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Bridging The Gap: Trade Liberalisation and The Gender Wage Divide in Latin America[1]

Latin Amerika'da Ticari Liberizasyon ve Cinsiyetler Arası Ücret Farkı

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ABSTRACT

Hecksher-Ohlin model posits that trade liberalisation serves to diminish the gender wage divide in developing economies with an abundance of lower-skilled labour, as these economies tend to specialise in low-skilled, labour-intensive exports. Since women are frequently employed in lower-skilled roles, this shift increases demand for their labour, raising wages in these sectors. The objective of the paper is to conduct an analysis of the impacts of trade liberalisation on the gender wage gap in twelve Latin American countries between 1995 and 2014. Static and dynamic panel data models are applied to investigate the effects on Latin American countries. The findings from both approaches indicate that trade liberalisation has, in fact, widened the gender wage gap in Latin American countries. This paper, therefore, underscores the necessity of exploring alternative theoretical approaches to better comprehend the complex dynamics between trade and gender inequalities.

MAKALEBİLGİSİ

Anahtar Kelimeler:
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ÖZET

Heckscher-Ohlin modeli, düşük vasıflı işgücüne sahip gelişmekte olan ekonomilerde ticaretin serbestleştirilmesinin toplumsal cinsiyet kaynaklı ücret farkını azaltacağını öne sürmektedir; çünkü bu ekonomiler, düşük vasıf gerektiren emek-yoğun ihracatlarda uzmanlaşma eğilimindedir. Kadınların genellikle düşük vasıflı işlerde istihdam edilmesi nedeniyle, bu değişimin kadın işgücüne olan talebi artırması ve bu sektörlerdeki ücretlerin yükselmesi beklenir. Bu çalışmanın amacı, 1995-2014 yılları arasında on iki Latin Amerika ülkesinde ticaretin serbestleşmesinin toplumsal cinsiyet ücret farkı üzerindeki etkilerini analiz etmektir. Bu bağlamda, Latin Amerika ülkelerinin üzerindeki etkileri incelemek için statik ve dinamik panel veri modelleri uygulanmıştır. Her iki yaklaşımdan elde edilen bulgular, ticaretin serbestleşmesinin Latin Amerika ülkelerinde toplumsal cinsiyet ücret farkını artırdığını göstermektedir. Bu nedenle, bu çalışma, ticaret ve toplumsal cinsiyet eşitsizlikleri arasındaki karmaşık dinamikleri daha iyi anlamak için alternatif teorik yaklaşımların araştırılmasının gerekliliğine dikkat çekmektedir.

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INTRODUCTION

In recent decades, numerous nations have undertaken economic reforms and trade liberalisation initiatives, sparking a burgeoning interest in the implications of these policies for gender disparities within labour markets. This area of research has grown in significance within the fields of international economics and development studies as scholars seek to understand the nuanced effects of liberalisation on gendered labour outcomes.

Trade liberalisation has both exclusive and inclusive effects on women. Many theorists support the idea that global economic integration increases opportunities for females in the labour market, but the integration does not remove all barriers to women's improvement (Joekes and Weston 1994; Mears 1995; Marchand, 1996, L. Meyer 2007). There are two theoretical arguments in the literature that explain these opportunities: the Heckscher-Ohlin model and Becker's discussion on the economics of discrimination. Heckscher-Ohlin trade theory suggests that less-skilled labour-abundant economies tend to specialise in less-skilled labour-intensive exports; therefore, less-skilled labour endowment benefits from trade. Since free trade is expected to increase the demand for less-skilled labour in these less-skilled labour-abundant economies, the wages of less-skilled labour will rise relative to skilled labour (Hecksher & Ohlin, 1991; Korinek, 2005; Berik, 2011; Aguayo-Tellez, 2012). Relying on this link, the theory suggests a lessening in the gender wage disparities in developing countries as women usually work at less-skilled jobs compared to men (Berik, 2011; Wolszczak-Derlacz, 2013; Korinek, 2005; Gupta, 2002).

Building on this theoretical foundation, Rasekhi and Hosseinmardi (2012) empirically investigated the relationship between trade openness and the gender wage gap in 21 developing countries. Their results confirmed the Hecsker-Ohlin theory by proving a negative correlation between trade liberalisation and gender wage disparities between 2002 and 2007. Another research that focuses on a developing country was conducted by Siddiqui in 2009. He analysed gender aspects of the impacts of trade liberalisation in Pakistan, and the findings showed that trade openness raised the labour participation of women in unskilled jobs and increased the real wages of women more than men. However, the study highlighted that trade liberalisation increased workload and relative income poverty for relatively poor women and corrupted their abilities.

The negative correlation extends beyond the developing world. Oostendorp (2004) examined the impacts of globalisation on the occupational gender wage gap in 83 countries from 1983 to 1999. The study illustrated that the gender wage gap tends to decline with trade and foreign direct investment (FDI) in wealthier countries, but there is little evidence about impoverished countries.

Similar results were observed in transitioning economies. Kecmanovic and Barret (2011) examined the impacts of economic transition on the mean gender earnings disparities in Serbia from 2001 to 2005, using quantile decompositions. The findings showed that the relative wages of workers increased in the first stage of the transition due to the rise in the productivity of female workers. Their results reported that the mean gender wage gap decreased by 8 percentage points during the sample period. In the same vein, Jolliffe and Campos (2005) showed that the gender disparities in log wages decreased remarkably from 0.31 points to 0.19 points during the transition in Hungary

Artecona and Cunningham (2002) analysed the alteration in the gender earnings gap, focusing on the manufacturing sector in urban Mexico during the trade liberalisation period. Their results documented that the gap between wages of men and women widened during this period; however, the main reason behind this gap expansion was explained by the general increase in the skills premium. Taking into account the key factor behind the expanded gap, they reported suggestive evidence that opening to trade causes a decline in wage discrimination, particularly in competitive firms. Considering these results, the authors state that improvement in the relative wages of female workers depends on ameliorating women's skills.

AlAzzawi (2013) researched the expansion of gender inequality in the Egyptian manufacturing sector and the effect of trade reform on the gender wage gap and on the female labour force. The study shows that the rise in trade liberalisation had substantially negative impacts on the relative wages of female workers and their employment despite the control of public-private segmentation and occupational segmentation.

Becker (1957) stated that discrimination brings economic costs to firms as employers pay a wage differential, which is higher than the marginal product of labour to male workers. Trade liberalisation might reduce discrimination through this channel: discriminatory firms face higher costs due to the competition caused by trade liberalisation, as employers make decisions favouring one group over another. Risen costs make these firms less competitive relative to non-discriminatory firms; therefore, the discriminatory firms face two options: adapting or being driven out of the market. Based on these two options, the ascending competition is expected to lessen discrimination against women in the long term (Becker,1957; Berik, 2011). Black and Brainerd (2004) confirmed this theory by showing that the undefined gender wage disparities declined faster in the concentrated US sectors than in competitive sectors when the economy faced a trade shock between 1976 and 1993. In addition, they found that a greater level of trade openness worked in favour of women by reducing discrimination in the workplace.

Yahmed (2012) provided theoretical evidence, relying on skill distribution, for the impacts of trade openness on gender wage disparities. She assumed that the characteristics of workers differ in skills and job commitment described as the availability and willingness to pursue a continuous long working life. Employers discriminate against women due to work interruptions, which are typically caused by maternity leave and child-rearing. This discrimination can be stronger in the export industry as the sector requires a great level of commitment due to operating in more rapidly changing and competitive environments than the other sectors. Considering the gender differences in labour market commitment, she documented that trade openness increases the gender wage inequalities at the upper part of skill distribution as trade openness encourages more firms to adopt skill-intensive technologies where job commitment is considered as a complementary to technological upgrading. She also reported that the gender wage disparities at the lower tail of the skill distribution declined due to the general equilibrium impacts.

Wolszczak-Derlacz (2013) analysed how domestic and foreign competition affected the gender wage inequalities for twelve manufacturing industries in eighteen OECD countries between 1970 and 2005. The results showed that the increment of the gender wage gap diminished for each class of skills in twelve countries between 1970 and 2005. Furthermore, the findings reported that concentrated industries have a greater gender wage gap than competitive industries, proving Becker's discrimination theory.

De Hoyos, Bussolo, and Núñez (2012) argued that the enlargement of the maquila sector, which is one of the export-oriented sectors in Honduras, has provided gender equality in employment and wages in Honduras. The results show that gender discrimination is 16 per cent smaller in maquila sector firms. The result confirms Becker's theory, which is that competition decreases gender discrimination. Considering the high number of female workers in the sector, the rise in the maquila sector promoted the reduction in gender earnings inequalities in Honduras.

Contrary to the findings given above, Berik, Rodgers, and Zveglich (2004) found that in Korean and Taiwanese concentrated industries, competition increases wage discrimination against female workers. Greater trade openness causes larger residual wage gaps between males and females in Taiwan. In Korean concentrated industries, a little attenuation in export openness is related to less wage discrimination.

Both the Hecksher-Ohlin model and Becker's theory suggest a negative link between gender wage inequalities and trade liberalisation for developing countries. Contrary to these arguments, Heterodox theory discusses that the relative bargaining power of labour, which depends on the skill level of workers and the features of jobs, determines wage levels. For example, import expansion is likely to negatively impact the earnings of less-skilled labour employed in the import-competing industry due to the job competition between workers in the sector. In this scenario, women workers might face job losses and limited access to new jobs with higher salaries, or they might experience slower growth in their wages relative to men. In the case of export expansion, women might have better access to newly created jobs in the sector; however, they still might experience wage discrimination as it is perceived as a routine feature of the labour division in the economy. All in all, the Heterodox approach analyses the correspondence between trade openness and gender wage disparities, relying on the power differences between groups of workers. Hence, it has a less optimistic view of the effects of trade integration on the gender pay gap (Berik, 2011).

Seguino (2000) examined the gender wage gap in two recently industrialised economies, Taiwan and Korea, between 1981 and 1992. According to the results, during this 'post-industrial development' phase, the gender wage disparities expanded in Taiwan because of trade liberalisation and increased physical capital mobility. The increased mobility of physical capital within the export sector—where women predominantly work—may exacerbate female workers' comparatively limited bargaining power, given that employers in such sectors are better positioned to evade wage demands than those in less mobile industries. In the context of Korea, however, findings indicated a reduction in the gender wage gap driven by outward FDI, as foreign investments typically stem from capital-intensive, male-dominated industries.

The literature given above shows that there is no consensus on the impacts of trade liberalisation on the gender wage gap. To contribute to this ongoing debate, this study analyses the effects of trade liberalisation on the gender wage gap in Latin American countries from 1995 to 2014. The region has a unique history of trade policy transformation when many countries rapidly moved from protectionist policies to trade liberalisation. In the early 1990s, many Latin American countries joined the trade liberalisation movement: they increasingly engaged in regional and bilateral trade agreements in the 1990s and early 2000s to integrate into the global economy. During this integration, Latin America removed quantitative restrictions, reduced import and export tariffs, and abolished government marketing boards, relying fully on the export industry as the engine of economic growth (Ventura-Dias, 2010). Although the pace of transition in each country was different, the region clearly reached a major turning point.

Moreover, Latin American countries show persistent gender inequality in the labour market, which is caused by structural heterogeneity. Export-oriented industries such as textiles and agriculture are more employment-intensive for women in Latin America, especially in Mexico and Central America. Regarding South America, the trade specialisation model is heavily focused on natural resources, which creates little employment for women (CEPAL, 2020). These structural particularities continue to reinforce gender disparities across the region, making Latin America an ideal setting for investigating the intersection of trade liberalisation and gender wage inequality, especially during the trade liberalisation era.

The rest of the paper proceeds as follows: Section 2 provides the data and methodology. Section 3 presents the empirical results, and the fourth section provides a discussion and conclusion.

1. DATA AND METHODOLOGY

1.1. Data

To construct the gender wage gap variable, the labour datasets were taken from the CEDLAS Gender database and the ILOSTAT Earnings and Labour Cost database. Since using weekly or monthly wages can distort the results because women generally work fewer hours than men (Leaker, 2008), nominal hourly wages were used to calculate the gender wage gap. For comparability purposes, national nominal wages were converted into international dollars using purchasing power parity (PPP, 2014 $) data extracted from the World Bank.

Following the literature, four different independent variables were chosen for this research: trade openness, concentration index of export, concentration index of import and FDI net inflows as a percentage of gross domestic product (GDP).

Oostendorp (2004) states that globalisation can be measured using trade (% of GDP) and FDI net inflows (% of GDP). Following Oostendorp's (2004) study, the trade openness dataset, the ratio of the sum of exports and imports of goods and services to GDP (OECD, 2011), and the FDI net inflow percentage of GDP were included as independent variables, which were obtained from the World Development Indicators and the World Bank, respectively.

As a final global trade integration-related variable, the concentration index was used as the measure of commodity concentration (or trade dependency), which was taken from the United Nations Trade and Development. This study analyses the concentration indices for both exports and imports separately to facilitate a more nuanced exploration of their respective effects on the gender wage gap.

According to Human Capital Theory, education is one of the factors used to explain the gender wage gap. In the literature, the Human Development Index (HDI) is widely used as a proxy for education level in countries (Rasekhi and Hosseinmardi, 2012); thus, following the literature, I used the HDI as a control variable in this analysis. The dataset is taken from the United Nations Human Development Report.

Rasekhi and Hosseinmardi (2012) stated that more female legislators are more likely to lower the gender wage gap, as political institutions, like parliaments, might play a key role in women's rights. In this case, a negative relationship is expected between the percentage of female legislators and the gender wage gap. Relying on this discussion, the percentage of female legislators was included as a control variable. The data is measured using the proportion of females in parliament data, which was obtained from the World Development Indicator.

1.2. Methodology

To estimate the impact of trade openness on the gender wage gap, I used a balanced panel dataset consisting of 240 observations, which were conducted regularly between 1995 and 2014 (T=20, N=12). Since the regularly repeated observations on the same individuals necessitate panel data analysis, I used static and dynamic panel data techniques in this research (Schmidpeter, 2017).

1.2.1. Cross-Section Dependence Test and Panel Unit Root Test

Baltagi (2007) stated that in panels with longer time series (20-30 years), cross-sectional dependence can be more problematic than in panels with fewer years and large cross-sections (where N>T). When the series exposes shocks, all horizontal cross-sectional units must be analysed to assess whether they are affected by shock equally. Phillips and Sul (2003) discussed that if there is enough level of cross-sectional dependence in the data, neglecting the dependence can significantly reduce the efficiency of the estimation. Considering this discussion on efficiency, the Breusch-Pagan (1980) LM test is applied to check whether the estimation suffers from cross-sectional dependency. Since the macro panel (T>N) was used in this analysis, following Hoyos and Sarifidis (2006), the Breusch-Pagan LM test was preferred instead of the Pesaran CD test.

After checking the cross-sectional dependency, I applied the Unit Root test to control if there is a stationary in the model. The reason behind using the Unit Root test is that the time dimension exceeds the cross-section dimension in my model (Herzer et. al., 2006). Relying on the cross-sectional dependency test results, I performed a Pesaran Cross-Sectional Augmented Dickey-Fuller Test (PESCDAF) as a second-generation Unit Root Test rather than a first-generation Unit Root test. Using the Pesaran

Cross-sectional ADF test gives more efficient results when variables are cross-section dependent (Pesaran, 2003). Also, Pesaran (2003) showed that in the Monte Carlo simulations, the CADF test is valid for both N> T and T> N.

1.2.2. Static Panel Data Analysis

Panel data models analyse individual effects and/or time effects to handle the observed or unobserved individual effects. These effects can be fixed or random and can be examined by fixed or random effect models (Park, 2011).

1.2.2.1. Fixed Effect Models

The Fixed Effects (FE) model analyses the link between the dependent variable and explanatory variable within an individual. Each individual has their own individual characteristics that can or cannot impact the independent variables. The FE model presumes that the individual-specific effects are correlated to explanatory variables. The FE model is run to examine the effect of variables varying over time by eliminating the impact of time-invariant features. In this way, the FE model can assess the net impacts of explanatory variables on the dependent variable (Torres-Reyna, 2007).

The FE model can be written as:

$$y_{it} = \alpha_i + \beta_1 x_{it} + u_{it} \tag{1}$$

where y_{it} is the dependent variable for i in time t, α_i, is the unknown intercept for each i, x_{it} is the independent variable, β is the coefficient and u_{it} is the error term.

1.2.2.2. Random Effects Models

The Random Effects (RE) model posits that variations across individuals are random and do not exhibit correlation with the independent variables in the analysis. This assumption allows time-invariant features to act as independent variables (Torres-Reyna, 2007; Schmidpeter, 2017).

The RE model can be shown as:

$$y_{it} = \beta x_{it} + \alpha + u_{it} + \varepsilon_{it} \tag{2}$$

where y_{it} is a dependent variable observed for i in time t, α is the unknown intercept, x_{it} is an independent variable, β is the coefficient, u_{it} is between entity error, and ε_{it} is within entity error.

Relying on the result of the Hausman Test, I chose the FE model to eliminate country differences, and the RE model was employed as a justification model. Thus, following Wolszczak-Derlacz (2013), I defined the gender wage gap using natural logarithms of male and female wages:

$$W_{i,t} = lnW_{m,i,t} - lnW_{f,i,t} \tag{3}$$

where i denotes country, t is time, m is male, and f is female.

Hence, the model can be written as:

$$W_{i,t} = \alpha_i + \beta_1 TradeOpen_{i,t} + \beta_2 ConExp_{i,t} + \beta_3 ConImp_{i,t} + \beta_4 FDI_{i,t} + \beta_5 HDI_{i,t} + \beta_6 Parl_{i,t} + u_{it} \tag{4}$$

where $W_{i,t}$ shows the gender wage gap, $TradeOpen_{i,t}$ measures trade integration, $ConExp_{i,t}$ is the concentration index of export, $ConImp_{i,t}$ is the concentration index of import, $FDI_{i,t}$ is foreign direct investment net flows percentage of GDP, $HDI_{i,t}$ is Human Development Index, and finally, $Parl_{i,t}$ shows the proportion of females in the parliament.

1.2.3. Dynamic Panel Data Analysis

Pesaran's CADF test rejected the null hypothesis for the dependent variable, which means that the dependent variable is stationary at the panel level. In terms of the independent variables, the results report that the null hypothesis cannot be rejected, meaning that independent variables are not stationary at the panel level. One of the solutions to deal with this problem is taking differences and setting up the models by using the differences. However, taking the first difference to perform static panel data techniques can cause a significant loss of information. To avoid this significant loss, I applied the dynamic panel technique in my analysis.

Pesaran, Schin and Smith introduced the ARDL Model in 1999 and thanks to the panel Autoregressive Distributed Lag (ARDL) model, one can run stationary I (0) and non-stationary I (1) variables together on the same estimation where the model has large time dimensions (T) and small cross-sectional dimensions (Pesaran and Shin, 1999). For this reason, Samargandi et al. (2015) suggested that the use of the Panel ARDL model is more suitable than the use of conventional panel co-integration tests. Another benefit of the panel ARDL model is that the model provides both short-term and long-term forecast results. Finally, the Panel ARDL model involves lags of dependent and independent variables, and this involvement provides consistent coefficients, even though the model suffers from endogeneity.

The Panel ARDL model is written as:

$$y_{it} = \sum_{j=1}^{p} \lambda_{ij} y_{i,t-j} + \sum_{h=0}^{q} \delta'_{ij}\, x_{i,t-j} + \mu_i + \varepsilon_{it} \tag{5}$$

where *(p, q, q, . . , q) i = 1, 2, . . . , N, and t = 1, 2, . . . ,T.*

Pesaran, Schin and Smith (1999) claim that the re-parameterisation of the first equation model is suitable to work:

$$\Delta y_{it} = \phi_i y_{i,t-1} + \beta'_i x_{it} + \sum_{j=1}^{p-1} \lambda^*_{ij} \Delta\, y_{i,t-j} + \sum_{j=0}^{q-1} \delta^{*\prime}_{ij} \Delta\, x_{i,t-j} + \mu_i + \varepsilon_{it} \tag{6}$$

i = 1, 2, . . . , N, and t = 1, 2, . . . ,T where

$$\phi_i = -(1 - \sum_{j=1}^{p} \lambda_{ij})\,, \quad \beta_i = \sum_{j=0}^{q} \delta_{ij} \tag{7}$$

j = 1, 2 , . . , p - 1 and j = 1 , 2 , . . , q – 1

$$\lambda^*_{ij} = -\sum_{m=j+1}^{p} \lambda_{im} \;,\; \delta^*_{ij} = -\sum_{m=j+1}^{q} \delta_{im} \tag{8}$$

where y represents the gender wage gap, x_{it} (k x 1) is the vector of independent variables, including trade openness, export concentration index, import concentration index, foreign direct investment, human development index and female parliament participation. λ and δ stand for the coefficients of lagged dependent and independent variables in short-run estimations, respectively. β represents the coefficients for the long-run forecasts. μ_i symbolises the fixed effects; the lagged dependent variables' coefficients, λ_{it}, are scalars. δ_{ij} provides k x 1 vectors of coefficient. ϕ represents the coefficient of speed of adjustment to the long-run equilibrium. Finally, q and p represent the lag of the independent variables and the lag of the dependent variable, respectively. Also, Δ indicates that $\Delta y_i = y_i - y_{i-1}$, $\Delta x_i = x_i - x_{i-1}$

The Panel ARDL model is performed by three estimators. These estimators are known as the mean group (MG), the dynamic fixed effects (DFE) and the pooled mean group (PMG). In this paper, the model is estimated using these three estimators. Before running the test, the ARDL lag structure is determined by performing the Lag Length Criteria test. The common approach in the literature is to use information criteria (IC), such as Akaike IC, Hannan IC and Schwarz IC. After applying the estimators, the Hausman test was used to find the most suitable one. The result indicated that the PMG model is the most fitting estimator for the analysis. Thus, only the PGM model was provided in this section.

1.2.3.1. Pooled Mean Group (PMG) Model

The PMG model serves as an intermediary estimator, balancing between separate regressions that allow each coefficient and error variance to vary across groups and traditional fixed-effect estimators, which presume homogeneity in all error variances and slope coefficients. The PMG estimator permits coefficients of short-run estimations, including intercepts and error variances, to vary across groups while constraining long-term slope coefficients to be uniform across countries.

2. RESULTS

This section presents empirical findings in two main parts. In the first part, the results of static panel data analysis, which was performed using the RE and FE models, are presented. The second part provides the results of dynamic panel data analysis.

2.1. Cross-Section Dependence Test

As a first step, the Cross-section Dependence test is applied to understand whether the horizontal cross-sectional units are affected by shocks equally and to decide which unit root test is more appropriate for the model.

Table 1. *Results of Cross-Section Dependence Test*

Variables	Breusch-Pagan LM	Pesaran CD
Gender Wage Gap	0.0000***	0.0000***
Concentration Index(Export)	0.0000***	0.0006***
FDI	0.0000***	0.0813*
Trade Openness	0.0000***	0.0000***
Concentration Index (Import)	0.0000***	0.0000***
HDI	0.0000***	0.0000***
Female Parliament Participation	0.0000***	0.0000***

, **, and * denotes the rejection of the null hypothesis at 10%, 5% and 1% levels, respectively.*

Both the Breusch-Pagan LM test and the Pesaran CD test were run for comparability purposes. Table 1 provides proof of a cross-section dependency for all variables, meaning that countries are interdependent (Sarafidis and Wansbeek, 2012). Based on these results, the Pesaran Cross-sectional ADF test is used as a second-generation Unit Root test.

2.2. Unit Root Test

Since the panel data spans twenty years in this paper, the variables are likely to have unit roots (Nelson and Plosser, 1982). Thus, the Pesaran Cross-sectional Augmented Dicky-Fuller Unit Root test was employed for both static and dynamic panel analyses to check the variables' order of integration. Although the order of integration is not crucial for the panel ARDL model, the PESCADF test was performed to prove that no series exceeds the I (1) order of integration in panel ARDL –otherwise, the model cannot be run.

Table 2. *Pesaran Cross-Sectional Augmented Dicky-Fuller Unit Root Test*

Variables	In level	First Difference
Gender Wage Gap	**0.019*****	0.0000***
Concentration Index(Export)	0.116	0.0000***
FDI	0.461	0.0000***
Trade Openness	0.350	0.0000***
Concentration Index (Import)	0.293	0.0000***
HDI	0.825	0.0000***
Female Parliament Participation	0.615	0.0000***

, **, and * denotes the rejection of the null hypothesis at 10%, 5% and 1% levels, respectively.*

Table 2 documents that for the level series, the PESCADF test rejected the null hypothesis of a unit root for the gender wage gap with a significance level of 1%. For all independent variables, the results failed to reject the null hypothesis, which means that they have unit roots. For this reason, the first difference level was controlled. The PESCADF Unit Root test rejected the null hypothesis for all independent variables at the 1% significance level, meaning that all the series are non-stationary in level. For the dependent variable, the series are stationary at the first difference level (I (1)).

2.3. Static Panel Data Analysis

The outcomes of the Unit Root test given above show that independent variables are not integrated in level; therefore, the method of taking differences of these variables is used to employ static models. In other words, if yt is a non-stationary vector, the model requires to establish the model using □yt. In this case, Shrestha and Bhatta (2017) suggest that the first differences should be taken for all variables to avoid spurious regression. Following this suggestion, the RE model and the FE model were applied, after taking the first differences of the variables.

Table 3. *Random Effects Model*

Variables	Coefficients	t-stat	p-value
ΔTrade Openness	-.001107	1.609	0.108
ΔFDI	.002734	1.212	0.226
ΔConcentration Index (Export)	-.156753	-1.012	0.312
ΔConcentration Index (Import)	-.126917	-0.488	0.625
ΔHDI	.001877	-0.095	0.924
ΔFemale Parliament Participation	**-.002406**	**-3.310**	**0.063***
C	-.003305	-0.629	0.529

, **, and * denotes the rejection of the null hypothesis at 10%, 5% and 1% levels, respectively.*

As mentioned, the Random Effects model was employed as a justification model to run the Hausman Test. Table 3 documents that all independent variables, except female parliament participation, are insignificant. For the female parliament participation variable, the p-value is 0.063, which is significant at the 10 % significance level, and the variable is negatively associated with the gender wage differentials.

Table 4. *Hausman Test*

Hausman Test		
Prob	:	**0.0190**

After running the RE model, the Hausman test was employed to choose the most suitable model. Table 4 shows that the null hypothesis is rejected at the 5 % significance level. Following this finding, the FE model was accepted as a suitable model.

Table 5. *Fixed Effects Model*

Variables	Coefficients	t-stat	p-value
ΔTrade Openness	**.001216**	**1.750**	**0.082***
ΔFDI	.002691	1.189	0.236
ΔConcentration Index(Export)	-.182767	-1.163	0.246
ΔConcentration Index (Import)	-.109616	-0.416	0.678
ΔHDI	-.001997	0.099	0.921
ΔFemale Parliament Participation	**-.002486**	**-1.896**	**0.059***
C	-.003226	-0.611	0.542

, **, and * denotes the rejection of the null hypothesis at 10%, 5% and 1% levels, respectively.*

Table 5 demonstrates that four explanatory variables lack statistical significance. The p-value for the female parliament participation variable stands at 0.059, indicating significance only at the 10% level. This variable has a coefficient of -0.002486, reflecting a negative association with the gender wage gap. The other statistically significant explanatory variable is trade openness, which is significant at the 10% level. The positive coefficient of the variable suggests that trade integration increased the Latin American gender wage inequality during the liberalisation years.

2.4. Dynamic Panel Data Analysis

2.4.1. Optimal Lag Length Test

To decide the appropriate number of lags required for the panel ARDL Model, the VAR Lag Order Selection Criteria Test was employed by choosing the maximum lag order as four. Relying on the results of HQ, FPE, AIC and SC, Lag 1 was chosen. The mechanism of lag order selection criteria was based on the selection of the minimum values of columns, as demonstrated with stars in Table 6.

Table 6. *Var Lag Order Selection Criteria*

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1659.020198	NA	0.081206	17.35438	17.47314	17.40248
1	-331.0512163	2545.274	**1.33e-07***	**4.031784***	**4.981886***	**4.416582***
2	-298.0611566	60.82542	1.57e-07	4.198554	5.979996	4.920051
3	-260.3808924	**66.72547***	1.78e-07	4.316468	6.929250	5.374664
4	-227.2764515	56.20858	2.12e-07	4.482046	7.926169	5.876941

2.4.2. Panel ARDL Model

As mentioned in the methodology section, there are three estimators to perform the Panel ARDL model. Therefore, before starting the analysis, the Hausman test was performed to confirm which estimator of the Panel ARDL model is the most appropriate for the panel dataset. Rejecting the null hypothesis indicates that the mean group estimator is proper for the analysis. Table 7 illustrates that the test failed to reject the null hypothesis, which means that the pooled mean group model is the most fitting estimator for this dataset.

Table 7. *Hausman Test*

Hausman Test		
Chi-square stat	:	11.390
Prob	:	**0.0771**

The result of the error correction coefficient (EC) should be discussed as a starting point. The EC coefficient, which is given in the short-run estimation part, is presumed to be statistically significant and should have a negative sign. Aligning with this expectation, Table 8 documents that the EC coefficient equals -.6042077, indicating that all variables are co-integrated and have a stable long-term relationship with each other.

The results of the Pooled Mean Group model estimations using ARDL with Lag 1 structure are given below. Table 8 lists the short-run and the long-run coefficients on the relationship between the dependent and the independent variables and the speed of adjustment error correction coefficient (EC). The findings show that global economic integration measures are statistically significant at different levels (except the concentration index of export). Trade openness and the concentration index of imports are significant at a 1% level, and FDI is significant at a 10% level. All these trade-related measures are positively correlated with the gender wage disparities in Latin America between 1995 and 2014. In other words, the results show that global economic integration increased the gender wage disparities during the trade liberalisation.

I used the Human Development Index and Female Parliament Participation rates as control variables. The findings display that the HDI, which was included as an education measure, is significant at a 1 % significance level and has a negative relationship with the gender wage in the long run. Although the female parliament participation rate was statistically significant in static and dynamic model results, dynamic panel model findings show that the variable is statistically insignificant in the long run.

Table 8. *Panel ARDL-Pooled Mean Group Regression*

Long-run Estimations			
Variables	**Coefficient**	**t-statistics**	**p-value**
Trade Openness	**.001679**	**4.76**	**0.000*****
FDI	**.003739**	**1.74**	**0.082***
Concentration Index (Export)	.103821	1.07	0.283
Concentration Index (Import)	**.454091**	**2.87**	**0.004*****
HDI	**-.017371**	**-3.37**	**0.001*****
Female Parliament Participation	.000660	0.73	0.468

Short-run Estimations			
Variables	Coefficient	t-statistics	p-value
EC	**-.6042077**	**-4.74**	**0.000*****
ΔTrade Openness	.0000324	0.02	0.981
ΔFDI	.0023294	0.68	0.494
ΔConcentration Index (Export)	-.0402267	-0.15	0.879
ΔConcentration Index (Import)	-.1490408	-0.25	0.804
ΔHDI	**.0712623**	**3.35**	**0.001*****
ΔFemale Parliament Participation	-.0013304	-0.54	0.591
Constant	.0485281	1.08	0.278

, **, and * denotes the rejection of the null hypothesis at 10%, 5% and 1% levels, respectively.*

The second part of Table 7 lists the findings of the short-run estimations. The findings show that the only statistically significant result is the Human Development Index in the short term. This short-run estimation provides an unusual outcome: in the short term, the Human Development Index increases the gender wage in Latin America.

3. CONCLUSION

This paper empirically analysed the impacts of the Latin American trade liberalisation movement on the gender wage gap between 1995 and 2014, using static and dynamic panel data techniques. The Fixed Effects model and the panel ARDL-Pooled Mean Group model were employed as a baseline model, and the Random Effects model was performed as a justification model. Through the application of the FE model to account for country-specific differences, it is observed that trade openness contributed to an expansion in the gender wage gap, whereas other trade-related variables did not yield statistically significant effects. Additionally, the analysis suggests that higher female parliamentary participation correlates with a reduction in gender wage disparities—a finding that is corroborated by the results from the RE model.

Contrary to the FE model, the Panel ARDL model shows that trade-related measures, including foreign direct investment net flow, trade openness, and import concentration, are significant and positively associated with Latin American gender wage disparities. The findings of this analysis contradict Heckscher-Ohlin's Theory and Becker's Discrimination Theory, showing that global economic integration widened gender wage disparities in Latin America between 1995 and 2014. According to the Heckscher-Ohlin model, one would anticipate that global trade integration would reduce the gender wage disparities in less-skilled labour-abundant economies. The model suggests that as economies open up to trade, the demand for less-skilled labour, in which women are often disproportionately represented in Latin American countries, should rise relative to skilled labour (Korinek, 2005; Wolszczak-Derlacz, 2013). Consequently, wages for less-skilled jobs, which typically employ more women at lower wages, should increase, thereby narrowing the gender wage disparities. Nevertheless, the evidence in this paper suggests the opposite effect, highlighting the limitations of these traditional economic theories in explaining gender wage dynamics in the context of Latin American trade liberalisation.

The reason behind this challenge might be related to the impacts of the trade liberalisation movement on the skill premium in Latin America. Goldberg and Pavcnik (2007) discuss that the skill premium and wage inequality increased in many Latin American countries, contrary to H-O model suggestions. Given the disproportionate employment rate of women in less skilled sectors, the increasing skill premium may have contributed to this contradiction in this analysis.

As one of the first cross-country studies examining the impacts of globalisation on gender wage disparities, Oostendorp (2004) could not find a significant link between FDI and gender wage inequality in developing countries. Conversely, the Panel ARDL model provided the opposite, illustrating a significant and positive relation between FDI and gender wage disparities in the long run. Latin America received FDI more than two times during the liberalisation era compared to the 1980s. Suanes (2016) discussed that a large share of FDI went into the mining and oil sectors (male-intensive sectors), while the agricultural sector received an insignificant share. Given that a significant share of female labour works in export-oriented sectors —mostly in agriculture and textile sectors—sector-biased FDI inflows might explain the positive correlation between FDI and gender wage disparities in Latin America. In addition, Becker's theory on economic discrimination argues that the cost of discrimination rises due to increasing competitiveness during global economic integration. Hence, one might expect a narrowing effect of trade openness on gender wage disparities. However, Neumayer (2010) stated that increasing foreign direct investment reduces the cost of production; hence, rising FDI inflow lessens the cost of discrimination (Rasekhi and Hosseinmardi, 2012). Thus, the increment in FDI might have reduced the discrimination cost, and employers may have kept the 'taste of discrimination' during the trade liberalisation era. As a result, FDI net inflow might have triggered gender wage disparities in the long term.

Another result that needs to be highlighted in this analysis is the relationship between the proxy measure of education (HDI) and gender wage disparities. As expected, it is observed that the HDI have a reducing impact on gender wage disparity in the long run. Nonetheless, the findings of short-term estimations illustrate that the HDI is positively correlated to gender wage disparities. The reason behind this positive correlation might be related to the span of market adjustment. Due to the structural division of labour between females and males and cultural norms in Latin America, market adjustment might be longer for female workers due to discrimination in workplaces. Also, this discrimination can cause skill mismatching as women are more likely to work at low-paying jobs at the first stage of their careers.

In light of the results and the discussion given above, one might say that the outcome of this research might be compatible with the Heterodox approach, which states that discrimination in the labour market can be conceptualised as both a response to the dominant gender norms within Latin American society, which influence the distribution of occupations and the levels of wages and as a deliberate strategy employed by employers to enhance profit margins. Future studies could analyse the relationship between trade and gender wage gaps using heterodox approaches to understand how trade liberalisation shapes bargaining power differences amongst worker groups at different skill levels.

AUTHOR DECLARATIONS

Declarations of Research and Publication Ethics: This study has been prepared in accordance with scientific research and publication ethics.

Ethics Committee Approval: Since this research does not include analyzes that require ethics committee approval, it does not require ethics committee approval.

Author Contributions: The author has done all the work alone.

Conflict of Interest: There is no conflict of interest arising from the study for the author or third parties.

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