

## Investigating the Gender Wage Gap in Cambodia

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Despite improvements in female labour force participation rates, the gender wage gap remains an issue in Cambodia. This study analyses the gender wage gap using a modified Oaxaca-Blinder decomposition method. The findings show that men earn more than women on average. Unobservable factors contribute more to the gender wage gap than do observable factors, suggesting that workers' skills, labour discrimination and institutional factors underlie the gender wage gap. Among the directly observed variables, women lag behind men in education, work experience, and highly paid management and professional jobs, widening the gender wage gap. However, women's employment in high-wage manufacturing sectors such as garments and in high-wage foreign and domestic firms has increased, thus reducing the gender wage gap. The results imply that to reach pay equality between women and men doing the same work, attention must be paid to both observable factors such as education and work experience and unobservable factors such as gender discrimination, institutional settings and other barriers that result in lower pay for women.

## 6.1 Introduction

Despite fast progress in reducing poverty and providing more and better employment opportunities, there is still a clear imbalance between the quality of life and wages in Phnom Penh city and in the rest of the country. Similarly, it is a persistent fact that women earn less than men.

Investigating earnings inequality has strong policy implications for Cambodia. A study by the Japan International Cooperation Agency (JICA 2010) using the Gini coefficient, the most commonly used measurement of inequality, finds that income inequality in Cambodia worsened from 2004 to 2007, especially in rural areas, despite concomitant reduction in overall poverty. At the regional level, with a Gini coefficient value of 44.4 percent, Cambodia has the second highest rate of inequality among ASEAN member states after Malaysia with 46.2 percent (Aekapol 2013).<sup>1</sup> However, the Asian Development Bank (2014), using the Palma measurement,<sup>2</sup> finds an overall reduction in income inequality in Cambodia. Roth and Lun (2014) find a decline in consumption inequality between 2009 and 2011. This highlights the difficulty of obtaining conclusive data on the issue.

Wage employment was selected as the focus of study because of its paramount importance for raising living standards and to fill a gap in the existing body of knowledge on the topic in Cambodia. Wage employment is the second largest source of employment and household income in Cambodia after self-employment. The proportion of wage workers in the total labour force almost doubled from 23 percent in 2004 to 41 percent in 2013, while the share of self-employed workers rose from 39 percent to 55 percent (NIS 2010, 2015). The growth of wage employment suggests that it is becoming integral to family income and national poverty reduction. However, little is known about the extent of inequality in this important segment of the labour market.

Investigating earnings inequality in wage employment on the basis of gender is particularly important for promoting decent wage employment for women. Latest data shows that gender disparities in the overall labour force in Cambodia remain high and barely improved over the 10 years to 2014. The labour force participation rates of women and men remained virtually unchanged at 77.5 percent and 87.9 percent, respectively. Similarly, the employment rates of women and men nudged up just 0.8 percentage point and 1 percentage point to 77.4 and 87.8 percent, respectively (NIS 2015). Perhaps most striking is the difference between women's and men's annual

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<sup>1</sup> A Gini score of 100 percent indicates maximum inequality and a score of 0 percent indicates no inequality.

<sup>2</sup> The Palma measurement is the ratio of the income share of the top 10 percent to that of the bottom 40 percent.

earnings: women earned just 71 percent of what men did in 2012 (ILO and ADB 2013).

Economic growth and structural change over recent decades led to employment growth in non-agricultural sectors. The share of women's employment in manufacturing increased from about 43 percent in 2004 to 53 percent in 2014, suggesting some signs of progress in improving women's labour position. But the gender pay gap indicates that employment growth has not been sufficiently inclusive for women (ILO and ADB 2013). Constraints on women's labour market options have relaxed, but there are still barriers and biases that result in lower pay for women. The current study examines the extent of earnings inequality between and within groups of wage workers on the basis of gender. The joint ILO-ADB (2013) report confirms the fact that female wage workers earn less than male wage workers in Cambodia, but sheds no light on the situation of wage workers in different economic sectors, different occupations and different areas (rural and urban).

The issue of wage inequality might be more complex when comparing workers in different groups at different wage levels, for example, male workers versus female workers in the top 20 percent of the wage distribution. Yet, there is no available information about gender differences in earnings for wage workers in the same wage distribution quantile. For example, equally qualified female workers may find it more difficult to secure high-wage jobs than their male counterparts. Therefore, the wage gap may differ by quantile and could be wider among high-wage than among low-wage workers.

Wage gap studies have been conducted in several developing countries, for example, Knight and Sabot (1982) in Tanzania, Chapman and Harding (1985) in Malaysia, and Amin, Quayes and Alam (2015) in Bangladesh. Yet, there is no similar comprehensive empirical study that explains the causes of the gender wage gap in Cambodia. This study attempts to highlight the issue in Cambodia and fill this knowledge gap.

The main objectives of the study are to investigate earnings inequality on the basis of gender and to identify the drivers of existing wage inequalities in Cambodia. To that end, the study addresses two key research questions. First, whether there is earnings inequality among male and female wage workers in general and within different quantiles of wage distribution in particular. Second, what the underlying causes of earnings inequality among wage workers are.

This study explores the causes of the gender wage gap using data on wage employment, which is an important segment of the labour market and a vital source of household income in Cambodia. By re-evaluating and investigating the main drivers of the persistent gender wage gap in Cambodia, the study offers new insights into the issue and suggests policy areas where interventions may be needed.

## 6.2 Literature review

When one group of people receives fewer benefits than other groups, there exists an unjust distributive system or so-called inequality (Kolm 1999; Nripesh 1999). The outcomes of inequality can have significant consequences for the affected parties, including feelings of unfairness and envy, deprivation and isolation, and social upheaval. Economic inequality not only harms economic growth in general but also reduces the effectiveness of political institutions and weakens the economic system, depriving workers of rights and fair pay while a few powerful individuals benefit from the labour of the majority. Thus, economic inequality requires policy immediate interventions (Nripesh 1999).

At the macro level, dissatisfaction as a result of workers' constant comparison of their status with their peers can lower productivity (Poggi 2014). Inequality can also hold back economic growth through its effects on labour force participation, fertility, labour productivity and working hours (Cassells et al. 2009; Schober and Winter-Ember 2009).

Despite compelling evidence of earnings differentials between female and male wage workers, previous studies on Cambodia, unlike those in other developing countries (see, for example, Nopo, Daza and Ramos 2011), have not documented any factors that explain why earning inequalities exist. Roth and Lun (2014), for instance, found high inequality in educational attainment between Cambodian men and women, but they did not explore the relationship between education inequality and wage inequality.

The debate about wage inequality in the literature suggests several main contributing factors. First is a change in labour supply composition, such as increases in highly educated workers, female labour force participation or migrant workers. An increase in the supply of highly educated workers reduces wage inequality because it lowers the wages of highly educated workers and narrows the wage gap between low-wage and high-wage earners. On the other hand, an increase in female labour force participation can widen wage inequality if female workers are concentrated in low-paying jobs. Changes in the quality and endowments of the labour force, such as age, experience and education, also affect wage inequality (Daczo 2012; Martins and Pereira 2004).

An increase in trade openness can shift demand towards skilled workers and thus widen wage inequality (Oostendorp 2009), though this effect depends on firms' heterogeneity – trade that enhances revenue dispersion across firms also increases wage inequality across workers and firms (Akerman et al. 2013).

Labour market institutions such as minimum wages and unions are another factor. In Indonesia, for instance, the introduction of a minimum wage had a positive impact on the wages of workers who previously earned below

the minimum wage (Chun and Khor 2010), and consequently reduced wage inequality.

Skill-biased technological change that favours skilled workers over unskilled workers can widen wage inequality, such as when organisational restructuring as a result of competitive market forces creates demand for more skilled labour (Bound and Johnson 1995; Acemoglu 1999; Bernard and Jensen 2000; Leonardi 2004; Oostendorp 2009; Daczo 2012).

Labour market heterogeneity across regions can cause wage inequality. If labour market integration of migrant workers and/or free movement of labour across regions exist, the economic returns to labour and therefore wage inequalities across regions will be small (Bernard and Jensen 2000).

Economic structural change can also induce wage inequality. For instance, innovation in the services sector increases the demand for skilled labour, thereby widening wage inequality between services and manufacturing sectors (Daczo 2012; Henze 2014). Even within sectors, occupational segregation, such as when more women than men concentrate in low-paying elementary occupations, can cause wage inequality (Blau and Kanh 2000; Oostendorp 2009; Mouw and Kalleberg 2010).

Workers' skill levels and job commitment have an effect on wage differentials, too. Wage inequality can arise due to an increase in demand for unobserved skills. If women have lower levels of unobserved skills than men do, then wage inequality may emerge. This could happen even if men and women have the same levels of observed skills (e.g. education) or the same occupation (Acemoglu 1999; Mouw and Kalleberg 2010). However, wage inequality is also thought to be associated with gender discrimination (Juhn, Murphy and Pierce 1993; Blau and Kanh 1997).

Daczo (2012) suggests classifying factors that affect wage inequality into two groups: group-specific or non-wage effect factors, and wage structure or wage-effect factors. The first group comprises observable factors such as education and experience and unobservable factors such as labour discrimination, unobserved skills and characteristics. Thus, if women have lower observed and/or unobserved skills or suffer discrimination, the gender wage gap will widen. The second group concerns differences in returns to observed and unobserved factors, mainly wage distribution, and includes returns to observed and unobserved skills as well as discrimination.

It is necessary to acknowledge the interactions between group-specific factors and wage-specific factors, as well as the interactions between observable and unobservable components of wage inequality. For instance, discrimination may cause a certain group such as women to form expectations about future pay, which, in turn, may influence the decision to invest in skill

acquisition (Juhn, Murphy and Pierce 1993; Blau and Kahn 1996; Gonzaler 2001; Carneiro, Heckman, and Masterov 2005).

Workforce skills and their basic components are variously and sometimes ambiguously defined in the literature. However, there is general consensus that work skills can be divided into hard skills – the technical or practical capabilities specific to a particular occupation, which are observable and measurable, and soft skills – interpersonal, communication, problem solving, mentoring, negotiation and persuasion. Some scholars extend the definition to include willingness to learn, positive attitude, work ethics and self-confidence (Lafer 2002, 2004).

### **6.3 Methodology**

Wages, although not the only determinant of living standards, are commonly used in the literature because they are easy to measure. There are several measures of wage inequality. Many studies focus on wage dispersion and changes in wage distribution. Others use variance in wages between men and women or between sectors to measure the extent of wage inequality. In this study, we use average wages to analyse the gender wage gap. The study used a mixed methods approach and relied mainly on secondary data supplemented with primary data.

#### **6.3.1 Data**

Primary data was collected from key informant interviews and consultation workshops. Key informants included policymakers, researchers, university academics, gender specialists from the Asian Development Bank and UN-Women, and representatives from business sectors, Cambodia Federation of Employers and Business Associations, and labour unions. Two workshops were organised. The first one assembled 15 key informants who have practical and policy knowledge on earnings inequality issues in Cambodia. The second was a technical consultation workshop to verify the regression models and quantitative analyses. The workshops provided in-depth insights into earnings inequality issues in Cambodia, especially unobserved factors such as workers' attitudes and behaviour and workplace discrimination, and helped validate the choice of control variables for the regression models.

Secondary data was compiled from the Cambodia Socio-Economic Survey (CSES), a nationally representative household survey conducted by the National Institute of Statistics (NIS) in 1994, 1996, 1997, 1999 and 2004, then annually since 2007. The CSES provides comprehensive information about the labour force and employment. It collects data on monthly salary, employment status, employment by sector, primary occupation, workplace and location (urban, rural) and demographic information on workers' gender, education, age, ethnicity, family size and land ownership. We used the CSES



2014 dataset to generate the descriptive statistics because the large sample size allows precise estimation of the gender wage gap.

### 6.3.2 Variables

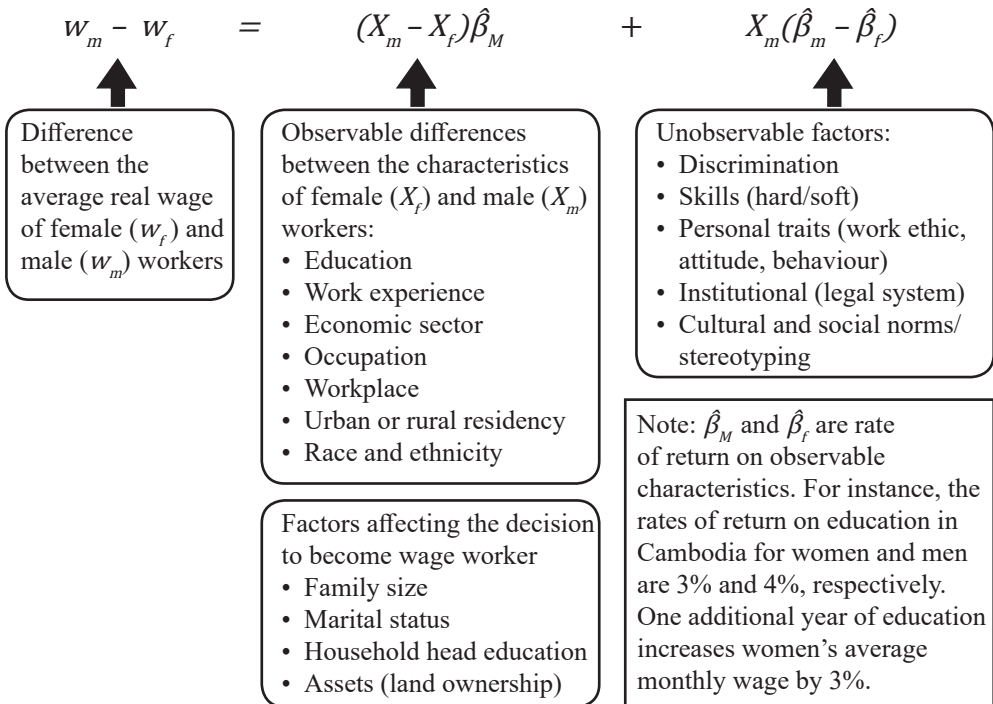
- *Employees or wage workers* are defined as workers (both full-time and part-time), aged 15–64, hired and paid by an employer, whether or not they have a written employment contract. Self-employed workers or own-account workers, unpaid family workers, child workers and older workers are excluded from the analysis because of lack of reliable information on their wages.
- *Wages* are defined as monthly earnings or salary in KHR. We use the real wage to calculate wages and perform wage gap decomposition. Real wage is obtained by deflating the nominal wage in CSES 2014 by the consumer price index (2010 = 100) from World Bank World Development Indicators 2015. Wage outliers, which fall below KHR80,000 a month (about KHR2,500 or USD0.50 a day) and above KHR12,000,000 a month (about KHR400,000 or USD100 a day), were excluded from the analysis. Because wages tend to have positive skew and most wages are concentrated below the mean wage, the minimum threshold was set to include workers earning less than the minimum wage.
- *Gender and ethnicity* are self-reported information collected by the CSES. Gender includes male and female. Ethnicity includes Khmer, Cham, Kuy and Tampaun (local ethnic groups), Chinese, Vietnamese, Thai and Lao. Khmer make up the majority of Cambodia's population.
- *Location* is rural or urban. The CSES defines urban communes as an area with a population density exceeding 200 per km<sup>2</sup> or a total population of more than 2,000, or where less than 5 percent of male workers work in agriculture.
- *Marital status*. Although not directly correlated with workers' earnings, living with a partner has an effect on labour force participation, especially for female workers. Marital status is classified into two groups: those who live with a partner, whether or not they are legally married, and those who are single, separated, divorced or widowed.
- *Family size* (the number of household members) also affects the likelihood of becoming a wage worker. Women with large families tend to opt for part-time work, and part-time workers tend to be in low-paid jobs.
- *Household head education* also affects labour force participation rates. In Cambodia, females are traditionally assigned household duties such as child care, elder care and other unpaid work. However, it is hypothesised that the higher the educational level of the household head, the lower the influence of cultural norms. This variable captures how cultural norms and expectations affect labour market participation.

- *Workers' age* is provided in complete years in the CSES.
- *Workers' educational attainment* is the highest school grade completed by individuals. A value of zero indicates no education, a value of 1 indicates completion of grade 1 or preschool education, 2 means completion of grade 2 and so on up to grade 12, which indicates completion of high school education. A value of 13 means individuals passed the national grade-12 exam (BAC II) and a value above 13 indicates higher education and formal training.
- *Work experience* is a variable constructed based on workers' age and education. Following Mincer (1974) and Miller (1993), we calculate experience using the function  $Experience = Age - Education - 5$ , which captures workers' potential work experience since leaving school. Potential experience is valid because we do not have information about actual work experience.
- *Land ownership* is the total land (m<sup>2</sup>) owned by a household. It includes land that is owned, purchased, inherited, rented out or rented in. Although asset ownership does not directly affect wages, it directly affects the decision about when to participate in the labour market as wage workers.
- *Employment by sector* refers to workers' primary economic activities as per the International Standard Industrial Classification (ISIC), which classifies industries by a four-digit code. The ISIC has 21 major categories (A to U) which at the 2-digit level are organised into 99 subdivisions (01–99), which are further subdivided (1–9). ISIC has undergone several revisions due to the adding of new economic sectors such as e-commerce and merging of existing ones (United Nations 2002, 2008). While it is easy to adjust for consistency at the 1-digit level, it is difficult to adjust CSES data at the 2-digit level and above. We therefore analyse employment at the 1-digit level and group all economic activities into three major sectors: agriculture, manufacturing and services.
- *Occupations* in the CSES are categorised using the 4-digit International Standard Classification of Occupations-88, which was adopted in 1987. We use the 1-digit classification of 10 occupations: armed forces; managers; professionals; technicians and associate professionals; clerical support workers, service and sales workers; skilled agricultural, forestry and fishery workers; crafts and related trade workers; plant and machine operators, and assemblers; and elementary occupations. However, we exclude armed forces from our analysis.
- *Workplace types* are classified into four groups: public organisations (government and government enterprises), domestic firms (including household businesses), foreign firms and others (NGOs, international organisations).



### 6.3.3 Pay gap decomposition

We perform a modified Oaxaca-Blinder decomposition (Oaxaca 1973; Blinder 1973) to separate the portion of the gender pay gap that is explained by differences between the observable characteristics of female and male workers (e.g. educational attainment, work experience, family size, occupation) from the portion that is not explained by those characteristics (i.e. unobservable factors). This method decomposes mean differences between women's and men's wages into observable and unobservable factors, as shown in the following equation and diagram.



The first part of the equation  $(X_m - X_f)\hat{\beta}_M$  is the observable portion of the gender pay gap and can be explained by gender differences in the characteristics listed. For example, if the average level of women's education is lower than that of men, there is a gender gap in education that increases the gender wage gap. The observable portion also includes other factors that affect the decision to engage in waged work such as family size, marital status, household head education and assets.

The second part  $X_m(\hat{\beta}_m - \hat{\beta}_f)$  is the unobservable portion of the gender pay gap and cannot be explained by differences in wage determinants. For example, men and women in the same occupation may have the same level of

education, but women may be paid lower wages than men. This was previously put down to workplace discrimination, whether intentional or unintentional. However, caution should be exercised when interpreting the decomposition results because differences between men's and women's earnings may be correlated with other unobservable factors such as workers' skills and motivation, institutional factors, cultural and social norms (Daczo 2012).

We deal with sample selection bias using the Heckman (1976) technique, the index problem following Oaxaca and Ransom (1994), and sensitivity of dummy variables using the contrast transform technique of Yun (2005).

To study the gender wage gap across different quantiles of wage distribution, we use the Machado and Mata (2005) technique<sup>3</sup> to decompose the gender wage gap into gender differences in observed characteristics and in returns to observed characteristics using a nonparametric technique.

## 6.4 Results and discussion

CSES 2014 indicates that wage workers account for about 45 percent (41 percent women, 59 percent men) of the labour force, the self-employed about 50 percent and unpaid family workers about 5 percent (NIS 2015). This suggests that wage work is an important segment of the labour force and also an important source of household income in Cambodia.

### 6.4.1 Overview of the Cambodian labour market and wage employment

The proportion of wage workers in total employment doubled from 22.3 percent in 2004 to 44.5 percent in 2014, along with a more modest rise in self-employed workers from 38.2 percent to 49.9 percent. The percentage difference between the shares of wage workers and the self-employed in total employment narrowed from around 16 percentage points in 2004 to 5 percentage points in 2014, suggesting a rapid change in labour market segmentation. Waged employment has clearly become an increasingly important labour market segment.

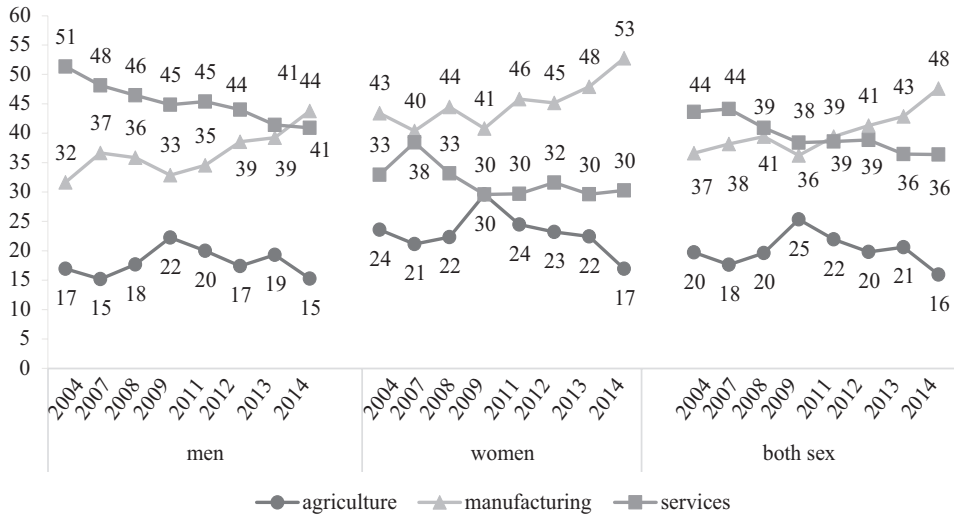
As Figure 6.1 shows, in 2014, women made up 53 percent of the manufacturing workforce and men 44 percent, and 30 percent of the services workforce compared to 41 percent for men.

Figure 6.2 shows the distribution of wage workers across different occupations. The largest proportions of wage workers are engaged in crafts and related trades followed by elementary occupations and then services and sales and clerical work.

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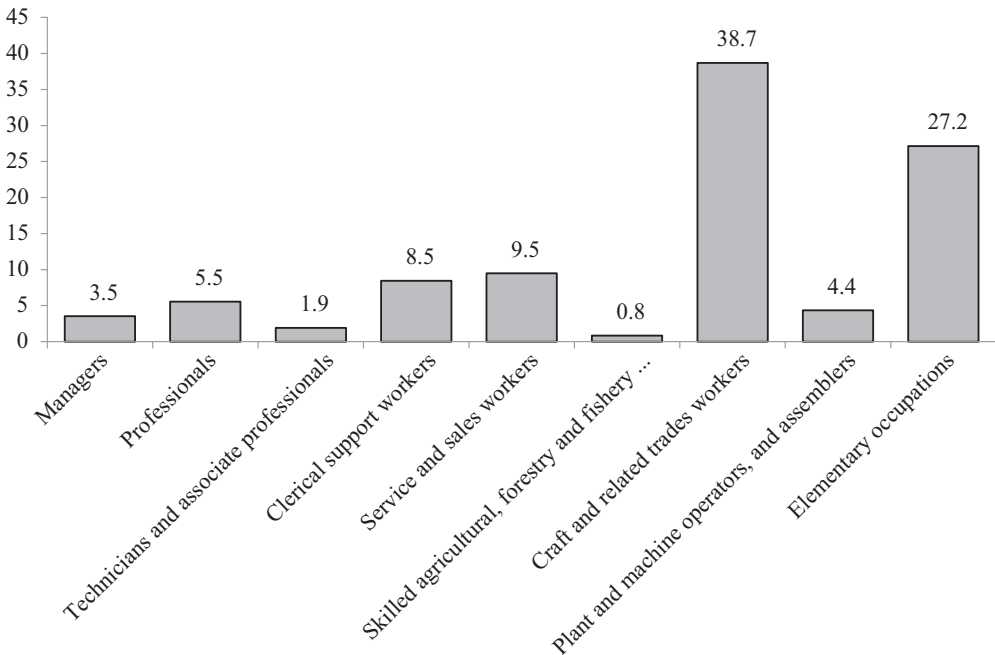
<sup>3</sup> The Machado-Mata decomposition is executed with Stata command "mmsel".

Figure 6.1: Wage labour shares by sector and gender (percent), 2004–14



Source: Authors' calculations using data from CSES 2014

Figure 6.2: Wage labour by occupation (percent), 2014



Source: Authors' calculations using data from CSES 2014

Table 6.1: Employment by occupation and workplace (percent), 2014

		Men	Women
Occupations (ISCO-88)	Manager	5.3	1.2
	Professional	5.3	<b>5.9</b>
	Technicians and associate professional	2.2	1.5
	Clerical support worker	8.9	7.9
	Service and sales worker	9.5	9.4
	Skilled agricultural, forestry and fishery worker	0.9	0.8
	Craft and related trades worker	32.6	<b>46.9</b>
	Plant and machine operators, and assembler	6.5	1.5
	Elementary occupation	28.9	24.8
Workplace type	Public organisation	14.7	6.7
	Domestic firm, household business	59.5	41.6
	Foreign firm	25.1	51.0
	NGO, international organisation, other	0.8	0.6

Source: Authors' calculations using 2014 CSES data

Table 6.2: Gender wage ratio (KHR 2010), 2014

Category	Variables	(1)	(2)	(2) / (1)
		Men	Women	Wage ratio
Region	Urban	721,709	576,464	0.80
	Rural	514,743	439,883	0.85
Economic sector	Agriculture	419,812	317,655	0.76
	Manufacturing	570,231	493,435	0.87
	Services	653,142	558,430	0.85
Occupation ISCO-88	Manager	612,353	449,573	0.73
	Professional	717,754	656,734	0.91
	Technician and associate professional	903,114	636,112	0.70
	Clerical support worker	866,906	762,026	0.88
	Service and sales worker	524,851	412,927	0.79
	Skilled agricultural, forestry and fishery worker	508,966	295,202	0.58
	Craft and related trades worker	561,400	482,019	0.86
	Plant and machine operator, and assembler	670,440	538,016	0.80
	Elementary occupation	460,727	379,008	0.82
Workplace type	Public organisation	588,384	511,744	0.87
	Domestic and household firm	528,411	414,734	0.78
	Foreign firm	684,580	534,236	0.78
	NGO, international organisation, other	1,152,685	696,187	0.60
Total		581,380	484,617	0.83

Source: Authors' calculations using data from CSES 2014

Table 6.1 shows employment by gender across occupation and workplace. Women outnumber men in only two occupations, particularly in crafts and related trades, and more than twice as many women as men work in foreign firms.

Table 6.2 displays the ratio of women's wage to men's wage in 2014. A wage ratio of less than 1 indicates that women's average wage is lower than that of men. The statistics show that the gender wage gap is higher in urban areas than in rural areas and lower in manufacturing and services than in agriculture. By occupation, the largest gender wage gap is in skilled agricultural, forestry and fishing jobs, followed by technician and management jobs. By workplace, the gender wage gap is highest in NGOs and lowest in the public sector.

#### 6.4.2 Gender wage gap decomposition

The results of Oaxaca-Blinder decomposition based on a sample of 10,190 wage workers (41 percent women, 59 percent men) and adjusted for sample selection bias are shown in Table 6.3. The results indicate that the differences between explained (observed) and unexplained (unobserved) characteristics contribute significantly to the gender wage gap. The gender wage gap of 0.15 indicates that women's average monthly real wage is about 15 percent or 1.2 times lower than that of men. In other words, women earn about 87 percent of what men earn. The magnitude is not large but it is statistically significant at the 5 percent level. The predicted real average monthly wage for men is about USD127 or KHR508,000 compared to about USD111 or KHR440,000 for women, a difference of about USD16 or KHR64,000.

Table 6.3: Results from the wage gap decomposition using the Oaxaca-Blinder method

	Difference in ln(wage)	Standard error		%
<b>Differential</b>				
Prediction_men	13.14	(0.008)	***	
Prediction_women	13.00	(0.009)	***	
Difference	0.13	(0.012)	***	
Adjusted for selection bias	<b>0.15</b>	(0.038)	***	100
<b>Explained</b>				
	<b>-0.02</b>	(0.007)	***	-15
Education	0.03	(0.004)	***	17
Experience	0.02	(0.002)	***	12
Economic sector	-0.02	(0.003)	***	-11
Occupation	0.02	(0.004)	***	15
Workplace type	-0.07	(0.005)	***	-47
Urban	-0.00	(0.001)		-1
Majority	0.00	(0.000)		0
<b>Unexplained</b>				
	<b>0.17</b>	(0.007)	***	115
<i>n_men</i>		6,006 (adjust R2=0.23)		
<i>n_women</i>		4,184 (adjust R2=0.28)		

Notes: Standard errors in parentheses; \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01.

The difference in workers' endowment, or the explained part (observed characteristics), is -0.02, and the difference in the unexplained part (unobserved characteristics) is 0.17. This means that a significant proportion of pay inequality cannot be explained by differences in observable factors. Many scholars have attributed this unexplained part to labour market discrimination. However, caution must be exercised when interpreting the results because this part of the gender wage gap could include the gaps in unobserved (unmeasured) skills and in returns to unobserved skills in addition to labour market discrimination or other institutional factors (Juhn, Murphy and Pierce 1993; Daczo 2012). Within the explained (observed) part, the following patterns are observed:

- *Education*: Gender differences in educational attainment explain 17 percent of the wage gap. Women, on average, completed 7.27 years of schooling and men completed 8.15 years. The fact that women have a lower level of education than men widens the gender wage gap.
- *Work experience*: That women have less work experience than men explains about 12 percent of wage inequality. Women generally opt for part-time work because they do the bulk of household work, which is one of the reasons they accumulate less work experience than men.
- *Economic sector*: Gender differences by industry can explain 11 percent of the gender wage gap. This is because of the higher percentage of women employed in high-wage sectors. The percentage of female workers is larger in manufacturing, which also has the largest positive coefficient in men's earnings regression (see Annex Table A1). Economic sector reduces the gender wage gap by 11 percent. The results indicate that investment growth in sectors such as manufacturing and services, which pay higher wages and employ more women, reduces the gender wage gap.
- *Occupation*: Gender differences in occupation explain 15 percent of the gender wage gap. Women's employment is primarily concentrated in low-paid occupations such as crafts and trades, whereas fewer women than men are employed in high-wage occupations (e.g. as managers, professionals and technicians). However, the coefficient of male earnings in these low-paid occupations is the smallest. We can safely conclude that occupational segregation increases the gender wage gap.
- *Workplace type* has a negative effect on the gender wage gap, reducing it by 47 percent. This is because the percentage of female workers employed in high-wage workplaces generally exceeds the percentage of male workers. This suggests that the distribution of female wage workers by workplace type, which includes domestic firms, foreign firms and the public sector, has generally improved compared to that of male wage workers.



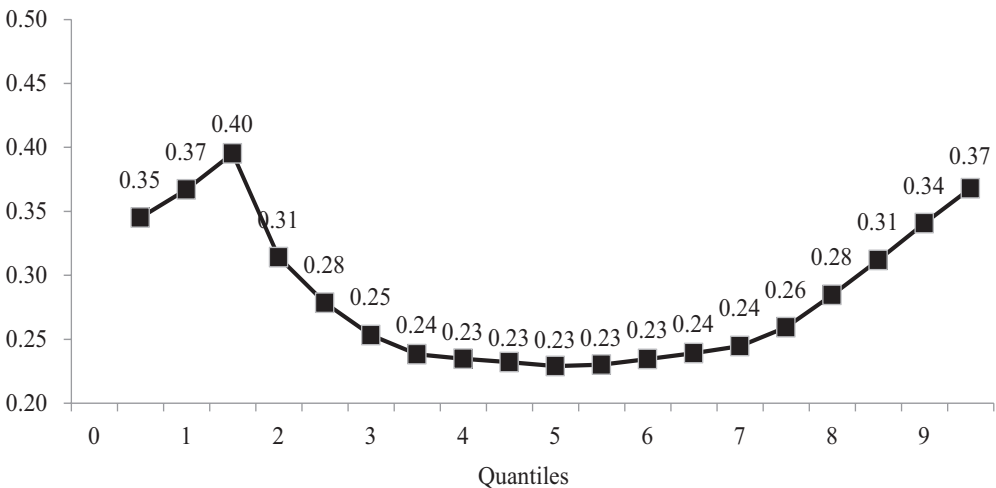
- *Urban/rural residence* does not have any statistically significant effect on the gender wage gap.
- *Ethnicity* does not influence the gender wage gap.

In summary, the findings from the Oaxaca-Blinder decomposition imply that efforts to address the gender wage gap must pay more attention to closing the gender gap in unobserved factors such as unobserved skills, discrimination against women, and institutional barriers that prevent women from getting equal pay. Moreover, the findings suggest that efforts to promote improvements in the observed characteristics of female wage workers such as education and work experience and increase women's employment in high-wage sectors and high-paying occupations must be continued.

#### 6.4.3 Gender wage gap decomposition by wage distribution quantile

The results of the Machado-Mata decomposition, which looked at the difference in characteristics and coefficient effect of the gender wage gap are shown in Figure 6.3. The lowest quantiles (the 1st and 2nd) include the group of jobs that pay lower wages while the highest quantiles (the 9th and 10th) include the group of jobs that pay higher wages. The vertical axis measures the estimated gender wage gap across quantiles.

Figure 6.3: Machado-Mata gender wage gap decomposition, 2014



Source: Authors' calculations using data from CSES 2014

The results indicate that the gender wage gap is positive across all wage distribution quantiles. This suggests that men's wages are higher than women's wages in both low-paying and high-paying jobs. However,

the gender wage gap appears to be much larger among the lowest and the highest earners.

In general, women tend to have difficulty getting top-paying jobs and negotiating high salaries. Thus, the gender wage gap is expected to be larger among high-paying jobs (the top quantiles of wage distribution). However, in Cambodia, even in the lowest paying jobs (the bottom quantiles), women get lower wages than men.

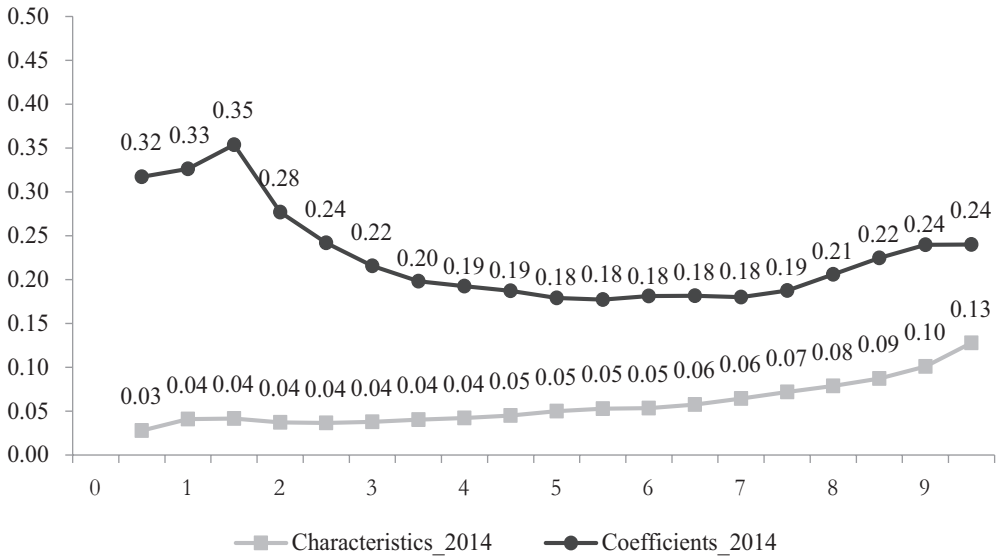
Moreover, gaps in coefficients (differences between men and women in returns to observed characteristics) have a stronger impact on the gender wage gap than gaps in characteristics (differences between men and women in quantity of observed characteristics), as shown in Figure 6.4. The gaps in observed characteristics refer to differences in education, work experience, employment share by sector, occupation and workplace while the gaps in unobserved characteristics refer to differences in returns to those observed characteristics.

The results also show that the gender gap in observed characteristics is the largest at the top of the wage distribution (among the highest-wage workers) while the gender gap in coefficient is larger at the bottom of the wage distribution (among the lowest-wage workers) and the top of the wage distribution (among the highest-wage workers).

The largest gender wage gap at the bottom of the wage distribution is mainly contributed by the gap in workers characteristics and the returns to worker characteristics. When it comes to observed characteristics such as education, experience and skills, the gap between women and men in the bottom quantile is small. However, women tend to receive far lower wages than men. This observed gender wage gap can be caused by gaps in unobserved factors such as gender discrimination, unobserved skills, or other institutional barriers and biases that result in lower pay for women.

At the top quantiles of wage distribution, the gender wage gap is not only contributed by differences in returns to observed characteristics but also by the large gap in observed characteristics. Among high-wage workers, women have much lower observed characteristics such as education, experience, observed skills and other observed characteristics than men. The findings suggest that narrowing the gender wage gap requires both removing barriers that stop women moving from low-paying jobs to better paying jobs and addressing discrimination against women.

Figure 6.4: Machado-Mata decomposition for gender wage gap in 2014



Source: Authors' calculations using data from CSES 2014

#### 6.4.4 Earnings equation estimation

It is useful to examine male-female differences in estimated earnings. The results of the earnings equation estimations given in Annex Table A1 indicate that, in 2014, an additional year of education increased average wages by 3 percent for women and 4 percent for men. They also show that both female and male workers in manufacturing and service sectors earn higher average wages than those in agriculture. The coefficient for women in manufacturing and services is higher than that for men, suggesting structural change that favours women's wages.

Moreover, wage workers in domestic and foreign firms and other organisations receive higher mean wages than public sector workers (i.e. government staff). Although public sector workers generally receive lower wages with slower increments, they have more job security than private sector workers. Similarly, workers in urban areas have higher mean wages than workers in rural areas, while the mean wages of majority and minority workers are not statistically different for women.

The earnings regression is shown in Annex Table A1 and the likelihood of being a wage worker in Annex Table A2. The results indicate that most variables have a positive impact on the likelihood of becoming a wage worker, except marital-status and assets (land ownership), which reduce the likelihood of becoming a wage worker.

## 6.5 Conclusions and policy implications

This paper has endeavoured to empirically investigate the influential factors causing gender wage inequality in Cambodia by decomposing the gender wage gap (men/women) into observable and unobservable factors using an extended Oaxaca-Blinder decomposition approach.

Men's wages grew faster than women's wages in the observed period, widening the gender wage gap. Unobserved factors, which include labour discrimination against women, unobserved skills and institutional factors that prevent women from getting equal pay, are a likely reason for this. On the other hand, gender gaps in observed factors, that is, education, experience, employment in high-paying sectors, occupation and workplace, have narrowed.

Observable characteristics, including education, put female wage workers in a markedly weaker position in both the bottom and the top wage distribution quantiles than men.

Household characteristics such as family size and household head positively affect women's decisions to become wage workers while marriage and land ownership reduce the probability of women becoming wage-workers.

In summary, to reduce the gender wage gap, interventions should be extended beyond narrowing gender gaps in education and experience to increasing women's employment in high-paying occupations, economic sectors and workplaces, removing other barriers and biases that result in lower pay for women, and eliminating discrimination against women. Policy actions to narrow the gender wage gap should therefore focus on the following:

- Reducing discrimination against women and other forms of discrimination (both direct and indirect) that prevent women from getting equal pay.
- Creating the right policy and institutional environment to break down the social, cultural and legal barriers that prevent women from getting equal pay.
- Promoting more investment and trade in high-wage manufacturing and services sectors that employ growing numbers of women.
- Promoting women's employment in high-wage firms including in multinational corporations.
- Promoting and supporting skill and educational development for women in competing for high-wage occupations.
- Reinforcing policy efforts aimed at narrowing education and work experience gaps by increasing women's enrolment and retention rates in higher education.

Moreover, in the presence of persistent gender wage gap and wage employment growth, especially in unskilled and low-skilled jobs, the

development of social security protection and labour institutions such as a statutory minimum wage are indispensable factors in addressing wage inequalities. Although our study suggests the existence of unobserved skills and discrimination, additional studies are needed to quantify the impact of discrimination on the gender wage gap.

### Acknowledgements

This research was carried out with financial and technical support from the Cambodia Development Resource Institute (CDRI) with funding from the government of Canada through the International Development Research Centre (IDRC). The authors are grateful for valuable comments and suggestions from Dr Makiko Matsumoto, all participants, commentators, coordinators, editors and reviewers during all the networking meetings and the editing process.

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## Annex

Table A1: Earnings regression for men and women

	2004		2014	
	Ln(wage)			
	men	women	men	women
education	0.03*** (0.00)	0.04*** (0.01)	0.04*** (0.00)	0.03*** (0.00)
experience	0.01*** (0.00)	0.00** (0.00)	0.01*** (0.00)	0.00 (0.00)
inverse Mills ratio	-0.23*** (0.04)	-0.12*** (0.04)	-0.05 (0.03)	-0.01 (0.03)
manufacturing	0.02 (0.12)	-0.17 (0.21)	0.16*** (0.03)	0.37*** (0.05)
services	-0.00 (0.11)	-0.25 (0.20)	0.04 (0.04)	0.19*** (0.05)
manager	0.03 (0.06)	-0.11 (0.10)	0.14*** (0.04)	0.39*** (0.08)
professional	0.13 (0.11)	-0.34** (0.16)	0.21*** (0.06)	0.33*** (0.09)
technician and associate professional	0.19 (0.24)	-0.09 (0.28)	0.15*** (0.04)	0.39*** (0.08)
clerical support worker	-0.11* (0.07)	-0.33*** (0.12)	-0.06 (0.04)	0.03 (0.08)
service and sales worker	-0.44*** (0.13)	-0.97*** (0.22)	0.02 (0.10)	-0.05 (0.16)
skilled agricultural and fishery worker	-0.08 (0.08)	-0.40*** (0.14)	-0.07 (0.05)	-0.14 (0.08)
craft and related trades worker	-0.00 (0.07)	-0.26** (0.13)	0.13*** (0.05)	0.04 (0.10)
plant and machine operator, assembler	-0.20*** (0.06)	-0.53*** (0.11)	-0.10* (0.05)	0.05 (0.08)
domestic firm	0.76*** (0.05)	0.71*** (0.08)	0.20*** (0.03)	0.27*** (0.04)
foreign firm	0.88*** (0.12)	0.67*** (0.13)	0.41*** (0.03)	0.55*** (0.04)
NGO and others	1.12*** (0.08)	0.91*** (0.10)	0.50*** (0.10)	0.23 (0.16)
urban	0.17*** (0.03)	0.09*** (0.03)	0.18*** (0.02)	0.09*** (0.02)
majority	-0.02 (0.11)	-0.11 (0.12)	-0.17** (0.08)	-0.05 (0.11)
_cons	12.13*** (0.17)	12.53*** (0.26)	12.53*** (0.11)	12.03*** (0.15)
N	5791	5130	6006	4184
r2	0.31	0.30	0.22	0.29
F	53.27	29.76	76.37	62.91
P	0.00	0.00	0.00	0.00

Notes: Standard errors in parentheses; \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Source: Authors' calculations using data from CSES 2014

Table A2: Likelihood of being wage-employees for men and women

	2004		2014	
	Labour Force Participation			
	men	women	men	women
age	0.11*** (0.01)	0.07*** (0.01)	0.05*** (0.01)	0.00 (0.01)
age squared	-0.00*** (0.00)	-0.00*** (0.00)	-0.00*** (0.00)	-0.00*** (0.00)
marital status	-0.35*** (0.04)	-0.70*** (0.04)	-0.42*** (0.04)	-0.59*** (0.03)
family size	0.02*** (0.01)	0.05*** (0.01)	0.05*** (0.01)	0.04*** (0.01)
household head education	0.08*** (0.00)	0.05*** (0.00)	0.05*** (0.00)	0.01*** (0.00)
log(land)	-0.08*** (0.00)	-0.08*** (0.00)	-0.08*** (0.00)	-0.07*** (0.00)
_cons	-2.62*** (0.13)	-1.73*** (0.14)	-0.35*** (0.13)	0.67*** (0.13)
<i>N</i>	13105	12784	12087	11379
r2_p	0.13	0.15	0.13	0.17
ll_0	-6899.94	-5362.80	-8376.71	-7626.06
ll	-6000.15	-4581.68	-7309.70	-6311.21
aic	12014.29	9177.36	14633.39	12636.43
chi2	1799.58	1562.25	2134.04	2629.70
p	0.00	0.00	0.00	0.00

Notes: Standard errors in parentheses; \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Source: Authors' calculations using data from CSES 2014

Table A3: Summary statistics for men and women

Variable	2004				2014			
	male	n	female	n	male	n	female	n
wage	247,815	3,796	229,476	2,558	659,445	7,721	551,810	5,813
real wage	404,200	3,796	374,288	2,558	568,096	7,721	475,371	5,813
ln(wage)	12.65	3,796	12.6	2,558	13.1	7,721	12.9	5,813
lfp	0.20	17,698	0.1	18,191	0.5	14,848	0.4	14,465
age	30.77	20,654	32.5	23,877	32.4	16,937	33.8	18,904
age squared	1,113.36	20,654	1,237.6	23,877	1,217.5	16,937	1,330.2	18,904
marital status	0.57	20,649	0.54	23,863	0.58	16,937	0.56	18,904
family size	5.81	20,654	5.60	23,877	5.22	16,937	5.07	18,904
household head	5.96	15,425	5.90	17,024	6.67	13,847	6.54	15,018
education	6.52	17,340	5.46	16,560	8.15	15,138	7.27	15,176
experience	18.65	17,304	19.57	16,516	19.16	14,693	20.14	14,769
log(land)	6.69	20,654	6.59	23,877	5.94	16,937	5.78	18,904
agriculture	0.60	17,721	0.58	18,215	0.44	14,854	0.47	14,477
manufacturing	0.13	17,721	0.15	18,215	0.25	14,854	0.24	14,477
services	0.27	17,721	0.27	18,215	0.32	14,854	0.29	14,477
isoc1	0.02	17,684	0.00	18,195	0.03	14,854	0.01	14,477
isco2	0.05	17,684	0.02	18,195	0.03	14,854	0.02	14,477
isco3	0.01	17,684	0.00	18,195	0.01	14,854	0.01	14,477
isco4	0.00	17,684	0.00	18,195	0.04	14,854	0.03	14,477
isco5	0.08	17,684	0.18	18,195	0.11	14,854	0.20	14,477
isco6	0.61	17,684	0.59	18,195	0.36	14,854	0.39	14,477
isco7	0.06	17,684	0.07	18,195	0.19	14,854	0.22	14,477
isco8	0.07	17,684	0.06	18,195	0.07	14,854	0.01	14,477
isco9	0.11	17,684	0.07	18,195	0.16	14,854	0.11	14,477
public organisation	0.06	17,651	0.02	18,138	0.07	14,850	0.03	14,476
domestic firm	0.90	17,651	0.95	18,138	0.80	14,850	0.77	14,476
foreign firm	0.00	17,651	0.00	18,138	0.12	14,850	0.20	14,476
NGO and others	0.03	17,651	0.03	18,138	0.00	14,850	0.00	14,476
urban	0.17	20,654	0.17	23,877	0.24	16,937	0.25	18,904
majority	0.96	20,654	0.96	23,877	0.96	16,937	0.96	18,904

Source: Authors' calculations using data from CSES 2014