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Chapter Five

External Sector Gender Wage Gaps in Sri Lanka: An Analysis Using Matching Techniques

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5.1. Introduction

The nexus between outward orientation and gender pay inequality have been explored in various contextual settings (Berik et al., 2004; Oostendorp, 2009; Samarasinghe, 1998; Seguino, 2000; Zweimüller et al., 2008). These studies cover the developing countries (Oostendorp, 2009), middle income semi-industrialized economies with export orientation (Seguino, 2000), and newly developed East Asian countries, Taiwan and Korea (Berik et al., 2004). The Sri Lankan context of the external sector gender wage gaps have been mainly explored through the mean wage gap for raw wages or residual wages (Nordås, 2004; Ranasinghe & Wickramasinghe, 2020; Samarasinghe, 1998; Seguino, 2000; Seneviratne, 2020; Weerahewa, 2002), and the results interpreted in line with the neoclassical discrimination theory(Becker, 1971), the neoclassical trade theory and from a feminist theoretical lens. However, not much is known about the gender pay gaps across a distribution and especially, about the nature of the unexplained potion of the wage gap. In this empirical backdrop, the present study seeks to establish whether any differences exist in external sector wages between sets of men and women matched on socio-economic characteristics that determine wages.

This study aims at extending the body of knowledge on external sector gender wage gaps in several ways. This is the first instance where matching techniques are used to explore the Sri Lankan context of external sector unexplained wage gaps and the nature of such gaps across the wage distribution. Matching methods are useful to minimize selection bias, and allow the distribution to be considered, in place of a mean or an average, as in the traditional decomposition techniques (Ñopo, 2008; Oanh & Ngoc, 2020).

Unlike previous studies done for Sri Lanka, this study also covers the inbound-tourism sector. Understanding the nature of external sector gender wage gaps, especially the much obscure segment of the gap, is decisive for effective gender policy initiatives and equitable economic development.

This chapter is organized as follows. The next section visits the historical manifestations of the external sector gender wage gaps and provides a brief overview of the existing literature. A detailed account of the matching techniques applies to scrutinize the external sector earning for the years 2015 and 2018 can be found in the section dedicated to methods. The results of the matching procedures are supplemented with further analysis of the unexplained gender wage gaps across sectors and between gender and ethnic intersections. A discussion of the results and the concluding remarks can be found in the final sections of the chapter.

5.2. Sri Lankan manifestations of gender wage inequality

There are historical roots to the construction of export sector economic structures that may foster modern gender wage gaps, especially in countries with a colonial past. The export economy of Sri Lanka, established under British colonial rule was the first known form of capitalist production in the island. The British planters who had previously worked in slave labour plantations in the Caribbean were involved in setting up plantations in Sri Lanka (Kurian & Jayawardena, 2013). The British colonial administration overlooked the poor working conditions of plantation workers and awarded incentives to the planters, who did little to reverse the working conditions. At the onset, the labor employed in the sector was imported from South India, was flexible, indentured and was far from being capitalist (Snodgrass, 1966). Incentives, favorable prices, and cheap flexible slave like labor allowed the plantation based primary export sector to grow at a phenomenal rate. By the time Sri Lanka gained political independence in 1948, the contribution of the plantation sector was close to 79 percent of the gross domestic product.

The number of women employed in the colonial plantation sector was a mere 2.6 percent in 1843 but grew to 27 percent by 1866, and thereafter the numbers have steadily increased (Kurian & Jayawardena, 2013). At present, tea remains a prominent agricultural export with a workforce comprising of around 80 percent of women (Jayasinghe, 2019). In addition, women dominate job roles, specifically of an elementary nature. For instance, more than 95 percent of the green leaf harvesters, a permanent full time job role but of an elementary nature, are women (Jayasinghe, 2019; Samarasinghe, 1993).

The intense and radical application of neoliberal policies from 1977 which were fashioned after right wing domestic political ideology and international-donor ideologies, dramatically altered the composition of the foreign exchange earning sector. The contribution of plantation agricultural exports to the total foreign exchange earnings dropped from 83.4 percent in 1977, to 21 percent in 1995. The industrial exports driven by the boom in the apparel industry contributed to 69.4 percent of the foreign earnings of 1995 (Samarasinghe, 1998). Simultaneously, the total number of women employed in the industrial export processing zones had increased to 78.4 percent of the total work force of the zones by 1992 (Samarasinghe, 1998).

The apparent feminization, especially visible during the 1990s in the outward earning external sector has shifted since. By 2018, the percentage of women employed in export processing zones stood at 56 percent of its total workforce (Department of Census and Statistics, 2021), a gradual decline from a 78 percent in the mid-1990s and early 2000, but still a notable high, compared to male labor employment. In addition, newer sectors, such as tourism, have become robust alongside labor migration, tea exports and apparels. The phenomenal expansion of the tourism industry, after the ending of the decade-long civil war in 2009, saw it transform into the fourth highest foreign exchange earning sector of the Sri Lankan economy. By 2014, the total workforce of the tourism industry, including jobs indirectly supported, was 10 percent of total employment (Silva & Mendis, 2017). Yet, unlike in tea and apparel, women's labor force participation in the industry remains low at a

mere 10 percent of its total workforce (Silva & Mendis, 2017; Wijayasiri, 2020).

Colonial and post-colonial liberal economic policies supported the increase in the avenues available for women's labor force participation in certain quarters of the Sri Lankan economy. However, these avenues did not contribute sufficiently to close the gaps between male and female outcomes (Samarasinghe, 1998). Studies that have explored the link between Sri Lanka's external earnings and gender from a feminist lens seem to have specifically paid notable attention to the tea plantation sector. The socio-economic constructions of colonial hierarchy and local patriarchy culpable for subjugation, are found preserved within the production arrangements weakening the economic outcomes of women workers (Kurian & Jayawardena, 2013, 2014; Ranasinghe & Wickramasinghe, 2020). Few others, for instance, Samarasinghe (1998) has analyzed how liberal Structural Adjustment Policies that induced flexible labor, changed patterns of women's labor force participation, prevented representation at decision-making level jobs, denied effective worker rights resulting in minimal benefits and low wages for women in the export-oriented sectors.

An early study by Weerahewa (2002), using macro data and a general equilibrium model, illustrates how low world market prices for garments and higher tariffs are culpable of widening the raw wage gap between male-female wage rates. Weerahewa (2002) believes an expansion in the sector will reduce the wage gaps, perhaps hinting that expansion or increased competition can resolve the discriminatory wage. It is worthwhile to note that for the period between 2000 and 2018, the volume index for garments have increased by 2.3 percent, trade value has increased by 8.1 percent and the unit prices have risen by 5.8 percent. For the period between 2015 and 2018, the volume index has grown by 0.8 percent, trade index by 7.8 percent and the

unit value by 6.9 percent.[1] Since 2004, Sri Lanka has enjoyed tariff concessions, especially with its dominant trade partners. Under the Generalized System of Preferences (GPS) Sri Lanka enjoyed a 40 percent duty concession for apparel exports to the European Union (EU) and another 20 percent concession for meeting various labor requirements in the industry (Ranjith & Widner, 2011). From 2017, another special duty concession was awarded, known as GSP plus, which covered apparel exports to the EU. Given this backdrop, it would be interesting to see if reduced tariffs and higher prices had resulted in the elimination or reduction of unexplained and discriminatory gender wage gaps for the years under review.

According to Seneviratne (2020), despite the mean gender pay gap decreasing since 1990s liberal reforms, the wage gap widens disproportionately in the lower half of the wage distribution, coinciding with falling absolute and relative returns to women in manufacturing industries and production occupations (Seneviratne, 2020). These findings suggest that greater international competition does not do much to remove the less visible gender wage differentials as thought earlier.

The neoclassical Heckscher-Ohlin approach argument, which differentiates males and females as separate factors, was applied to rationalize wage gaps from results of a mean decomposition of external sector wages by Robertson et al. (2018). Yet again, it would be interesting to find out as to whether such gaps exist when male and female differences are eliminated through matching techniques.

Empiricist studies on Sri Lanka's external sector gender wage gaps have paid considerable attention to the explained portion of the total gap. Moreover, nothing much is known of the unexplained gaps and their behavior across a wage distribution. In addition, apart from a handful of feminist studies, for instance, Seguino (2000), no attempt has been made to interpret empiricist

[1] Central Bank of Sri Lanka Annual report, author's calculation. All index values are derived for 2010 base year and 2010 =100.

findings beyond the neoclassical theorizing. This study intends to address these knowledge gaps.

5.3. Methods

Wage gaps are often decomposed between explained and unexplained parts applying methods ranging from parametric, semi-parametric to non-parametric and across the mean and beyond the mean (Blinder, 1973; Bourguignon et al., 2008; Fortin et al., 2011; Firpo et al., 2009; Juhn et al., 2014; Machado & Mata, 2005; Oaxaca, 1973; Oaxaca & Ransom, 1994; Ñopo, 2008). The unexplained part of the wage gap is customarily considered as the wage differential that manifests from labor market discrimination (Blinder, 1973; Oaxaca, 1973). The explained potion is the wage differential that occurs due to observable differences between men and women's wages. Deviating from the customary emphasis on the explained potion, this study uses two matching techniques, namely the propensity score matching (PSM) and the method proposed by Ñopo (2008), to estimate the unexplained gap, which is the gap that remains after matching for men and women's observable characteristics.

Propensity scores, enable the formation of matched sets that have a balance on a large number of covariates and the matching takes place on the scalar propensity score of the covariates (Stuart & Rubin, 2008). Ñopo's (2008, 2009) technique, a fully non-parametric method, considers gender as the treatment variable in which sub-samples of men and women's wages are matched using a quasi-experimental matching method. This then allows the distribution to be considered, in place of a mean or an average, as in the traditional Oaxaca and Blinder (1973) method. Estimation is restricted to common support, where there is sufficient overlap in the characteristics of treated and untreated individuals in finding adequate matches.

Several propensity score matching techniques were tested to find the best covariate balance (Stuart & Rubin, 2008), and kernel matching was chosen. The kernel matching of propensity scores ensures that each treatment

individual is matched to all control individuals with greater weight given to those with more similar propensity scores.

For the propensity score method, using kernel matching, let Υ be the log of the hourly pay of an individual. Gender is indicated by D, with D =1 being the 'treated' group that are female and D = 0 denoting those who are 'untreated' (or the control group), that are males. The average treatment effect (ATE) is the total wage gap, containing both the explained and the unexplained wage differentials and thus, can be expressed as follows.

$$ATE = \mathrm{E}(\Upsilon_{1i} - \Upsilon_{0i}) \equiv \mathrm{E}(\beta_i) \qquad (1)$$

The average treatment effect of the treated (ATET) represents the gender pay gap that cannot be explained by the different characteristics of men and women (Hedija, 2016). The average treatment effect of the treated (D =1) can be written as depicted in equation 2.

$$ATET = \mathrm{E}(\Upsilon_{1i} - \Upsilon_{0i}|D_i = 1) \equiv \mathrm{E}[\beta|D_i = 1] \qquad (2)$$

Ñopo's (2008) method of matching and decomposing is a fully non-parametric method. Hence, it requires no estimation of a linear wage regression and uses wage data without any log transformation (Djurdjevic & Radyakin, 2007).

Conforming to Ñopo's (2008)method, the matching algorithm used in this study matches women without replacement and men with replacement. First, a female is selected and matched to all the males that have the same characteristics as the female selected initially. Second, a synthetic individual, whose characteristics are equal to the average wage of all the matched males, is constructed and matched to the original initially selected female. The synthetic male and the female is then put in their respective new sample of matched individuals and the steps are repeated (without replacement of females) until the female sample is exhausted (Ñopo, 2008). As a result, sets of matched and unmatched, male and female samples are reconstructed.

Now, let E[Y|M] be the expected value of hourly wages conditional to characteristics (X) of the matched males, M, and E[Y|F] be the expected value

of hourly wages conditional to characteristics (X) for females, F. The wage gap can be expressed as follows (Ñopo, 2008).

$$\Delta = \mathrm{E}[\mathrm{Y}|\mathrm{M}] - \mathrm{E}[\mathrm{Y}|\mathrm{F}] \qquad (3)$$

The wage gap (similar to ATE from the propensity score matching) is then decomposed into four addictive components as depicted in equation 4.

$$\mathrm{E}[\mathrm{Y}|\mathrm{M}] - \mathrm{E}[\mathrm{Y}|\mathrm{F}] = \Delta = (\Delta_M + \Delta_X + \Delta_F) + \Delta_0 \qquad (4)$$

Where, Δ is the wage gap (similar to ATE) comprising of explained and unexplained differences, Δ_M is the part that can be explained by the differences of two groups of males matched and unmatched to female characteristics, Δ_F is the gap between two groups of females whose characteristics can be matched and unmatched to that of males, and Δ_X , is the gap explained by the differences in the distribution of observable characteristics of males and females over the common support which can be eliminated through the matching technique. Thus, the first three components $(\Delta_M + \Delta_X + \Delta_F)$ constitute of observable characteristics, while the last component, Δ_0 is the gap that cannot be explained and likely due to unobservable characteristics and gender discrimination. In this study, all females are matched to the corresponding control groups and thus, $\Delta_F = 0$.

5.4 Data and specifications

The data for this study comes from the Labor Force Survey (LSF) for 2018 and the 2015 conducted by the Department of Census and Statistics, Sri Lanka. The year 2015 acts as the base year for understanding the magnitude of change that had taken place in 2018. These data sets are handled separately with no pooling. The income data of individuals engaged in tea, apparels and tourism related occupations are sorted from the annual Labor Force Survey for 2018 and 2015. The tea, apparel and tourism sectors respectively contributed 6 percent, 22 percent and 22 percent to foreign exchange earnings from goods exports, remittances, and tourism and their combined share was 61 percent of the total earning from goods exports, remittances, and tourism. In 2018, the

tea, apparels and tourism contributed 5.8 percent, 21.7 percent and 22.9 percent respectively, while, adding up to a share of 50.4 percent of the total earnings from exports, remittances and tourism (Central Bank of Sri Lanka, 2016, 2019).

Table 5.1 presents the breakdown of the samples across year and gender for occupations in tea, apparel, and tourism (before matching).

Table 5.1: Sample across gender and year

	Gender		
Year	Female	Male	Total
2018	2,029	1,561	3,590
2015	2,339	1,818	4,157

Source: LSF 2018, 2015 and author calculations.

The model specification and diagnostics when estimating propensity scores are not the standard model diagnostics for logistic regression and the concern is mainly with the quality of the match and sometimes the accuracy of propensity scores itself (Stuart & Rubin, 2008). Hence, the specifications are modeled to balance the covariates, their squares and cross products. Finally, the common support is tested using graphs and empirical estimations.

To create the propensity scores, a probit is run (even with a logit model, similar but not identical inferences can be obtained) with the dependent variable being gender. Female earners constitute the treatment group (D =1) and male earners form the untreated or controlled group (D = 0). The outcome variable is log of hourly wages, calculated by adjusting total monthly wages of the primary job to the actual number of hours worked in the primary job during the reference period (a week) of the survey.

The independent variables comprise those commonly found in the gender wage gap literature. These variables included age, age squared and education level representing the standard Mincerian wage function, marital status, family role (head or member), number of children (below 15 years), occupation category, the status of employment and part-time work (Djurdjevic

& Radyakin, 2007; Frölich, 2007; Oanh & Ngoc, 2020; Robertson et al., 2018). A major limitation of the data used is the lack of information relating the number of years worked or the work expertise of the worker. Therefore, education and occupation structures with hierarchal information is used as proxies of experience and to represent the human capital stocks.

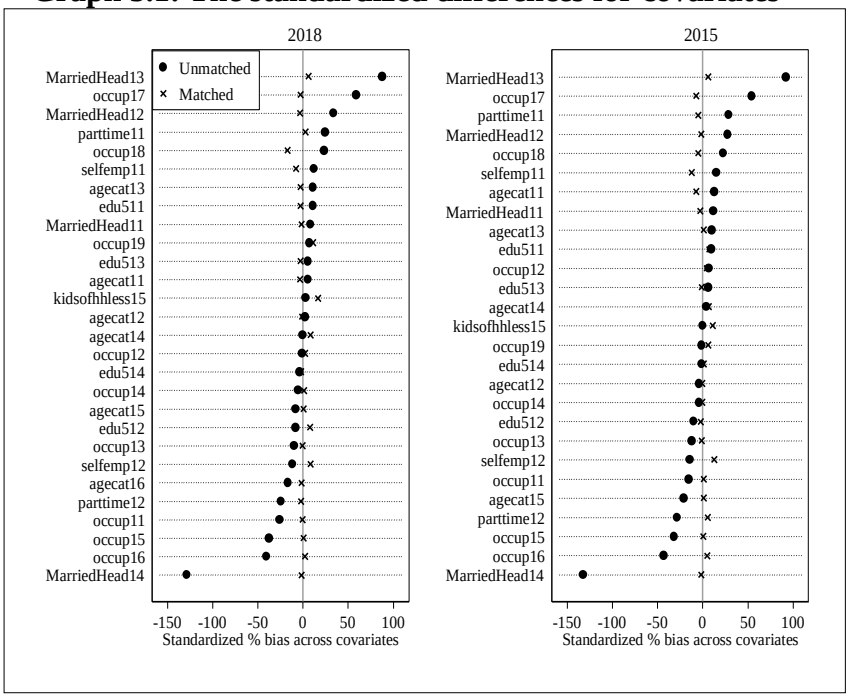
Table 5.2 depicts the results for the evaluation of standardized differences in the matching samples. The standardized percentage mean bias after matching, is higher for specifications in model 1 and 2 compared to specifications in model 3 which is less than 5 percent. Hence, covariates in specification 3 are chosen as the final covariates for the model.

Table 5.2: Standardized percentage mean and median bias

		2018	
Model	Sample	Mean Bias percent	Median Bias percent
	Unmatched	0.1	19.9
Model 1	Matched	4.9	4.6
	Unmatched	23	11.5
Model 2	Matched	5.4	3.7
	Unmatched	22.1	11
Model 3	Matched	4.3	2.6
		2015	
	Unmatched	27.9	18.7
Model 1	Matched	5.4	5.1
	Unmatched	23.9	14.7
Model 2	Matched	4.6	3.8
	Unmatched	23	12.7
Model 3	Matched	4.3	3.3

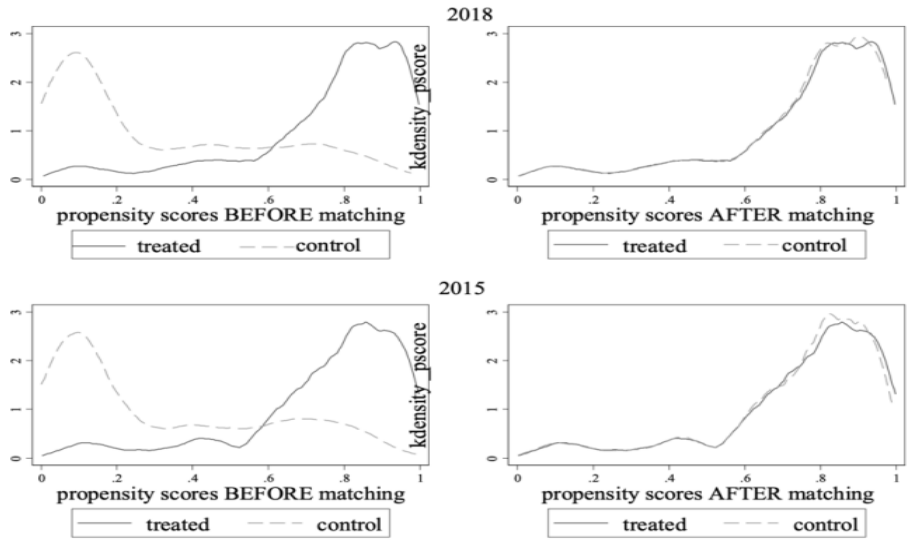
Source: LSF 2018, 2015 and author calculations.

Graph 5.1: The standardized differences for covariates



Source: LSF 2015, LSF 2018 and author's calculations.

Graph 5.2: Kernel distribution of propensity scores before and after matching



Source: LSF 2018, LSF 2015 and author's calculations.

The full list of covariates of model 3, is depicted in Table 5.3 below.

Table 5.3: Covariates of model 3

Variable	Subcategories
Age	Age between 15-25 years; 26-35 years;36-45 years; 46-55 years; 56-65 years; 65 years or older.
Occupation	Senior managers, senior officials, and legislators; Professionals; Clerks and clerical support workers; Services and Sales workers; Skilled Agricultural workers; Craft, and related trades workers; Plant and machine operators, assemblers; Elementary occupations.
Cohabitation status and household role	Non cohabiting member; Non cohabiting head; Cohabiting member; Cohabiting head
Part time work	No part time work; Part time work
Employment status	Employee; Self -employed or employer
Education	No schooling; 5 years or less schooling; 6-11 years of schooling; 12-14 years of schooling; 15 or more years of schooling
Children	Number of children

The same covariates of model 3 selected for the propensity score matching is used in the Ñopo's matching technique with the modelling assumption that individuals with the same observable characteristic should be paid the same regardless of their sex. For both years more than 55 percent of males and females have been included in the common support (treatment group) after resampling (Table 5.4). As explained before, raw wages are used instead of log transformed wages as there is no requirement of a linear wage function in

the Ñopo's match technique. In addition, the counterfactual mean wage is simulated only for the common support, implying that no assumption on the out-of-support is required (Ñopo, 2008; Djurdjevic & Radyakin, 2007).

Table 5. 4: Sample in common support (Ñopo Matching)

	In common support (treated)	
Year	Percentage of males	Percentage of females
2018	60.62	55.56
2015	57.77	58.99

Source: LSF 2018, LSF 2015 and author's calculations.

5.5. Empirical results

In this section, the gender wage gap across the absolute and relative wage distributions, sectoral wage gaps and their gendered intersections with ethnicity have been examined.

Wage inequality between 2018 and 2015

The PSM results show that the average treatment effect (ATE), which is the total gender wage gap (total explained and unexplained) between matched males and females, is 29 percent ($p = 0.000$) for 2018 and 28 percent ($p = 0.000$) for 2015. These results imply an increase of the total gender wage gap from 2015 to 2018.

The average treatment effect of the treatment for 2018 is 25 percent ($p = 0.000$) and is biased against women, meaning after matching men still earned 25 percent more than women. For 2015, the average treatment effect of the treated is 23 percent ($p = 0.000$). These results, as depicted in Table 5.5, specify that the unexplained gender wage inequality has increased in 2018 compared to 2015 by 2 percent of log points between females and their matched male counterparts. In other words, the males in the control group, who are identical to the treated group of females in terms of matching propensity scores, on average, earned more. This indicates a considerable level of bias in the external sector wage distribution against women, despite tea and apparel sectors continuing to have a higher female labor force participation.

Table 5.5: Propensity score matching results for 2018 and 2015

2018[a]						
Variable	Sample	Treated	Controls	Difference	S.E.*	P value
Log of hourly wage	Unmatched	4.5362	4.9445	-0.4083	0.0244	0.0000
	ATT	4.5448	4.7923	-0.2475	0.0496	0.0000
2015[b]						
Log of hourly wage	Unmatched	4.2471	4.6353	-0.3882	0.0235	0.0000
	ATT	4.249	4.4752	-0.2262	0.0435	0.0000

Source: LSF 2018, 2015 and author's calculations.

Note: * Bootstrapped standard error.

a: Observations on common support for 2018: female- 1833 and male 1466.
b: Observations on common support for 2015: female- 2191 and male 1746.

The results of the Ñopo's decomposition for the years 2018 and 2015 are presented in Table 5.6 and 5.7. The Ñopo decomposition calculates the gender wage gap as a percentage of women's wages. Hence, these results should not be confused with the PSM percentages reported above for absolute log wages.

The Ñopo decomposition results indicate that the overall unexplained hourly gender wage gap for the common support sample is 17 percent (LKR 20.46) and 12 percent (LKR 10.75), respectively, for the years 2018 and 2015. Evidently, there is an increase in the unexplained gap. In monetary terms, by 2018, women employed in the external sector on average lost around LKR 3429 (US$ 21)2 per month due to unexplained reasons, whereas this gap was only, LKR 1763.35 (US$ 13)[3] in 2015. Hence, the unexplained gender wage gap had risen by almost two folds in Sri Lankan Rupee (LKR) terms. From the Ñopo decomposition, it can be ascertained that both overall gender wage inequality and unexplained wage inequality (that exists for the observations within common support) in the export earnings sector has risen in 2018 compared to 2015. The increasing trend of the wage inequality, as depicted in

[2] Converted using the 2018 average annual exchange rate, which was 1 US$=LKR 162.54.
[3] Converted using the 2015 average annual exchange rate, which was 1 US$=LKR 135.94.

Table 5.6 and Table 5.7, is similar to that witnessed for the propensity matching results.

Table 5. 6: Ñopo Matching results for 2018 and 2015

	Total Gap	Unexplained gap	
Year	Δ	Δ0	SE
2018	67 percent	17 percent	3 percent
2015	44 percent	12 percent	5 percent

Source: LSF 2018, 2015 and author's calculations.

Note: Δ is the gap as a percentage of female wages, Δ0 is the unexplained gap and SE is the standard error of the unexplained gap.

Table 5.7: Gender wage gap in monetary terms (Ñopo Matching)

	Hourly wage gap in LKR		Monthly wage gap in LKR	
Year	Δ	Δ0	Δ	Δ0
2018	78.91	20.46	12693.9	3429.71
2015	39.81	10.75	6275.3	1763.35

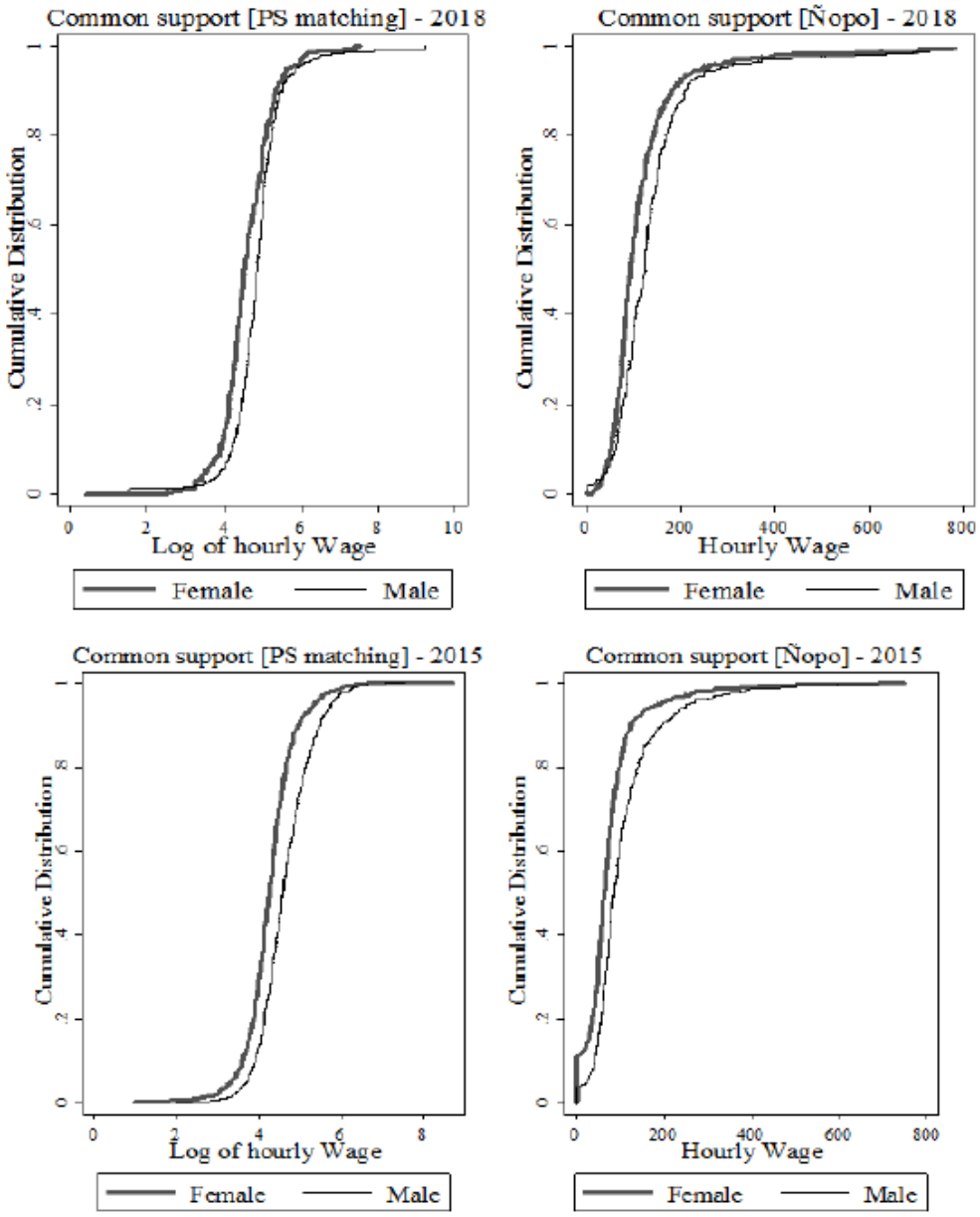
Source: LSF 2015, 2018 and author's calculations.

Δ is the gap as a percentage of female wages and Δ0 is the unexplained gap.

Wages across the distribution for matched samples

Graph 5.3 depicts the male and female wage distributions of sub-samples within common support. Despite the matching, the men's wages tend to be greater than the women's wages for both 2018 and base year 2015. From this graph, it can be ascertained that the external sector cumulative male wage distribution, in both log and non-log forms, demonstrates 1st order stochastic dominance over most parts of the female wage distribution, indicating that a wage gap difference remains though out the distribution.

Graph 5.3: Wage distribution for cases within common support (after matching)



Source: LSF 2018, 2015 and author's calculations.

Graph 5.4 inspires a quantile analysis of the unexplained gender wage gap that exists in the external earning sector. According to Ñopo, "the horizontal

distance between the two cumulative distribution functions obtained after matching is a measure of the unexplained gender wage gap at the respective percentile" (Ñopo, 2008, 289). Hence, on the right-side panel of Graph 5.4 is a depiction of the unexplained wage gap across quintiles as measured through Ñopo's technique for 2018 and 2015. On the left side of Graph 5.4 is the depiction of the relative wage gap as calculated from the matched samples of the propensity score matching, which is a moderate representation of the unexplained wage gap for their respective years. The shapes of the gender wage gap distributions are almost identical for both matching techniques across a given year.

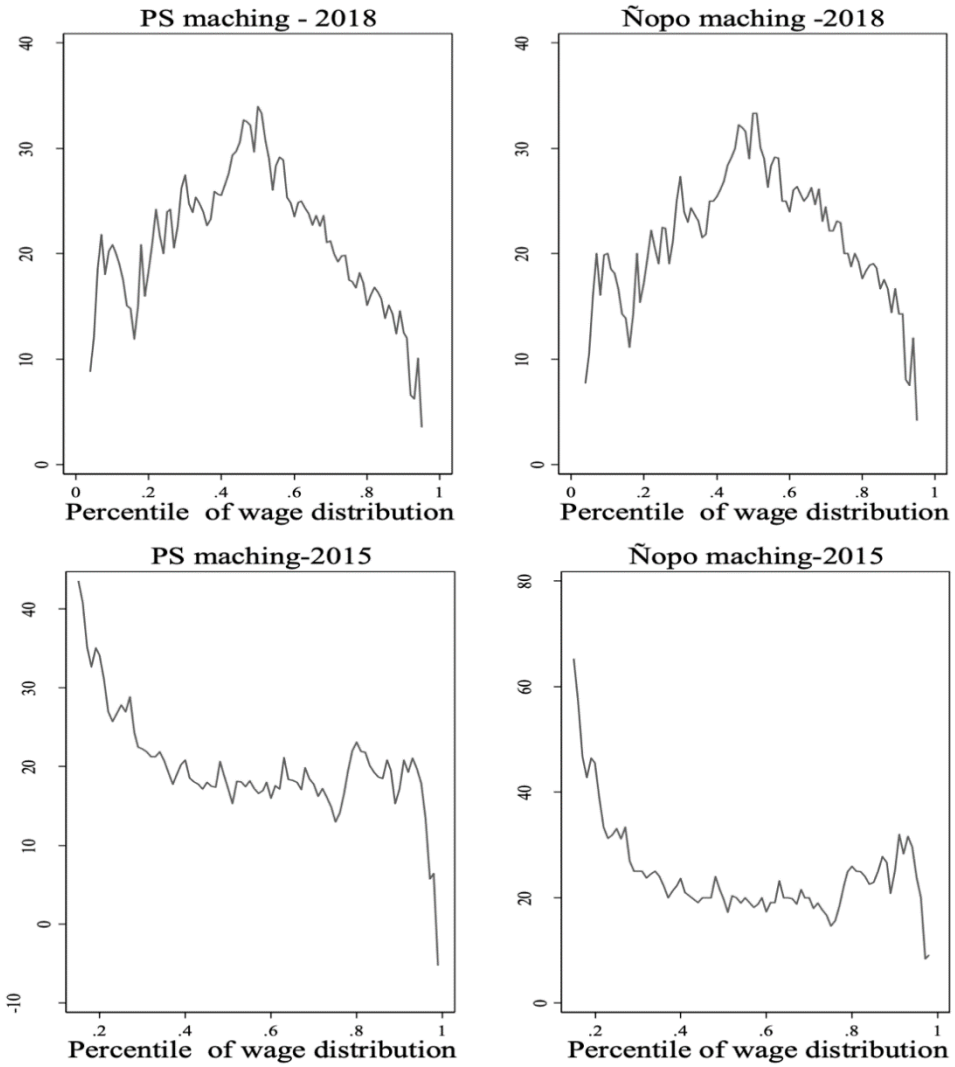
The widest unexplained wage gap for the year 2015 can be found in the 10th percentile for results obtained from the PSM method and in the 12th percentile for results obtained from Ñopo's matching technique[4]. By 2018, the highest unexplained gender wage gap is recorded in the 50th percentile[5].

The highest average unexplained gap is found in the 1st and the 2nd deciles, respectively recording 35 percent and 61 percent, in the 2015 distribution. In contrast, the highest average unexplained gaps for 2018 are found in the 5th and the 6th deciles. These results (graphically visible in Graph 5.4) reveal that in contrast to highest income earners, middle- and low-income earning women were more likely subjected to discriminatory wages and depicts signs of a temporal shift in the intensity of the wage discrimination, from lower-income categories (or entry-level jobs) in 2015 to middle-income categories by 2018.

[4] The unexplained gap corresponding to the 10th percentile obtained through PSM method is 120 percent as a percentage of the women's wages. For the Ñopo's matching technique, the highest unexplained gap is at the 12th percentile, records a value of 212 percent as a percentage of women's wages.

[5] The unexplained gap is 34 percent for results obtained from the PSM methods and 33 percent for the Ñopo's matching technique.

Graph 5.4: Relative gender wage gap (after matching) - 2018 & 2015



Source: LSF 2018, 2015 and author's calculation.

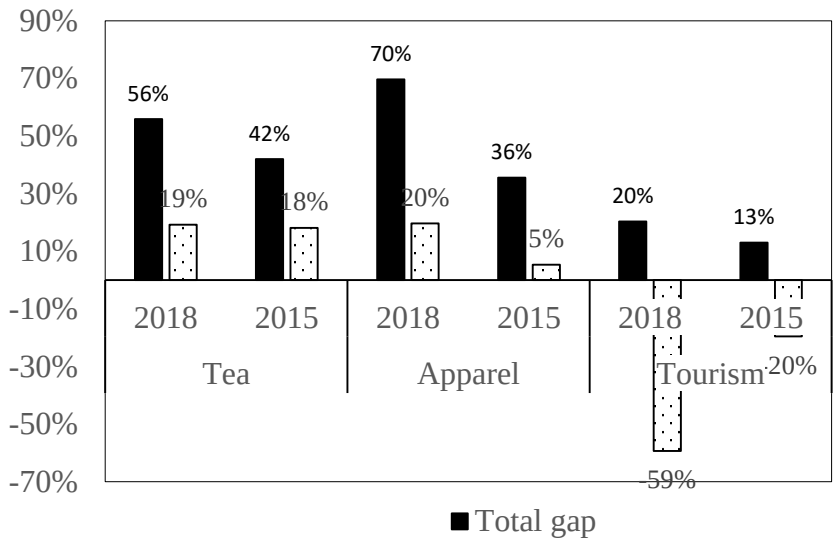
Sectoral analysis and the possible gendered intersections using Ñopo decomposition

Using the Ñopo's (2008) decomposition method the wage gap is decomposed, and results are depicted across tea, apparel, and tourism sectors. In all three sectors an unexplained gap is present. Overall, tea and apparel exporting sectors demonstrate the widest wage inequalities compared to tourism.

Both apparel and tea exporting sectors record an unexplained gap close to 20 percent as a percentage of women's wages whereas the unexplained gap in the tourism sector is in the negative region. One factor that may be contributing to the negative gap observation in tourism, is the low number of matched female observations (286), a direct result of tourism sector's low female labor force participation (hardly 10 percent of the total workforce) compared to tea and apparel, which are amongst the highly feminized sectors in the export economy.

As depicted in Graph 5.5, both explained and the unexplained gaps are observed in the tea and apparel sectors and their sizes have increases from 2015 to 2018. The highest wage gaps are now seen in the apparel sector.

Graph 5.5: Gender wage gaps across sector

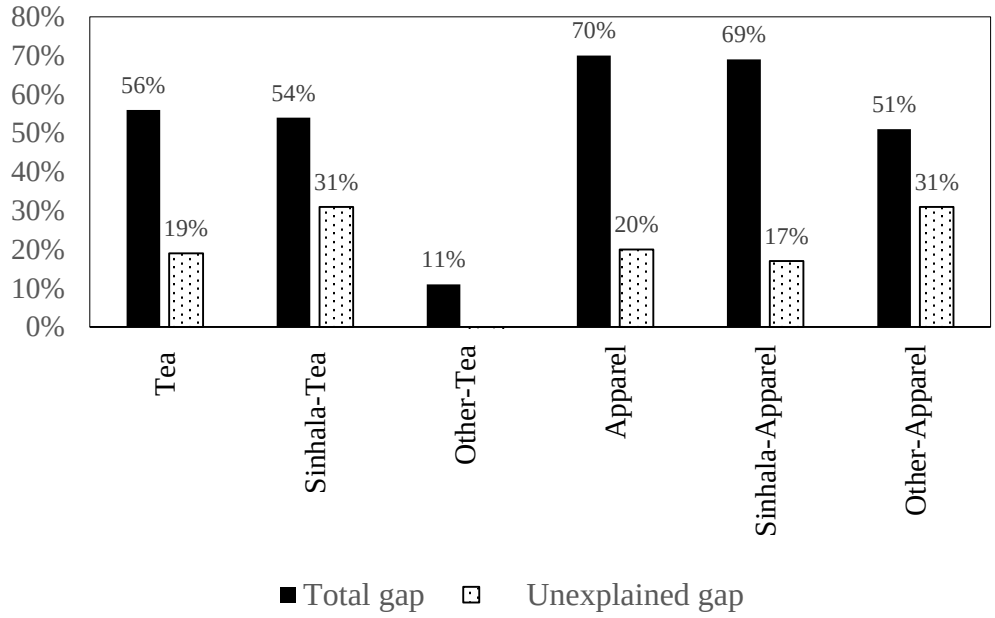


Source: LSF 2018, 2015 and author's calculations.

Graph 5.6 depicts how sectoral wage gaps tend to vary across ethnicity of women. Sinhala women representing the majority ethnic group and employed in tea export sector seem to have a higher unexplained gap than the non-Sinhalese (mainly Tamil minority) women employed in the sector. The difference which is 31 percent is even larger than the average sectoral unexplained gap of 19 percent. The gender wage difference encountered by

minority women seems to stem entirely from the differences in characteristics between men and women rather than any unexplained gap (which is in the negative region, -2 percent). This finding is compelling, as it sheds new light on the gender-race discriminatory dynamics that persists in the tea export sector.

Graph 5.6: Ethnicity and wage gaps across export sectors



Source: LSF 2018 and author's calculations.

In the apparel industrial sector, the unexplained gender wage gap for Sinhala women workers is relatively lower than the unexplained gender wage gap for minority (Tamil and Muslim) women. Minority women face a gap of 31 percent, which is even higher than the industry's average unexplained gender wage gap of 20 percent.

These results demonstrate that women belonging to all ethnic clusters encounter unexplained gender wage discriminations at varying levels particularly in tea and apparel export sectors.

5.6. Discussion

The increase of the unexplained gender wage gap from 2015 to 2018, is somewhat comparable, but not identical (due to methodological differences), to the observations made by Seneviratne (2020) regarding the widening of the unexplained gender wage gap at the mean since the 1990s liberal reforms. However, this study shows that the unexplained wage gap for matched cases, exists not only at the mean but throughout the distribution, with varying intensity and has widened between 2015 and 2018.

The 1st order stochastic dominance of male outcomes over female outcomes is comparatively similar to results reported by Kulatunga (2016) for the distribution of assets including earned income, between men and women. The highest decile enjoying the least amount of discrimination is also common to the Sri Lankan context of asset inequalities (Kulatunga, 2016).

Despite matching for education, occupations, occupational hierarchies and other characteristics, significant gender gaps remain in the export income earning sectors of the Sri Lankan economy. Thus, the gender-differentiated human capital argument presented within the Heckscher-Ohlin approach is weak for the matched samples of 2015 and 2018.

The results of this study prove that the opening of the economy in 1977 and the export orientation from 1990s, which contributed to the expansion of Sri Lanka's external sector, has not removed, or lessened the unexplained gender wage gaps. The results are also not comparable with the market openness and competition arguments for gender wage discrimination as propagated in Becker's (1971) theory of discrimination. Despite increase to prices in apparels and tariff concessions, a significant total wage gap and the largest unexplained gender wage gap is reported from the apparel export sector. Such findings, at least for the years under review, debunk the narrative that lower tariffs and higher prices will reduce gender wage gaps and eliminate discrimination.

The unexplained gaps in the apparel manufacturing sector resonates with Acker's (2004) assertions of gender being an input in global capitalist manufacturing wherein women workers are often seen as docile, cheap to hire, and able to tolerate repetitive work (Acker, 2004). Further evidence to the nexus between capitalism and patriarchy is furnish by the unexplained gender wage gap results from the tea export sector and strengthens the feminist concerns around patriarchal injustice encountered by plantation sector women (Kurian & Jayawardena, 2014; Ranasinghe & Wickramasinghe, 2020). When ethnicity is introduced as a gendered intersection, Sinhala women seems to bare the bulk of the unexplained wage inequality in the tea plantation sector, whereas the unexplained wage gap for minority women is apparently in the negative region. Therefore, it can be concluded that the existing gender wage differentials for minority women in tea sector, is due to differences in explained characteristics which may transpire due to a variety of reasons including discriminatory access to education and patriarchal household and social structures.

5.7. Conclusion

The findings prove that not only a total wage gap, but unexplained wage gaps too have persisted and are visible for the years under review. Compared with 2015, there is an increase in the unexplained gender wage gap in 2018. Across the distribution, the peak of the unexplained wage gap seems to have shifted from the low-income deciles in 2015, to 5th and 6th deciles in 2018, indicating possible wage adjustments at the entry and low-income categories and neglect of such adjustment to for middle-income earners.

In all three export sectors, tea, apparel and tourism, gender wage gaps are present. The tea and apparel export sectors record the widest wage inequalities compared to the tourism sector. With the relative decline of the agricultural exports share and the increase of the relative share of industrial exports in the gross domestic product, the intensity of unexplained gaps and discrimination seems to have concentrated in the apparel sector as it records the highest

unexplained wage differentials for the years under review. The ethnic and gender intersection results reveal significant gender wage disparities among both the majority Sinhala women and minority Tamil and Muslim women.

The findings of this study debunk many existing mainstream narratives relating to gender wage differentials. Neither competition, expansion nor differences in male and female labor can explain the existence of unexplained gaps across matched sets of men and women. The patriarchal socio-economic structures culpable for subjugation and gender manifesting as an input in production are plausible causes for the continuation of horizontal wage inequalities between men and women of equal human capital, occupational and demographic status.

Even low levels of discrimination can cause significant pay gaps because they encourage the prioritizing of men's work (Averkamp et al., 2020), and ultimately affect women's empowerment. Solutions for unexplained gender wage inequality can only come from interventions that can change the existing socio-economic structures and not through market forces. Encouraging export sector businesses to practice transparency in wage payments is an important step towards removing hidden wage differences. The elimination of gender wage gaps for equally qualified and positioned men and women should also be considered a gender policy priority. The wage gaps that transpire across ethnic and gender intersections must be addressed by policies designed with intersectional considerations. Strong decent work policy regimes and equal pay laws can potentially lessen the impact of patriarchal and capitalist structures instigating subjugation.

References

Acker, J. (2004). Gender, capitalism and globalization. *Critical Sociology*, *30*(1): 17–41.

Averkamp, D., Bredemeier, C., & Juessen, F. (2020). *Decomposing Gender Wage Gaps–A Family Economics Perspective* (No. 13601; IZA Discussion Papers). Institute of Labor Economics (IZA).

Becker, G. S. (1971). *The economics of discrimination*. University of Chicago Press https://bit.ly/3Bdl3F5.

Berik, G., Rodgers, Y. van der M., & Zveglich, J. E. (2004). International trade and gender wage discrimination: Evidence from East Asia. *Review of Development Economics*, *8*(2): 237–254.

Blinder, A. S. (1973). Wage discrimination: Reduced form and structural estimates. *Journal of Human Resources*, 436–455.

Bourguignon, F., Ferreira, F. H., & Leite, P. G. (2008). Beyond Oaxaca–Blinder: Accounting for differences in household income distributions. *The Journal of Economic Inequality*, *6*(2): 117–148.

Central Bank of Sri Lanka. (2016). *Economic and Social Statistics of Sri Lanka-2016* (p. 192). Central Bank of Sri Lanka. https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/ statistics/otherpub/econ_percent26_ss_2016_e-min.pdf.

Central Bank of Sri Lanka. (2019). *Economic and Social Statistics of Sri Lanka-2019* (p. 194). Central Bank of Sri Lanka. https://www.cbsl.gov.lk/sites/default/files/cbslweb_ documents/statistics /otherpub/ess_2019_e.pdf

Department of Census and Statistics. (2021). *Gender Statistics*. Free Trade Zone and Industrial Zone Workers by Year and Sex. http://www.statistics.gov.lk/Resource/en/GenderStatistics/Special_Concerns/FreeTradeZoneAndIndustrialZoneWorkersByYearAndSex.pdf.

Djurdjevic, D., & Radyakin, S. (2007). Decomposition of the gender wage gap using matching: An application for Switzerland. *Swiss Journal of Economics and Statistics*, *143*(4): 365–396.

Firpo, S., Fortin, N. M., & Lemieux, T. (2009). Unconditional quantile regressions. *Econometrica*, *77*(3): 953–973.

Fortin, N., Lemieux, T., & Firpo, S. (2011). Decomposition methods in economics. *Handbook of Labor Economics*, *4*, 1–102.

Frölich, M. (2007). Propensity score matching without conditional independence assumption—With an application to the gender wage gap in the United Kingdom. *The Econometrics Journal*, *10*(2): 359–407.

Hedija, V. (2016). Gender wage differences in the Czech Public Sector: A micro-level case. *Review of Economic Perspectives*, *16*(2): 121–134.

Jayasinghe, T. (2019). *Labor Issue in Tea Plantation Sector in Sri Lanka*. Aggregate Global. https://agrigateglobal.com/reads/opinion/labor-issue-in-tea-plantation-sector-in-sri-lanka/.

Juhn, C., Ujhelyi, G., & Villegas-Sanchez, C. (2014). Men, women, and machines: How trade impacts gender inequality. *Journal of Development Economics*, *106*, 179–193.

Kulatunga, S. T. K. (2016). Unpacking Household Asset Inequality between Male and Female Headed Households in the Post War Economy of Eastern Sri Lanka: A Decomposition Analysis. In S. Bandara (Ed.), *A Paradigm Shift of Thoughts and Policies: The Need of the Hour of Developing Economies- Proceedings Full Paper Series: Vol. I* (pp. 1–10). Sri Lanka Forum of University Economists.

Kurian, R., & Jayawardena, K. (2013). *Plantation patriarchy and structural violence: Women workers in Sri Lanka*. [Paper Presentation], Conference on Bonded Labour, Migration, Diaspora and Identity Formation in Historical and Contemporary Context, Paramaribo, Suriname. https://repub.eur.nl/pub/50375/Metis_193809.pdf.

Kurian, R., & Jayawardena, K. (2014). *Persistent Patriarchy: Women Workers on Sri Lankan Plantations*. Social Scientists' Association.

Machado, J. A., & Mata, J. (2005). Counterfactual decomposition of changes in wage distributions using quantile regression. *Journal of Applied Econometrics, 20*(4): 445–465.

Ñopo, H. (2008). Matching as a tool to decompose wage gaps. *The Review of Economics and Statistics*, *90*(2): 290–299.

Ñopo, H. (2009). *The gender wage gap in Peru 1986-2000: Evidence from a matching comparisons approach* (Working Paper, No. 675). Inter-American Development Bank, Research Department, Washington, DC. https://www.econstor.eu/handle/10419/51490.

Nordås, H. K. (2004). *Is Trade liberalization a window of opportunity for women?* (ERSD-2003-03; WTO Staff Working Paper), World Trade Organization. http://dx.doi.org/10.30875/a9503098-en.

Oanh, N. H., & Ngoc, N. H. (2020). Gender pay gap in Vietnam: A propensity score matching analysis. *Journal of Economics and Development*, *23*(3): 238-253.

Oaxaca, R. (1973). Male-female wage differentials in urban labor markets. *International Economic Review*, *14*(3): 693–709.

Oaxaca, R. L., & Ransom, M. R. (1994). On discrimination and the decomposition of wage differentials. *Journal of Econometrics*, *61*(1): 5–21.

Oostendorp, R. H. (2009). Globalization and the gender wage gap. *The World Bank Economic Review*, *23*(1), 141–161.

Ranasinghe, S. B., & Wickramasinghe, D. (2020). Unveiling a postcolonial neoliberalism: Hybridised controls and emancipatory potentials for tea-plucking women in Sri Lanka. *Accounting, Auditing & Accountability Journal, 34(3)*: 651-679. https://doi.org/10.1108/AAAJ-12- 2018-3785.

Ranjith, J. S., & Widner, B. (2011). Sri Lanka's garment industry: Prospects for agglomeration, challenges and implications for regional development. *South Asian Journal of Management*, *18*(4): 7–22.

Robertson, R., Lopez-Acevedo, G., & Savchenko, Y. (2018). *Globalisation and the gender earnings gap: Evidence from Sri Lanka and Cambodia 1992-2015* (IZA Discussion Papers, No. 11821). Institute of Labor Economics (IZA).

Samarasinghe, V. (1993). Puppets on a string: Women's wage work and empowerment among female tea plantation workers of Sri Lanka. *The Journal of Developing Areas*, *27*(3): 329–340.

Samarasinghe, V. (1998). The feminization of foreign currency earnings: Women's labor in Sri Lanka. *The Journal of Developing Areas*, *32*(3): 303–326.

Seguino, S. (2000). Gender inequality and economic growth: A cross-country analysis. *World Development*, *28*(7): 1211–1230.

Seneviratne, P. (2020). Gender wage inequality during Sri Lanka's post-reform growth: A distributional analysis. *World Development*, *129*, 104878. https://doi.org/10.1016/j.worlddev.2020.104878.

Silva, D. S., & Mendis, B. (2017). Women in tourism industry–Sri Lanka. *Journal of Tourism, Hospitality and Sports, 25:* 65–72.

Snodgrass, D. R. (1966). *Ceylon: An Export Economy in Transition*. Richard D. Irwin.

Stuart, E. A., & Rubin, D. B. (2008). Best practices in quasi-experimental designs. In *Best practices in quantitative methods* (pp. 155–176). Sage Thousand Oaks, CA. https://citeseerx.ist.psu.edu/ viewdoc/ download?doi=10.1.1.584.1057&rep=rep1&type=pdf.

Weerahewa, J. (2002). The Influence of garment Exports on male-female wage inequality in Sri Lanka. *DFID, UK*. https://bit.ly/3b7Rp9x

Wijayasiri, J. (2020, February 24). So Sri Lanka; More like, So Where are all the Women in the Hotel Industry? *Talking Economics*. https://www.ips.lk/talkingeconomics/2020/02/24/so-sri-lanka-more-like-so-where-are-all-the-women-in-the-hotel-industry/.

Zweimüller, M., Winter-Ebmer, R., & Weichselbaumer, D. (2008). Market orientation and gender wage gaps: An international study. *Kyklos*, *61*(4): 615–635.