), while it is now significant and approximately equal to 10% in Madagascar.

As we only control for individual characteristics in the previous linear models, this means that heterogeneity at the firm level is not taken into account. This is undoubtedly likely to bias the gender estimated coefficient since some firms' characteristics may influence wages of men and women in a different way. This would be for instance the case if the gender wage gap arises as a result of gender-specific sorting of workers across firms that pay different wages. We then turn to fixed effects models (see the Appendix). Implicitly, we assume that the firms' heterogeneity components are correlated with the exogenous explanatory variables. This is very important in our context if we (plausibly) assume that there is a sorting of workers across firms. In particular, employees (either male or female) with "good" unobservable characteristics are more likely to work in firms paying high wages[20].

According to the fixed effect estimates (Table 3, columns 1C, 2C, 3C, 4C, 5C, 6C and 7C), the gender wage gap is now only significant in Mauritius and Morocco. Curiously, there is a slight increase in the absolute value of the gender coefficient for Morocco (13.3% instead

[19] *Specifically, we introduce nine occupational dummy variables related to occupations in six countries of our sample, while there are six occupations in the Moroccan data.*

[20] *We implement statistical tests to test the relevance of our econometric specification. For the seven African countries, we find that the fixed effects specification is the most appropriate one.*

of 12.4%), while the gender coefficient is divided by two in Mauritius. This is consistent with the idea that part of the gender gap is due to firm sorting and that firms' characteristics influence the earnings of men and women differently. Two further comments are in order. First, the gender gap remains insignificant in Benin, Kenya, Madagascar, Senegal and Uganda. Secondly, additional controls for occupations in the fixed effects regression substantially reduce the gender gap in Morocco.

3.2. The relative importance of gender in wage determination

Results from OLS regressions suggest that gender matters to understand differences in individual wages, at least in Mauritius and Morocco, and that firms effects are important. In what follows, we attempt to assess the relative impact of the different explanatory variables introduced in the linear wage regressions. For that purpose, we follow the regression-based decomposition approach proposed in Fields (2004). The idea is to decompose the explained portion of the regression into weights for each of the covariates and the methodology is described in the Appendix.

When considering the basic specification with no controls for occupations and firm heterogeneity (Table 4, rows 1A, 2A, 3A, 4A, 5A, 6A, 7A), we find that the gender variable has very little influence in Benin, Kenya, Madagascar, Senegal and Uganda. In these countries, the gender dummy explains at most 0.5% (in Madagascar) of the overall wage differences. The weight of the gender coefficient is much more important in Morocco (5.6%) and it is even three times higher in Mauritius (18.6%). So, among the selected African country, the problem of gender inequality in earnings is really a concern in that Island. The contribution of the gender variable still amounts to 17.5% when occupations are taken into account and to 15.7% when both occupations and firm fixed effects are controlled for (rows 4A, 4B, 4C).

Insert Table 4 here

It is then interesting to have a look at the relative contribution of the other covariates. In all countries, wages are mainly explained by years of schooling. The contribution of the education variable is greater than 70% in Benin, Madagascar, Morocco and Uganda, and it exceeds 50% in the seven African countries. Years of experience and years of tenure come after, the contribution of seniority being substantially higher than that of experience (except in Kenya and in Uganda). We observe significant changes in the weights once occupations are taken into account (rows 1B, 2B, 3B, 4B, 5B, 6B, 7B). Occupations are really important in

Kenya, in Madagascar, in Morocco and in Uganda, where they explain about one-half of the total wage differences[21].

A last finding concerns the inclusion of firm fixed effects (rows 1C, 2C, 3C, 4C, 5C, 6C, 7C). The contribution of the firm heterogeneity is substantial, as it exceeds 20% in Madagascar and Morocco and even 30% in Benin and Uganda. Furthermore, controlling for the firm effects significantly reduces the contribution of the schooling variable. This may be due to the sorting of workers, the most productive workers being hired in firms offering higher wages.

3.3. The gender wage gap along the conditional wage distribution

According to the ICA surveys, the mean level of wage is significantly different for men and women both in Mauritius and Morocco. However, not observing a gender wage gap for the other countries using OLS regressions does not necessarily mean that there is no gender wage gap in the manufacturing firms. In the context of a developed country, Albrecht et al. (2003) have shown that the gender gap was unlikely to remain constant throughout the wage distribution. We thus turn to quantile regressions, further described in the Appendix, to investigate the magnitude of the gender wage gap along the wage distribution using the male-female pooled samples (Koenker, 2005).

Let us first focus on the two countries where men and women receive different mean wages (Table 5). On the one hand, we note that the gender wage gap does not really vary across the wage distribution in Mauritius. The difference in earnings is for instance 35.9% at the 25th percentile, 34.6% at the median and 38.1% at the 90th percentile. So, there is no sharp increase in the gender gap when considering the upper part of the wage distribution of that country. On the other hand, the gender gap is almost three times higher at the 90th percentile than at the 10th percentile in Morocco (respectively 16.8% instead of 6.1%).

Insert Table 5 here

The quantile estimates for the other countries show that the shape of the gender wage gap is really country-specific. In Benin, differences in earnings between men and women are now significant in the lower part of the wage distribution. Women receive much lower wages than men at the 10th and 25th percentiles, respectively 30.8% and 9.3%. The opposite pattern holds in Uganda. Women outearn men in the lower part of the wage distribution, with a

[21] *In addition, including occupations strongly affects the relative contributions of the other covariates, in particular education. For instance, in Kenya, the weight associated with years of schooling is 65.2% without controls for occupations, but it amounts to 17.4% once occupations are in the list of regressors.*

female wage premium exceeding 20%. However, women receive significantly lower wages at the 90th percentiles. Finally, there is no clear variation across the distribution in Kenya, Madagascar and Senegal. Accounting for occupations also affects the magnitude of the gender gap, which is in particular significant at the 25th and 75th percentiles in Madagascar when controlling for occupations in the quantile regressions[22].

3.4. Quantile decomposition of differences in distributions

A very restrictive assumption in the previous regressions is the fact that the returns to individual characteristics have to be the same for men and women. Unfortunately, this hypothesis of equal returns is unlikely to hold if there are strong selection effects of female employees due to sorting for instance. It is straightforward to decompose the total difference in earnings between men and women into two components, one due to differences in labor market characteristics and one due to differences in the returns to these characteristics (see Appendix). For each country, we plot in Figure 3 the magnitude of the gender wage gap across the earnings distribution calculated from gender-specific regressions. We also indicate the relative contribution of the differences in characteristics and in coefficients.

Insert Figure 3

Let us first focus on Mauritius and Morocco, two countries where gender differences are large. While the gender wage gap remains fairly flat in the former country, it is strongly increasing in absolute value in the latter. In Mauritius, the role of differences in characteristics is higher in the upper part of the distribution (above the 90th percentile), while differences of returns to these characteristics matter more in its lower part. For instance, differences in coefficients are about four times higher than differences in characteristics till the median earnings. An opposite pattern holds in Morocco. The role of labor market returns is increasing along the distribution and the weight of differences in coefficients exceeds the weight of differences in characteristics above the 40th percentile.

Concerning the other countries, the contribution of differences in coefficients when explaining earnings inequality between men and women strongly varies across the wage distribution. In Benin and Senegal, women would receive higher wages than men if they were paid on the same basis for their individual characteristics. In Kenya, the gender wage gap is essentially due to the fact that men and women working in the manufacturing sectors have

[22] *We have also estimated fixed effects quantile regressions following Koenker (2005). As in the linear regression, the gender quantile coefficients are much lower with the fixed effects specifications in Mauritius and in Morocco.*

different individual characteristics since the curves of total difference and difference in endowments are almost merged, especially above the median. Conversely, in Madagascar and Uganda, the gender wage gap essentially stems from differences in returns to the disadvantage of women.

3.5. The role of the firm characteristics

From our previous discussions, it is clear that wage policies settled by firms are likely to influence gender earnings differentials. An interesting question is to know whether the firms' characteristics tend to increase or reduce the gender earnings gap. For that purpose, we extend the previous Oaxaca-Blinder decomposition following Meng (2004) to account for the role of the firm fixed effects (see Appendix). The total earnings differential is given by the sum of three terms: one related to differences in individual characteristics, one related to differences in the returns to these characteristics, and one related to difference in the firm's premium paid to male and female employees. When this last term is negative, this means that the firm tends to narrow the gender wage gap. Then, the gap would have been higher without the role of the firm's wage policy.

As pointed out in Meng (2004), the above decomposition does not account for the possibility of gender segregation across firms. To control for the role of gender segregation, we proceed in the following way. In a first step, we estimate gender-specific wage equations including both individual and firm explanatory variables, and we add in the list of covariates the proportion of female employees measured at the firm level. This allows us to pick up the effect of the gender employment ratio on earnings. In a second step, using these estimates, we compute for each employee the predicted value of earnings, which is now net of gender segregation across firms[23]. The fixed effects decomposition is finally performed using the adjusted wage as dependent variable.

As we estimated gender-specific fixed effect regressions, this implies that the sample is now restricted to firms with at least two male and two female employees. This significantly reduces the size of the selected samples, especially in countries like Benin, Kenya, Senegal or Uganda, where the proportion of female employees is somewhat low in the formal manufacturing sectors. As a consequence, we note that the total difference in earnings between men and women is substantially higher with the new sample selection in Kenya and Uganda for instance.

[23] *In our empirical analysis, we do not account for the possibility that the effect of gender segregation across firms depends on the type of occupation within the firms.*

As shown in Table 6 and Figure 3, the main conclusion from the decomposition of the fixed effects model is that firms do not really influence the magnitude of the gender earnings gap in the African labor markets, except in Senegal. In Benin, the positive sign for the component of the firm effects indicates that the firm wage policies are associated with a rise in the gender earnings gap, but the corresponding impact remains very limited (1.5%). An opposite pattern is found in Kenya, with a decrease of 0.9% of the gender gap, while the variation is even smaller in Madagascar, in Mauritius, in Morocco and in Uganda. The negative coefficient is larger in Senegal, indicating that firms pay a higher wage premium to their female employees than they do to their male employees[24]. On the whole, our findings thus suggest that African manufacturing firms do not really attempt to narrow gender differences in pay.

Insert Table 6 here

Insert Figure 3 here

4. Conclusion

This study makes use of matched employer-employee data collected in seven African countries (Benin, Kenya, Madagascar, Mauritius, Morocco, Senegal and Uganda) to shed light on the magnitude of the gender wage gap in the manufacturing sector. With such data, it is possible to account for the effect of the firm's wage policy on gender earnings differentials. This is crucial if firms tend to pay men and women differently. Taking into account the employer's effect on wages is also a way to reduce the bias in the gender wage gap estimates that may often be present due to the existence of workers' sorting across firms offering different wages. Such analysis would not be feasible with the use of household surveys where there is generally no information on the respondent's employer.

The various empirical analyses conducted in this paper lead to the following conclusions. First, preliminary statistics justify taking a distributional approach to have a proper view of the magnitude of the gender wage gaps in Africa. Indeed, raw gender gaps calculated at the mean of the samples hide significant differences in the magnitude of the gaps along the wage distribution. This is particularly true for the cases of Benin, Morocco and Uganda, where the raw gaps vary significantly depending on the workers' relative position in the wage distribution. In Benin for instance, the raw gap is significantly in favor of men in the lower part of the wage distribution, while it is in favor of women in its upper part. By

[24] *However, this result has to be interpreted with cautious given the limited size of the Senegalese sample once the latter is restricted to firms comprising at least two male and two female employees.*

contrast, the reverse holds true for Uganda where the gap reverses sign and is detrimental to women in the upper part of the distribution. In Morocco, the significant gap increases steadily all along the wage distribution, thereby revealing the potential existence of a glass ceiling effect against women on top of the distribution (Nordman and Wolff, 2009a).

Secondly, we estimate wage regressions controlling for workers' human capital and job characteristics and for heterogeneity at the firm level. This investigation suggests that we have to make a difference between two groups of countries. The first one comprises Benin, Kenya, Madagascar, Senegal and Uganda where there is no significant evidence of difference in male and female earnings once worker, job and firm characteristics are accounted for. The second group includes Mauritius and Morocco, where earnings are found to be statistically different between men and women.

We then believe that differences among the seven African countries could be due to the presence of selectivity effects, through gender differences in access to jobs. Indeed, as there are few women working in the formal manufacturing sectors in Benin, Kenya, Senegal, and Uganda, these women are likely to have unobserved characteristics positively correlated with their productivity. This is expected to strongly reduce differences in earnings between men and women. Unfortunately, there is not much we can do to correct selectivity effects with such datasets, which is a shortcoming of the present study.

We further perform a regression-based decomposition whose aim it to decompose the explained portion of the individual wage differentials into weights for each of the considered covariates (including gender, workers' human capital and firm effects). Both in Benin, Kenya, Madagascar, Senegal and Uganda, the gender dummy explains at most 0.5% of the overall wage difference, while the weight of gender is much more important in Morocco (5.6%) and even three times higher in Mauritius (18.6%). So, among the selected African manufacturing sectors, the question of gender inequality in earnings is essentially a concern in Mauritius. By contrast, the contribution of education in this decomposition is much more important since it exceeds 50% in the seven African countries. The weight of firm heterogeneity in earnings differentials is also important, with contributions of about 20% in Madagascar and Morocco and even 30% in Benin and Uganda.

An additional step in our analysis is to investigate the pattern of the adjusted gender wage gaps along the wage distribution using quantile regressions. Indeed, not observing an adjusted gender gap using regressions at the means (OLS regressions) does not necessarily signify that there is no unfair earnings treatment in the investigated manufacturing firms. We find that the adjusted gender gap does not really vary across the wage distribution in

Mauritius. By contrast, the adjusted gender gap is almost three times higher at the ninth decile than at the first decile in Morocco. The quantile estimates for the other countries show that the shape of the adjusted gender gap is country-specific. For instance, in Benin, unexplained differences in earnings between men and women hold only in the lower part of the wage distribution, while the opposite pattern is found in Uganda. Besides, there is no clear variation across the distribution in Kenya, Madagascar and Senegal.

We then perform earnings decompositions at quantiles, which separate the total difference in earnings between men and women into two components: one due to differences in individuals' labor market characteristics and one due to differences in the returns to these characteristics. In Mauritius, the role of differences in characteristics is higher in the upper part of the distribution, while differences of returns to these characteristics matter more in its lower part. An opposite pattern holds in Morocco where the role of labor market returns is increasing along the distribution and the weight of differences in coefficients exceeds the weight of differences in characteristics above the fourth decile. Results are mixed for the other countries where we find that the contribution of differences in returns when explaining earnings inequality between men and women strongly varies along the wage distribution. For instance, in Benin and Senegal, female employees would receive higher wages than their male counterparts if they were paid on the same basis for their individual characteristics.

An interesting question is to know whether the firms' characteristics tend to increase or reduce the gender earnings gap. We then add a third term to the preceding decompositions, i.e. the difference in the firm's premium paid to male and female employees. A negative third term would indicate that the firm tends to narrow the gender wage gap. In addition, we account for the possible firm sorting by adjusting wages using the proportion of female employees in each firm. This is a way to correct for the potential bias in the gender wage gap estimates due to the sorting of males and females across firms offering different wages. The main conclusion from these last decompositions is that firms do not really influence the magnitude of the gender earnings gap in the African labor markets, except in Senegal. This suggests that African manufacturing firms do not really attempt to narrow gender wage inequalities.

This last result is in contrast to other findings in developed countries where the impact of the firm effects on the magnitude of the gender wage gap appears more substantial. In Australia and France for instance, Meng (2004) and Meng and Meurs (2004) show that firm wage policies are associated with a significant narrowing of the gender earnings gaps, especially in the former country. Nevertheless, it is not possible to provide comparison points

with other developing countries as, to the best of our knowledge, this study of the gender wage gaps with matched data on African countries is the first of its kind. Nevertheless, it is likely that the nature of the data used in this study, i.e. collected in relatively homogenous manufacturing sectors while those used in developed countries usually include service industries (Meng and Meurs, 2004), hides the possible existence of more influential firm wage strategies in Africa, in particular in large-sized firms.

A few caveats have to be kept in mind when interpreting our results. A first remark is the highly specific nature of our samples, with a focus on the manufacturing sectors only. It would then be worthwhile to expand the availability of matched data for further studies in other formal sectors, not only in the countries under consideration in our study, but also in other African countries. A second shorthcoming is our impossibility to further examine the selection effect resulting from unequal access to job opportunities amongst men and women. As shown in our empirical analysis, the very low proportion of women employed in some countries suggests that access to jobs in the manufacturing sector may be very selective.

It would then be of interest to better understand why countries such as Mauritius and Morocco have such higher women hirings than the other countries in the study. This could be due to a different sectoral composition of the economy, but this may also stem from a different functioning of the labor markets. Clearly, more information is needed to understand the factors behind access to jobs, especially amongst women. A complementary analysis based on cross-sectional data, with information on both working and non-working people, would allow us to understand the factors explaining the probability for a woman to have a job and to estimate selectivity-corrected wage regressions. The drawback with such household data is the lack of firm characteristics for those who have a job, which is certainly harmful as our analysis has highlighted the necessity to account for the firms' characteristics (either observed or unobserved).

While understanding the driving forces behind hirings is a task left for future research, institutional and economic policies that might be pursued to encourage equal hiring in different countries with different industrial profiles are more than welcome to reduce the magnitude of earnings differences between men and women. Further reduction of the gender gap should entail policies aimed at promoting women's access to quality jobs in high paying firms in the formal sector, as well as policies intended to foster equal pay for equal jobs. As it stands, our empirical analysis sheds light on the necessity to further examine the gender wage gap in all African countries and to assess the role of gender-specific access to job on this gap.

For that purpose, additional quantitative findings along with qualitative analysis would be helpful to further explain specificities between the various African countries.

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Table 1. Descriptive statistics of the workers

	Benin			Kenya			Madagascar			Mauritius		
	Men	Women	All	Men	Women	All	Men	Women	All	Men	Women	All
Log hourly earnings	5.68	5.65	5.67	4.14	4.03	4.12	8.03	7.98	8.01	4.46	3.96	4.24
Female	0	1	0.14	0	1	0.19	0	1	0.37	0	1	0.44
Married	0.69	0.65	0.69	n.a.	n.a.	n.a.	0.79	0.65	0.74	0.70	0.70	0.70
Years of completed schooling	9.50	10.04	9.58	11.63	12.27	11.75	11.63	12.34	11.89	10.15	9.85	10.02
Years of experience off the firm	3.67	3.19	3.60	4.43	2.08	3.99	5.75	3.70	4.99	7.12	5.17	6.26
Years of tenure in the current firm	5.96	5.57	5.90	9.25	7.15	8.85	6.26	5.70	6.05	9.99	7.39	8.85
Occupations												
Owners (as managers)	0.07	0.04	0.06	0.02	0.00	0.02	0.01	0.01	0.01	0.02	0.01	0.01
Employed managers	0.06	0.15	0.07	0.09	0.06	0.08	0.02	0.02	0.02	0.05	0.01	0.04
Professionals (University Degree)	0.10	0.12	0.10	0.06	0.06	0.06	0.07	0.09	0.08	0.07	0.06	0.06
Technicians (with diploma or other formal qualification)	0.21	0.06	0.19	0.14	0.07	0.12	0.07	0.04	0.06	0.10	0.02	0.06
Skilled foremen and supervisors	0.05	0.04	0.05	0.13	0.05	0.11	0.08	0.08	0.08	0.14	0.08	0.11
Skilled machine maintenance and repair workers	0.03	0.01	0.03	0.16	0.01	0.13	0.07	0.02	0.05	0.15	0.07	0.11
Unskilled production workers	0.20	0.16	0.20	0.23	0.20	0.22	0.47	0.40	0.44	0.24	0.29	0.26
Health worker, office and sales workers	0.07	0.35	0.11	0.11	0.46	0.17	0.06	0.22	0.12	0.12	0.33	0.21
Service workers (cleaners, guards)	0.21	0.07	0.19	0.07	0.08	0.08	0.15	0.13	0.14	0.12	0.14	0.13
Number of observations	1346	228	1574	1522	354	1876	1093	641	1734	764	599	1363

	Morocco			Senegal			Uganda		
	Men	Women	All	Men	Women	All	Men	Women	All
Log hourly earnings	2.68	2.45	2.59	6.57	6.71	6.60	6.75	6.82	6.76
Female	0.00	1.00	0.40	0.00	1.00	0.18	0.00	1.00	0.19
Married	0.64	0.33	0.51	0.68	0.59	0.67	n.a.	n.a.	n.a.
Years of completed schooling	8.81	8.51	8.69	10.05	12.82	10.53	11.56	12.07	11.66
Years of experience off the firm	1.86	1.26	1.62	4.75	2.91	4.42	4.02	2.49	3.73
Years of tenure in the current firm	8.14	6.04	7.30	8.52	6.82	8.22	5.29	4.94	5.22
Occupations									
Owners (as managers)	0.07	0.02	0.05	0.02	0.00	0.02	0.11	0.06	0.10
Employed managers	0.11	0.07	0.10	0.04	0.07	0.05	0.14	0.04	0.12
Professionals (University Degree)				0.12	0.11	0.12	0.08	0.12	0.09
Technicians (with diploma or other formal qualification)	0.40 #	0.39 #	0.40 #	0.14	0.07	0.12	0.07	0.03	0.06
Skilled foremen and supervisors				0.06	0.02	0.05	0.12	0.06	0.11
Skilled machine maintenance and repair workers				0.10	0.01	0.08	0.07	0.02	0.06
Unskilled production workers	0.27	0.33	0.29	0.35	0.14	0.32	0.29	0.24	0.28
Health worker, office and sales workers	0.15 ##	0.18 ##	0.16 ##	0.06	0.51	0.14	0.04	0.26	0.08
Service workers (cleaners, guards)	0.00 ###	0.01 ###	0.00 ###	0.11	0.06	0.10	0.07	0.16	0.09
Number of observations	4686	3120	7806	1112	237	1349	1058	248	1306

Source: Investment Climate Surveys for Benin (2004), Kenya (2003), Madagascar (2005), Mauritius (2005), Senegal (2003), Uganda (2003). FACS for Morocco (2000). For Morocco, the occupations correspond to different regroupings: # is skilled workers and technicians, ## non-production employees, and ### apprentices.

Table 2. Descriptive statistics of the firms

	Benin		Kenya		Madagascar		Mauritius	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Total number of employees	38.90	74.03	227.27	443.59	191.91	446.07	174.19	424.89
Share of female employees	0.13	0.18	0.14	0.14	0.33	0.31	0.38	0.30
Principal owner is female (1 if yes)			0.03	0.18	0.20	0.40	0.10	0.30
Share of Managers/Executives in the permanent employees	0.17	0.14	0.16	0.17	0.06	0.05	0.10	0.17
Share of Executives in the permanent employees	0.09	0.13	0.05	0.09	0.06	0.07	0.03	0.05
Exporting firm (1 if yes)	0.22	0.41	0.51	0.50	0.30	0.46	0.64	0.48
Sector dummies								
Agro industry	0.20	0.40	0.29	0.45	0.11	0.31		
Chemicals and related products	0.05	0.21	0.09	0.28	0.04	0.20		
Materials for construction	0.05	0.22	0.06	0.23	0.06	0.24		
Furniture	0.19	0.39	0.03	0.18	0.13	0.34		
Metallic products	0.11	0.32	0.15	0.36	0.29	0.46		
Industry of paper, paper products and plastics products	0.24	0.43	0.15	0.36	0.02	0.14		
Textiles and leather	0.02	0.14	0.18	0.39	0.23	0.42		
Wood	0.13	0.34	0.04	0.21	0.02	0.16		
Other	0.01	0.07			0.09	0.28		
Number of observations	194		248		281		189	

	Morocco		Senegal		Uganda	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Total number of employees	123.46	198.95	123.26	411.11	144.35	617.29
Share of female employees	0.56	2.13	0.11	0.14	0.17	0.18
Principal owner is female (1 if yes)	0.05	0.21	0.05	0.22	0.05	0.21
Share of Managers/Executives in the permanent employees	0.05	0.07	0.15	0.19	0.28	0.29
Share of Executives in the permanent employees	0.04	0.06	0.07	0.09	0.08	0.14
Exporting firm (1 if yes)	0.57	0.50	0.50	0.50	0.18	0.39
Sector dummies						
Agro industry / Food for Morocco	0.10	0.30	0.36	0.48	0.40	0.49
Chemicals and related products / Chemicals only for Morocco	0.09	0.28	0.13	0.34	0.06	0.25
Materials for construction / Textile for Morocco	0.24	0.42	0.07	0.25	0.14	0.34
Furniture / Garment for Morocco	0.37	0.48	0.02	0.15	0.15	0.36
Metallic products / Electricals for Morocco	0.05	0.21	0.10	0.30	0.07	0.26
Industry of paper, paper products and plastics products / Plastics products only for Morocco	0.09	0.28	0.19	0.40	0.10	0.30
Textiles and leather / Leather only for Morocco	0.08	0.27	0.09	0.29	0.05	0.22
Wood			0.04	0.19	0.02	0.14
Other						
Number of observations	842		249		264	

Source: Investment Climate Surveys for Benin (2004), Kenya (2003), Madagascar (2005), Mauritius (2005), Senegal (2003), Uganda (2003). FACS for Morocco (2000).

Table 3. Linear regressions of the log hourly wages

	Benin				Kenya				Madagascar				Mauritius			
	(1A)	(1B)	(1C)	(1D)	(2A)	(2B)	(2C)	(2D)	(3A)	(3B)	(3C)	(3D)	(4A)	(4B)	(4C)	(4D)
Female	-0.101	-0.085	-0.005	-0.036	-0.010	-0.064	-0.011	-0.036	-0.056	-0.098**	0.011	-0.047	-0.353***	-0.397***	-0.227***	-0.223***
	(0.97)	(0.82)	(0.10)	(0.72)	(0.18)	(1.29)	(0.25)	(0.87)	(1.29)	(2.19)	(0.32)	(1.33)	(7.98)	(9.26)	(6.37)	(6.25)
Married	0.188***	0.180***	0.108*	0.070					0.094**	0.118***	0.040	0.052	0.084**	0.070*	0.125***	0.107***
	(2.81)	(2.76)	(1.94)	(1.39)					(2.21)	(2.82)	(1.07)	(1.55)	(1.98)	(1.74)	(3.97)	(3.57)
Years of completed schooling	0.044	0.043	-0.030	-0.036*	0.188***	0.093***	0.149***	0.048***	0.047**	0.028*	0.041**	0.015	-0.033*	-0.054***	-0.009	-0.027
	(1.22)	(1.34)	(1.45)	(1.67)	(7.43)	(4.71)	(6.31)	(2.64)	(2.18)	(1.67)	(2.57)	(1.27)	(1.72)	(3.28)	(0.42)	(1.51)
(Years of completed schooling)^2/10	0.037**	0.027*	0.056***	0.038***	-0.032***	-0.016***	-0.034***	-0.012	0.010	0.005	0.009	0.006	0.062***	0.049***	0.050***	0.036***
	(2.29)	(1.83)	(5.50)	(3.78)	(4.70)	(3.15)	(3.25)	(1.64)	(1.12)	(0.73)	(1.35)	(1.40)	(6.03)	(5.67)	(4.40)	(4.08)
Years of experience off the firm	0.014	0.013	0.055***	0.043***	0.077***	0.049***	0.079***	0.049***	0.003	0.005	0.004	0.004	0.028***	0.020**	0.017**	0.010
	(0.99)	(0.92)	(4.78)	(3.76)	(8.28)	(5.92)	(9.58)	(6.85)	(0.36)	(0.76)	(0.61)	(0.63)	(3.26)	(2.46)	(2.31)	(1.44)
(Years of experience off the firm)^2 /100	0.003	0.006	-0.111**	-0.118***	-0.183***	-0.118***	-0.171***	-0.108***	0.030	0.010	0.028	0.017	-0.052	-0.038	-0.005	0.002
	(0.04)	(0.11)	(2.53)	(2.72)	(4.74)	(3.65)	(5.11)	(4.12)	(0.93)	(0.34)	(0.93)	(0.58)	(1.46)	(1.10)	(0.14)	(0.05)
Years of tenure in the current firm	0.041***	0.040**	0.027**	0.008	0.057***	0.055***	0.041***	0.040***	0.034***	0.031***	0.033***	0.027***	0.056***	0.050***	0.056***	0.048***
	(2.68)	(2.57)	(2.04)	(0.74)	(5.41)	(5.89)	(3.86)	(4.65)	(3.11)	(2.87)	(3.57)	(3.00)	(7.25)	(6.90)	(8.03)	(7.38)
(Years of tenure in the current firm)^2/100	-0.041	-0.054	0.003	0.007	-0.071**	-0.096***	-0.041	-0.071**	-0.064	-0.072**	-0.056**	-0.059**	-0.091***	-0.084***	-0.098***	-0.089***
	(0.77)	(1.03)	(0.07)	(0.17)	(2.14)	(3.21)	(1.10)	(2.36)	(1.62)	(1.98)	(2.01)	(2.19)	(3.72)	(3.72)	(4.75)	(4.66)
Constant	4.451***	4.648***	4.931***	5.353***	1.802***	3.993***	2.372***	4.074***	7.065***	7.925***	7.158***	8.356***	3.461***	4.563***	3.319***	4.455***
	(22.74)	(21.10)	(43.68)	(37.83)	(7.61)	(15.20)	(13.61)	(23.68)	(52.47)	(30.77)	(69.56)	(35.43)	(32.29)	(14.49)	(28.66)	(32.19)
Dummies for occupation	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Firm fixed effects	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES
Observations	1574	1574	1574	1574	1876	1876	1876	1876	1734	1734	1734	1734	1363	1363	1363	1363
R-squared	0.35	0.37	0.69	0.73	0.24	0.45	0.61	0.75	0.21	0.32	0.66	0.73	0.36	0.43	0.70	0.75

	Morocco				Senegal				Uganda			
	(5A)	(5B)	(5C)	(5D)	(6A)	(6B)	(6C)	(6D)	(7A)	(7B)	(7C)	(7D)
Female	-0.124***	-0.086***	-0.133***	-0.075***	0.037	-0.063	0.024	-0.042	0.075	0.109	-0.128	-0.005
	(8.27)	(6.20)	(10.07)	(6.32)	(0.69)	(1.00)	(0.49)	(0.81)	(0.84)	(1.27)	(1.26)	(0.05)
Married	0.129***	0.081***	0.110***	0.070***	0.239***	0.196***	0.099**	0.071*				
	(8.84)	(6.20)	(9.64)	(7.04)	(5.47)	(4.69)	(2.13)	(1.70)				
Years of completed schooling	-0.043***	-0.014**	-0.046***	-0.011***	0.026**	0.013	0.016	0.005	0.174***	0.069	0.094**	0.021
	(5.26)	(2.50)	(7.66)	(2.60)	(2.22)	(1.24)	(1.49)	(0.57)	(3.48)	(1.60)	(2.31)	(0.58)
(Years of completed schooling)^2/10	6.001***	2.718***	5.926***	1.892***	0.028***	0.017***	0.025***	0.013***	-0.025	-0.003	0.001	0.004
	(10.36)	(6.38)	(13.73)	(6.26)	(4.83)	(3.41)	(4.57)	(2.86)	(1.13)	(0.16)	(0.04)	(0.26)
Years of experience off the firm	0.030***	0.020***	0.030***	0.019***	0.034***	0.027***	0.032***	0.027***	0.084***	0.056***	0.066***	0.031**
	(7.99)	(5.78)	(9.62)	(6.75)	(4.13)	(3.26)	(4.18)	(3.70)	(3.55)	(2.71)	(3.57)	(2.22)
(Years of experience off the firm)^2 /100	-0.063***	-0.044***	-0.049***	-0.034***	-0.063*	-0.060*	-0.034	-0.041	-0.174*	-0.121	-0.121	-0.067
	(6.63)	(4.62)	(7.82)	(5.24)	(1.85)	(1.75)	(1.07)	(1.41)	(1.68)	(1.30)	(1.54)	(1.11)
Years of tenure in the current firm	0.022***	0.017***	0.033***	0.019***	0.054***	0.049***	0.041***	0.034***	0.056***	0.030	0.074***	0.026*
	(6.31)	(5.23)	(9.44)	(5.74)	(5.56)	(5.34)	(3.85)	(3.35)	(3.16)	(1.51)	(4.35)	(1.79)
(Years of tenure in the current firm)^2/100	-0.886	0.040	-4.686***	-2.312**	-0.066**	-0.063**	-0.056*	-0.051	-0.134**	-0.084	-0.156***	-0.073
	(0.73)	(0.03)	(3.94)	(2.07)	(2.03)	(1.98)	(1.69)	(1.57)	(2.34)	(1.29)	(3.10)	(1.35)
Constant	2.120***	3.019***	2.125***	3.164***	5.276***	6.102***	5.608***	6.643***	4.656***	5.853***	5.185***	5.936***
	(78.80)	(53.15)	(88.24)	(63.26)	(61.03)	(36.91)	(68.17)	(52.84)	(14.51)	(18.52)	(17.32)	(24.19)
Dummies for occupation	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Firm fixed effects	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES
Observations	7806	7806	7806	7806	1349	1349	1349	1349	1306	1306	1306	1306
R-squared	0.33	0.44	0.65	0.74	0.39	0.46	0.70	0.75	0.18	0.27	0.70	0.77

Source: Investment Climate Surveys for Benin (2004), Kenya (2003), Madagascar (2005), Mauritius (2005), Senegal (2003), Uganda (2003), FACS for Morocco (2000). Authors' calculations.
Standard errors are robust to clustering at the firm level. Significance levels are respectively equal to 1% (***), 5% (**) and 10% (*).

Table 4. Decomposition à la Fields of the log hourly wages

Country	Explanatory variables							Total
	Gender	Marital status	Years of schooling	Years of experience	Years of tenure	Occupation	Firm effects	
Benin								
(1A) Basic	0.09%	4.66%	83.78%	2.40%	9.07%	-	-	100.00%
(1B) Basic + occupations	0.05%	4.15%	64.09%	2.26%	7.25%	22.19%	-	100.00%
(1C) Basic + occ. + fixed effects	0.00%	3.77%	39.92%	2.22%	4.65%	16.52%	32.92%	100.00%
Kenya								
(2A) Basic	0.04%	n.a.	65.25%	18.46%	16.25%	-	-	100.00%
(2B) Basic + occupations	0.22%	n.a.	17.35%	6.25%	6.94%	69.24%	-	100.00%
(2C) Basic + occ. + fixed effects	0.14%	n.a.	15.89%	6.04%	5.92%	55.94%	16.08%	100.00%
Madagascar								
(3A) Basic	0.52%	2.32%	83.98%	1.33%	11.85%	-	-	100.00%
(3B) Basic + occupations	0.59%	1.93%	31.50%	0.62%	6.06%	59.30%	-	100.00%
(3C) Basic + occ. + fixed effects	0.56%	1.30%	20.58%	0.41%	4.70%	48.78%	23.68%	100.00%
Mauritius								
(4A) Basic	18.52%	1.71%	51.84%	3.40%	24.52%	-	-	100.00%
(4B) Basic + occupations	17.46%	1.18%	23.63%	2.13%	17.97%	37.64%	-	100.00%
(4C) Basic + occ. + fixed effects	15.75%	1.08%	20.85%	1.81%	15.49%	33.62%	11.40%	100.00%
Morocco								
(5A) Basic	5.56%	6.17%	72.42%	3.47%	12.37%	-	-	100.00%
(5B) Basic + occupations	2.88%	2.91%	28.42%	1.63%	8.08%	56.07%	-	100.00%
(5C) Basic + occ. + fixed effects	2.33%	2.31%	17.84%	1.29%	5.44%	48.86%	21.91%	100.00%
Senegal								
(6A) Basic	0.23%	8.14%	64.70%	6.27%	20.67%	-	-	100.00%
(6B) Basic + occupations	-0.33%	5.71%	31.95%	3.81%	15.52%	43.34%	-	100.00%
(6C) Basic + occ. + fixed effects	-0.06%	5.09%	26.38%	3.84%	10.53%	38.50%	15.72%	100.00%
Uganda								
(7A) Basic	0.17%	n.a.	71.60%	23.12%	5.12%	-	-	100.00%
(7B) Basic + occupations	0.18%	n.a.	24.51%	9.76%	1.68%	63.87%	-	100.00%
(7C) Basic + occ. + fixed effects	-0.08%	n.a.	15.33%	3.76%	0.69%	44.72%	35.59%	100.00%

Source: Investment Climate Surveys for Benin (2004), Kenya (2003), Madagascar (2005), Mauritius (2005), Senegal (2003), Uganda (2003). FACS for Morocco (2000). Authors' calculations.

Table 5. Gender estimates from quantile regressions of the log hourly wages

Country	Percentile					Mean
	10th	25th	50th	75th	90th	
Benin						
Basic	-0.308***	-0.093*	-0.012	-0.015	0.049	-0.101
	(4.73)	(1.73)	(0.21)	(0.24)	(0.44)	(0.97)
Basic + Occupations	-0.196**	-0.139***	-0.085	0.014	0.129	-0.085
	(2.32)	(2.86)	(1.38)	(0.18)	(1.27)	(0.82)
Basic + occupation + fixed effects	0.001	-0.001	-0.032	-0.031	-0.052	-0.036
	(0.02)	(0.02)	(0.52)	(0.61)	(0.89)	(0.72)
Kenya						
Basic	-0.005	-0.030	0.019	-0.020	-0.041	-0.010
	(0.09)	(0.85)	(0.35)	(0.25)	(0.37)	(0.18)
Basic + Occupations	-0.086*	-0.068	-0.063	-0.080	-0.221*	-0.064
	(1.70)	(1.48)	(1.28)	(1.21)	(1.86)	(1.29)
Basic + occupation + fixed effects	-0.000	-0.028	-0.080*	-0.075	-0.022	-0.036
	(0.01)	(0.88)	(1.77)	(1.45)	(0.40)	(0.87)
Madagascar						
Basic	-0.048	-0.036	-0.004	-0.061	0.014	-0.056
	(1.51)	(0.93)	(0.10)	(1.20)	(0.16)	(1.29)
Basic + Occupations	-0.049	-0.080***	-0.054	-0.124***	-0.130	-0.098**
	(1.19)	(2.58)	(1.44)	(2.68)	(1.59)	(2.19)
Basic + occupation + fixed effects	-0.043	-0.039	-0.036	-0.038	-0.046	-0.047
	(1.49)	(1.56)	(1.57)	(1.17)	(1.29)	(1.33)
Mauritius						
Basic	-0.320***	-0.359***	-0.346***	-0.368***	-0.381***	-0.353***
	(5.90)	(8.22)	(8.18)	(7.73)	(5.64)	(7.98)
Basic + Occupations	-0.342***	-0.365***	-0.406***	-0.430***	-0.478***	-0.397***
	(4.98)	(9.09)	(9.78)	(10.20)	(7.12)	(9.26)
Basic + occupation + fixed effects	-0.195***	-0.253***	-0.237***	-0.235***	-0.275***	-0.223***
	(5.18)	(9.40)	(8.12)	(7.95)	(7.58)	(6.25)
Morocco						
Basic	-0.061***	-0.069***	-0.095***	-0.137***	-0.168***	-0.124***
	(4.89)	(7.22)	(8.65)	(10.07)	(7.33)	(8.27)
Basic + Occupations	-0.053***	-0.057***	-0.066***	-0.102***	-0.135***	-0.086***
	(3.78)	(7.10)	(7.26)	(8.27)	(7.54)	(6.20)
Basic + occupation + fixed effects	-0.022**	-0.036***	-0.044***	-0.067***	-0.091***	-0.075***
	(1.99)	(28.62)	(17.59)	(6.83)	(79.57)	(6.32)
Senegal						
Basic	0.113	0.014	0.025	0.037	0.026	0.037
	(1.14)	(0.25)	(0.53)	(0.51)	(0.25)	(0.69)
Basic + Occupations	0.066	-0.035	-0.060	-0.058	-0.118	-0.063
	(0.52)	(0.52)	(1.02)	(0.80)	(1.22)	(1.00)
Basic + occupation + fixed effects	0.057	-0.001	-0.074	-0.085*	-0.082	-0.042
	(1.24)	(0.03)	(1.62)	(1.95)	(1.25)	(0.81)
Uganda						
Basic	0.224*	0.243***	0.050	-0.157	-0.360**	0.075
	(1.76)	(2.61)	(0.53)	(1.26)	(2.41)	(0.84)
Basic + Occupations	0.279**	0.113	0.055	-0.073	-0.191	0.109
	(2.52)	(1.15)	(0.73)	(0.57)	(1.20)	(1.27)
Basic + occupation + fixed effects	0.088	0.038	-0.015	-0.145	-0.322*	-0.067
	(0.61)	(0.43)	(0.17)	(0.98)	(1.79)	(0.78)

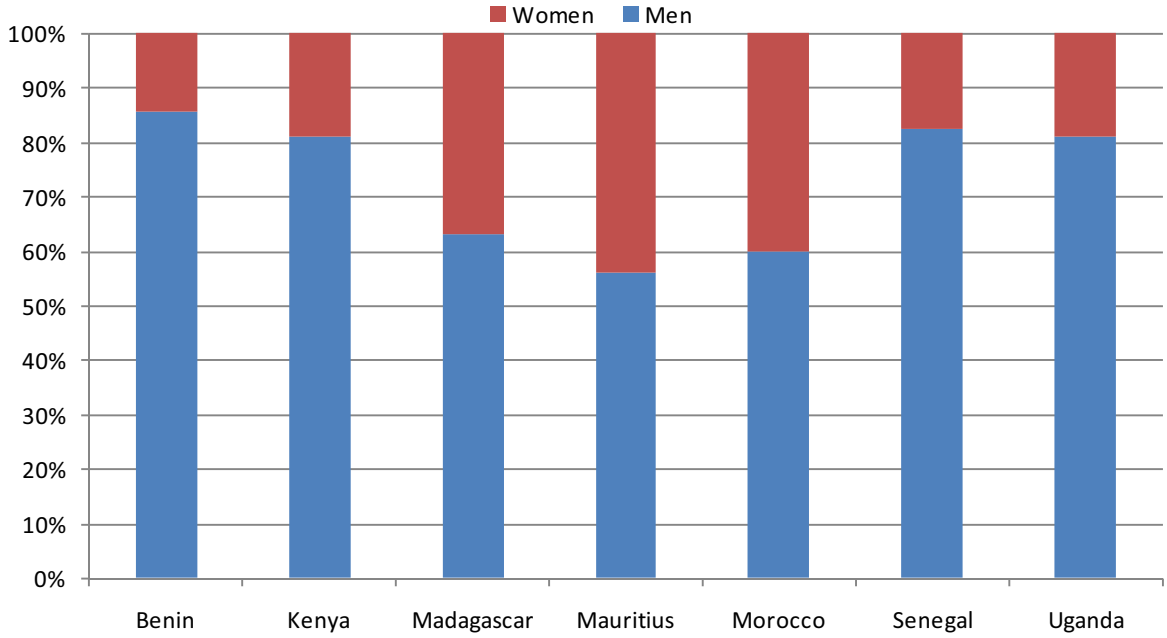
Source: Investment Climate Surveys for Benin (2004), Kenya (2003), Madagascar (2005), Mauritius (2005), Senegal (2003), Uganda (2003), FACS for Morocco (2000). Authors' calculations.
Significance levels are respectively equal to 1% (***), 5% (**) and 10% (*).

Table 6. Decomposition of the gender earnings differentials accounting for gender segregation across firms

Country		Benin	Kenya	Madagascar	Mauritius	Morocco	Senegal	Uganda
Difference in characteristics	Value	0.1002	0.1172	0.0271	0.1629	0.1254	-0.0011	0.2516
	%	122.0%	55.0%	42.3%	38.7%	47.6%	-9.5%	53.2%
Difference in coefficients	Value	-0.0193	0.0979	0.0369	0.2574	0.1384	0.0148	0.2208
	%	-23.5%	45.9%	57.4%	61.2%	52.6%	130.0%	46.7%
Difference in firm effects	Value	0.0012	-0.0018	0.0002	0.0000	-0.0005	-0.0023	0.0002
	%	1.5%	-0.9%	0.3%	0.0%	-0.2%	-20.5%	0.1%
Total difference	Value	0.0821	0.2132	0.0642	0.4203	0.2633	0.0114	0.4727
	%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Investment Climate Surveys for Benin (2004), Kenya (2003), Madagascar (2005), Mauritius (2005), Senegal (2003), Uganda (2003), FACS for Morocco (2000). Authors' calculations.

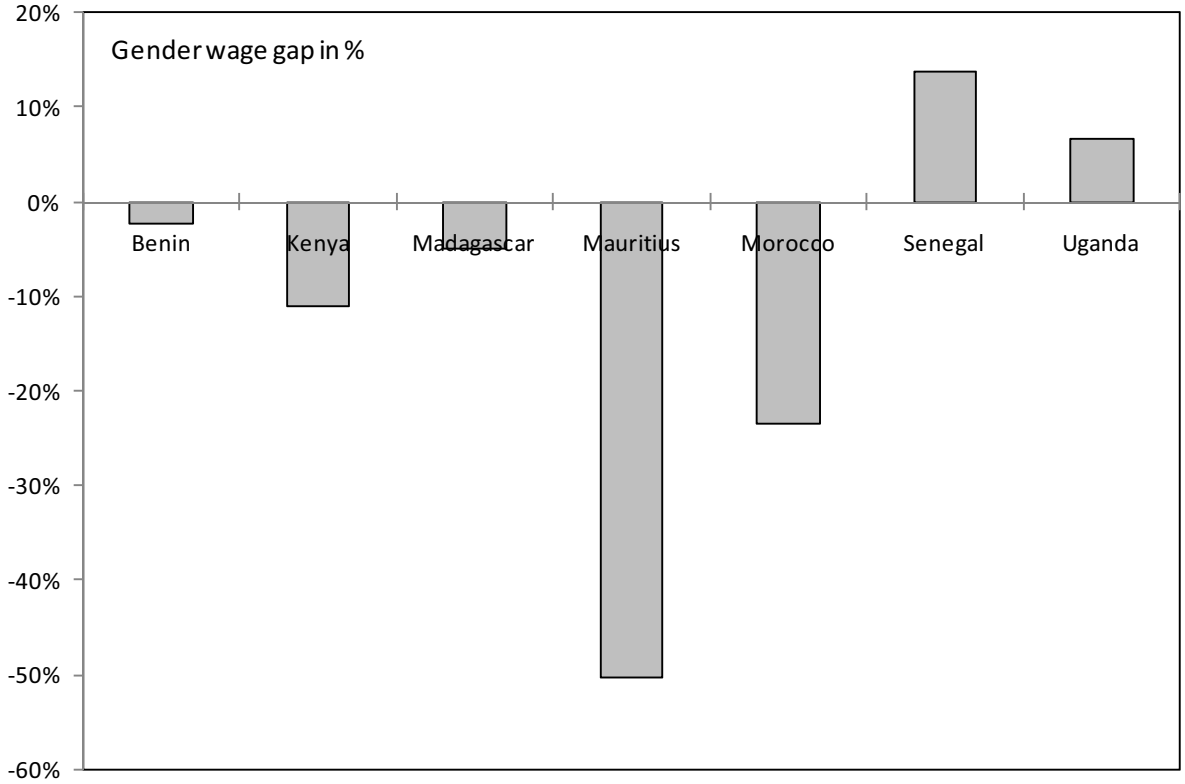
Figure 1. Sex compostion of the employee's samples



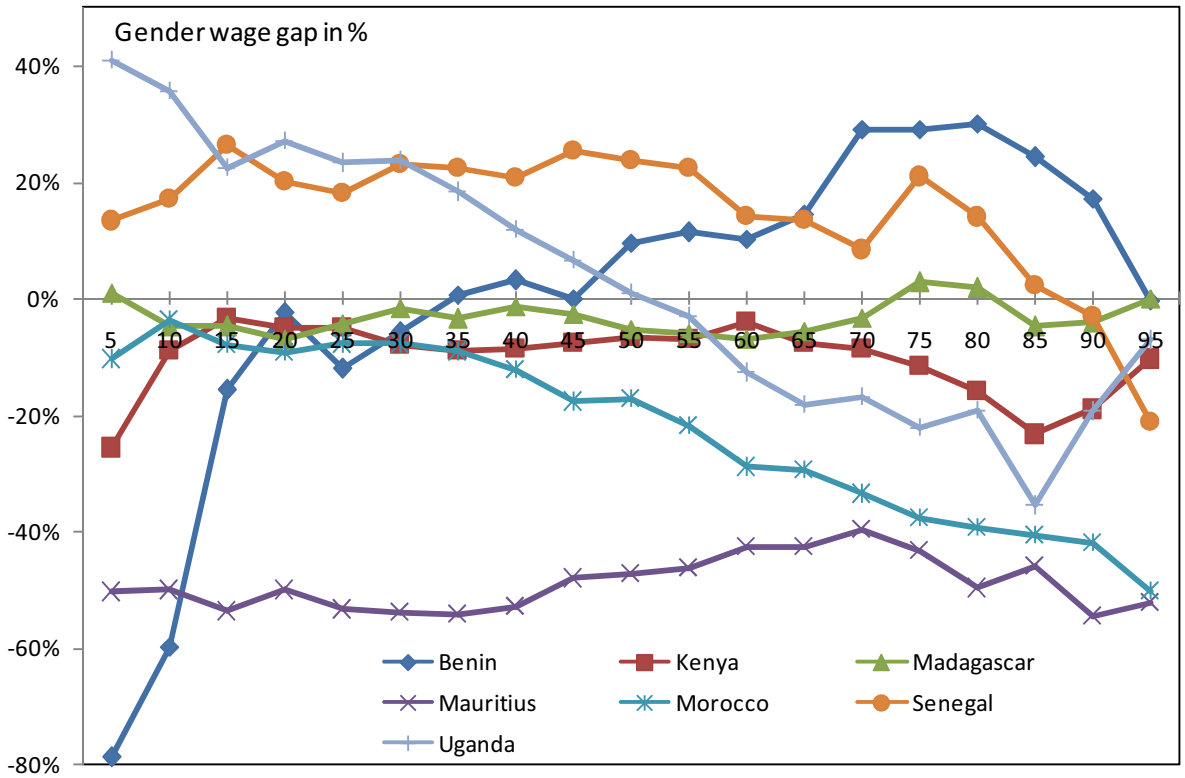
Source: Investment Climate Surveys for Benin (2004), Kenya (2003), Madagascar (2005), Mauritius (2005), Senegal (2003), Uganda (2003), FACS for Morocco (2000). Authors' calculations.

Figure 2. Descriptive statistics of the gender wage gap

A. At the mean of the sample

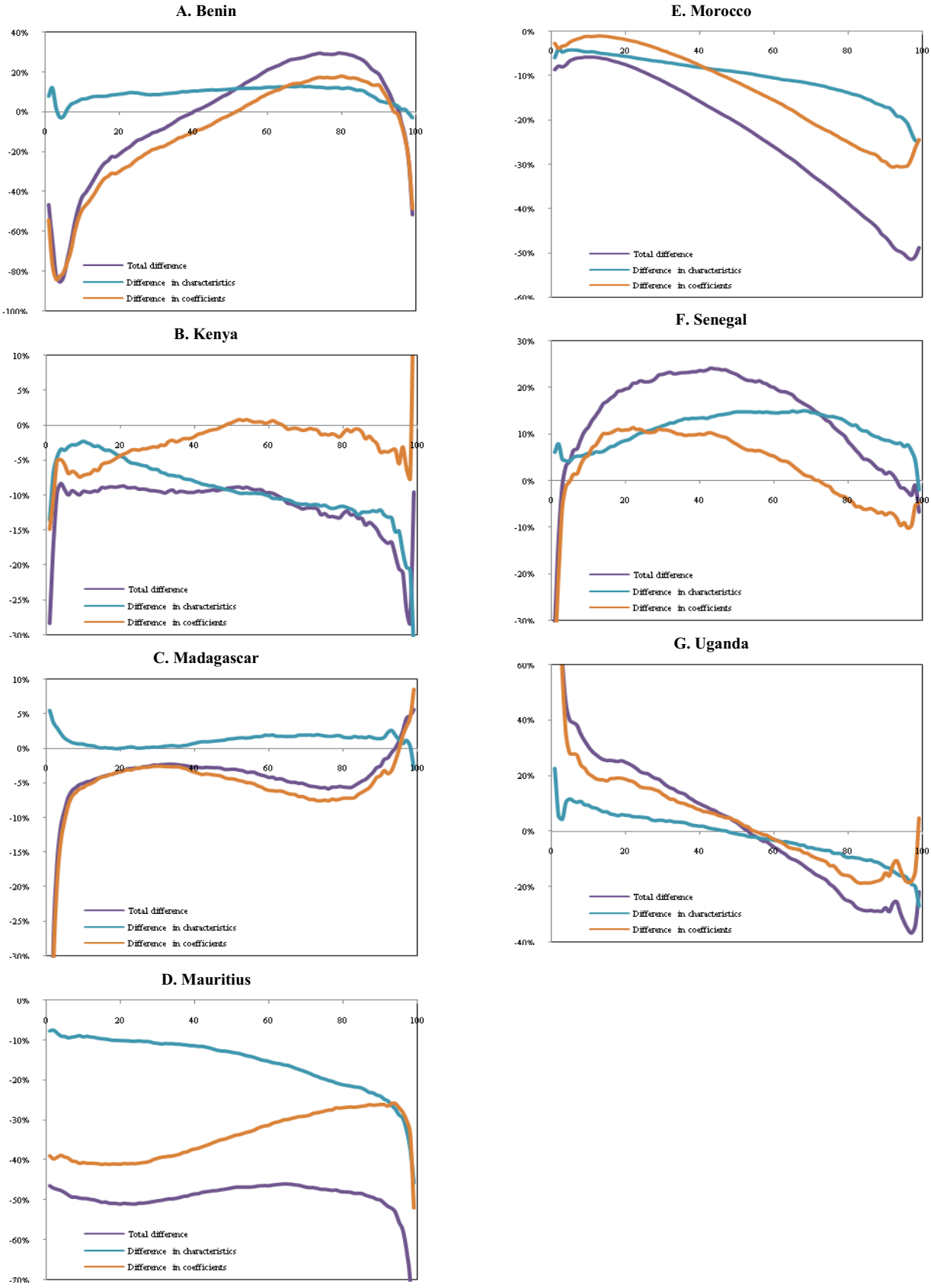


B. Across the wage distribution



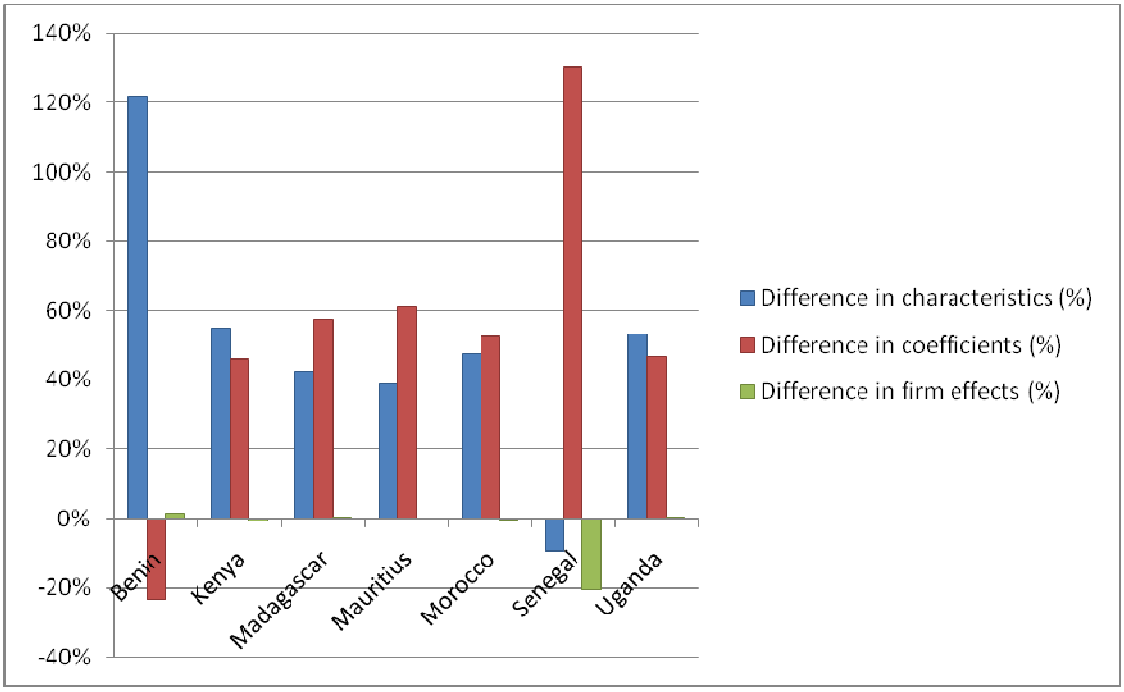
Source: Investment Climate Surveys for Benin (2004), Kenya (2003), Madagascar (2005), Mauritius (2005), Senegal (2003), Uganda (2003), FACS for Morocco (2000). Authors' calculations.

Figure 3. Quantile decompositions of the gender wage gap, by countries



Source: Investment Climate Surveys for Benin (2004), Kenya (2003), Madagascar (2005), Mauritius (2005), Senegal (2003), Uganda (2003), FACS for Morocco (2000). Authors' calculations.

Figure 4. Decomposition of the gender earnings differentials accounting for gender segregation across firms



Source: Investment Climate Surveys for Benin (2004), Kenya (2003), Madagascar (2005), Mauritius (2005), Senegal (2003), Uganda (2003), FACS for Morocco (2000). Authors' calculations.

Appendix

- ***Regression analysis***

To account for gender differences at the mean wage level, we turn to OLS regressions. We control for several individual characteristics (like age, education, etc) and include in the list of controls a gender dummy variable, so that the model we estimate is (with i and j as subscripts respectively for the employee and the firm):

$$\ln w_{ji} = \beta X_{ji} + \gamma F_{ji} + \varepsilon_{ji} \quad (1)$$

with $\ln w_{ji}$ the log hourly wage, X_{ji} the set of covariates, F_{ji} the gender dummy, β and γ parameters to be estimated, and ε_{ji} a residual supposed to be normally distributed. Since we have completed questionnaires for several employees per firm, we calculate robust standard errors (using a clustering procedure) since the different workers within a firm will certainly have correlated characteristics. By accounting for both male and female workers when estimating (1), the underlying assumption is that the returns to the different explanatory variables are not gender-specific.

Since we have repeated information for several employees per firm, we can control for observed and unobserved heterogeneity at the firm level using fixed effects models. Again, we rely on a linear specification of the form:

$$\ln w_{ji} = \beta X_{ji} + \gamma F_{ji} + \delta_j + \varepsilon_{ji} \quad (2)$$

where δ_j is a firm fixed effect. The model is estimated by adding a set of firm dummy variables in the OLS regressions. The firms' heterogeneity components δ_j is supposed to be correlated with the covariates X_{ji}. Since the workplace is the same for all the workers belonging to a given firm, all the firm characteristics are picked up by the fixed effect.

- ***Field's decomposition***

The decomposition suggested by Fields (2004) may be implemented in the following way. Omitting the different subscripts for simplicity, we consider the linear regression $\ln w = \beta X + \gamma F + \varepsilon$ and assume that there are K exogenous regressors in X indexed by k (with $k = 1,...,K$). Then, the variance of the dependent variable $\ln w$ can be expressed as:

$$\text{var}(\ln w) = \sum_k \text{cov}(\beta_k X_k, \ln w) + \text{cov}(\gamma F, \ln w) + \text{cov}(\varepsilon, \ln w). \quad (3)$$

Let us define $s(X_k) = \text{cov}(\beta_k X_k, \ln w)/\text{var}(\ln w)$, $s(F) = \text{cov}(\gamma F, \ln w)/\text{var}(\ln w)$ and $s(\varepsilon) = \text{cov}(\varepsilon, \ln w)/\text{var}(\ln w)$. It follows that (Fields, 2004):

$$\sum_k s(X_k) + s(F) + s(\varepsilon) = 100\% \quad (4)$$

which indicates the relative contribution of the various covariates and the residual. The first two terms on the left-hand side of (4) sum exactly to the R-squared, so that $s(F)$ and $s(X_k)$ provide respectively the weight of gender and the weight of each regressor k.

- ***Quantile regressions***

Quantile wage regressions consider specific parts of the conditional distribution of the hourly wage and indicate the influence of the different explanatory variables on wages respectively at the bottom, at the median and at the top of the log hourly wage distribution. Using our previous notation, the model that we seek to estimate is:

$$q_\theta(\ln w_{ji}) = \beta(\theta) X_{ji} + \gamma(\theta) F_{ji} \quad (5)$$

where $q_\theta(\ln w_{ji})$ is the θ^{th} conditional quantile of the log hourly wage. The set of coefficients $\beta(\theta)$ provides the estimated rates of return to the different covariates (gender being excluded) at the θ^{th} quantile of the log wage distribution and the coefficient $\gamma(\theta)$ measures the part of the wage gap that is due to gender differences. In a quantile regression, the distribution of the error term is left unspecified. The quantile regression method provides robust estimates, particularly for misspecification errors related to non-normality and heteroskedasticity.

- ***Mean and quantile decompositions***

For the presentation, let $\ln w^H$ and $\ln w^F$ be the log hourly wage of men and women respectively. From separate regressions $\ln w^H = \beta^H X^H + \varepsilon^H$ and $\ln w^F = \beta^F X^F + \varepsilon^F$ performed on the male and female subsamples, we deduce that the gender wage gap is $\ln w^H - \ln w^F = \beta^H X^H - \beta^F X^F + \varepsilon^H - \varepsilon^F$. This gap can be decomposed in the following way (Oaxaca and Ramson, 1994):

$$\ln w^H - \ln w^F = \beta^H (X^H - X^F) + (\beta^H - \beta^F) X^F + (\varepsilon^H - \varepsilon^F) \quad (6)$$

In (6), the first term on the right-hand side $\beta^H(X^H - X^F)$ is the explained part of the gender wage gap, which is due to differences in individual characteristics between men and women (endowment effects). The second term $(\beta^H - \beta^F)X^F$ is due to the difference in the price that the market pays to male and female workers for their personal characteristics.

As shown in Machado and Mata (2005), this decomposition may be implemented at the various quantiles of the earnings distribution. The distribution of earnings conditional on individual characteristics is first estimated using linear quantile regressions, then the conditional distribution is approximated by estimating a large number of quantile regressions and the conditional distribution of earnings is finally integrated over the covariates to obtain the unconditional distribution.

Finally, a similar decomposition may be done in presence of fixed effects. Using the same notation, we first estimate fixed effects regressions, respectively for the subsamples of men and women. From $\ln w^H = \beta^H X^H + \delta^H + \varepsilon^H$ and $\ln w^F = \beta^F X^F + \delta^F + \varepsilon^F$ and recalling that δ^H and δ^F are firm fixed effects, it follows that:

$$\ln w^H - \ln w^F = \beta^H(X^H - X^F) + (\beta^H - \beta^F)X^F + (\delta^H - \delta^F) + (\varepsilon^H - \varepsilon^F) \qquad (7)$$

According to (7), the total earnings differential may be expressed as a sum of three terms. The first one $\beta^H(X^H - X^F)$ is related to differences in personal characteristics between men and women. The second one $(\beta^H - \beta^F)X^F$ is due to differences in the returns to these individual characteristics. Finally, the term $(\delta^H - \delta^F)$ is the difference in the firm's premium which is paid to male and female employees.