Southeast Asian Journal of Economics Vol.10(3) December 2022: 163-198
Received: 15 October 2021
Accepted: 3 November 2022

Trade Liberalization and Wage Inequality between Skilled and Unskilled Workers: Evidence from Thailand

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Abstract

This paper addresses distributive issues as a result of trade liberalization reforms that occurred in Thailand after it joined the WTO in 1995. The analysis will exploit the concept of industry wage premiums and how skilled and unskilled workers are allocated between industries by using two-stage regressions. We find that the episode of trade reforms that occurred in Thailand increased industry wage premiums overall. The effects are weak but statistically significant for both skilled and unskilled workers. The paper also suggests no improvement in the income gap between skilled and unskilled laborers in Thailand after trade reforms as skilled workers benefited relatively more during this period. The results can be explained by the 'skill-enhancing trade' hypothesis.

Keywords: trade reforms, trade liberalization, wage inequality, wage premiums, income distribution.

1. Introduction

World integration has led to higher economic development and growth, poverty reduction, and a higher income and living standard. The debate over protectionism started among industrialized countries after World War II and later reached developing countries. Soon after the new trade agreements were formed, the world was brought closer. However, any advancement often comes with side effects. Income distribution is one of the most concerning topics that comes with it, especially in a developing country like Thailand where income inequality is among the largest in Southeast Asia. Since the 1980s, Thailand's income inequality has worsened substantially. The Gini coefficient increased from 0.453 in 1975 to 0.500 in 1986 (Ikemoto, 1992). Even in 2008, the Gini index of Thai household income had still not decreased. It measured at around 0.51, compared to lower than 0.4 in Indonesia, Malaysia, and Vietnam. Intervention from the government is needed. First, we need to identify the cause of this continuously widening income gap. We look to the well-known worldwide transition that took place in Thailand during the 1990s.

Many studies have been done to investigate the effects of trade reforms on several developing countries. However, to the best of our knowledge, there has been minimal research regarding the topic of income inequality during the episodes of trade liberalization in Thailand. This paper will address the distributive issues as a result of trade liberalization that took place in Thailand after it joined the WTO in 1995. Thailand serves as a suitable case for the study of trade liberalization and income distribution due to the magnitude of trade reforms being substantial and the fact that Thailand has one of the highest income inequality rates in Southeast Asia. The analysis will exploit the concept of industry wage premiums and how skilled and unskilled workers are allocated between industries. We look specifically at skilled and unskilled workers and analyze separately how trade liberalization may have impacted the change in the wages for each group of workers.

Following the two-step procedure developed by Krueger and Summers (1988), we first estimate wage premiums for the manufacturing sector

and then investigate the impact of trade liberalization on the wage premiums for skilled and unskilled workers. Given that each industry employs different shares in terms of skilled and unskilled workers, and wages in each industry respond to the changes in trade policy differently, in this paper we will capture how changes in trade policy affect the relative incomes of skilled and unskilled workers in the economy. Tariff reductions have a positive impact on wage premiums, and if sectors with a higher share of unskilled labor experience a relatively larger positive change in their wage premiums due to trade openness, relative to other sectors, then unskilled workers would earn more relative to skilled workers in those sectors. This would imply that trade openness reduces wage inequality between skilled and unskilled workers. With this connection in mind, we proceed to estimate wage premiums for skilled and unskilled separately for each industry.

The main findings in this study indicate that, after controlling for unobserved time-invariant worker and industry attributes, a reduction in tariffs is associated with higher wage premiums for both skilled and unskilled workers. However, including sector-specific time-variant characteristics as explanatory variables tends to reduce the statistical significance of the tariff coefficient for unskilled workers. Furthermore, our findings suggest that the trade reforms in Thailand have little to no effect on the wage differentials as the magnitude of changes in the wage premiums for skilled workers are slightly higher or similar to that of unskilled workers. Hence, the paper concludes that trade liberalization has resulted in increased wage inequality in Thailand, at least during the period of this study.

The rest of the paper is organized as follows. Section 2 provides a literature review. Section 3 describes the empirical methodology used in this paper, followed by the data summary in Section 4. Estimation results can be found in Section 5. The conclusion and discussion of the results are in Section 6.

2. Literature Review

The reason behind the uneven effect between developed and developing countries can be simply explained by the well-known Stolper-Samuelson theorem that discusses relative prices of output and relative returns to the factor of production on the Heckscher–Ohlin framework, where a country would export its abundant-factor intensive products and import its scarce-factor intensive products. Many developing countries that had undertaken trade liberalization were small and abundant with labor, though rather unskilled. Trade would then increase the demand for domestic goods produced by the unskilled, which in turn would lead to a relative increase in returns to labor, or wages, and a relative decline in return to the other factor, usually capital. This implies that trade reforms would increase the real incomes of unskilled workers and, in turn, reduce income inequality in developing countries. This may have been evident in the Asian Tiger countries (i.e., Hong Kong, Taiwan, Singapore, and South Korea) during the early trade reforms (Kumar & Mishra, 2008). However, there is evidence suggesting otherwise. For example, Robertson (2000) suggests that trade openness increased the demand for skilled labor in developing countries, e.g., Mexico, thereby increasing rather than decreasing income inequality. Perry and Olarreaga (2006), Goldberg and Pavcnik (2007), Topuz and Dağdemir (2020), and Khan, Walmsley, and Mukhopadhyay (2021) provide evidence for worsening wage inequality following trade liberalization in various countries.

The analysis in this study follows a series of previous studies on trade liberalization and industry wage premiums using the evidence from several countries to conduct an analysis of the effect of trade reform on wage inequality using the data of Thailand. The period captured in those papers occurred about the same time as this study did, which was around when several trade agreements and organizations started to pave the way for freer trade worldwide in the 1990s and 2000s. The results of trade openness on wages are different depending on the country. On one hand, the evidence that support

trade openness relating to higher industry wage premiums are from Gaston and Trefler (1994), who used the American data to explore trade policy changes and wage premiums in the US manufacturing sectors, Goh and Javorcik (2005) on the data of Poland, and Kumar and Mishra (2008) on Indian data. On the other hand, those associating tariff reductions with a fall in industry wage premiums are, e.g., Revenga (1997) in the case of Mexico, Goldberg and Pavcnik (2005) in the case of Columbia, and Falcone and Galeano (2017) in the case of Argentina. Moreover, some evidence suggests an insignificant relationship between trade reforms and industry wage premiums, e.g., Feliciano (2001) in the case of Mexico and Pavcnik, Blom, Goldberg, and Schady (2004) in the case of Brazil. As for the case of Thailand, the results align with the pro-trade strand. Durongkaveroj and Ryu (2018) find that trade reform is associated with a reduction in Thailand's economic disparity and poverty by comparing the data of 1995 to that of 2005. Moreover, Jayanthakumaran, Sangkaew, and O'Brien (2013) find a negative relationship between tariff level and industry wage premiums in Thailand during the period from 1991 to 2007.

This paper is closely related to the study by Jayanthakumaran et al. (2013), which investigated the effects of tariff reductions on wage premiums during the trade reforms in Thailand. They find that tariff reductions are weakly associated with increases in wage premiums overall. However, the inclusion of immediate imports resulting from the tariff reductions intensified the effect of the increases in wage premiums. Hence, their paper leaves room for a more detailed analysis of wage differentials between skilled and unskilled workers during Thailand's transitions toward freer trade.

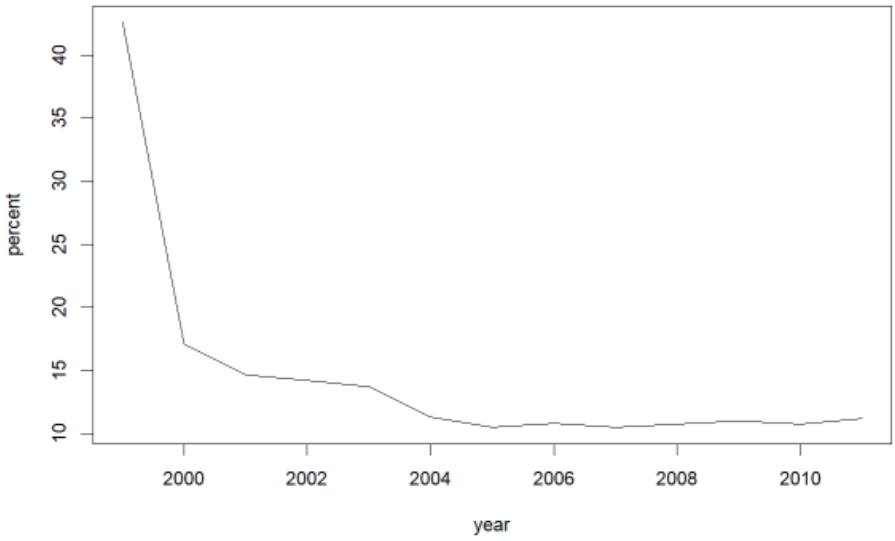
Background on Thailand's Trade Liberalization

There are two major episodes of trade reforms that Thailand has experienced. First, having participated in the Uruguay Round agreements in 1986 along with 123 other countries with the aim toward increased trade liberalization, Thailand, as many other countries, was asked to open up markets and reduce tariffs in manufacturing products as well as eliminate non-tariff

barriers and reduce other protection measures, including export and production subsidies in agriculture. Member countries were asked to bind their custom duty rate on imports and to agree to institutional and rule changes such as anti-dumping and safeguards (Warr, 1997). Secondly, in December 1994, Thailand became one of the founding members of the World Trade Organization (WTO), which officially took effect in January 1995. In the immediate aftermath of Thailand joining the WTO, import tariffs on 3908 goods in 11 categories except agricultural goods were lowered further by 52 percent in total (Higashi, 1997).

The trade reform path has not been smooth, however. With Thailand's currency crisis in 1997, in which the value of the Thai baht depreciated by 50 percent and a 12 percent contraction in real income, many critics raised concerns over the trade reforms of the early 1990s. Import duties were increased following the crisis and the government's decision to relax trade barriers in the highly affected sectors such as automobiles and petrochemicals, and agriculture was stalled to some extent. However, in 1998, a Tariff Committee was established to schedule and plan for tariff reductions, which has substantially declined since 2000. Figure 1 shows the evolution of the simple average tariffs for all products over time from 1999 to 2011. The figure depicts a sharp decline in tariff rates from 42.6 percent to 17 percent that took place in the year 2000 before leveling to just above 10 percent afterward.

Figure 1. Simple average tariff for all products from 1999 to 2011



Source: World Bank's WITS database.

3. Methodology

To estimate the effects of tariff reductions on industry wage premiums, we follow the two-stage regression developed by Krueger and Summers (1988), that expresses industry wages as deviations from the employment-weighted average wage premium. The framework has been used in previous literature such as Pavcnik et al. (2004), Goldberg and Pavcnik (2005), Goh and Javorcik (2005), Perry and Olarreaga (2006), Kumar and Mishra (2008), and Jayanthakumaran et al. (2013). In the first stage, the log of individual 's wages () is regressed on a set of worker's characteristics (), such as age, gender, marital status, occupation, education, a dummy indicating one if the individual is a household head, and a set of industry indicators ().

The first stage regression is estimated separately for each year (1999-2008), expressed as follows:

$$ln\,(w_i) = \beta_H H_i + \sum_{j=1}^{17} I_{ij} wp_j + \epsilon\,, \quad (1)$$

where j represents an industry, wp_j denotes the industry wage premiums, capturing the part of worker's wage variation that cannot be explained by worker's characteristics but explained by industry affiliation of the worker. Even though adding worker's characteristics controls for characteristic differences, average wages can still vary across industries since each industry employs different shares of skilled and unskilled workers. Once the industry wage premium (wp_j) is obtained from the first stage, we then calculate the normalized wage premium using the procedure developed by Haisken-DeNew and Schmidt (1997).

In the second stage, the normalized industry wage premiums (ω_j) from the first stage are pooled over time and regressed on trade-related measures, or import tariffs, in this case. The second stage equation takes the following form:

$$\omega_{jt} = \beta_T T_{jt} + \beta_D D_{jt} + \alpha_j + \gamma_t + \varepsilon_{jt}, \quad (2)$$

where T_{jt} is a vector of trade-related measures, which is primarily import tariffs in this case, and D_{jt} denotes the vector of other controls such as industry and year indicators. The second stage regression is estimated using the industry fixed-effects model and is interpreted as a reduced form relationship where only the relationship between trade policy changes and industry wage premiums is concerned.

Alternatively,

$$\Delta\omega_{jt} = \beta_1 \Delta T_{jt} + \beta_D \Delta D_{jt} + \gamma_t + \varepsilon_{jt}, \quad (3)$$

where $\Delta\omega_{jt}$ denotes the change in industry wage premium between time t - *1* and t in industry j, ΔT_{jt} denotes the change in import tariffs between time t - *1* and t in industry j, and γ_t denotes a vector of year indicators. The alternative form

of the second stage equation is regressed in the first differenced form which controls for unobserved industry-specific heterogeneity. For this equation in the second stage, the weighted least squares (WLS) method is employed. The weight used in the analysis is the inverse of the standard error of the industry wage premiums estimated in the first stage.

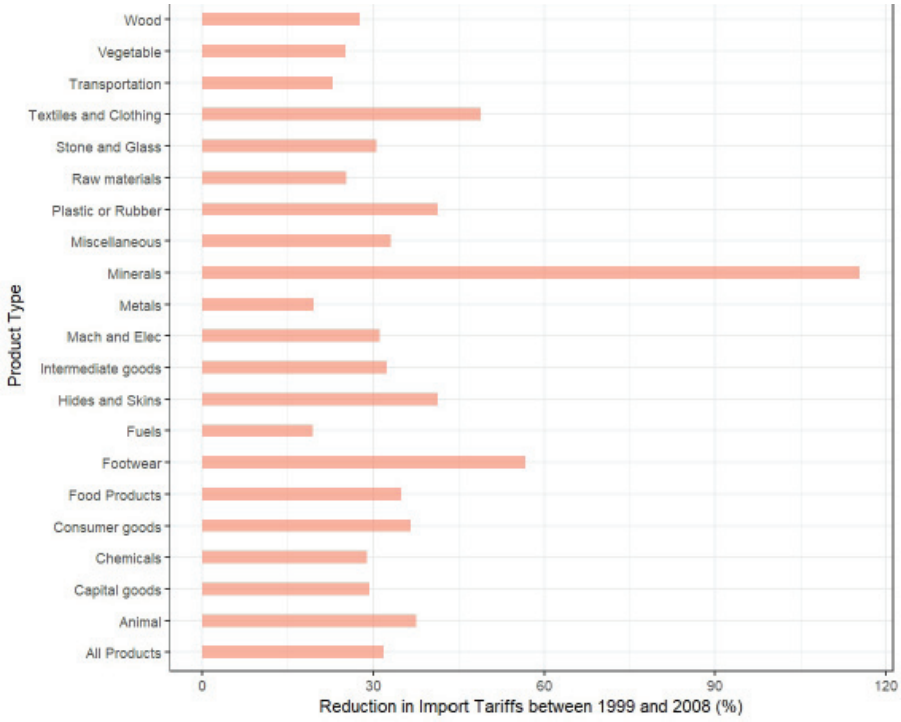
4. Data Source and Summary

Trade Policy

The main trade policy instrument used in this paper is the commonly used import tariff. As shown in Figure 2, immediately following Thailand joining the WTO in 1995, tariff rates fell rapidly before spiking up again just before 1999 and then steadily decreasing after 2000. Tariff data is obtained from the World Integrated Trade Solution (WITS) database provided by the World Bank. The tariff used in the analysis is the AHS (i.e., Effectively Applied) Simple Average of import tariffs vis-à-vis the world, which is composed of 21 product groups.[1] Among these product groups, only 16 tariff categories are used in the analysis, which is matched with the 12 industrial classifications in the LFS. Tariff data for 2002 is not available, so we use the average tariff between 2001 and 2003 to represent 2002 data.

[1] 21 product groups include: all products, capital goods, consumer goods, intermediate goods, raw materials, animal, chemical, food products, footwear, fuels, hides and skins, machine and electricity, metals, minerals, miscellaneous, plastic and rubber, stone and glass, textiles and clothing, transportation, vegetable, and wood.

Figure 2. Thailand's trade liberalization vis- à-vis the world



Source: World Bank's WITS database.

This study covers the period from 1999 to 2008. The simple average import tariffs for all products fell by 25.5 percentage points from 42.6 percent in 1999 to 17.1 percent in 2000 and steadily dropped to 10 percent in 2008, i.e., a 31.8 percentage-point decrease in tariffs during the 10-year period.

The level of protection, however, varied across industries. Figure 2 illustrates the reduction in import tariffs in each industry between 1999 and 2008 for simple average tariffs. Prior to the reforms, in 1999, minerals were protected the most with the simple average import tariff as high as 117.8 percent, with footwear being the second most protected sector at 82.7 percent. In contrast, fuels, metals, chemicals, and wood products were given the least protection with around 31 percent tariff on average among these sectors. During trade reforms,

the non-metallic minerals sector had undergone the largest tariff reduction by 115.4 percent from 117.8 percent in 1999 to 2.4 percent in 2008. The smallest decreases for simple average tariff were reflected in fuels and metals by the absolute value of 19.4 and 19.5 percent, respectively, during the same period.

The level of protection after trade reforms also varied. Minerals were no longer the most protected sector but instead the least protected sector after trade reforms with the simple average tariff as low as 2.4 percent in 2008, followed by fuels and chemicals with a tariff of 3.8 and 4 percent, respectively. On the contrary, food products became the most protected sector with the post-reform tariff rate at 30.8 percent, followed by footwear, transportation, vegetable, and textiles and clothing, with the average tariff among these categories of 24 percent. Note that fuels and chemicals remained among the least protected sectors in both pre- and post-reforms.

Labor Force Survey (LFS)

The Thailand Labor Force Survey (LFS) maintained by the National Statistical Office of Thailand (NSO) covering the third quarter of years 1999 to 2008 (10 years in total) is used. The LFS is a national representative survey based on the Stratified Two-Stage Sampling technique and covers a range of questions such as respondents' educational background, employment status, income, occupation, industry, and so on.

Respondent's characteristics used in this paper include age, gender, marital status, completed education, monthly earnings, weekly hours worked, sector of employment, region, and relationship to the household head. We use observations for respondents ages 15 to 75 living in the central region of Thailand, including Bangkok, which is the central hub of the manufacturing sector. The reason we include workers only in the central area is that the paper concentrates on the manufacturing sector where the degree of tariff reductions was largest. The eastern region, important for export-oriented industries of Thailand (also known as the Eastern seaboard of Thailand, or the Eastern Economics Corridor, EEC), is also included in the analysis.

Summary statistics are shown in Table 1. The average age of workers in the sample was 34.5 in 1999 and increased slightly to 35.5 in 2008. The overall average age is 35.5 years. The average weekly hours worked also remained relatively constant over time with a slight increase from 46.3 hours in 1999 to 47.5 hours in 2008 with an overall average of 47.4 hours per week. About 63 percent of individuals in the sample were married, and females constituted a little less than half at an overall average of 48.4 percent. The average hourly nominal wages show an increasing trend. In 1999 the average wages were about 42.1 baht per hour then increased to about 58.2 baht per hour in 2008. The average hourly wages throughout the period were 50.6 baht per hour. Approximately 4 in 10 people were household heads. Almost 20 percent of the sample resides in the capital.

The highest educational attainment of people in the sample increased for secondary or vocational and university degrees or higher and decreased for primary or less and 2-year university or second vocational degrees. About 42 percent of people in the sample have primary school or less. The number reflected a slight decrease over time from 46 percent in 1999 to 38.3 percent in 2008. Only about one-fifth had a university degree or higher with an increasing trend from 16.5 percent in 1999 to 22.5 percent in 2008.

Tables 1.1 and 1.2 provide the summary statistics for unskilled workers and skilled workers, respectively. Unskilled workers are classified as workers having a primary or less level of education, and skilled workers are those who obtained a university or higher degree[2]. Hourly wages for unskilled laborers increased from 24.7 baht per hour in 1999 to 29.6 baht per hour in 2008. Similarly, for the skilled group, the hourly wages also increased from 79.5 to

[2] Educational attainment is often used as a means to classify skilled and unskilled workers and has been adopted by several studies in this related field, e.g., Pavcnik et al. (2004), Goldberg and Pavcnik (2005), Goh and Javorcik (2005), Perry and Olarreaga (2006), Kumar and Mishra (2008), and Jayanthakumaran et al. (2013). However, some other characteristics such as occupation or training could be a better fit in some settings.

124 baht per hour during the same period. Comparing both groups, the hourly wage for the unskilled averages around 26 baht per hour and 114 baht per hour for skilled workers. The mean difference in hourly wage is confirmed by conducting a two-sample t-test to be statistically significant at the one percent level. Moreover, the average age is somewhat higher for the unskilled workers in the sample (38.6 years and 37 years, respectively). The number shows a slightly increasing trend for both groups. The unskilled group is also shown to work longer hours than the skilled counterpart, with the average at 49.5 hours per week, as opposed to 41.9 hours per week for the skilled group. The number remains relatively constant over time for both groups. Surprisingly, females constitute more than half of the skilled worker population at around 60 percent. On the contrary, relatively more males (53 percent) work as unskilled laborers. Furthermore, unskilled workers are more likely to be married and the household head. Around 70.6 percent of the unskilled are married, and 43.6 percent are household head, compared to 53.9 percent and 37.6 percent of married skilled workers and household head, respectively. Lastly, more skilled workers (28.8 percent) live in the capital area compared to the unskilled group (14.3 percent). More and more skilled workers migrated to the capital over time. The number increased from 21.6 percent in 1999 to 30.1 percent in 2008, whereas the number remained relatively unchanged for unskilled workers over the period. This suggests the inability of the workers in the unskilled group to move. All mean differences between both groups are statistically significant at one percent as confirmed by the two-sample t-test.

Table 2 exhibits the share of unskilled workers in each industry. In 1999, agricultural sectors had the highest share of unskilled workers, especially in forestry and logging, agricultural and hunting, and fishing, with around 90 percent of the workers being unskilled. The unskilled share is almost 89 percent on average across all agricultural sectors. Even after the reform, the highest percentage of unskilled laborers is still found in the agricultural sectors. However, the number decreased to about 72 percent in 2008. Among manufacturing industries, the wood sector has the highest share of unskilled

workers both before and after trade reforms even though the number decreased slightly from 78.2 percent in 1999 and 64.6 percent in 2008.

As for the service sectors, the financial and insurance industry employed the smallest portion of unskilled workers both before and after the reforms. The number was 10.6 percent in 1999, which decreased to 5.8 percent in 2008. On the contrary, the construction sector hired more than 80 percent of unskilled workers in 1999 and decreased to 67 percent in 2008. Overall, the share of unskilled workers in all industries declined over time. The sectors that reflected the largest change in employment share are found in transport equipment, utilities, and financial and insurance, where the number of unskilled workers declined by half. On the contrary, real estate, tobacco, and fabricated metals industries employed more unskilled workers over time.

5. Results

First Stage Results

The first stage equation (1) is estimated separately for each cross-section. The log of worker wages is regressed on a set of industry affiliation dummies and controlled for worker characteristics including age, age squared, dummies for marital status, household head, the highest education attainment level, geographical location, and occupation. The results are shown in Table 3.

In general, the results are consistent with the previous studies; all the coefficients have the expected signs and are statistically significant at the one percent level. Individuals who are old, a household head, male, and married earn relatively more. People who live in Bangkok earn more than those living in the central area around Bangkok. The signs of the coefficient on education indicators are also intuitive. Workers with a university degree or higher earn relatively more than those from other categories, while those who have primary or less schooling earn the least. Similarly, Tables 3.1 and 3.2 show first-stage regressions for unskilled and skilled workers, respectively. Overall, the signs and magnitude are similar to the whole sample case.

Our findings in the first stage are highly consistent with Goldberg and Pavcnik (2005) who worked on Columbian data, Goh and Javorcik (2005) on Polish data, Pavcnik et al. (2004) on Brazilian data, and Kumar and Mishra (2008) on Indian data.

Second Stage Results

The most important part of our findings is the impact on distributive issues because each industry employs different ratios of skilled and unskilled workers according to Table 2. We provide some examples from the LFS data. In 1999, the agricultural sector employs an 80-90 percent share of unskilled workers, while the financial and insurance sector contains only about 14 percent of unskilled laborers. Given that trade liberalization led to increases in industry wage premiums in Thailand, if the sectors with a higher share of unskilled workers experienced a larger magnitude of tariff reduction, it could be construed that the tariff reductions will lead to a larger wage premium increase for unskilled workers relative to skilled workers in general. To test this hypothesis, we proceed to analyze the data for both skilled and unskilled workers separately.

In the second stage, by pooling all data, industry wage premiums are regressed on tariffs separately for skilled and unskilled workers. The results for skilled workers are shown in Table 4.1. There are two specifications: first differencing and fixed effects, respectively. Year dummies are included in all specifications. The estimated coefficients are negative and statistically significant at the one percent level after controlling for unobserved industry heterogeneity through the first differencing method. Alternatively, to control for the time-invariant unobserved worker and industry characteristics, the model with industry-fixed effects was employed in the last column of Table 4.1. The result remains negative and statistically significant yet smaller in magnitude. On the other hand, the results for unskilled workers are shown in Table 4.2. Similar to skilled workers, the estimated coefficients are negative and statistically significant for both specifications despite the degree being smaller than those of skilled workers.

The second stage results suggest that reductions in tariffs in a given industry raise wage premiums in that industry for both skilled and unskilled workers in Thailand. In other words, trade liberalization leads to rising wage premiums. Moreover, the magnitude of the increase in wage premiums is less than two times larger for skilled workers than unskilled workers. For example, using the tariff coefficient from specification 1 of Table 4.1 and 4.2, a 50-percent tariff cut would lead to a 0.4(percent increase in industry wage premiums for skilled workers and only a 0.25(percent increase for unskilled workers. However, the results from the fixed-effects model in specification 2 show that the tariff coefficients for both skilled and unskilled workers share the same magnitude. Thus, we conclude that trade liberalization in Thailand does not have an effect on income inequality during the period of study between 1999 and 2008.

The potential explanation for the direction and degree of magnitude of the results can be explained by Majid (2004) who finds that in the case of developing countries, an increase in trade openness will not directly increase wage rates, or even induce a decline in the wage rates in the short-run, but rather increase it via growth in the long-run. Thus, the data from Thailand showing a subtle change after trade liberalization matches the evidence provided by Majid (2004).

Controlling for additional sector-specific time-variant variables

Because wages could be affected by other channels, in addition to tariffs, and tariff reduction is associated with the size of firms' exports and imports, additional controls such as imports and exports variables are included in the estimation for the robustness check (Goh & Jarvorcik, 2005). Imports and exports serve as channels capturing other trade-related activities, other than tariffs, which had affected wage differentials. The controls endogenously enter the model in their first-lagged variables, and to capture the contemporaneous effects of trade factors, contemporaneous imports and exports are also tested in a different specification. Note that the relationships between these controls and wage differentials are not of concern in the study.

The results for skilled workers are presented in Table 5.1. There are four specifications. To be comparable, the first and second columns are the first differencing and fixed effects results from Table 4.1. The third column includes the log of lagged imports and exports. The tariff coefficient turns out to be insignificant to the inclusion of the lagged variables. In the fourth column, when contemporaneous imports and exports are included in the estimation, the estimated coefficient for skilled workers is, despite being smaller in magnitude, negative and statistically significant at a five percent level. Likewise, the results for unskilled workers are shown in Table 5.2. The estimated coefficients are negative but statistically insignificant to the inclusion of both lagged and contemporaneous variables.

As shown in Tables 5.1 and 5.2, controlling for imports and exports has led to a decline in the magnitude and significance level of the coefficient on tariffs. This means that tariffs act as a proxy for exports and imports in this case, and tariffs lose their significance when exports and imports are at play. The effect is milder for skilled workers as some level of significance is still shown. The positive/negative coefficient on exports suggests that export-oriented firms offer a higher/lower wage premium for their workers, respectively.

6. Conclusion and Discussion of the Results

This paper explored the effects of trade reforms in Thailand on wage inequality between skilled and unskilled workers. Following the procedures of Goldberg and Pavcnik (2005), we first estimate the effect of trade reforms by using trade policy variables, i.e., import tariffs, on industry wage premiums then compare their impact on both skilled and unskilled workers. This study covers the period from 1999 to 2008 when Thailand experienced a huge decline in import tariff rates following the commitment to trade liberalization.

The results in this paper can be summarized into two main prospects. On one hand, trade reforms were associated with increased wages for both skilled and unskilled workers, which is consistent with Majid (2004), Kumar and Mishra (2008), Gaston and Trefler (1994), Goh and Javorcik (2005), and

Jayanthakumaran et al. (2013). On the other hand, we find that the increases in wages are fairly even across industries, and the trade reforms favor skilled workers as much as unskilled workers. The results for skilled workers are robust when controlling for the exports and imports variables. Hence, we conclude that trade liberalization has no effect on wage inequality in Thailand, at least in the short run. The results are in contrast to Warr (2014) who finds by using the general equilibrium model that skilled laborers gained relatively more than unskilled laborers after Thailand's trade liberalization. In comparison to the results from other countries, our results are also opposite to that of Goldberg and Pavcnik (2004) who find that trade liberalization worsens income inequality in Columbia and of Perry and Olarreaga (2006) who find that trade reforms were accompanied by increases in wage inequality in most Latin American countries. It also contradicts the findings of Kumar and Mishra (2008) who find that in the case of India trade liberalization decreased wage inequality from 1980 to 2000 and contrasts with what happened to the Four Asian Tigers (Hong Kong, Singapore, South Korea, and Taiwan) where income inequality improved as a result of trade reforms.

The results are supported by several arguments, one of them being the inflow of technology from the industrialized world, which is in favor of skilled workers. This is called the 'skill-enhancing trade' (SET) hypothesis, termed by Robbins (2003). As a developing country, Thailand also experienced more than double the FDI inflows after opening to trade. Another explanation is that this period of transferring and installing new technologies can be temporarily skilled-biased (Pissarides, 1997), and skilled workers gain relatively more only in the short-run during the adjustment to the new level of technologies. Kohpaiboon and Jongwanich (2014) suggested that where output tariffs are concerned, an income inequality gap can be widened by either an increase in demand for skilled laborers or a decrease in unskilled laborers after trade liberalization, while the result is the opposite when importing firms (a reduction in input tariffs) are concerned. Many studies suggest the immobility of laborers to be the cause of the rising inequality. However, this does not seem to be the

case for Thailand. Jitsuchon (2014) finds a high immigration rate, around 40 percent of the total population in 1994, and that immigration was active from the 1990s to the early 2000s.

Thailand has been one of the most unequal countries in the world. From the 1980s, Thailand's Gini coefficient had been around below 0.500 (Ikemoto, 1992). After trade liberalization in 2003, the inequality spiked up a bit before slightly coming down in 2005, and it shows a decreasing trend ever since. However, the inequality is still considered high. In 2016, more than half of the national income belongs to the top 10 percent, while only 13 percent of the national income belongs to the bottom half of the whole population (Jenmana & Gethin, 2019). Even when compared to other countries like Russia, China, and the United States, Thailand still has the highest top 10 percent national income share among those countries. As for the policy implication, the government should be more aware of the difference in the degree of changes in wages of each industry after the trade reforms. The policy that aims to reduce wage inequality should target the industries with high unskilled worker ratios, such as the agricultural, wood, tobacco, fabricated metals, and construction sectors.

Acknowledgements

This article is completed with much thanks to Fumio Ohtake and Masaru Sasaki for their expert advice and encouragement throughout this difficult project, as well as the Ohtake-Sasaki seminar, Graduate School of Economics, Osaka University. I would also like to thank Professor Yong Yoon for his extraordinary support throughout this endeavor.

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Table 1. Summary statistics

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
	N=12360	N=12936	N=18756	N=21056	N=21090	N=20797	N=22456	N=23586	N=23132	N=24057	N=200226
Hourly wage (Baht)											
Mean (SD)	42.1 (41.3)	41.5 (41.2)	47.6 (67.9)	46.4 (67.0)	48.6 (72.9)	49.7 (75.2)	53.6 (74.0)	53.8 (70.5)	55.4 (70.2)	58.2 (101)	50.6 (72.7)
Age (years)											
Mean (SD)	34.5 (10.8)	34.7 (11.0)	34.7 (10.7)	34.8 (10.8)	35.1 (10.9)	35.2 (11.1)	35.5 (11.1)	35.8 (11.0)	36.5 (11.2)	37.0 (11.2)	35.5 (11.0)
Weekly hours worked											
Mean (SD)	46.33 (8.93)	46.91 (8.63)	46.85 (8.90)	47.38 (8.57)	47.58 (8.58)	47.48 (8.58)	47.70 (8.69)	47.75 (8.65)	47.51 (8.56)	47.46 (8.47)	47.37 (8.65)
Sex											
Male	52.0%	52.7%	51.2%	51.6%	50.8%	51.9%	51.7%	51.5%	51.8%	51.4%	51.6%
Female	48.0%	47.3%	48.8%	48.4%	49.2%	48.1%	48.3%	48.5%	48.2%	48.6%	48.4%
Marital status											
Married	63.2%	63.6%	62.9%	63.1%	63.5%	63.3%	63.1%	63.4%	64.5%	63.7%	63.4%
Other	36.8%	36.4%	37.1%	36.9%	36.5%	36.7%	36.9%	36.6%	35.5%	36.3%	36.6%
Relation to household											
Head	41.7%	42.0%	40.5%	39.1%	38.0%	38.9%	38.5%	39.3%	39.2%	38.9%	39.4%
Other	58.3%	58.0%	59.5%	60.9%	62.0%	61.1%	61.5%	60.7%	60.8%	61.1%	60.6%
Highest level attained											
Primary or less	46.0%	46.6%	44.2%	44.4%	42.8%	42.2%	40.0%	39.3%	39.0%	38.3%	41.8%
Secondary or vocational	8.8%	9.1%	14.8%	15.5%	15.7%	16.1%	16.1%	16.7%	16.6%	15.9%	15.1%

2-yr-college or second vocational	12.1%	11.2%	6.5%	6.4%	6.5%	6.6%	6.7%	6.5%	6.4%	6.6%	7.2%
University or higher	16.5%	15.7%	19.2%	17.8%	18.8%	18.9%	20.8%	21.1%	21.1%	22.5%	19.6%
Residential area											
Capital	15.5%	15.2%	19.6%	19.6%	19.7%	18.5%	19.5%	19.3%	18.1%	18.9%	18.7%
Central area outside capital	84.5%	84.8%	80.4%	80.4%	80.3%	81.5%	80.5%	80.7%	81.9%	81.1%	81.3%

Table 1.1. Summary statistics for unskilled workers (workers with primary school or less education)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
	N=5689	**N=6025**	**N=8284**	**N=9354**	**N=9035**	**N=8766**	**N=8976**	**N=9276**	**N=9030**	**N=9220**	**N=83655**
Hourly wage (Baht)											
Mean (SD)	24.7 (14.8)	25.3 (16.9)	23.5 (24.9)	24.6 (39.2)	24.8 (30.0)	24.9 (26.6)	26.6 (30.9)	27.0 (30.3)	27.9 (29.6)	29.6 (74.2)	26.0 (36.7)
Age (years)											
Mean (SD)	36.3 (11.5)	36.7 (11.6)	37.0 (11.4)	37.4 (11.3)	38.0 (11.3)	38.5 (11.7)	39.0 (11.5)	39.5 (11.4)	40.5 (11.5)	40.9 (11.5)	38.6 (11.5)
Weekly hours worked											
Mean (SD)	49.4 (8.85)	49.8 (8.42)	49.5 (8.94)	49.7 (8.51)	49.8 (8.57)	49.2 (8.70)	49.7 (8.92)	49.4 (8.64)	49.2 (8.62)	49.3 (8.58)	49.5 (8.68)
Sex											
Male	53.3%	53.9%	53.0%	52.5%	52.1%	53.4%	53.5%	53.4%	52.9%	52.4%	53.0%
Female	46.7%	46.1%	47.0%	47.5%	47.9%	46.6%	46.5%	46.6%	47.1%	47.6%	47.0%
Marital status											
Married	69.0%	69.3%	69.6%	70.0%	71.1%	71.0%	70.9%	70.8%	71.7%	71.7%	70.6%
Other	31.0%	30.7%	30.4%	30.0%	28.9%	29.0%	29.1%	29.2%	28.3%	28.3%	29.4%
Relation to household											
Head	44.0%	43.1%	43.5%	42.1%	41.4%	43.7%	43.1%	45.1%	44.5%	45.5%	43.6%
Other	56.0%	56.9%	56.5%	57.9%	58.6%	56.3%	56.9%	54.9%	55.5%	54.5%	56.4%
Residential area											
Capital (i.e., Bangkok)	13.2%	13.7%	14.9%	15.9%	15.2%	14.3%	14.4%	14.7%	13.6%	12.9%	14.3%
Central area outside capital	86.8%	86.3%	85.1%	84.1%	84.8%	85.7%	85.6%	85.3%	86.4%	87.1%	85.7%

Table 1.2. Summary statistics for skilled workers (workers with university degree or higher education)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
	N=2038	N=2037	N=3608	N=3746	N=3955	N=3932	N=4674	N=4977	N=4885	N=5417	N=39269
Hourly wage (Baht)											
Mean (SD)	79.5 (64.5)	79.2 (68.0)	109 (111)	109 (101)	113 (119)	116 (119)	121 (111)	120 (104)	123 (104)	124 (101)	114 (105)
Age (years)											
Mean (SD)	34.4 (9.47)	34.4 (9.35)	36.9 (9.34)	37.1 (9.35)	37.1 (9.65)	37.1 (9.72)	37.2 (9.79)	37.1 (9.88)	37.7 (10.1)	38.1 (10.1)	37.0 (9.79)
Weekly hours worked											
Mean (SD)	40.9 (7.24)	41.6 (7.27)	40.8 (7.02)	41.3 (6.96)	41.7 (7.00)	42.2 (7.07)	42.3 (6.95)	42.5 (7.01)	42.3 (6.97)	42.4 (6.83)	41.9 (7.02)
Sex											
Male	49.5%	48.8%	40.5%	40.5%	40.4%	40.5%	40.0%	39.3%	40.0%	38.9%	40.9%
Female	50.5%	51.2%	59.5%	59.5%	59.6%	59.5%	60.0%	60.7%	60.0%	61.1%	59.1%
Marital status											
Married	55.0%	53.5%	56.0%	55.7%	53.4%	53.6%	53.4%	52.5%	54.5%	53.2%	53.9%
Other	45.0%	46.5%	44.0%	44.3%	46.6%	46.4%	46.6%	47.5%	45.5%	46.8%	46.1%
Relation to household											
Head	40.8%	43.4%	39.3%	38.6%	38.1%	37.5%	36.5%	36.2%	36.6%	35.3%	37.6%

Other	59.2%	56.6%	60.7%	61.4%	61.9%	62.5%	63.5%	63.8%	63.4%	64.7%	62.4%
Residential area											
Capital (i.e., Bangkok)	21.6%	20.8%	29.6%	29.9%	30.6%	28.9%	31.0%	29.9%	27.8%	30.1%	28.8%
Central area outside capital	78.4%	79.2%	70.4%	70.1%	69.4%	71.1%	69.0%	70.1%	72.2%	69.9%	71.2%

Table 2. The share of unskilled workers defined by workers with primary or less schooling by industries from 1999 to 2008

Industry	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Agricultural										
Agricultural and hunting	0.911	0.929	0.879	0.866	0.879	0.858	0.844	0.837	0.83	0.835
Fishing	0.89	0.918	0.896	0.889	0.858	0.883	0.833	0.77	0.784	0.715
Forestry and logging	0.933	0.895	0.841	0.588	0.629	0.652	0.738	0.758	0.747	0.700
Mining and quarrying	0.824	0.769	0.689	0.705	0.672	0.727	0.735	0.558	0.586	0.646
Manufacturing										
Food and beverage	0.662	0.647	0.617	0.581	0.562	0.575	0.568	0.539	0.535	0.573
Tobacco	0.500	--	0.636	0.333	0.333	0.529	0.500	0.200	1.00	0.556
Textiles	0.524	0.48	0.576	0.515	0.482	0.496	0.41	0.474	0.472	0.487
Apparel and leather	0.573	0.591	0.6	0.582	0.534	0.551	0.53	0.511	0.505	0.459
Wood products	0.782	0.703	0.715	0.798	0.724	0.75	0.714	0.646	0.719	0.646
Paper products	0.528	0.429	0.377	0.367	0.31	0.364	0.279	0.377	0.379	0.319
Printing	0.259	0.39	0.226	0.252	0.362	0.321	0.275	0.246	0.316	0.206
Coke and petroleum	0.312	0.364	0.174	0.231	0.161	0.226	0.156	0.167	0.097	0.2
Chemical products	0.399	0.444	0.263	0.24	0.249	0.304	0.268	0.215	0.283	0.247
Rubber and plastics	0.464	0.538	0.484	0.444	0.385	0.407	0.397	0.308	0.298	0.367
Non-metallic mineral	0.537	0.497	0.517	0.472	0.455	0.439	0.438	0.461	0.432	0.424
Basic metals	0.446	0.44	0.429	0.455	0.376	0.431	0.442	0.343	0.392	0.368
Fabricated metal	0.506	0.616	0.541	0.561	0.565	0.481	0.448	0.46	0.453	0.534
Machinery and equipment	0.197	0.214	0.17	0.183	0.153	0.155	0.144	0.14	0.139	0.126
Transport equipment	0.482	0.434	0.346	0.356	0.289	0.261	0.249	0.222	0.208	0.219
Furniture and others	0.543	0.535	0.586	0.585	0.579	0.544	0.494	0.513	0.49	0.536
Services										
Utilities	0.353	0.427	0.186	0.221	0.218	0.219	0.163	0.158	0.17	0.163
Construction	0.818	0.826	0.77	0.736	0.738	0.715	0.71	0.692	0.698	0.67
Wholesale and retail trade	0.455	0.469	0.414	0.425	0.395	0.395	0.39	0.362	0.355	0.337
Transportation and storage	0.431	0.439	0.399	0.323	0.348	0.315	0.303	0.309	0.305	0.259
Financial and insurance	0.106	0.178	0.053	0.054	0.044	0.052	0.054	0.063	0.061	0.058
Real estate	0.226	0.304	0.5	0.463	0.351	0.44	0.419	0.289	0.391	0.381
Other services	0.277	0.256	0.252	0.271	0.267	0.259	0.252	0.247	0.257	0.242

Table 3. First stage regression

Dependent variable: ln_wage

	1999	2000	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Age	0.038***	0.037***	0.046***	0.049***	0.047***	0.050***	0.045***	0.043***	0.043***	0.037***
	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Age squared	-0.0003***	-0.0003***	-0.0004***	-0.0005***	-0.0004***	-0.0005***	-0.0004***	-0.0004***	-0.0003***	-0.0003***
	(0.00004)	(0.00004)	(0.00003)	(0.00003)	(0.00003)	(0.00003)	(0.00003)	(0.00003)	(0.00003)	(0.00003)
Household head	0.060***	0.067***	0.057***	0.051***	0.063***	0.079***	0.073***	0.058***	0.052***	0.069***
	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)	(0.009)
Female	-0.133***	-0.127***	-0.148***	-0.162***	-0.149***	-0.158***	-0.161***	-0.154***	-0.163***	-0.155***
	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)	(0.009)
Married	0.095***	0.074***	0.079***	0.088***	0.081***	0.094***	0.095***	0.092***	0.084***	0.103***
	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)	(0.009)
Living in Bangkok	0.147***	0.149***	0.234***	0.226***	0.246***	0.272***	0.206***	0.216***	0.238***	0.206***
	(0.012)	(0.011)	(0.010)	(0.009)	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)	(0.011)
Primary or less	2.045***	2.068***	1.852***	1.806***	1.800***	1.839***	1.950***	2.097***	2.052***	2.269***
	(0.061)	(0.064)	(0.047)	(0.046)	(0.046)	(0.044)	(0.045)	(0.040)	(0.041)	(0.047)
Lower secondary	2.308***	2.321***	2.109***	2.056***	2.040***	2.102***	2.216***	2.367***	2.319***	2.524***
	(0.060)	(0.062)	(0.046)	(0.044)	(0.044)	(0.043)	(0.043)	(0.038)	(0.040)	(0.045)
Upper secondary	2.425***	2.388***	2.235***	2.123***	2.151***	2.179***	2.280***	2.402***	2.380***	2.571***
	(0.060)	(0.062)	(0.046)	(0.045)	(0.045)	(0.043)	(0.043)	(0.038)	(0.040)	(0.047)
2-yr college	2.616***	2.619***	2.495***	2.346***	2.387***	2.416***	2.505***	2.649***	2.608***	2.786***
	(0.061)	(0.063)	(0.047)	(0.046)	(0.046)	(0.044)	(0.044)	(0.039)	(0.041)	(0.047)

University or higher	2.700***	2.706***	2.801***	2.672***	2.701***	2.762***	2.880***	3.009***	3.007***	3.138***
	(0.060)	(0.062)	(0.048)	(0.046)	(0.046)	(0.045)	(0.045)	(0.040)	(0.041)	(0.046)
Industry indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Occupation indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,360	12,936	18,756	21,056	21,090	20,797	22,456	23,586	23,132	24,057
R2	0.985	0.984	0.981	0.981	0.981	0.980	0.981	0.983	0.983	0.975
Adjusted R2	0.985	0.984	0.981	0.981	0.981	0.980	0.981	0.983	0.983	0.975

Table 3.1. First stage regressions for unskilled workers

Dependent variable: ln_wage

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Age	0.026***	0.022***	0.031***	0.035***	0.026***	0.033***	0.030***	0.032***	0.032***	0.029***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)
Age squared	-0.0003***	-0.0002***	-0.0004***	-0.0004***	-0.0003***	-0.0004***	-0.0003***	-0.0004***	-0.0004***	-0.0004***
	(0.00004)	(0.00004)	(0.00004)	(0.00004)	(0.00004)	(0.00004)	(0.00004)	(0.00003)	(0.00003)	(0.00003)
Household head	0.054***	0.051***	0.038***	0.044***	0.056***	0.059***	0.061***	0.040***	0.042***	0.032***
	(0.013)	(0.012)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.010)	(0.010)	(0.012)
Female	-0.185***	-0.176***	-0.217***	-0.187***	-0.180***	-0.201***	-0.219***	-0.193***	-0.204***	-0.177***
	(0.013)	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)	(0.012)	(0.011)	(0.011)	(0.013)
Married	0.095***	0.070***	0.073***	0.070***	0.088***	0.071***	0.087***	0.082***	0.080***	0.060***
	(0.012)	(0.012)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.012)
Living in Bangkok	0.156***	0.151***	0.204***	0.240***	0.227***	0.282***	0.220***	0.235***	0.246***	0.281***
	(0.018)	(0.017)	(0.015)	(0.013)	(0.014)	(0.015)	(0.015)	(0.014)	(0.014)	(0.015)
Industry indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Occupation indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,689	6,025	8,284	9,354	9,035	8,766	8,976	9,276	9,030	9,220
R2	0.983	0.983	0.978	0.977	0.978	0.978	0.978	0.981	0.980	0.977
Adjusted R2	0.982	0.983	0.978	0.977	0.978	0.978	0.978	0.980	0.980	0.976

Table 3.2. First stage regressions for skilled workers

Dependent variable: ln_wage

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Age	0.040***	0.050***	0.084***	0.061***	0.059***	0.070***	0.071***	0.065***	0.060***	0.038***
	(0.007)	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.007)	(0.010)
Age squared	-0.0001	-0.0002*	-0.001***	-0.0003***	-0.0003***	-0.0004***	-0.0004***	-0.0003***	-0.0003***	-0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Household head	0.059***	0.074***	0.049**	0.030*	0.036**	0.078***	0.046***	0.037**	-0.007	0.077***
	(0.021)	(0.022)	(0.020)	(0.018)	(0.018)	(0.019)	(0.017)	(0.016)	(0.016)	(0.023)
Female	-0.078***	-0.067***	-0.055***	-0.089***	-0.090***	-0.073***	-0.063***	-0.100***	-0.109***	-0.090***
	(0.021)	(0.022)	(0.021)	(0.018)	(0.020)	(0.019)	(0.017)	(0.016)	(0.016)	(0.023)
Married	0.039*	0.013	0.032	0.063***	0.035*	0.072***	0.029	0.013	0.032*	0.082***
	(0.022)	(0.021)	(0.020)	(0.019)	(0.020)	(0.021)	(0.018)	(0.017)	(0.016)	(0.025)
Living in Bangkok	0.151***	0.186***	0.304***	0.251***	0.292***	0.303***	0.229***	0.235***	0.257***	0.186***
	(0.028)	(0.027)	(0.022)	(0.020)	(0.022)	(0.022)	(0.019)	(0.019)	(0.020)	(0.027)
Industry indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Occupation indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,038	2,037	3,608	3,746	3,955	3,932	4,674	4,977	4,885	5,417
R2	0.991	0.991	0.988	0.989	0.987	0.987	0.987	0.988	0.988	0.972
Adjusted R2	0.991	0.990	0.988	0.989	0.987	0.987	0.987	0.988	0.988	0.972

Table 4.1. Second stage estimation for skilled workers

	Dependent variable:	
	Wage Premiums	
	FD	FE
		(2)
Tariff	-0.008***	-0.002**
	(0.003)	(0.001)
Constant	-0.014***	
	(0.004)	
Year dummies	Yes	Yes
Industry dummies	No	Yes
First differencing	Yes	No
Observations	160	170
R2	0.136	0.740
Adjusted R2	0.130	0.708

Note: *p<0.1; **p<0.05; ***p<0.01

Table 4.2. Second stage estimation for unskilled workers

	Dependent variable:	
	Wage Premiums	
	FD	FE
	(1)	(2)
Tariff	-0.005**	-0.002***
	(0.002)	(0.0001)
Constant	-0.012***	
	(0.002)	
Year dummies	Yes	Yes
Industry dummies	No	Yes
First differencing	Yes	No
Observations	159	169
R2	0.140	0.956
Adjusted R2	0.134	0.950

Note: *p<0.1; **p<0.05; ***p<0.01

Table 5.1. Second stage estimation with additional trade-related controls for skilled workers

	Dependent variable:			
	Wage Premiums			
	FD	FE		
	(1)	(2)	(3)	(4)
Tariff	-0.008***	-0.002**	-0.001	-0.004**
	(0.003)	(0.001)	(0.001)	(0.002)
log(lagged_IM)			0.778***	
			(0.231)	
log(lagged_EX)			-0.683***	
			(0.211)	
log(Imports)				-0.602*
				(0.354)
log(Exports)				0.691*
				(0.364)
Constant	-0.014***			
	(0.004)			
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	No	Yes	Yes	Yes
First differencing	Yes	No	No	No
Observations	160	170	170	170
R2	0.136	0.740	0.753	0.749
Adjusted R2	0.130	0.708	0.718	0.713

Note: *p<0.1; **p<0.05; ***p<0.01

Table 5.2. Second stage estimation with additional trade-related controls for unskilled workers

	Dependent variable:			
	Wage Premiums			
	FD	FE		
		(2)	(3)	(4)
Tariff	-0.005***	-0.002***	-0.0002	-0.0002
	(0.002)	(0.001)	(0.0004)	(0.0003)
log(lagged_IM)			0.305***	
			(0.102)	
log(lagged_EX)			-0.564***	
			(0.086)	
log(Imports)				-0.571***
				(0.071)
log(Exports)				-0.006
				(0.073)
Constant	-0.012***			
	(0.002)			
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	No	Yes	Yes	Yes
First differencing	Yes	No	No	No
Observations	159	169	169	169
R2	0.140	0.956	0.969	0.983
Adjusted R2	0.134	0.950	0.965	0.980

Note: *p<0.1; **p<0.05; ***p<0