

Trade, skill premium and the gender wage gap: Evidence from manufacturing industries

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Research

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Abstract

The paper assesses the impact of trade liberalization on the labour market by focusing on skill wage premium. The paper tests these effects by developing a monopolistic competition model with two factors of production characterized by their skill levels (skilled and unskilled labour). The paper finds that tariff's level reductions cause a moderate increase in the wage gap. Thus, our analysis shows that a 10% decrease in tariffs is accompanied by a 16.1 % increase in the skill premium. Also, the same level of tariffs' cut will on average increase the gender wage gap by 26.8%.

The study implies that trade liberalization tends to benefit more workers in the skilled labour market compared to workers in the unskilled labour market.

Introduction

The increase in wage inequalities and disparities have been a source of tensions in many countries. The last decade has seen several debates from economists and policy makers on the role of globalization. The surge of preferential trade agreements (PTAs) is reshaping the structure of developing countries.

Although the number of PTAs have grown rapidly, some of these agreements remain vague in terms of scope and coverage (Dür, Baccini, & Elsig, 2014). In this study, we show that PTAs grew on average from 14 to 30 over the period 1993–2014 (See Table 1). This suggests that the market access of exporting firms have improved over time.

A similar trend is observed for the subset of countries covered in this study, the simple average applied tariffs have been 41.24 %, 10%, 29.92% which represents a decline of 44.13%, 19.65%, and 28.27%, respectively (See Table 1). The reduction in trade barriers has been associated with an increase in intra-industry trade. This trend has led several trade studies to examine the effects of multilateralism on employment, earnings, and inequality (Harrigan & Reshef, 2015).

The study contributes to the literature by examining the traditional trade theory that states that trade liberalization raises the relative return of the larger factor of production (Stolper & Samuelson, 1941). We examine the effects of a reduction in import tariffs on the skill wage premium in South Africa using manufacturing firms data. The novelty of this study is that it considers South Africa which is one of the most unequal country in the world whereas other studies have focused on countries such as Indonesia and Brazil (Gustavo, Filho, & Terra, 2006; Amiti & Cameron, 2012).

In the Heckscher-Ohlin theory, trade liberalization can raise or reduce the wage skill premium in countries regardless of their income level status. However, in the unskilled labour abundant country, trade openness is expected to reduce the wage premium.

Trade protection takes the form of tariffs and non-tariffs barriers with the latter almost impossible to measure. Hence, early studies on trade have used exports, imports, and sometimes import price indices to

capture trade integration.

Jenkins & Sen (2006) document that trade liberalization has an ambiguous effect on employment in South Africa. They assume that the firm's level of production does not change with the degree of skilled labour. They employ export-output ratio and import penetration ratio to capture the degree of trade integration. We attempt to contribute to the literature by first addressing an important challenge with the empirical exercise in the area by using a more comprehensive measure of tariffs barriers. To overcome the problem of tariffs' measurement we follow Goldberg & Pavcnik (2005) who use the changes in the industry level tariffs to capture trade integration.

The second contribution of this paper is that it distinguishes between the factors of production. To overcome this issue, we adopt a monopolistic competition model with heterogeneous firms. Thus, we propose a model where firms use skills more efficiently than others. This allows to draw a correlation between production, skills and exports.

We investigate the impacts of trade liberalization on the wage gap between skilled and unskilled labour. We also study the effects of trade liberalization on the gender wage gap.

Table 1
The evolution of Tariff (Max) and PTAs

Country	Avg Tariff (%) (Max)		Weighted avg Tariff (%) (Max)		PTA's partners	
Year	1993	2014	1993	2014	1993	2014
South Africa	93.446	41.242	99.363	55	14	30
Year	1996	2013	1996	2013	1993	2014
India	50.898	10	52	9.221	13	35
Year	1993	2014	1993	2014	1993	2014
Thailand	105.822	29.929	100	29.933	13	32
Source: Author's own calculation based on WTO and TRAINS database						

Avg tariff (Max): It is the highest simple average tariff of included 6-digit lines; Weighted avg Tariff (Max): It is the highest average of tariff weighted against their corresponding trade value; PTA's partners: Preferential trade agreements' partners.

Table 2
The evolution of Tariff (Min) and PTAs

Country	Avg Tariff (%) (Min)		Weighted avg Tariff (%) (Min)		PTA's partners	
Year	1993	2014	1993	2014	1993	2014
South Africa	10.797	8.620	0	0	14	30
Year	1996	2013	1996	2013	1993	2014
India	49.931	8.965	41.253	0.956	13	35
Year	1993	2014	1993	2014	1993	2014
Thailand	40	5	40	5	13	32
Source: Author's own calculation based on WTO and TRAINS database						

Avg tariff (Min): It is the lowest simple average tariff of included 6-digit lines; Weighted avg Tariff (Min): It is the lowest average of tariff weighted against their corresponding trade value; PTA's partners: Preferential trade agreements' partners.

The third contribution of the paper is that the effects of trade liberalization on employment in manufacturing sector depends on the type of trade costs used. On one hand, a reduction in trade tariffs increases employment in both the skilled and unskilled labour market. On the other hand an increase in trade openness has an ambiguous effect on the manufacturing sector's employment.

The paper exploits the trade liberalization episode from South Africa during the period 1993–2014, under which the country experiences a wave of trade liberalization reforms. The benefits associated with this episode is the country's readmission in the international community. After several years of isolation, the aim of South Africa trade policies has been the facilitation of bilateral and regional trade arrangements. Figure 1 plots the tariffs protection and the wage premium across firms in the manufacturing sector. The graph shows a negative correlation between the wage premium and the tariffs. There is also evidence that the data follows a linear trend. The wage premium is represented on the vertical axis, whereas the average tariffs corresponds to the horizontal axis.

We take advantage of the tariffs reforms implemented in South Africa to construct an annual tariff rate based on the simple average tariffs' changes.

Similar to the work of Krugman & Venables (1995), we propose a model where firms use a basket of differentiated goods for final consumption or as intermediates. However, our approach is different from that of (Di Comite, Nocco & Orefice, 2018) who assumes that the elasticity of substitution is not constant and intermediate inputs are only used in the fixed component of the cost function. We follow Krugman & Venables (1995), and assume that the elasticity of substitution does not change and firms use the

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We also build a two-country model to assess the employment effect of trade liberalization in developing countries.

We test these effects by using a 3-digit Standard Industrial Classification (SIC) data, and national household survey data on wage and employment over the period 1993–2014. We first present the analysis of labour market effects of trade liberalization on South Africa. Secondly, we show the effects of trade policy on labour market in our selected panel of countries namely (India, Thailand, and South Africa). The paper is organized in 6 sections: the next section develops the model. Section 3 discusses the literature review. Section 4 describes the dataset and the measurement of the variables. Section 5 presents the results and Sect. 6 concludes.

The Model

We assume a world with two similar countries, where population in each country is differentiated only by their income. Each country has an identical skilled labour force that produces the same type of goods and supplies their services to the monopolistic competitive industry. Similarly, each country consists of identical unskilled labour force that produces homogeneous goods and supplies their services to the monopolistic competitive industry. The technology used is the same in each industry, therefore marginal cost is homogeneous. Every industry faces a demand and supply side which is discussed below.

2.1 The Demand

Consumers face the same constant elasticity of substitution with the following utility:

$$U = \left[\int_{m \in \Omega} q(m)^{\frac{e-1}{e}} d(m) \right]^{\frac{e}{e-1}} \quad (1)$$

Where Ω stands for all the varieties, $q(m)$ is the consumption of varieties, e is the elasticity of substitution between each pair of varieties. The consumer maximizes his utility with respect to consumption subject to the budget constraint $PC = 1$.

Because tastes are homothetic, the aggregate demand for a variety takes the following form :

$$Q(m) = p(m)^{-e} P^{e-1} I \quad (2)$$

Where I is the total income of all consumers in the country, P is the price index of the optimal bundle. From Eq. (2) we clearly see that a rise in the relative price and national income will result in a fall and an increase in aggregate demand, respectively.

2.2 The Supply

In a monopolistic industry, we assume that firms use skilled (s) labour and unskilled (u) labour in each country at the prevailing wage rate in each industry to produce one unit of the good. The two factors of production are combined in a constant elasticity of supply (CES) production function:

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$$y = [u^{(\alpha-1/\alpha)} + z^{(1/\alpha)} s^{(\alpha-1/\alpha)}]^{(\alpha/\alpha-1)} \quad (3)$$

α corresponds to the elasticity of substitution between the factors of production. The parameter z is a random variable that ensures that skilled labour is more productive than unskilled labour, The lowest cost for a firm is the marginal cost (c) and the skilled premium is $m = w_s/w_u$. We solve the minimization problems by setting the following equations:

$$u = y (1 + zm^{1-\alpha})^{(\alpha/1-\alpha)} \quad (4)$$

$$s = yzm^{-\alpha} (1 + zm^{1-\alpha})^{(1/1-\alpha)} \quad (5)$$

The marginal cost to produce is thus given by:

$$c(z) = w_u(1 + zm^{1-\alpha})^{(1/1-\alpha)} \quad (6)$$

Equation (6) shows that the skill intensity rises in (z) and decreases in (m).

2.3 Trade Liberalization

We consider the impact of the reduction in tariffs (τ) on the skill premium m . Before any trade policy is implemented, the equilibrium wage is given as:

$$\Delta \equiv \int_{z_x^*}^{\infty} (1 + zm^{1-\alpha})^{c-\alpha/\alpha-1} (Azm^{-\alpha} - C) Dg(z) + (Az_x^* m^{-\alpha} - C/1 + z_x^* m^{1-\alpha}) - (Az^* m^{-\alpha} - C/1 + z^* m^{1-\alpha}) \quad (7)$$

Where $Azm^{-\alpha} - C$, corresponds to the skill intensity of the firm. This expression can be positive or negative depending on whether the firm is more skill intensive or not. The three components in Eq. (7) help to understand the effects of a trade liberalization on employment.

The main goal of the model is to examine the effects of the costs of exporting on the wage gap between skilled and unskilled workers. We define trade liberalization as the reduction in applied average tariffs. The three components mentioned above allow us to examine three propositions as in ((Di Comite, Nocco & Orefice, 2018). The first one is that trade liberalization is expected to lower employment of the unskilled labour market. In the second proposition, we expect trade liberalization to increase the wage gap between the unskilled and the skilled labour. In the third proposition, we expect skilled workers not to be impacted by any trade liberalization effects.

As noted by Melitz (2003), trade integration impacts firms differently. He documents that reducing trade costs will initially benefit more efficient firms because they will be able to increase their exports of goods and services. Also, efficient firms that produce only for domestic purposes will now be able to make a moderate profit through the export market. The least productive firm in the country will likely exit the market. In other words, tariffs removal will have different effects on skilled and unskilled labour. Because

unskilled workers are hired proportionally to the production level, we can conclude that employment in the unskilled labour market decreases as trade barriers are lifted.

Skilled labour are remunerated based on total profits, hence they will take advantage of the reductions in the trade costs. This justifies our third proposition that trade liberalization leads to an increase in the employment of skilled labour. Also, the effects of trade integration of skilled and unskilled labour will undoubtedly lead to an increase in the wage gap using the definition of the skilled premium.

Literature Review

A good starting point of the literature is the Ricardo-Viner model which assumes capital is mobile across sectors while labour is immobile. This model states that sectors that experiment significant trade liberalization experiments are associated with a decrease in the wage premium. In contrast, the Heckscher Ohlin theory of trade, the model predicts the impact of trade on employment varies across sectors. When trade barriers are lifted, the exporting sector grows while the import-substituting sector contracts. This implies that trade leads to a redistribution of employment away from the substituting sector and more closer to the exporting sector.

The impact of trade liberalization on the wage gap have been widely discussed among political commentators and economists. Feenstra & Hanson (1997) in their seminal work, argue about the factors that have contributed to the fall in the wage of low-skilled workers compared to high-skilled workers. They stress the importance of intermediate goods imported abroad in affecting the labour market for low-skilled workers.

Similarly, Harrison & Hanson (1999) attempt to capture how foreign outsourcing of input and technological progress can explain the wage disparities in the US by examining the North-South trade relation. They show that the rise in income inequality is due to structure of each variable.

In a substantial amount of analysis conducted on trade and inequality in developing country, Goldberg & Pavcnik (2007) reveal that there is not enough evidence to support the notion that trade liberalization favours the more vulnerable. Rather, trade reforms have resulted in the increase in demand for more educated workers.

Autor, Dorn, & Hanson (2013) examine the rise in the Chinese import competition on the commuty zone (CZ) in US. They find that rising imports reduce employment and wages in the US labour market. Thus, they find that depending on the level of exposure, a CZ is to china (75 percentile or 25 percentile), manufacturing employment declines by 4.5 % or 0.8%, respectively.

In a North-North setting, Mohler, Weder & Wyss (2018) document that there is a strong probability that following a trade liberalization, import competition reduces the chances of employment of individuals irrespective of their skills in the manufacturing sector in Switzerland. However, in the same trade setting,

trade liberalization is bias toward skill demand (see Dinopoulos, Syropoulos, Xu, & Yotov, 2011). They show that trade liberalization causes an increase in the skill premium.

Also, Burstein and Vogel (2017) find evidence that skilled labour benefit more from trade liberalization. They build on the Heckscher-Ohlin model and allow heterogeneity in the firms' production across different sectors. Trade liberalization tends to be in favour of sectors that have a comparative advantage over other sectors. Hence after a trade liberalization, the skill premium rises in countries that have more efficient skill-intensive sectors and reduces elsewhere.

Vannoorenberghe (2011) develops a North-North model of trade where he distinguishes between skilled and unskilled labour. The results show that an increase in trade integration widens the wage gap by raising the demand for skilled labour and driving unproductive workers out of the market.

Di Comite, Nocco & Orefice (2018) develops a monopolistic competition model using EU KLEMS data on OECD countries. They find that a 10% fall in trade tariffs corresponds to a 3.8% rise in the wage gap. They also note that unskilled labour employment fall by 3.3%. When trade barriers are lifted, import intermediate allow skilled workers to gain higher wages.

Harrigan & Reshef (2015) assume that firms are not homogeneous in their productivity and their skill intensity. They believe that the most productive firms are the most skill-intensive. Therefore, a reduction in trade barriers will increase the volume of trade and the demand for skilled labour. Their study shows the positive correlation of globalization and income inequality in countries irrespective of their factor endowment. Earlier studies have found similar results that trade liberalization increase the skill premium (See Feenstra & Hanson 1985; Zhu & Trefler 2005).

In a different approach, Autor, Dorn, & Hanson (2015) consider technology and trade to be the two significant forces driving the labour market in advanced economies. This is because technology has a positive effect on both physical and human capital which in turn contributes to an increase in the demand of skilled labour.

A country that opens up to trade face a rise in the demand for labour due to the increase in output, while the increase in productivity decreases it (Helpman, Isthoki & Redding 2010). Also, wage inequality rises because the suppression of less efficient firm and the increase in profitability of more productive firms do not lower inequality.

The discussions suggest that it is not possible to conclude on the potential effects of trade liberalization on wages. However, the model from the literature can serve as a guideline to develop stronger economic framework that can assess the effects of trade liberalization on wages in developing economies. Hence, we attempt to answer this question empirically.

The Model Prediction

The empirical exercise undertaken in this section is to examine the three propositions regarding the effects of trade liberalization on unskilled workers, wage premium, and skilled workers. We follow the work of Revenga (1997) who employ both the OLS and 2SLS estimation technique to deal with the endogeneity issues in the model.

4.1 Data source

The study uses labour market data from Quantec Easy data which reports information on output, wage, employment, and export share in manufacturing for South Africa. The database provides disaggregated data by industry at the 3-digit standard industrial classification. The database covers 42 manufacturing industries from 1993–2018. We obtain the tariffs data from the UNCTAD TRAINS database and refer to the simple average tariff rate. We use the standard deviation (σ) of the tariffs rate at the HS – 3 level to match the labour market data. It represents the coefficient of variation of the tariffs rate around the average.

$$\text{Where } \sigma = \sqrt{\frac{1}{N} \sum_{K=1}^N (T - \bar{T})^2} \quad (8)$$

Specialization is defined as the export share in manufacturing over the total exports of the country. In the literature, two approaches (Frontier and non-Frontier) have been used to measure total factor productivity. In this study we use non-frontier approach because it provides detailed information regarding the contribution of each input to output growth. It is calculated as the ratio of aggregate output over the cost of input.

Trade policy also has an impact on gender wage gap. We estimate gender wage gap by computing the ratio of male workers over female workers. Trade openness on the other hand is obtained from World Development Indicators (WDI).

For our panel data, we obtain labour market information from the Labour Bureau Chandigarh and the Asian Development Bank. In our panel data the sample shrinks from 2007–2014 because of unavailability of data. The next section presents the empirical specification.

4.2 Empirical specification

From the theoretical model we develop, trade tariffs reduction leads to a fall in the level of unskilled workers, thereby increasing the skill premium. We attempt to test this proposition using the following equation:

$$\ln(y)_{r,s,t} = \theta_{r,t} + \theta_{s,t} + \beta_1 \log(1 + \text{tariff})_{r,s,t} + \beta_2 X_{r,s,t} + \epsilon_{r,s,t} \quad (9)$$

Where r,s,t represent the exporting country, the international standard industrial classification sector, and the year. The explanatory variable $y_{r,s,t}$ is: (i) the number of people employed in the unskilled labour

market; (ii) the skill premium defined as the ratio between the number of people employed in the skilled labour market over the number of people employed in the unskilled labour market; the number of people employed in skilled labour market.

Our variable of interest is the simple average tariff faced by South Africa's manufacturing export sectors. We include country $\Theta_{r,t}$ and sector-year $\Theta_{s,t}$ specific effects in our estimation to control for any specific feature that can influence the changes in employment. Country year effects refer to any macroeconomic changes that can influence the labour market (labour legislation). In contrast, sector year fixed effects include shocks such as technology. These developments can enhance the production process thereby making firms more capital intensive which can in turn increase the wage gap. Therefore, we capture this channel through the sector specific effects.

We control for endogeneity in the model by including the following set of control variables $X_{r,s,t}$

That comprises export specialization that we define earlier, total factor productivity that reflects the manufacturing sector productivity patterns that can impact the wage of workers.

We use the following labour demand equation to examine the effects of trade liberalization on manufacturing employment in developing countries.

$$L_{it} = \alpha + \beta_1 W_{it} + \beta_2 Q_{it} + \gamma TO_{it} \quad (10)$$

Where L is manufacturing employment, W refers to the real wage in industry, Q is output in manufacturing industry and TO is trade openness.

4.3 Empirical results

Table 3 shows the results on the effects of trade liberalization on manufacturing employment of skilled workers. We present the results of 4 models. In the first and the third model, we do not include country year and industry specific effects, while in the second and fourth model we include these variables.

Our preferred specification is column 4 because its ability to capture endogenous variables. Previous studies have highlighted the strengths of this estimation (see Amiti & Cameron, 2012; Di Comite., Nocco, & Orefice, 2018).

Based on our preferred specification, Table 3 shows that a 10% reduction in tariffs results in a 9.2% increase in the employment of skilled workers. A similar reduction in tariffs level leads to a 12 % increase in the employment of unskilled workers (See Table 4).

The coefficients for tariffs in Table 5 is negative, thus a 10% tariffs' cut leads to an increase in the skill premium by 16.1 %. This finding confirms our second proposition, that trade liberalization increases or worsens the wage gap.

Table 3
Trade liberalization and manufacturing employment (skilled workers)

	Log of (manufacturing skilled employment)			
	(1)	(2)	(3)	(4)
Ln(tariff + 1)	0.072*** (0.017)	0.091** (0.043)	0.070*** (0.015)	0.092** (0.038)
TFP	-0.248 (0.198)	-0.203 (0.269)	0.315 (0.163)	0.664** (0.317)
Specialization	0.084** (0.036)	0.084** (0.038)	0.030 (0.026)	0.041 (0.036)
Industry effects	No	Yes	No	Yes
Year effects	No	Yes	No	Yes
Sample	South Africa	South Africa	South Africa	South Africa
Constant	13.177*** (0.437)	13.091*** (0.506)	12.487*** (0.323)	12.558*** (0.385)
Model	OLS	OLS	2SLS	2SLS
Observations	22	22	22	22
R-squared	0.503	0.520	0.561	0.483
Standard errors are shown in parentheses				
*Significant at 10%; **Significant at 5%; ***Significant at 1%.				

Table 4
Trade liberalization and manufacturing employment (Unskilled workers)

	Log of (manufacturing unskilled employment)			
	(1)	(2)	(3)	(4)
Ln(tariff + 1)	0.265*** (0.034)	0.118 (0.074)	0.274*** (0.031)	0.120* (0.067)
TFP	0.159 (0.380)	-0.468 (0.460)	1.746*** (0.391)	2.109*** (0.726)
Specialization	0.228*** (0.069)	0.251 (0.066)	0.271 (0.054)	0.153** (0.064)
Industry effects	No	Yes	No	Yes
Year effects	No	Yes	No	Yes
Sample	South Africa	South Africa	South Africa	South Africa
Constant	14.690*** (0.839)	15.512*** (0.866)	15.180*** (0.658)	14.284*** (0.677)
Model	OLS	OLS	2SLS	2SLS
Observations	22	22	22	22
R-squared	0.808	0.853	0.810	0.832
Standard errors are shown in parentheses				
*Significant at 10%; **Significant at 5%; ***Significant at 1%.				

Table 5
Trade liberalization and manufacturing employment (Wage premium)

	Log of (manufacturing wage premium)			
	(1)	(2)	(3)	(4)
Ln(tariff + 1)	-0.192*** (0.026)	-0.026 (0.046)	-0.203*** (0.026)	-0.161* (0.087)
TFP	-0.407 (0.294)	0.265 (0.290)	-1.431*** (0.292)	-1.445*** (0.473)
Specialization	-0.144** (0.053)	-0.166 (0.041)	-0.241 (0.045)	-0.111*** (0.040)
Industry effects	No	Yes	No	Yes
Year effects	No	Yes	No	Yes
Sample	South Africa	South Africa	South Africa	South Africa
Constant	-1.513** (0.648)	-2.421*** (0.545)	-2.693*** (0.551)	-1.725*** (0.421)
Model	OLS	OLS	2SLS	2SLS
Observations	22	22	22	22
R-squared	0.807	0.901	0.774	0.890
Standard errors are shown in parentheses				
*Significant at 10%; **Significant at 5%; ***Significant at 1%.				

Using ols and 2sls estimations in Table 5, we show that tariff liberalization has a negative effect on the wage premium. In both method, the effects tend to reduce when we include industry and year effects. The increase in spending in research and technology can help mitigate the rising wage gap, thereby explaining these effects.

Turning to gender wage gap, we present the effects of trade liberalization on gender wage. Previous estimations of Table 6 show no significant impact of tariffs reduction on gender wage gap. However, in our preferred specification, the results reveal that a 10% fall in tariffs leads to a increase in 26.8% increase in the gender wage gap.

Table 6
Trade liberalization and manufacturing employment (Gender wage gap)

	Log of (manufacturing gender wage gap)			
	(1)	(2)	(3)	(4)
Ln(tariff + 1)	-0.052 (0.094)	-0.262* (0.132)	-0.310 (0.316)	-0.268*** (0.069)
TFP	-0.455 (0.277)	-0.279 (0.300)	2.569 (2.293)	-0.203 (0.347)
Specialization	0.305*** (0.068)	0.021 (0.166)	-0.073 (0.342)	-0.272 (0.235)
Industry effects	No	Yes	No	Yes
Year effects	No	Yes	No	Yes
Sample	South Africa	South Africa	South Africa	South Africa
Constant	4.581*** (0.734)	1.052 (2.036)	0.439 (3.598)	0.763*** (0.176)
Model	OLS	OLS	2SLS	2SLS
Observations	12	12	12	12
R-squared	0.833	0.908	0.421	0.908
Standard errors are shown in parentheses				
*Significant at 10%; **Significant at 5%; ***Significant at 1%.				

Finally, we show the effects of trade liberalization on a panel of developing countries. We use a labour demand approach which has been widely employed by (Hine & Wright, 1999; Jenkins & Sen, 2006). Using our preferred specification, Table 7 shows that trade openness has no significant effect on employment.

Table 7
Trade liberalization and manufacturing employment

	Log of (manufacturing employment)			
	(1)	(2)	(3)	(4)
Ln(wage)	-0.0185 (0.110)	-0.020 (0.110)	-0.2135*** (0.0382)	-0.2270** (0.1030)
Ln(trade openness)	-0.0292** (0.029)	-0.0308** (0.012)	-0.0212 (0.0169)	-0.0194 (0.0159)
Ln(output)	0.1624 (0.115)	0.1119 (0.112)	0.1914*** (0.0169)	0.1943*** (0.0382)
Industry effects	No	Yes	No	Yes
Year effects	No	Yes	No	Yes
Sample	All countries	All countries	All countries	All countries
Constant	11.5434*** (1.3865)	12.0609*** (1.423)	13.6347*** (0.1397)	13.6886*** (0.1874)
Model	OLS	OLS	2SLS	2SLS
Observations	45	45	45	45
R-squared	0.747	0.418	0.945	0.947

Conclusion

The paper investigated the different impacts of trade liberalization on different types of workers. The findings reveal that skilled workers are able to get more wages when trade tariffs reduce. We build a monopolistic competition model with two factors of production differentiated by their skills level. The model we develop allow to test the following propositions: (i) Trade liberalization reduces employment in the unskilled labour market; (ii) Trade liberalization raises the wage gap between skilled and unskilled workers; (iii) Trade liberalization increases employment in the skilled labour market.

The results confirm our second and third propositions. Thus, a 10% reduction in tariffs leads to an increase in the wage gap by 16.1 %. Also, a similar reduction in trade tariffs leads to a 9.2% increase in the employment of skilled workers. However, we show that a 10 % decline in tariffs, increases employment in the manufacturing unskilled labour market by 12 % which contradicts our first proposition.

We also show that on average the same level of tariffs' cut increases the gender wage gap by 26.8%. Further, using a trade openness on a panel of developing countries, we show that trade liberalization has no effect on employment.

The findings imply that both the skilled and unskilled labour benefit from trade liberalization policies. However, the increase in the wage gap is a signal to policy makers in the sense that they need to support the unskilled labour market by giving them enough training to make them more competitive.

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Figures

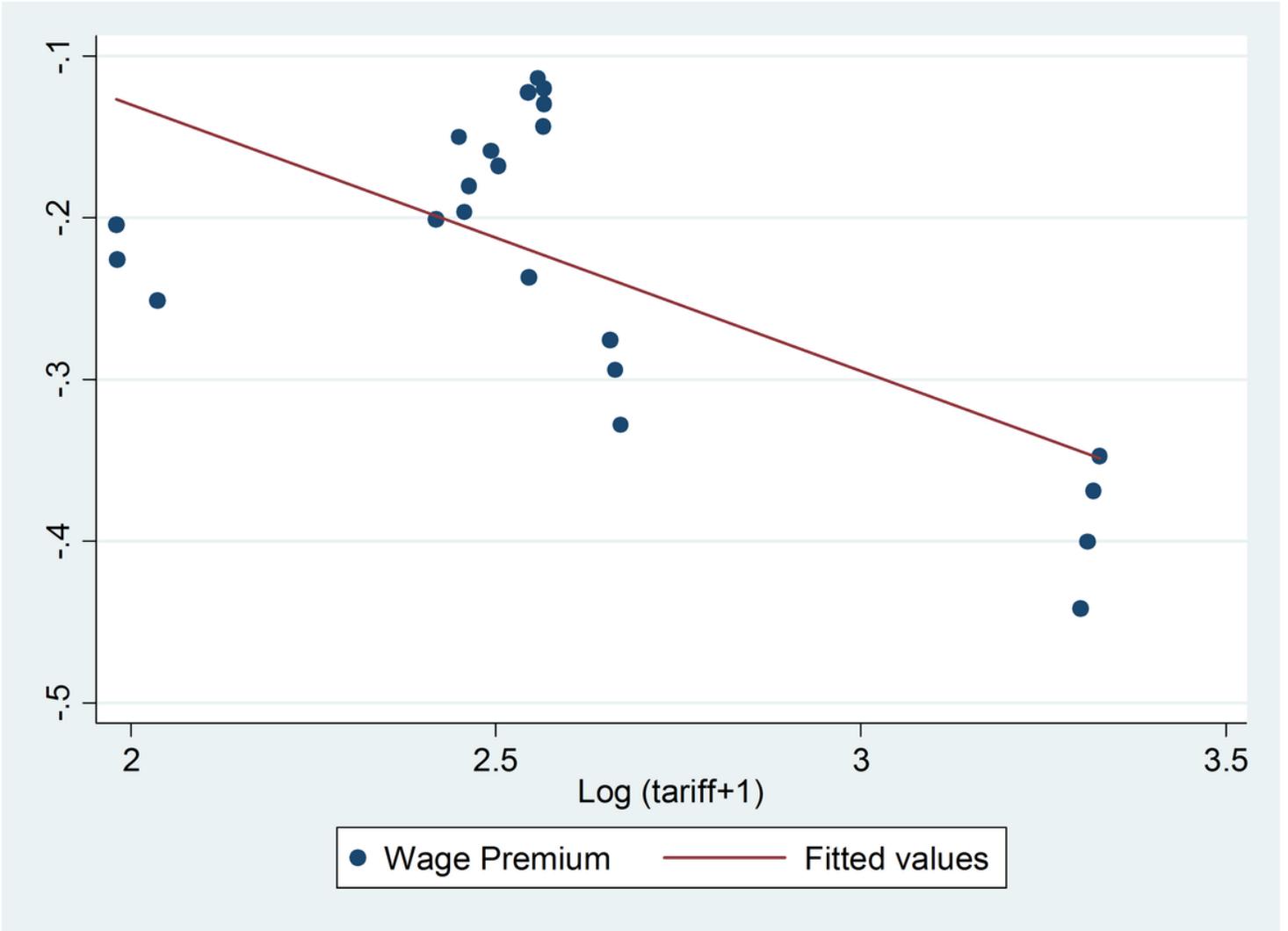


Figure 1

Wage premium and tariff

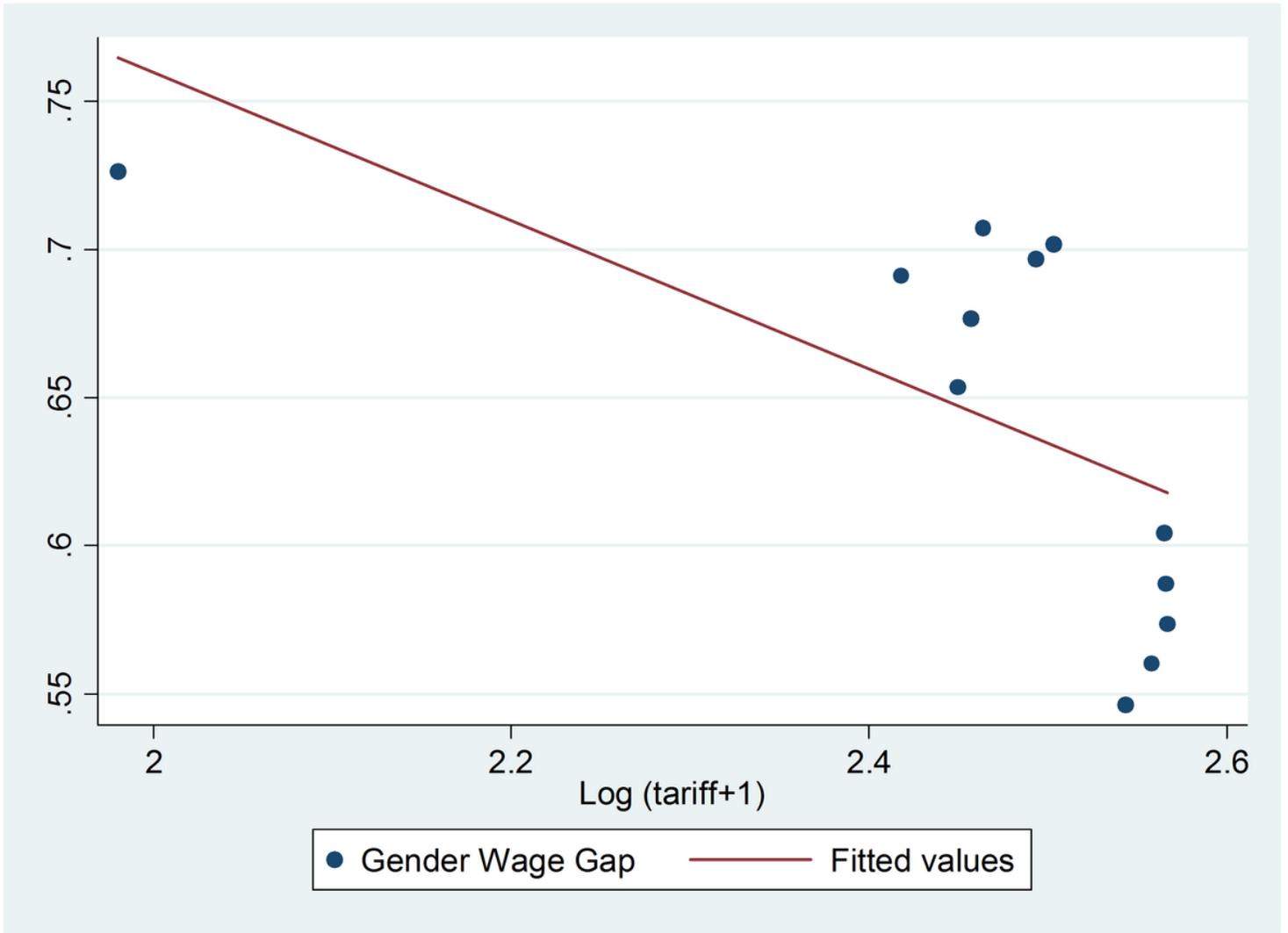


Figure 2

Gender Wage Gap and tariff