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Relative Factor Return Gaps in Labour Markets and Global Integration

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Abstract

The paper estimates the role of integration in welfare generation in a cross country framework. Once controlling for institutions, openness is generally associated with increased wage inequalities across nations. However the results for trade policy are mixed. Decrease in import taxes increase wage inequality, whereas decrease in export taxes has an egalitarian effect. The results are applicable only to the larger sample of developed and developing countries. The results highlight the bottle neck faced by both developing and developed countries in WTO talks which have not been successful as yet in terms of further decrease in trade taxes. In case this situation prevails, the paper calls for more South-South trade which would enable developing countries to decrease the relative wage gaps among their labour force.

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1. Introduction:

Dollar and Kraay (2004) have shown that openness to international trade in particular appears to benefit poor people as much as everyone else. The study pointed out the experience of countries in the Asia and Pacific region (i.e., the Republic of Korea, Singapore, and Taipei, China) which contains a broad range of examples concerning both trade liberalization and poverty reduction. The paper also implied that reforms on average have had little effect on income distribution. Other recent cross country studies also emphasized opening up as a necessary policy tool for poverty alleviation. For example, many studies attribute high growth rates achieved by China and India to their opening up in 80s and 90s, whereas the same period is associated with a decline of incidence of poverty from 28% in 1978 to 9% in 1998 in China and from 51% in 1978 to 27% in 2000 in India respectively (see Srinivasam and Bhagwati 2002).

The proponents of globalization are generally confident that free trade carries significant pro poor growth effects. However, the increasing concentration of world poverty in some regions of the world (e.g. Sub Saharan Africa) and instances of rise in spatial inequality in developing countries which have opened up (i.e. China, Vietnam, Mexico, Brazil, Chile, Columbia and Venezuela etc) implies that processes of growth needs a careful evaluation and we have to exhaust all possible channels through which poverty is affected. For example, trade might very well be good for poor because it is good for growth but if trade amplifies inequalities between income groups, it cannot claim to be the harbinger of welfare generation because income distribution is no less a vital determinant of poverty than growth itself.

Behrman et al (2001) noticed that in 7 out of 18 Latin American countries that initiated market reforms in the mid 1980s, inequality has actually increased in recent times. The rest of the economies in their sample showed that inequality was approximately same in 1990s to the levels of 1980s. It is further noticed in many studies that liberalization process in many developing countries seems to be biased against low-skilled labor. The empirical verification in this regard comes mainly from Latin American region primarily because most of the economies in the region undertook rigorous reform policies in the mid 1980s as part of their structural adjustment plans and also witnessed grappling inequality in Post reform periods. Ligovini et al (2001) found out that inequality in Mexico rose sharply between 1984 and 1994 and rising returns to skill labor accounted for 20 percent of the increase in the inequality in household per capita income. Similarly, Hanson and Harrison (1999) found that the reduction in tariffs and the elimination in import licenses account for 23 percent increase in the relative wages of skilled labor over the period of 1986-1990 thus providing further evidence for the role liberalization played in rising inequality in Mexico. Other country studies on Brazil, Chile, Colombia and Venezuela, also show that skilled workers received increased premiums after liberalization when compared to their unskilled counterparts (World Bank, 2001).

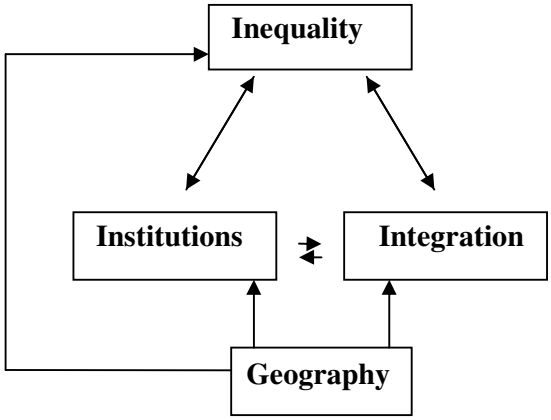
Such empirical evidence contradicts the basic trade theory which suggests that trade liberalization would result in an increase in demand for low-skilled in a developing country, thereby improving the relative earnings of this group compared with the more skilled. The evidence further feeds the fears of Ravallion (2003), who coined the possibility that openness to trade can lead to the demand for relatively skilled labor,

which tends to be more inequitably distributed in poor countries than rich ones. He also proposed caution regarding the results of Dollar and Kraay (2004) paper concerning neutral inequality effects of trade reform on the base of latter's methodology and referred to his own empirical work which found that reform process do carry unequal distributional effects.

The paper tries to find the effects of trade liberalization on inequality in a cross section setting. The rest of the paper is organized as follows: section 2 presents the data and methodology, section 3 contains the empirical results, and finally section 4 concludes with some policy implications.

2. Data and Methodology:

Figure 1: Endogeneity between Integration, Institutions and Inequality



Many recent studies show that institutions and integration are endogenous (i.e., Rodrik et al, 2004) whereas there are issues of two way causality between inequality and institutions (i.e., see Keefer, 2002; Chong and Gradstein, 2004). Chong and Gradstein (2004) find strong evidence of bi-directional causality between institutions and inequality. Inequality may affect the quality of institutions. For example, high inequality will prevent the poor from investing in education or the ruling class may not invest in education so that the poor majority will not be politically active thus undermining the development of necessary social and political institutions. Easterly (2001) and Keefer (2002) suggests that social polarisation negatively affects institutional quality. The countries with poor institutions are also likely to have high inequality. For example in Russia in the 1990s, a small group of entrepreneurs exploited their political power to promote their own interests, subverting the emergence of institutions committed to the protection of smaller share holders and businesses. According to the Corruption Perceptions Index published by Transparency International, among the transition economies, Estonia is placed 28, and Hungary 31; whereas Russia is placed 79, and Ukraine 83. In these transition economies, weak performance of public institutions, infringement of property rights in favour of influential parties, lower willingness to use courts to resolve business disputes, lower

level of tax compliance and higher levels of bribery all have been strongly correlated with inequality. Similarly, in several Latin American countries, the ruling elites, the military and large businesses impeded smaller business interests giving rise to significant informal sector. Chong and Gradstein (2004) have shown that when the political bias in favour of the rich is large, income inequality and poor institutional quality may reinforce each other, indicating endogeniety between the two.

Any empirical analysis which takes trade and institutions as pure exogenous factors while analysing their effects on inequality may lead to miss-specification bias. We construct our inequality model in correspondence with the reduced form growth model proposed by Rodrik et al (2004) where trade and institutions are taken as endogenous to each other as well as the dependent variable which in our case is wage inequality. See figure 1 for illustration.

Our basic inequality equation would look like:

Wage Inequality = f (Institutions, Integration, Geography) *(1)*

Here in line with Rodrik et al (2004), we assume geography is a pure exogenous concept.

Much recently Kaufman et al (2002) formulated aggregate governance indicators for six dimensions of governance covering 175 countries. They relied on 194 different measures of governance drawn from 17 different sources of subjective governance data constructed by 15 different sources including international organizations, political and business risk rating agencies, think tanks and non governmental organizations. The governance indicators have been oriented so that higher values correspond to better outcomes on a scale from -2.5 to 2.5. They are categorized as rule of law (*Rl*), political stability (*Ps*), regulatory quality (*Rq*), government effectiveness (*Ge*), voice and accountability (*Va*) and control of corruption (*Ctc*). We add two more political indicators namely democracy (*Demo*) and autocracy (*Auto*) to our analysis from Polity dataset whereas, both ranging from 0 to 10.

We incorporate not 1 but 12 various concepts of openness and trade policy in our regression model in order to carry out a robustness check for our results while controlling for various definitions of institutions. We have carefully chosen three specific measures of openness. The ratio of nominal imports plus exports to GDP (*Lcopen*) is the conventional openness indicator (see Frankel and Romer, 1999; Alcala and Ciccone, 2002; Rose, 2002; Dollar and Kraay, 2003; Rodrik et al, 2004). Two other measures of openness are overall trade penetration (*Tarshov*) derived from World Bank's TARS system and overall import penetration (*Impnov*) respectively (see Rose, 2002). Neither of these measures are direct indicators of trade policy of a country, pointing only towards the level of its participation in international trade. There are indicators of trade restrictiveness acting as measures of trade policy (Edwards, 1998; Greenaway et al, 2001, Rose 2002). Import tariffs as percentage of imports (*Tariffs*), tariffs on intermediate inputs and capital goods (*Owti*), trade taxes as a ratio of overall trade (*Txtrg*) and total import charges (*Totimpov85*) can all be considered as good proxies for trade restrictiveness and have also been employed in our study. Other measures which capture restrictions in overall trade are non-tariff barriers. We use overall non-tariff coverage (*Ntarfov87*) and non-tariff barriers on

intermediate inputs and capital goods (*Owqi*) as two proxies for non-tariff barriers (see Rose, 2002). Moreover there is also a trend in the trade literature to use composite measures of trade policy. Edwards (1998) advocates the Sachs and Warner (1995) openness index (O*pen80*) as a proxy for openness.

To capture wage inequality we employ UTIP-UNIDO Theil measure (*Theil*) calculated by University of Texas Inequality Project (UTIP) which captures wage inequality between skilled and unskilled labour. This is motivated by several considerations. First, comparable and consistent measures of income inequality, whether on a household level or per head basis are difficult, almost implausible and generally fails to provide adequate or accurate longitudinal and cross-country coverage. On the other hand, inequality of manufacturing pay, based on UNIDO Industrial Statistics provides indicators of inequality that are more stable, more reliable and more comparable across countries because UNIDO measures are based on a two or three digit code of International Standard Industrial Classification (ISIC) a single systematic accounting framework. Furthermore, manufacturing pay has been measured with reasonable accuracy as a matter of official routine in most countries around the world (Galbraith and Kum, 2002).

Corresponding to equation 1, our inequality model based on *Theil index* has 2 equations; whereas each equation corresponds to a different integration classification.

$$Theil99_{1i} = \alpha_1 + \beta_1 I_i + \chi_1 Open_i + \varepsilon_{1i} \qquad (2)$$

$$Theil99_{2i} = \alpha_2 + \beta_2 I_i + \chi_2 TP_i + \varepsilon_{2i} \qquad (3)$$

The variable $Theil99_i$ is Theil Index in a country i, I_i, $Open_i$ and TP_i are respectively measures for institutions, general openness in the economy and trade policy and ε_i is the random error term.

As we have discussed, there are potential endogenity problems between institutions and integration and between institutions and inequality itself. To this effect we have first regress our institutional, trade policy and openness proxies on a set of instruments. Frankel and Romer (1999) suggests that we can instrument for openness by using trade/GDP shares constructed on the basis of a gravity equation for bilateral trade flows. The FR approach consists of first regressing bilateral trade flows (as a share of country's GDP) on measures of country mass, distance between the trade partners, and a few other geographical variables, and then constructing a predicted aggregate trade share for each country on the basis of coefficients estimated. Hall and Jones (1999) employed distance from the equator and the extent to which the primary languages of Western Europe are spoken as first languages today as instruments for institutions. Hall and Jones made an argument that the instruments are not correlated with the error term. Acemolgu, Johnson and Robinson (2001) identify the mortality of European settlers as a potential instrument. Using two ex post assessments of institutional quality- risk of expropriation by the government and constraints on the executive- as measures of institutions, they showed that settler mortality is a strong predictor of institutions. However there are two drawbacks for AJR instrument. First, the data is only available for 64 countries. Though Rodrik et al (2004) have extended it to 80 countries; it still covers a relatively low number when compared to 'the extent to which the primary languages of Western Europe are spoken as first languages

today' which covers as many as 140 countries. Secondly, according to Glaeser et al (2004), AJR instrument of settler mortality fails to be orthogonal to the error term. 'Settler mortality is strongly correlated not just with ancient, but also with the modern, decease environment, suggesting that it might be the decease environment, rather than history, that matters for economic development. Secondly settler mortality is strongly correlated with human capital accumulation, suggesting that it cannot be used as an instrument for institutions (Glasear et al, 2004:8).' Thus following Dollar and Kraay (2003) and Hall and Jones (1999), we use 'fractions of the population speaking English (*Engfrac*) and Western European languages as the first language (*Eurfrac*)' as an instrument for legal, economic and political institutions. As in Rodrik et al (2004), we employ 'distance from the equator' as another instrument (proxy for geography) also employed by Hall and Jones (1999).

$$I_i = \sigma_1 + \varsigma_1 Eng_i + \theta_1 Eur_i + \vartheta_1 FR_i + \tau_1 Disteq + \mathrm{E}_{1i} \qquad (4)$$

$$Open_i = \sigma_2 + \varsigma_2 Eng_i + \theta_2 Eur_i + \vartheta_2 FR_i + \tau_2 Disteq + \mathrm{E}_{2i} \qquad (5)$$

$$TP_i = \sigma_3 + \varsigma_3 Eng_i + \theta_3 Eur_i + \vartheta_3 FR_i + \tau_3 Disteq + \mathrm{E}_{3i} \qquad (6)$$

Where Eng_i and Eur_i are our instruments for legal, economic and political institutions referring to fractions of population speaking English and European languages respectively. FR_i is instrument for openness and trade policy. $Disteq_i$ is proxy for geography showing distance from the equator. At the second stage the predicted values of respective institutional, openness and trade policy variables are employed in the inequality and income share equations.

Table 1 shows results of instruments for the first stage. The trade instrument (*FR*) works well with all the proxies of *openness* with the exception of *trade policy variables*. Nevertheless, significance for other instruments balance the weak relationship and enhance explanatory power of all openness and trade policy variables. Staiger and Stock(1997) rule of thumb suggest that instruments are good if F-statistics is equal to or greater than 10. Trade policy variables violated this rule.

However, one may note here that Staiger and Stock rule of thumb is a good way to determine the validity of instruments when there is only one instrument and one endogenous independent variable. The Cragg-Donald (1993) type higher order asymptotic tests can be undertaken where endogenous independent variables are expected to exogenously determine the dependent variable. For such regressions, 2SLS bias should be small and lie under the Cragg-Donald critical values to establish the validity of IV. To test for exogeniety of instruments, over identification test is needed. Higher order asymptotic tests are also run in second stage to validate our weak instruments in case of openness and trade policy variables.

Table 1: First Stage Regression Analysis:

Instruments	Instrumented Trade Variables											
	Lcopen	Imp85	Imp82	Tars85	Tars82	Open80s	Tariffs	Owti	Txtrdg	Totimpov 85	Owqi	NonTrov 87
Eng	0.43	17.99	18.15	28.27	86.73	-0.019	-1.02	-0.004	0.0018	9.66	-0.11	15.53
	(2.74)*	(2.59)*	(2.30)*	(2.27)**	(2.60)*	(-0.09)	(-0.29)	(-0.07)	(0.12)	(0.84)	(-1.04)	0.76
Eur	-0.09	-4.51	-5.66	-3.07	-3.70	0.17	-3.74	-0.067	-0.018	-0.45	-0.002	-30.59
	(-0.90)	(-0.89)	(-0.97)	(-0.34)	(-0.15)	(1.28)	(-1.46)	(-1.41)	(-1.72)***	(-0.58)	(-0.03)	-2.46**
FR	0.65	21.21	24.55	36.80	47.34	0.215	-1.94	-0.097	0.03	-19.44	-0.049	-22.89
	(11.88)*	(7.73)*	(7.59)*	(7.48)*	(3.46)*	(2.59)*	(-1.34)	(-3.65)*	(0.54)	(-4.34)*	(-1.05)	-2.90*
Disteq	-0.003	0.01	-0.201	0.017	-0.32	0.01	-0.19	-0.001	-0.0008	0.21	-0.009	-0.24
	(-1.55)	(0.11)	(-1.70)***	(0.09)	(-0.66)	(3.86)*	(-3.85)*	(-1.99)***	(-3.98)*	(1.04)	(-0.63)	(-0.64)
N	144	95	94	95	92	60	96	94	54	73	92	73
F	38.66*	18.24*	17.53*	16.68*	5.79*	7.66*	5.88*	5.90	5.77*	5.51*	0.97	3.70*
R2	0.52	0.44	0.44	0.42	0.21	0.35	0.20	0.21	0.32	0.24	0.04	0.17

-*, **, *** corresponds to 1%, 5% and 10% level of significance respectively.

-Institutional proxies are also instrumented for with same instruments. Though the results are only provided for openness/ trade policy proxies as institutions enter the regression equations as control variables. Also note that total number of controlled institutional variables are 8, and thus for each openness/ trade policy variable, there are 8 combinations to form 8 regression equations. This makes up for 98 regression equations where we test the role of trade on at least one definition of inequality (i.e., Theil Wage Inequality Index in table 2)

3. Results

Table 2, provides summary of results for all outcome based (openness) and incidence based (trade policy) measures of trade barriers for all possible model specifications available under *Theil* inequality equations. The results for openness indicators confirm that increased trade leads to higher wage inequality for both developed and developing countries**.** In order to validate the assertion put forward by Acemoglu (1999) that for developed countries in Europe, trade may be related with relatively stable wage inequality, the author has run regressions for *Theil99* for a reduced sample with European countries only. The cross section of one year observations on *Theil99* does not allow enough degrees of freedom to significantly relate wage inequality with trade. (space restrictions prevent us to provide results here) However, the sign does change to a negative for *Lcopen* under various specification tests, providing weak evidence to the trade explanation of paradoxical European trends in wage inequality as pointed out by Acemoglu (1999): ' So the reason may be that demand for skills has increased much less in Europe than in US because trade may have caused labor-biased technical change in Europe, contrary to its effect on U.S.: most LDCs use U.S. technologies, and with the increased productivity of skilled workers both in the U.S. and in the LDCs following trade, the supply of skill intensive goods in the economy may increase so much that their relative world price may be below their pre-trade European level.' P (26)

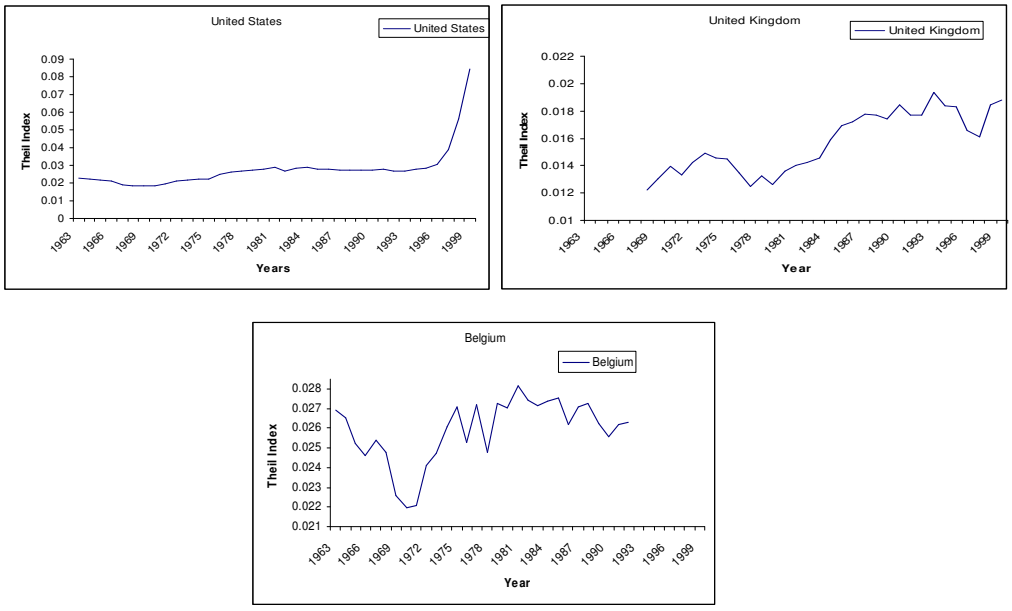
In comparison to openness measures, the results for trade policy are mixed. Trade policy variables that have a significant relationship with wage inequality are overall trade taxes (*Txtrdg*), total import charges (*Totimpov85*) and non-tariff coverage (*Ntarfov87*). *Totimpov85* and *Ntarfov87* are negatively associated with wage inequality and the relationship is significant in 8 out of 9 cases for *Totimpov85* and only 3 out of 9 cases for *Ntarfov87*. *Txtrdg* in contrast has a positive relationship with wage inequality and it is significant in 5 out of 10 cases. The conflicting results on different measures of trade policy may have to do with country coverage of the variables. For example *Txtrdg* covers both developed and developing countries while *Totimpov85* and *Ntarfov87* covers developing countries only.

Thus before moving further with the analysis, the possibility of case sensitivity bias, that arises due to the presence of significant differences in the coverage of the sample of countries in different proxies of openness and trade policy variables, needs to be addressed. Country tables at the end of manuscript show that trade policy proxies cover a much smaller sample of developed and developing countries when compared to openness proxies. Trade shares (*Lcopen)* is available for 170 countries, whereas maximum number of countries, for all such trade policy variables which are found to be significantly related with *Theil99* is 76 for *Totimpov85,* 54 for *Txtrdg* and 76 for *Ntarfor87.* To solve the problem of omitted country bias, one possibility is to also undertake regressions for reduced samples of *Lcopen* which can correspond to the countries available in *Totimpov85*, *Txtrdg*, and *Ntarfov87.*

Table 3, shows the results for *Lcopen* for compete sample (N=170) and reduced samples of (N=54) corresponding to *Txtrdg* and (N=76) corresponding to *Totimpov.* Since *Natarfov87* has generally been insignificant, it would not be included in further analysis. The results for *Lcopen* for reduced sample do not change. If anything the

positive relationship between openness and wage inequality is more pronounced. For the same number of countries covered in *Txtrdg*, *Lcopen* is significantly related with wage inequality at 1% level, where as in comparison to the complete sample of 170 countries, where the significance could be achieved at 10 % only, the explanatory power of *Lcopen* for reduced sample has increased. For the reduced sample corresponding to countries available for *Totimpov87,* the results on *Lcopen* have improved further with even higher coefficients and significance achieved at 1% in all cases. Overall, table 3 suggest that opening up to international trade significantly cause wage inequality in both developed and developing countries. However, the results reveal more than that. The positive effect of *openness* on wage inequality is more pronounced for developing countries as can be seen from the higher coefficients achieved for *Lcopen* in columns 21 to 26, where only developing countries are included. Results on *Lcopen* in columns 15 to 20, may also be capturing the developing country effect. We know that the sample of countries which corresponds to the *Txtrdg* have even fewer developed countries than the larger sample of *Lcopen*. Developed countries covered by *Txtrdg* are Australia, Austria, Belgium, Canada, Denmark, Spain, Finland, France, UK, Ireland, Netherlands, Norway, Sweden and United States. With exception of U.S. wage inequality in most of these countries has been more or less stable. (see figure 2) In contrast, wage inequality has been sharply increasing for most developing countries.

Figure: 2. *Wage Inequality in U.S., U.K., and Belgium*



Now we come to the next issue; What constitutes the opposite signs of *Totimpov85 and Txtrdg* observed in table 2? The positive sign for *Txtrdg* (also see table 4) suggests that decrease in trade taxes improve average wages of the unskilled labour and resultantly wage inequality would decline. Presence of European countries in the sample, where technical change may have been more labour intensive as proposed by

Acemoglu (1999), might have drawn this result. For developing countries, decrease in trade taxes may improve export potential of the country which would then favour unskilled labor as much as skilled labor in the manufacturing sector and causing wage inequality to fall (For trade taxes the effect of export taxes are more pronounced; Mamoon and Murshed 2005). In some East Asian countries, (i.e., South Korea) wage inequality has declined significantly with a sharp rise in exports. However, South Korea is an outlier among developing countries. Decline in relative wage gap may very well be due to higher levels of education when compared to other developing countries. Thus on whole, we cannot be sure that decreasing trade taxes may lead to fall in wage inequality in most developing countries. The author tried to isolate developing country specific effect of *Txtrdg* on wage inequality, but loss of degrees of freedom by dropping developed countries from the sample has reduced the statistical validity of the model as 2SLS bias is risen in favour of OLS. (Table 4)

The detailed results are presented for Totimpov85 in table 4. The results depict that if a country follows a more open policy by decreasing import taxes, it will have a positive effect on wage inequality. Lower import taxes or non-tariff barriers may cause increase in wage inequality in the manufacturing in developing countries because opening up to more imports from outside world for a developing country means increase in trade in skill intensive goods and that may lead to further technology diffusion in skilled intensive sectors through higher imports of technology goods and finally further raising the skill premium. Thus there is definite distinction between exports and imports and their relative effect of wage gap in developing countries.

If developed and developing countries can trade more, they can also trade more in labour intensive goods leading to a rise in average wages in manufacturing for developing countries. However, a general observation is that only few developing countries can export to developed countries whereas developing countries trade among each other far less than what they should do due to many conflicts prevailing within or in between many developing countries. Thus trade in developing countries, how they stand today, may always raise skill premia relative to wages of unskilled unless developing countries find ways to trade with each other more through arrangements like 'regional trade agreements' and thus also go through the 'Acemoglu's European paradox' where more trade may lead to labour intensive technical change.

Results on institutions in table 3 suggest that voice and accountability, political stability, government effectiveness, regulatory quality, rule of law and control for corruption are all have a significant and negative relationship with wage inequality. Good quality institutions are good for wages of unskilled as much of the wages of skilled. Institutions also have a strong redistributive power.

Table 2 *openness / trade policy (All Specifications)*

	Dependent Variable: Theil99							
Independent Variables	1	2	3	4	5	6	7	8
	(Va)	(Rl)	(Ctc)	(Rq)	(Ge)	(Ps)	(Demo)	(Auto)
Lcopen	0.032	0.036	0.039	0.029	0.039	0.039	0.041	0.035
	(1.54)	(1.68)*	(1.77)*	(1.39)	(1.82)*	(1.78)*	(1.70)*	(1.41)
Impnov85	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002
	(2.66)***	(2.87)***	(2.88)***	(2.48)**	(3.01)***	(2.86)***	(2.57)***	(2.28)**
Impnov82	0.001	0.002	0.002	0.0002	0.002	0.002	0.002	0.002
	(2.68)***	(2.91)***	(2.92)***	(2.63)***	(3.06)***	(2.93)***	(2.67)***	(2.41)**
Tarshov85	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(2.84)***	(3.06)***	(3.08)***	(2.66)***	(3.24)***	(3.06)***	(2.75)***	(2.44)**
Tarshov82	0.0005	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(2.62)***	(2.56)***	(2.65)***	(2.44)**	(2.74)***	(2.59)***	(2.20)**	(1.98)**
Open80s	0.007	-0.033	-0.025	-0.062	0.052	0.030	-0.007	-0.047
	(0.51)	(-0.41)	(-0.28)	(-0.08)	(0.46)	(0.28)	(-0.09)	(-0.84)
Tariffs	-0.004	0.008	0.012	0.007	0.015	0.004	-0.004	-0.001
	(-0.34)	(0.80)	(0.89)	(1.11)	(0.55)	(0.37)	(-0.96)	(-0.63)
Owti	-0.230	-0.324	-0.302	-0.149	-0.425	-0.366	-0.136	-0.058
	(-1.34)	(-1.53)	(-1.50)	(-0.86)	(-1.78)*	(-1.63)	(-0.96)	(-0.49)
Txtrdg	4.810	2.281	2.504	4.509	2.986	2.441	5.713	4.364
	(1.50)	(1.84)*	(1.91)*	(1.63)	(1.75)*	(2.03)**	(1.46)	(1.39)
Totimpov85	-0.003	-0.002	-0.002	-0.002	-0.002	-0.002	-0.003	-0.003
	(-2.32)**	(-1.82)*	(-1.70)*	(-2.31)**	(-1.84)*	(-2.04)**	(-2.56)***	(-2.33)**
Owqi	-0.800	-1.082	-1.243	-0.522	-1.101	-1.010	-0.487	-0.264
	(-1.03)	(-0.92)	(-0.85)	(-0.98)	(-0.95)	(-0.94)	(-1.01)	(-0.94)
Ntarfov87	-0.002	-0.001	-0.0005	-0.002	-0.002	-0.002	-0.002	-0.002
	(-1.64)	(-0.82)	(-0.26)	(-1.66)*	(-1.04)	(-1.30)	(-2.09)**	(-2.12)**

-*, **, *** corresponds to 1%, 5% and 10% levels of significance respectively
- Institutions are Control variables which are in parentheses

Table: 3 *Theil99 and Openness (Lcopen)*

Dependent Variable: Theil99 for (Developed + Developing)

	Complete sample of Lcopen (n = 170)						Reduced Sample of Lcopen if (Dum Txtrdg, n=54)						Reduced Sample of Lcopen if (Dum Totimpov, n=76) Representing Developing countries only					
Independent Variables	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Nominal Trade Share (Lcopen)	0.032*	0.04**	0.04*	0.029	0.036*	0.039*	0.049**	0.059***	0.054***	0.051**	0.056***	0.056***	0.072**	0.068***	0.071***	0.074***	0.069***	0.070**
	(0.018)	(0.039)	(0.027)	(0.028)	(0.029)	(0.029)	(0.239)	(0.023)	(0.021)	(0.022)	(0.022)	(0.022)	(0.031)	(0.026)	(0.027)	(0.029)	(0.026)	(0.029)
Voice and Accountability (Va)	-0.02**						-0.02*						0.004					
	(0.011)						(0.011)						(0.029)					
Political Stability (Ps)		-0.03*						-0.03***						0.0081				
		(0.014)						(0.012)						(0.036)				
Government Effectiveness (Ge)			-0.02**						-0.024**						-0.0002			
			(0.01)						(0.01)						(0.04)			
Regulatory Quality (Rq)				-0.03**						-0.03						-0.009		
				(0.02)						(0.02)						(0.36)		
Rule of law (Rl)					-0.02*						-0.02***						0.010	
					(0.01)						(0.009)						(0.26)	
Control for Corruption (Ctc)						-0.02*						-0.022**						0.008
						(0.01)						(0.008)						(0.43)
N	122	116	117	122	122	118	52	50	50	52	52	51	67	64	65	66	66	65
F-statistics	2.85*	2.46*	2.13*	2.98**	2.01*	2.24*	4.34**	5.10***	5.85***	4.46**	6.51***	5.53***	3.47**	3.17**	3.34**	3.16**	3.40**	3.08*
R-Square	0.08	0.08	0.07	0.05	0.07	0.09	0.15	0.15	0.24	0.15	0.23	0.20	0.04	0.05	0.05	0.05	0.04	0.03
Maximal 2SLS Bias	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.004	0.004	0.0017	0.00	0.007
Sargan (P)	0.42	0.60	0.48	0.42	0.41	0.60	0.067	0.156	0.09	0.04	0.13	0.09	0.473	0.447	0.433	0.476	0.488	0.47

- ***, **, * denotes significance at 1%, 5 % and 10% levels respectively, Robust Standard Errors are in the parenthesis; Standard errors corrected for as run Durbin–Wu–Hausman test (augmented regression test) for endogeneity (see Davidson and MacKinnon. 1993)

Table: 4 : *Theil99 and Trade Policy (Txtrdg and Totimpov85)*

	Dependent Variable: Theil99																	
	(Developed + Developing)												(Developing Only)					
Independent Variables	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
Trade Taxes (Txtrdg)	0.071	2.44**	2.98*	0.059**	2.28**	2.50**							5.21	-0.7	-0.6	3.07	-0.5	-0.9
	(0.045)	(1.17)	(1.77)	(0.031)	(1.14)	(1.30)							(3.5)	(2.3)	(3.4)	(3.3)	(2.2)	(2.7)
Total import charges (Totimpov85)							-0.002**	-0.002**	-0.002**	-0.002***	-0.002*	-0.002*						
							(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)						
Voice and Accountability (Va)	0.06						0.015						0.2*					
	(0.05)						(0.48)						(0.1)					
Political Stability (Ps)		0.028						0.002						0.1*				
		(0.96)						(0.035)						(0.08)				
Government Effectiveness (Ge)			0.03						-0.007						0.23			
			(0.95)						(0.043)						(0.17)			
Regulatory Quality (Rq)				0.094						-0.005						0.24		
				(0.078)						(0.044)						(0.14)		
Rule of law (Rl)					0.021						0.007						0.11*	
					(0.02)						(0.210)						(0.06)	
Control for Corruption (Ctc)						0.026						0.017						0.2**
						(0.98)						(0.045)						(0.09)
N	52	50	50	52	52	51	67	64	65	66	66	65	36	34	34	36	36	35
F-statistics	2.14	3.60**	2.65*	2.57*	4.07**	3.11**	2.60*	2.71*	2.32*	2.31*	2.39*	2.42*	1.42	1.49	0.87	1.28	1.82	1.98
R-Square	0.02	0.29	0.05	0.15	0.33	0.24	0.09	0.06	0.07	0.002	0.023	0.015	-5.0	-2.2	-5.6	-4.5	-1.6	-3.6
Maximal 2SLS Bias	0.13	0.04	0.16	0.13	0.08	0.07	0.00	0.00	0.073	0.002	0.023	0.015	0.662	0.36	0.59	0.66	0.33	0.33
Sargan (P)	0.72	0.14	0.27	0.92	0.12	0.18	0.153	0.136	0.135	0.142	0.137	0.139	0.74	0.432	0.76	0.55	0.21	0.94

- ***, **, * denotes significance at 1%, 5 % and 10% levels respectively, Robust Standard Errors are in the parenthesis; Standard errors corrected for as run Durbin–Wu–Hausman test (augmented regression test) for endogeneity (see Davidson and MacKinnon. 1993)

4. Conclusions

This paper is an attempt to gauge the effect of integration on wage inequality. We find that openness is generally related with higher wage inequality. Our results highlight the fear among developed and developing countries to decrease import taxes which has also lead to the continuous failure of WTO talks as the paper finds that opening up of protected sectors to increased international competition by revoking import taxes lead to higher wage inequality in developing countries. There are two solutions though. Either developed countries unilaterally decrease their import taxes on primary products, thus allowing even higher export share of developing countries in these products which would raise the wages of unskilled labour or alternatively more trade is carried out among developing countries which lie in different stages of technological ladder through more refined regional trade agreements.

Furthermore, the findings in the paper seem to suggest that developing countries may practice protectionism by means of higher import duties because practicing such trade measures are good for wage inequality. The issue needs to be seen in the context of WTO plus where both developed and developing countries have entered multiple bilateral and multilateral trade agreements with each other. In these arrangements the real issue is of binding rates. More important under WTO is high ceilings in binding rates in protected sectors than prevalent tariffs. Though developing countries can still practice above average tariffs against imports from other countries including developed ones, they should bring the binding rates lower by decreasing the ceiling levels. Such a step would facilitate the trading environment and would sow the seeds for success in the negotiations between developed and developing countries under WTO. Fall in binding rates now would eventually lead to reduction in tariff rates in future by both developed and developing countries. Presently developing countries can still promote trade with existing tariffs while looking at more trading avenues within their group and give further time to trade negotiations to gain momentum towards freer trade arrangements for all. Such a strategy would also cover the negative effects of tariff reduction on manufacturing pay inequality between skilled and unskilled labor as it would give more time for manufacturing sector to raise the over all level of wages.

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DATA AND SOURCES:

Auto: Autocracy, Year: 1999, Source: Polity IV dataset

Ctc: Control for Corruption, Year: 1997/98. Source: Kaufman et al (2002)

Disteq: Distance from Equator of capital city measured as abs (Latitude)/90. Source: Rodrik, Subramanian & Trebbi (2002)

Engfrac: Fraction of the population speaking English. Source**:** Rodrik, Subramanian & Trebbi (2002)

Eurfrac: Fraction of the population speaking one of the major languages of Western Europe: English, French, German, Portuguese, or Spanish. Source: Rodrik, Subramanian & Trebbi (2002)

Ge: Government Effectiveness, Year: 1997/98. Source: Kaufman et al (2002)

Impnov85: Import Penetration: overall, 1985. Source: Rose (2002).

Impnov82: Import Penetration: overall, 1982. Source: Rose (2002).

Lcopen: Natural logarithm of openness. Openness is given by the ratio of (nomnal) imports plus exports to GDP (in nominal US dollars), Year: 1985. Source: Penn World Tables, Mark 6.

Logfrankrom (FR) : Natural logarithm of predicted trade shares computed following Frankel and Romer (1999) from a bilateral trade equation with 'pure geography' variables. Source: Frankel and Romer (1999).

Nontarfov: Non- Taiff Barriers Coverage: Overall, 1987. Source: Rose (2002).

Open80s: Sachs and Warners (1995) composite openness index. Source: Rose (2002).

Owqi: Non Trade Barriers Frequency on intermediate inputs, Capital goods, 1985. Source: Rose (2002).

Owti: Tariffs on Intermediate and Capital Goods, 1985. Source: Rose (2002)

Ps: Political Stability, Year: 1997/98. Source: Kaufman et al (2002)

Rl: Rule of Law, Year: 1997/98. Source: Kaufman et al (2002)

Rq : Regulatory Quality, Year: 1997/98. Source: Kaufman et al (2002)

Tarshov85: TARS Trade Penetration: overall, 1985. Source: Rose (2002).

Tarshov82: TARS Trade Penetration: overall, 1982. Source: Rose (2002).

Tariffs: Import Duties as %age imports, Year:1985. Source: World Development Indicators (WDI), 2002.

Theil: UTIP-UNIDO Wage Inequality THEIL Measure - calculated based on UNIDO2001 by UTIP, Year: 1997. Source: University of Texas Inequality Project (UTIP) http://utip.gov.utexas.edu.

Totimpov: Weighted Average of Total Import Charges: overall, 1985. Source: Rose (2002)

Txtrg: Trade taxes / trade, 1982. Source: rose (2002)

Va: Voice and Accountability, Year: 1997

Country List for Theil99

Afghanistan
Angola
Albania
Netherlands Antilles
United Arab Emirates
Argentina
Armenia
Australia
Austria
Azerbaijan
Burundi
Belgium
Benin
Burkina Faso
Bangladesh
Bulgaria
Bahrain
Bahamas, The
Bosnia and Herzegovina
Belize
Bolivia
Brazil
Barbados
Bhutan
Botswana
Central African Republic
Canada
Chile
China
Cote d'Ivoire
Cameroon
Congo, Rep.
Colombia
Cape Verde
Costa Rica
Cuba
Cyprus
Czech Republic
Germany
Denmark
Dominican Republic
Algeria
Ecuador
Egypt, Arab Rep.
Eritrea
Spain
Ethiopia
Finland
Fiji
France
Gabon
United Kingdom
Georgia
Ghana
Guinea
Gambia, The
Guinea-Bissau
Equatorial Guinea
Greece
Guatemala
Hong Kong, China
Honduras
Croatia
Haiti
Hungary
Indonesia
India
Ireland
Iran, Islamic Rep.
Iraq
Iceland
Israel
Italy
Jamaica
Jordan
Japan
Kenya
Kyrgyz Republic
St. Kitts and Nevis
Korea, Rep.
Kuwait
Liberia
Libya
Sri Lanka
Lesotho
Lithuania
Luxembourg
Latvia
Macao, China
Morocco
Moldova
Madagascar
Mexico
Marshall Islands
Macedonia, FYR
Malta
Myanmar
Mongolia
Northern Mariana Islands
Mozambique
Mauritania
Mauritius
Malawi
Malaysia
Namibia
Nigeria
Nicaragua
Netherlands
Norway
Nepal
New Zealand
Oman
Pakistan
Panama
Peru
Philippines
Papua New Guinea
Poland
Puerto Rico
Korea, Dem. Rep.
Portugal
Paraguay
French Polynesia
Qatar
Romania
Russian Federation
Rwanda
Saudi Arabia
Sudan
Senegal
Singapore
Solomon Islands
El Salvador
Somalia
Sao Tome and Principe
Suriname
Slovak Republic
Slovenia
Sweden
Swaziland
Seychelles
Syrian Arab Republic
Togo
Thailand
Tonga
Trinidad and Tobago
Tunisia
Turkey
Tanzania
Uganda
Ukraine
Uruguay
United States
St. Vincent and the Grenadines
Venezuela, RB
West Bank and Gaza
Samoa
Yemen, Rep.
Yugoslavia, Fed. Rep.
South Africa
Congo, Dem. Rep.
Zambia
Zimbabwe

Country List for Weighted Average of total Import Charges, 1985(Totimpov85) (Available for Developing Countries Only)

Angola
Argentina
Antigua and Barbuda
Burundi
Benin
Burkina Faso
Bangladesh
Bahrain
Bahamas, The
Belize
Bolivia
Brazil
Barbados
Central African Republic
Chile
China
Cote d'Ivoire
Cameroon
Congo, Rep.
Colombia
Costa Rica
Cuba
Cayman Islands
Algeria
Ecuador
Egypt, Arab Rep.
Ghana
Guinea
Grenada
Guatemala
Guyana
Hong Kong, China
Haiti
Indonesia
India
Iran, Islamic Rep.
Jamaica
Jordan
Kenya
Korea, Rep.
Kuwait
Sri Lanka
Morocco
Madagascar
Mexico
Malawi
Malaysia
Nigeria
Nicaragua
Nepal
Oman
Pakistan
Peru
Philippines
Papua New Guinea
Paraguay
Qatar
Sudan
Senegal
Singapore
Sierra Leone
El Salvador
Syrian Arab Republic
Thailand
Trinidad and Tobago
Tunisia
Turkey
Tanzania
Uganda
Uruguay
St. Vincent and the Grenadines
Venezuela, RB
Yemen, Rep.
Congo, Dem. Rep.
Zambia
Zimbabwe

Country List for Non Tariff Barrier Coverage, 1987 (Nontarr87)
(Available for Developing Countries Only)

Angola
Argentina
Antigua and Barbuda
Burundi
Benin
Burkina Faso
Bangladesh
Bahrain
Bahamas, The
Belize
Bolivia
Brazil
Barbados
Central African Republic
Chile
China
Cote d'Ivoire
Cameroon
Congo, Rep.
Colombia
Costa Rica
Cuba
Cayman Islands
Algeria
Ecuador
Egypt, Arab Rep.
Ghana
Guinea
Grenada
Guatemala
Guyana
Hong Kong, China
Haiti
Indonesia
India
Iran, Islamic Rep.
Jamaica
Jordan
Kenya
Korea, Rep.
Kuwait
Sri Lanka
Morocco
Madagascar
Mexico
Malawi
Malaysia
Nigeria
Nicaragua
Nepal
Oman
Pakistan
Peru
Philippines
Papua New Guinea
Paraguay
Qatar
Sudan
Senegal
Singapore
Sierra Leone
El Salvador
Syrian Arab Republic
Thailand
Trinidad and Tobago
Tunisia
Turkey
Tanzania
Uganda
Uruguay
St. Vincent and the Grenadines
Venezuela, RB
Yemen, Rep.
Congo, Dem. Rep.
Zambia
Zimbabwe