

DO TRADING PARTNERS MATTER FOR LABOUR MARKET INEQUALITY? THE MALAYSIAN CASE

*Evelyn Devadason**

This study examines the differential impact of major bilateral trade flows on labour market inequality for the period 1983 to 2000. The focus is on the key trading partners of Malaysia, which are the Association of the Southeast Asian Nations (ASEAN), the United States of America and Japan. The paper finds that the direction of trade or rather the “whom” aspects of trade matter for inequality trends. There are striking differences on the labour market when export destinations are considered relative to import sources. The results suggest that an expansion in exports to countries that are relatively skilled labour abundant causes greater product market competition, thereby increasing the demand for skilled labour vis-a-vis unskilled labour in the domestic market. Inequality outcomes however do not differ with import source, as there is a general dampening effect of import expansion on the former in the short- and long run. The results clearly do not lend support to the widespread belief that imports from countries that are relatively skilled labour abundant reduce labour market inequality.

JEL Classifications: J23, F16

Keywords: bilateral trade flows, skill inequality, wage inequality

INTRODUCTION

The nature of demand shifts for skilled labour in Malaysia indicates that the aggregate employment shifts has not been skills-neutral. There has been a shift in skilled labour at the high end of the job ladders, which is towards occupations requiring high educational attainment and professional training, particularly in the professional and technical as well as the administrative and managerial categories (see Shariff and Rashid, 2000; Milanovic, 2000). The declining trend in skill intensity in manufacturing from 43 per cent in 1985 to 35 per cent in 1991 (World Bank, 1994) had reversed by 1993 (Lee, 1998).

The above studies clearly indicate that manufacturing has undergone some important structural changes over the past two decades, and part of this change has been reflected by the shifts towards skilled labour. Several explanations have been given for the changing trend in skill intensity in manufacturing. Both supply and demand factors are deemed to have explained the growth in skill intensity (see Kanapathy, 2002). Lee (1998) attributes the loss of skill intensity between 1985 and 1993 to lack of investment in skill intensive industries due to skill shortages.

* Senior Lecturer, Department of Economics, Faculty of Economics & Administration, University of Malaya, 50603, Kuala Lumpur, Malaysia, *E-mail: evelyns@um.edu.my or evelyndevadason@gmail.com*

The shortages were then met by the supply of migrant workers, resulting in higher demand for unskilled labour. Rasiah (2002) however argues that the subsequent rise in the demand for skilled segments of the manufacturing labour force in the 1990s was due to labour shortages, which forced export-oriented industries to automate.

Others argue that skill shifts in manufacturing have taken place amidst the continuing integration of Malaysia with the world economy. The switch in trade orientation from import substitution to export-oriented industrialization since the mid-1980s coupled with reductions in the types of trade protection *via* the dismantling of tariffs and export duties contributed to the internationalization of the manufacturing sector. The high trade exposure of Malaysian manufactures in turn has made it increasingly more inter-dependent with its trading partners. This study thus investigates if Malaysian trade in manufactures, particularly trade with her key trading partners, impacts differentially on the labour market inequality. Since trade patterns vary with different trading partners, it is envisaged that the latter invokes different responses in labour demand. The focus is on the role-played by trade with three key trading partners of Malaysia, which is the ASEAN (Association of Southeast Asian Nations), United States of America (US) and Japan.

This paper is structured as follows. Section 2 explains the data employed for the study. Section 3 highlights the extent of bilateral trade with the three key trading partners and the inequality trends in the manufacturing labour market. Section 4, the core section, is devoted to an empirical study based on panel data estimations. Finally, Section 5 concludes.

DATA

The study exploits labour data (employment and wages) drawn from annual national manufacturing surveys (based on the Malaysia Industrial Classification, MIC). Only full-time paid employees (N) are considered, which excludes working proprietors and active business partners, unpaid family workers and part-time paid employees. Similarly, only the wages and salaries of full-time employees are taken into account. The wage variable refers to the average yearly earnings per full-time employee in each industry. All wage variables are deflated by the Malaysian consumer price index (at constant 1980 prices).

The definition of skills used for the study is solely based on occupational groupings governed by the availability of data from the manufacturing surveys. Skilled workers refer to the number of employees in the managerial, professional, technical and supervisory categories. Unskilled workers comprise production/operative workers. The real average wages for skilled- and unskilled workers are constructed based on their average yearly earnings.

The data on exports (X) and imports (M) are derived from the *Malaysia: External Trade Statistics* publications. The data is compiled for industries at the 3-digit Standard International Trade Classification (SITC) level for the period 1983 to 2000 for 19 major industrial groups. Exports are valued f.o.b. while imports c.i.f. Both exports and imports are in ringgit Malaysia at current prices. Total manufacturing imports and exports is deflated with the import price and export price index (1980 =100) for the entire economy respectively.

The data set on export and import volumes are derived for three trading areas: original ASEAN partners (Singapore, Thailand, Philippines and Indonesia, hereafter referred to as the

ASEAN), US and Japan. Exports and imports with the numerous other countries are captured as trade with the rest of the world (ROW). For this study, changes in import and export volume of trade are conceived as shocks to the demand for labour.

Integrating labour, industrial and trade statistics trade, the empirical analysis involves a panel data set of 19 major industrial groups, spanning the period 1983 to 2000. The data comprises a balanced panel of 342 observations.

BILATERAL TRADE FLOWS AND INEQUALITY TRENDS

Bilateral Trade Flows

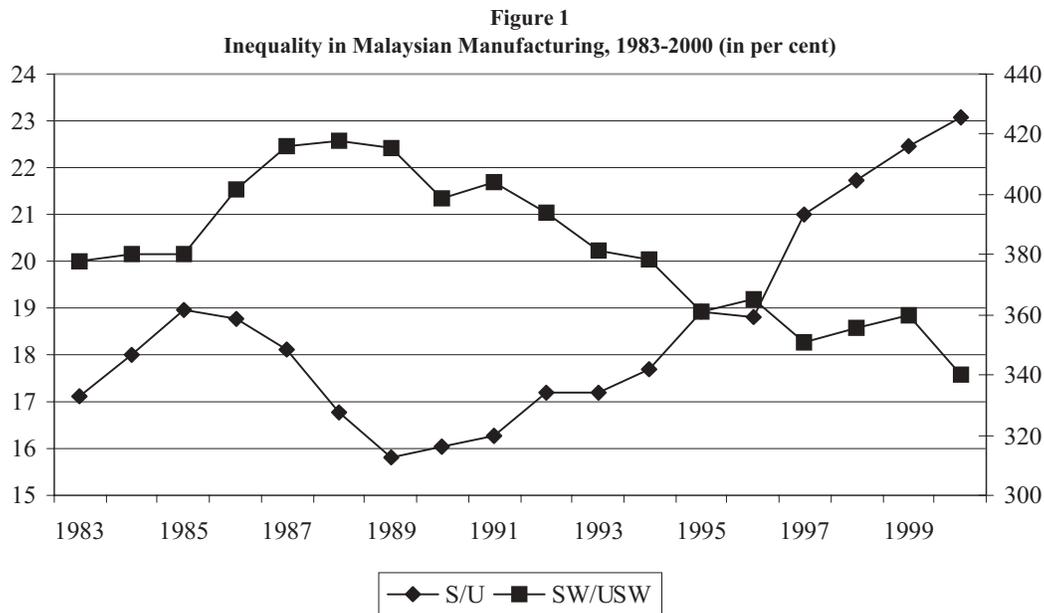
Malaysian trade in manufactures with the ASEAN, US and Japan has been steadily rising with time. The average annual growth rate of exports to the ASEAN, the US and Japan between 1983 and 2000 is 14 per cent, 18 per cent and 12 per cent respectively. The average annual growth rate of imports from the ASEAN between 1983 and 2000 is 15 per cent, and 13 per cent each for imports from the US and Japan. In addition to the rise in growth rates, all three countries account for substantial export and import market shares of Malaysian manufactures (see Table 1). While the ASEAN and Japan saw a decline in their export market shares of Malaysia between 1983 and 2000, the US gained position in this respect. Conversely, the ASEAN and the US gained in import market shares of Malaysia while that of Japan declined marginally over the same period. Overall, the three trading partners are of importance to Malaysia, with combined export and import market shares of more than 50 per cent in 1983 and 2000.

Table 1
Trade Indicators With Key Trading Partners of Malaysia

Trading Partner	Export Share (%)		Import Share (%)		Share in Total Trade (%)	
	1983	2000	1983	2000	1983	2000
ASEAN	29.00	24.62	16.00	22.20	23.02	23.52
US	14.00	19.48	15.00	16.30	15.00	18.03
Japan	17.00	10.64	22.00	20.40	20.48	15.08

Source: Calculated from *Malaysia: External Trade Statistics*, various issues.

The three trading partners thus represent a fairly balanced group with almost similar growth rates in trade flows as well as dominant market shares for Malaysian trade in manufactures. It should be emphasized that the aim of the study is not to investigate the differential impact of trade with different *income groups* of trading partners, but the differential impact of trade with *key* trading partners. It is worth mentioning though that the US and Japan are basically high income countries while the ASEAN (with the exception of Singapore) are grouped as lower income countries based on the World Bank (2002) classification. In this respect, the US and Japan differ from that of the ASEAN, since the former two countries are established industrial countries that are relatively skilled labour abundant.



Note: Skill inequality (S/U) is on the left axis while wage inequality (SW/USW) is on the right axis.

Source: Calculated from unpublished data from the Department of Statistics, Malaysia.

Inequality Trends

The annual pattern of skill- and wage inequality, measured by the ratio of the number of skilled labour to unskilled labour for the former and the ratio of skilled wages to unskilled wages for the latter, is depicted in Figure 1.

The 1980s see a marginal decline in skill inequality (from 17 per cent in 1983 to 16 per cent in 1990) in the manufacturing sector. At the same time, wage inequality has increased from 378 per cent to 398 per cent. However the 1990s is characterized by a reversal in the relative quantity decline of the 1980s and a steady decrease in relative prices. Explanations based on the increases in the relative supplies of unskilled labour are compatible with the skill inequality trends observed in the 1980s since unskilled labour increased by 9 per cent per annum while skilled labour increased merely by 8 per cent per annum. However in the 1990s, the reverse occurs with higher growth rates of 10 per cent per annum for skilled labour vis-à-vis 6 per cent per annum for unskilled labour. The increase in demand for skilled labour is related to firms upgrading their skill structure in response to changing comparative advantage (Kanapathy, 2002).

In wage terms, average skilled wages grew at a faster rate (2 per cent) than unskilled wages (less than 1 per cent) in the 1980s. In the 1990s, the growth of average skilled wages lagged behind average unskilled wages at only 3 per cent while the latter grew at 4 per cent. A closer scrutiny of the decline in wage inequality¹ in the 1990s stems from larger increases in average real wages of unskilled labour relative to that of skilled labour. The demand for unskilled labour spear-headed by export-led industrialization since the mid-1980s had made it a scarce factor with rising wages (Athukorala and Menon, 1999).

The diverging trends in skill- and wage inequality observed for total manufacturing appears to be an industry wide syndrome. The variation in wage inequality however is found to be more widely dispersed across industries, suggesting that the increase in the relative supply of skilled labour can only partially explain the wage movements and that demand side factors should be further investigated.

IMPACT OF DIFFERENT TRADE FLOWS ON LABOUR

Selected Literature

It is conceived theoretically that an increase in imports from a skilled labour abundant country will substitute skilled intensive activities domestically (Greenaway *et al.*, 1999a). This will thus be viewed as a negative shock to the demand for skilled labour. Given an upward sloping supply of labour to the industry, this shock should result in reduced premium of skilled labour. Increased imports from a skilled labour abundant country thus imply a shift toward less skilled intensive activities (Balassa, 1986, notes that the opposite occurs in the case of developed countries, which is the reallocation of labour towards skilled and technical labour), resulting in higher premium for unskilled labour.

As for exports, the effects of an increase in exports to a skilled labour abundant (unskilled labour abundant) country is supposed to have both a positive (negative) aspect of increased (reduced) competition in export destinations and a negative (positive) effect of decreasing (increasing) production. Both effects do not manifest into a clear-cut relationship for labour demand. However, Milner and Tandrayen (2004) add that supplying the international market requires the manufacture of high quality goods, which is achieved through investment in modern technologies, capital-intensive methods as well as managerial and technical expertise. This in turn implies that the demand for skilled labour is likely to be higher in the export sector. Chen and Hsu (2001) agree that trade with developed economies may accompany the transfer of new technology which requires skilled labour, thereby widening the inequality gap.

In view of the above theoretical conjectures, several studies have documented labour market effects of trade with different trading partners. Lawrence and Evans (1996) argue that growing international trade between the US and developing countries has had only a minimal impact on the wage structure since sectors that are exposed to competition from these countries comprise a small share of total employment. Similarly Freeman and Revenga (1999) also argue the case of a limited role of trade with less developed countries (LDCs) in affecting European employment. Dewatripont *et al.* (1999) further explain that the small import shares of LDCs in European markets possibly account for the lack of employment sensitivity to trade with the former.

In contrast to the above findings on the absolute labour market effects, Lovely and Richardson (1998) stress that the direction of trade matters for wage inequality in the US when the “what” and “whom” aspects of trade are considered. Their study shows that skilled labour received higher rewards for their skill in industries with a high export dependence on newly industrial markets. Conversely unskilled labour received lower industry specific wage premiums where intra-industry trade was large with established industrial countries. The “what” and “whom” aspects of trade flows are also found to be of importance for labour demand in the United Kingdom. Greenaway *et al.* (1999b) find stronger effects of reductions in labour demand owing

to trade with the European Union (EU) and the US than for trade with East Asia given that much of the trade is intra-industry.

Similar investigations have also been conducted in other countries in Asia and Africa. The study by Tachibanaki *et al.* (1998) reveals that the wage gap between the skilled and unskilled labour in Japan is not significantly affected by the increase in imports from East Asia. Conversely, the study by Chen and Hsu (2001) indicates that net exports of Taiwan to the Organization for Economic Cooperation and Development (OECD) countries raises the relative wage of skilled labour while that to non-OECD countries diminishes their relative wage. Milner and Tandrayen (2004) also point out that greater disciplining effect on African wages exist when exporting to more competitive markets. Their study reveals that exports of sub-Saharan African countries to competitive markets outside Africa generate a negative wage premium whilst exporting to the less competitive and protected African market yields a positive effect on wages.

The impact of trade on inequality thus cannot be completely ignored given the existing evidence (albeit mixed) of the importance and the direction of trade flows on relative labour demand. It is this issue, the role played by *trading partners*, which is the focus of the current paper.

Estimating Equations

The empirical analysis to uncover trade flow links with labour is rooted in a partial equilibrium framework. The analysis is conducted based on derived econometric specifications of relative employment and wage shares from a standard translog cost function. Other related works that have used the translog cost function approach are Machin *et al.* (1996), Hansson (2000) and Anderton *et al.* (2001, 2002) and Pavcnik (2003).

The variable cost function in translog form that assumes capital to be a fixed factor of production is as follows:

$$\begin{aligned} \ln C_i = & \alpha_0 + \alpha_q \ln Q_i + \frac{1}{2} \alpha_{QQ} \ln(Q_i)^2 + \beta_k \ln K_i + \frac{1}{2} \beta_{KK} \ln(K_i)^2 + \sum_j \gamma_j \ln W_{ij} + \\ & \frac{1}{2} \sum_j \sum_k \gamma_{jk} \ln W_{ij} \ln W_{ik} + \sum_j \delta_{Qj} \ln Q_i \ln W_{ij} + \sum_j \delta_{Kj} \ln K_i \ln W_{ij} + \rho \ln Q_i \ln K_i + \\ & \lambda_T T_i + \frac{1}{2} \lambda_{TT} (T_i)^2 + \lambda_{QT} T_i \ln Q_i + \lambda_{KT} T_i \ln K_i + \sum_j \phi_{TWj} T_i \ln W_{ij} \end{aligned} \quad (1)$$

where

C_i = variable costs in industry i

Q_i = output in industry i

K_i = capital stock in industry i

W_{ij} = price of variable factor j

T_i = technology in industry i

Cost minimization of the above generates the following linear equations for the factor shares (L):

$$L_{ij} = \alpha_j + \delta_{Qj} \ln Q_i + \delta_{Kj} \ln K_i + \sum_k \gamma_{jk} \ln W_{ik} + \phi_{TWj} T_i \quad (2)$$

Differencing (denoted by d) the above generates:

$$dL_{ij} = \phi_{TWj} dT_i + \delta_{Qj} d \ln Q_i + \delta_{Kj} d \ln K_i + \sum_k \gamma_{jk} d \ln W_{ik} \quad (3)$$

Assuming homogeneity of degree one in prices imposes:

$$\sum_k \gamma_{jk} = \sum_j \gamma_{jk} = \sum_j \delta_{kj} = \sum_j \delta_{Qj} = 0 \quad (4)$$

this generates

$$dL_{ij} = \phi_{TW_j} dT_i + \delta_{Q_j} d\ln Q_i + \delta_{K_j} d\ln K_i + \gamma d\ln(W_j/W_k) \quad (5)$$

with two variable factors, j and k.

Machin *et al.* (1996) and Anderton *et al.* (2001, 2002) define the two variable factors of production as skilled and unskilled. Most studies have defined *relative* employment (and *relative* wages) as the proportion of skilled workers (and skilled wages) to total employment (total wages). However, Machin *et al.* (1996) do acknowledge that the theoretical foundation for estimating employment and wage share regressions of this form is weak. Thus this study will adopt the more conventional factor demand² equation of estimating relative employment (and relative wages) as the changes of skilled versus unskilled (hereafter referred to as inequality³).

The relative employment (skill inequality) and relative wage (wage inequality) equations are examined with the inclusion of trade variables, which are exports and imports. For this study, both import and exports are disaggregated by country of origin and market destination respectively (see Greenaway *et al.*, 1999a). In addition to trade variables, foreign labour and foreign direct investment are also introduced in the equation, due to the importance of foreign presence and foreign participation in the Malaysian manufacturing respectively. Foreign labour is distinguished by skills to capture the differential impact on inequality.

The study also considers the dynamic relationships, characterized by the presence of a lagged dependent variable among the regressors, to examine the path of inequality as the labour market moves between old and new equilibria in response to trade. This is due to the existence of adjustment costs of changing employment and wages. Generally, the important aspect related to dynamics concerns the interpretation of the long run and short run effects. Since the differencing induces a bias in the coefficient on the lagged dependent variable because of the correlation between it and the unobserved fixed effects in the residual, an instrumental variable approach is adopted. The method used is the generalized method of moments (GMM) technique of Arellano and Bond (1991), which uses lags of the endogenous variables dated t-2 and earlier as instruments since external instruments are difficult to find. The GMM estimator is adequate in this case given the large number of observations.

The skill- and wage inequality equations estimated in the study are as follows respectively:

$$\begin{aligned} d(S/U)_{i,t} = & -\Omega + \sum_j \mu_{1j} d\ln MASEAN_{i,t-j} - \sum_j \mu_{2j} d\ln MUS_{i,t-j} - \sum_j \mu_{3j} d\ln MJAPAN_{i,t-j} + \\ & \sum_j \mu_{4j} d\ln MROW_{i,t-j} - \sum_j \mu_{5j} d\ln XASEAN_{i,t-j} + \sum_j \mu_{6j} d\ln XUS_{i,t-j} + \\ & \sum_j \mu_{7j} d\ln XJAPAN_{i,t-j} - \sum_j \mu_{8j} d\ln XROW_{i,t-j} + \sum_j \mu_{9j} d(FDI/CI)_{i,t-j} + \\ & \sum_j \mu_{10j} d(FWs/N)_{i,t-j} - \sum_j \mu_{11j} d(FWu/N)_{i,t-j} + \sum_j \phi_{0j} d(S/U)_{i,t-j} + \\ & \sum_j \phi_{1j} d(SW/USW)_{i,t-j} - \sum_j \phi_{2j} d\ln(VA)_{i,t-j} + \sum_j \phi_{3j} dK_{i,t-j} + \epsilon_{it} \end{aligned} \quad (6)$$

and

$$\begin{aligned}
d(\text{SW/USW})_{i,t} = & -\Omega + \sum_j \mu_{1j} d\ln \text{MASEAN}_{i,t-j} - \sum_j \mu_{2j} d\ln \text{MUS}_{i,t-j} - \sum_j \mu_{3j} d\ln \text{MJAPAN}_{i,t-j} + \\
& \sum_j \mu_{4j} d\ln \text{MROW}_{i,t-j} - \sum_j \mu_{5j} d\ln \text{XASEAN}_{i,t-j} + \sum_j \mu_{6j} d\ln \text{XUS}_{i,t-j} + \\
& \sum_j \mu_{7j} d\ln \text{XJAPAN}_{i,t-j} - \sum_j \mu_{8j} d\ln \text{XROW}_{i,t-j} + \sum_j \mu_{9j} d(\text{FDI/CI})_{i,t-j} + \\
& \sum_j \mu_{10j} d(\text{FWs/N})_{i,t-j} - \sum_j \mu_{11j} d(\text{FWu/N})_{i,t-j} + \sum_j \phi_{0j} d(\text{SW/USW})_{i,t-j} + \\
& \sum_j \phi_{1j} d(\text{S/U})_{i,t-j} - \sum_j \phi_{2j} d\ln(\text{VA})_{i,t-j} + \sum_j \phi_{3j} d\text{K}_{i,t-j} + \eta_{it}
\end{aligned} \quad (7)$$

where

Ω = constant

S/U = skill inequality (ratio of skilled labour to unskilled labour)

SW/USW = wage inequality (ratio of real average skilled wages relative to real average unskilled wages)

M = real imports (by country of origin)

X = real exports (by market destination)

FDI/CI = share of foreign direct investment in total capital investment

FWs/N = share of skilled foreign workers in total employment

FWu/N = share of unskilled foreign workers in total employment

VA = output measured as real value-added

K = capital intensity measured as total fixed assets per output

ε and η represent error terms that pick up random measurement errors in relative employment and relative wage respectively and the effects of labour demand shocks on relative employment and relative wages, which are not picked up by the included independent variables.

Theoretically, the expected sign for the coefficient for capital (K) is positive if capital-skill complementarities exist. Similarly the sign for the coefficient for FDI share (FDI/CI) is also positive if skill-biased technological spillovers prevail. The expected signs for the coefficients for skilled foreign labour share (FWs/N) and unskilled foreign labour share (FWu/N) are positive and negative respectively given that the former widens the skill-unskilled gap while the latter has the opposite effect on inequality. The sign for the coefficient for output (VA) is negative if an increase in manufacturing output results in higher demand for unskilled labour relative to skilled labour. The sign for the trade coefficients, for MUS and MJAPAN, are negative if the imports from these skilled labour abundant countries displace the demand for skilled labour domestically. Conversely, the signs for the coefficient term for MASEAN may be positive or negative given the differences in the relative levels of skill endowment of the ASEAN countries vis-à-vis Malaysia. As for the coefficients for XUS and XJAPAN, positive signs are expected if products exported to skilled labour abundant destinations are relatively more skill intensive. The sign for the coefficient for XASEAN may again be positive or negative.

RESULTS

Appendix 1 presents the GMM estimates of the dynamic skill- and wage inequality equations. All variables in equations (6) and (7) of Appendix 1 are first differenced⁴ to eliminate individual effects. The results of the one-step model are reported though the null hypothesis of no first-order correlation in the difference residuals is rejected for all specifications, since Arellano and Bond (1991) recommend the one-step results instead of the two-step standard errors for inference on coefficients. The one step results are found to be free of second order autocorrelation for both specifications.

From Appendix 1, the estimated coefficients on the relative wage term in equation (6) and the relative employment term in equation (7) are negative and statistically significant, as expected. The change in value-added is negatively signed (though not significant at conventional levels for skill inequality) which is in line with expectations that a short-run increase in manufacturing output tends to reduce the demand for skilled labour relative to unskilled labour, thereby narrowing the skill-unskilled gap in terms of employment and wages.

Conversely, strong evidence of a positive link exists between capital intensity and inequality, thereby confirming the notion that capital is indeed skill-biased. In contrast to the significance of capital intensity, FDI shares do not significantly affect inequality in terms of employment and wages. In fact, the presence of foreign participation proxied by FDI share points to a negative impact on skill inequality. The evidence seems to suggest that FDI has not brought in skilled labour using technology. (See also contrasting arguments for Malaysia by Oguchi *et al.* (2002) on the lack of efficient technology *via* FDI; Mahadeva (2002) on the failure of Malaysian manufacturing industries to adapt better technology and equipment *via* FDI; and Byung (2003) on the behaviour of foreign firms that do not conduct research and development investment in the local market).

Though foreign participation in the form of FDI inflows does not significantly matter for inequality, the presence of foreign labour is of importance to the latter. The growing presence of skilled migrants is found to significantly increase skill inequality while the growing presence on unskilled migrants reduces (albeit insignificant) wage inequality.

The following discussion centers on the trade variable coefficient estimates, which is the focus of the study. Table 2 presents the short- and long run impact of the trade flows⁵ on inequality.

In the case of trade with the ASEAN, the short-run coefficient estimates reveal a significant negative impact of exports on skill inequality. This implies that increases in exports to the ASEAN cause larger increases in unskilled labour relative to skilled labour. Though exports to the US and Japan do not significantly matter for the skilled-unskilled gap, it is interesting to note that the coefficient estimates are positive. The signs on the long run estimates for export destinations remain the same as those for the short run based on equation (6) of Table 2.

The results above imply that export destinations are of importance to skill inequality trends in manufacturing. Exports to advanced markets plausibly provide the pressure and incentives to upgrade (and thus employ more skilled labour) which lacks in trade with less advanced markets. It may also be the case that the ASEAN market is likely to be relatively more protected

Table 2
Estimated Short- and Long Run Impact of Trade Flows with Key Trading Partners on Inequality

Trade Variable	Short Run		Long Run	
	(6)	(7)	(6)	(7)
dln(XASEAN)	-11.653*	-10.904	-6.737	-5.473
dln(XUS)	4.902	7.025	0.542	-2.696
dln(XJAPAN)	2.562	21.032**	0.752	25.802
dln(XROW)	5.676**	22.109**	3.017	37.109
dln(MASEAN)	-2.519	-4.161	-3.950	-11.749
dln(MUS)	3.772	-5.427	3.725	-2.357
dln(MJAPAN)	-10.415**	-4.799	-4.393	-0.983
dln(MROW)	-3.451	-18.421**	-2.317	-17.392

Note: The dependent variable for equation (6) is $d(S/U)$ and the dependent variable for equation (7) is $d(SW/USW)$.
 ** significant at 5% and *significant at 10%.

Source: Calculated from Appendix 1.

and less competitive, and therefore exports to the ASEAN are more likely to face less competitive market conditions than that to the US and Japan.

While the ASEAN market is the only destination that significantly affects skill inequality within the three key trading partners, the Japanese market is of significance to wage inequality. The positive impact of exports to Japan on wage inequality in the short- and long run imply that the Japanese market imposes some form of competition for Malaysian products that induces higher demand for skilled labour and hence larger increases in skilled wages relative to unskilled wages. Thus products exported to Japan could plausibly be more skilled intensive vis-à-vis that to the ASEAN.

By import sources, products from Japan significantly reduce skill inequality. It appears that imports from Japan substitute for domestically skilled intensive activities thereby reducing the demand for skilled labour. Though the US is also skilled labour abundant relative to Malaysia, substitution of skilled activities domestically is not evident given the positive albeit insignificant impact on skill inequality. Given prior evidence of a low level of intra-industry trade in total trade with Japan as opposed to that with the US, one plausible explanation is that imports from established skilled labour abundant countries substitute for services of domestic skilled labour only when the products traded are differentiated and not when the imports comprise intermediate and capital input (imports of capital goods may channel technology diffusion/adoption, see Hoekman and Winters, 2005) as well as of semi-finished goods and unassembled parts for assembly/finishing.

Though only imports from Japan significantly reduce skill inequality, it is interesting to note that the impact of imports from all sources has a dampening effect on the skilled-unskilled wage gap in the short- and long run. The results do not lend support to the widespread belief that imports from countries that are relatively skilled labour abundant reduce labour market inequality. There is obviously no indication of the Hecksher-Ohlin-Samuelson (HOS) effect in the case of Malaysia.

Finally, the short-and long run evidence points to some striking differences in terms of the impact of different export destinations and import sources on inequality outcomes. Exports to

the ASEAN impose the largest reduction effects on inequality while exports to Japan result in the largest increment effects on the latter. Such is not the case when the signs and magnitude of the impact of import sources for inequality is considered. Imports from Japan and from the ASEAN induce the largest reduction in skill inequality and wage inequality respectively.

CONCLUSION

The general conclusion drawn from the preceding analysis is that an expansion of trade with Malaysia's three key trading partners has had an undeniable influence on labour market inequality. Overall, the paper finds striking differences on inequality outcomes when export destinations are considered relative to import sources. The results suggest that an expansion in exports to countries that are relatively skilled labour abundant causes greater product market competition, thereby increasing the demand for skilled labour vis-à-vis unskilled labour in the domestic market. Inequality outcomes however do not differ with import source, as there is a general dampening effect of import expansion on the skilled-unskilled gap in the short- and long run.

In short, the "whom" aspects of trade matter for inequality in the Malaysian manufacturing labour market, particularly bilateral trade with Japan that offers a more significant role. The importance of the key trading partners as a source of labour market inequality sets the stage for future investigation of the "what" aspects of trade in the bilateral trade flows. Further research should focus on the extent of production fragmentation⁶ in trade (particularly in imports) with these partner countries to examine the reasons for the reported inequality outcomes.

If the broad trends in trade flows with the key trading partners continue unabated, further increase in imports from these countries may impose a threat to the skill upgrading of the manufacturing sector. It will be in the best interest of Malaysia to diversify its import sources. The recent increase in bilateral trade with China (which has emerged as the fourth largest trading partner of Malaysia) coupled with the ongoing talks of an ASEAN-China Free Trade Area and the increase in free trade agreements with India, is thus considered a positive move to reduce the concentration of bilateral trade to a selected group of countries.

NOTES

1. The declining wage inequality may be thought to support the Hecksher-Ohlin-Samuelson (HOS) prediction for a developing country. This work departs from the conventional wisdom in recognizing that Malaysia is a middle-income (semi-industrialized, located between a developing and a developed economy) country.
2. Supply conditions are taken as given since relative labour supply shifts cannot be investigated across industries in the context of examining inequality. Supply shocks are also presumed to be more equally felt across industries than demand shocks arising from differences in trade flows.
3. The fundamentals in analyzing inequality in this paper are based on "between" group inequality (skilled versus unskilled in terms of employment and wages) within industries.
4. The panel unit root tests proposed by Im, Pesaran and Shin (IPS, 1997) are performed and all variables are found to be I(1) process, which is stationary in first differences.
5. The effects of net exports are also estimated and tested (results not reported). By employing net exports to estimate the inequality equations, it is implicitly imposed the conditions that exports and

- imports affect skilled and unskilled labour either in an opposite direction or in the same direction and the effects of exports dominate those of the imports.
6. Japanese firms are already known to have actively formed international production networks in East Asia (see Kimura and Ando, 2003).

REFERENCES

- Arellano, M. and Bond, S. (1991), "Some Tests of Specification for Panel Data: Monte Carlo Evidence and An Application to Employment Equations," *Review of Economic Studies*, 58(2): 277-297.
- Anderton, B., Brenton, P. and Oscarsson, E. (2001), "What's Trade Got To Do With It? Relative Demand for Skills Within Manufacturing," CEPS Working Document No. 162, Sweden: Centre for European Policy Studies, Stockholm University.
- Anderton, B., Brenton, P. and Oscarsson, E. (2002), "Outsourcing and Inequality," CEPS Working Document No. 187, Sweden: Centre for European Policy Studies, Stockholm University.
- Athukorala, P. and Menon, J. (1999), "Outward Orientation and Economic Development in Malaysia," *World Economy*, 22 (8): 1119-1139.
- Balassa, B. (1986), "The Employment Effects of Trade in Manufactured Products Between Developed and Developing Countries," *Journal of Policy Modelling*, 8(3): 371-390.
- Byung, S. M. (2003), "FDI and Trade: Links in the Case of Malaysia," *Journal of the Asia Pacific Economy*, 8 (2): 229-250.
- Chen, B. L. and Hsu, M. (2001), "Time-Series Wage Differential in Taiwan: The Role of International Trade," *Review of Development Economics*, 5(2): 336-354.
- Dewatripont, M., Sapir, A. and Sekkat, K. (1999), "Labour Market Effects of Trade with LDCs in Europe," In Dewatripont, M., Sapir, A. and Sekkat, K. (eds.) *Trade and Jobs in Europe: Much Ado About Nothing?* United Kingdom: Oxford University Press.
- Freeman, R. and Revenga, A. (1999), "How Much has LDC Trade Affected Western Job Markets?" In Dewatripont, M., Sapir, A. and Sekkat, K. (eds.), *Trade and Jobs in Europe: Much Ado About Nothing?* United Kingdom: Oxford University Press.
- Greenaway, D., Hine, R. C. and Wright, P. (1999a), "An Empirical Assessment of the Impact of Trade on Employment in the United Kingdom," *European Journal of Political Economy*, 15: 485-500.
- Greenaway, D., Hine, R. C. and Wright, P. (1999b), "Further Evidence on the Effect of Foreign Competition on Industry Level Wages," GLM Research Paper 99/11, United Kingdom: Centre for Research on Globalisation and Labour Markets, University of Nottingham.
- Hansson, P. (2000), "Relative Demand for Skills in Swedish Manufacturing: Technology or Trade?" *Review of International Economics*, 8 (3): 533-555.
- Hoekman, B. and Winters, L. A. (2005), "Trade and Employment: Stylized Facts and Research Findings," World Bank Policy Research Working Paper 3676, United States: World Bank.
- Im, K. S., Pesaran, M. H. and Shin, Y. (1997), "Testing for Unit Roots in Heterogenous Panels," mimeo, United Kingdom: University of Cambridge.
- Kanapathy, V. (2002), "Skill Shortages, Training Needs and HRD Strategies of MNCs in Malaysia," mimeo, Malaysia: Institute of Strategic and International Studies.
- Kimura, F. and Ando, M. (2003), "Fragmentation and Agglomeration Matter: Japanese Multinationals in Latin America and East Asia," paper presented at the LAEBA/ Brookings Institution/World Trade Institute Event, Promises and Pitfalls of Globalization: Latin America and Asia in Comparative Perspective, Washington DC, Jan 6.

- Lawrence, R. Z. and Evans, C. L. (1996), "Trade and Wages: Insights from the Crystal Ball," NBER Working Paper 5633, United Kingdom: National Bureau of Economic Research.
- Lee, K. H. (1998), "Labour Market Issues: Skills, Training and Labour Productivity," In Soon, L.Y. and Nagaraj, S. (eds), *The Seventh Malaysia Plan: Productivity for Sustainable Development*, Malaysia: University of Malaya Press.
- Lovely, M. E. and Richardson, J. D. (1998), "Trade Flows and Wage Premiums: Does Who or What Matter?" NBER Working Paper 6668, United Kingdom: National Bureau of Economic Research.
- Machin, S., Ryan, A. and Van Reenan, J. (1996), "Technology and Changes in Skill Structure: Evidence from An International Panel of Industries," Centre for Economic Performance Discussion Paper No. 297, United Kingdom: London School of Economics.
- Machin, S. and Reenan, J. V. (1998), "Technology and Changes in Skill Structure: Evidence from Seven OECD Countries," *Quarterly Journal of Economics*, 113 (4): 1215-1245.
- Mahadevan, R. (2002), "Is There a Real TFP Growth Measure for Malaysia's Manufacturing Industries?" *ASEAN Economic Bulletin*, 19 (2): 178-90.
- Milanovic, B. (2000), "Inequality and Determinants of Earnings in Malaysia, 1984-1997," mimeo, United States: World Bank.
- Milner, C. and Tandrayen, V. (2004), "The Impact of Exporting and Export Destination on Manufacturing Wages: Evidence for Sub-Saharan Africa," Credit Research Paper 04/01, United Kingdom: Centre for Research in Economic Development and International Trade, University of Nottingham.
- Oguchi, N., Amdzah, N.A.M., Bakar, Z., Abidin, R. Z. and Shafii, M. (2002), "Productivity of Foreign and Domestic Firms in the Malaysian manufacturing industry," *Asian Economic Journal*, 16 (3): 215-228.
- Pavcnik, N. (2003), "What Explains Skill Upgrading in Less Developed Countries?" *Journal of Development Economics*, 71: 311-328.
- Rasiah, R. (2002), "Manufactured Exports, Employment, Skills and Wages in Malaysia," Employment Papers 2002/35, Geneva: International Labour Organization.
- Shariff, M. B. and Rashid, Z. A. (2000), "Labour Skill Content in Manufactures: The Case of Malaysia," Working Paper 4/2000, Malaysia: Universiti Putra Malaysia.
- Tachibanaki, T., Morikawa, M. and Nishimura, T. (1998), "Economic Development in Asian Countries, and the Effect of Trade in Asia on Employment and Wages in Japan," *Asian Economic Journal*, 12(2): 123-151.
- World Bank (1994), "Malaysia—Meeting Labour Needs: More Workers and Better Skills," Draft document Country Operations Division, East Asia and the Pacific Region, United States: World Bank.
- World Bank (2002), *World Development Report 2000/2001: Attacking Poverty*, United States: Oxford University Press.

Appendix 1
GMM Estimates of Inequality Equations (one step results)

<i>Independent Variable</i>	(6)	<i>Std. Err.</i>	<i>Independent Variable</i>	(7)	<i>Std. Err.</i>
	<i>coefficient</i>			<i>coefficient</i>	
cons	-0.143	0.301	cons	-0.324	0.706
d(S/U) _{t-1}	-0.928**	0.132	d(SW/USW) _{t-1}	-0.293**	0.056
d(S/U) _{t-2}	-0.578**	0.077	d(SW/USW) _{t-2}	-0.334**	0.080
d(SW/USW) _t	-0.165**	0.042	d(S/U) _t	-0.875**	0.384
d(SW/USW) _{t-1}	-0.089**	0.038	d(S/U) _{t-1}	0.029	0.129
d(SW/USW) _{t-2}	0.036	0.047	d(S/U) _{t-2}	-0.079	0.133
dln(VA) _t	-4.815	4.103	dln(VA) _t	-17.364*	10.137
dln(VA) _{t-1}	4.345	3.189	dln(VA) _{t-1}	-14.701	11.815
dln(VA) _{t-2}	3.245	3.329	dln(VA) _{t-2}	-3.623	7.186
dK _t	0.902**	0.417	dK _t	1.205**	0.561
dK _{t-1}	0.192	0.209	dK _{t-1}	-0.553	0.360
dK _{t-2}	0.561*	0.295	dK _{t-2}	0.022	0.282
d(FDI/CI) _t	-0.028	0.047	d(FDI/CI) _t	0.046	0.179
d(FDI/CI) _{t-1}	-0.054	0.063	d(FDI/CI) _{t-1}	0.064	0.207
d(FDI/CI) _{t-2}	0.022	0.031	d(FDI/CI) _{t-2}	0.234	0.151
d(FWs/N) _t	17.390**	7.943	d(FWs/N) _t	4.708	10.121
d(FWs/N) _{t-1}	35.951**	14.510	d(FWs/N) _{t-1}	10.524	10.536
d(FWs/N) _{t-2}	18.901**	5.260	d(FWs/N) _{t-2}	7.805	6.964
d(FWu/N) _t	0.073	0.555	d(FWu/N) _t	2.402**	1.156
d(FWu/N) _{t-1}	-1.859**	0.630	d(FWu/N) _{t-1}	2.806	1.808
d(FWu/N) _{t-2}	-0.348	0.659	d(FWu/N) _{t-2}	-3.197	2.821
dln(XASEAN) _t	-11.653*	6.320	dln(XASEAN) _t	-10.904	11.373
dln(XASEAN) _{t-1}	-10.115	6.530	dln(XASEAN) _{t-1}	1.052	11.623
dln(XASEAN) _{t-2}	4.884	3.846	dln(XASEAN) _{t-2}	0.961	14.767
dln(XUS) _t	4.902	3.311	dln(XUS) _t	7.025	6.694
dln(XUS) _{t-1}	-0.645	3.370	dln(XUS) _{t-1}	-3.449	4.377
dln(XUS) _{t-2}	-2.900*	1.703	dln(XUS) _{t-2}	-7.955	7.325
dln(XJAPAN) _t	2.562	2.296	dln(XJAPAN) _t	21.032**	9.794
dln(XJAPAN) _{t-1}	0.064	2.113	dln(XJAPAN) _{t-1}	6.633	4.773
dln(XJAPAN) _{t-2}	-0.741	1.855	dln(XJAPAN) _{t-2}	14.237**	5.024
dln(XROW) _t	5.676**	1.945	dln(XROW) _t	22.109**	5.394
dln(XROW) _{t-1}	1.174	2.421	dln(XROW) _{t-1}	18.566**	8.413
dln(XROW) _{t-2}	0.710	1.994	dln(XROW) _{t-2}	19.590**	7.968
dln(MASEAN) _t	-2.519	3.398	dln(MASEAN) _t	-4.161	10.917
dln(MASEAN) _{t-1}	1.862	4.189	dln(MASEAN) _{t-1}	-11.382	9.193
dln(MASEAN) _{t-2}	-9.241**	4.808	dln(MASEAN) _{t-2}	-3.538	7.537
dln(MUS) _t	3.772	3.012	dln(MUS) _t	-5.427	5.577
dln(MUS) _{t-1}	1.999	2.692	dln(MUS) _{t-1}	-5.715	6.814
dln(MUS) _{t-2}	3.564	2.565	dln(MUS) _{t-2}	7.314	7.709
dln(MJAPAN) _t	-10.415**	3.208	dln(MJAPAN) _t	-4.799	6.832
dln(MJAPAN) _{t-1}	-0.012	4.168	dln(MJAPAN) _{t-1}	4.823	10.234
dln(MJAPAN) _{t-2}	-0.582	3.300	dln(MJAPAN) _{t-2}	-1.620	6.604
dln(MROW) _t	-3.451	2.924	dln(MROW) _t	-18.421**	6.743
dln(MROW) _{t-1}	-0.461	3.641	dln(MROW) _{t-1}	-12.388	9.339
dln(MROW) _{t-2}	-1.895	2.397	dln(MROW) _{t-2}	2.564	7.143
2nd order serial correlation		-1.81	2nd order serial correlation		0.81
No. of observations		266	No. of observations		266

Note: 1. The dependent variable is d(S/U) for equation (6), and d(SW/USW) for equation (7).

2. The robust standard errors are reported.

**significant at 5% and *significant at 10%