INTERNATIONAL TRADE AND EDUCATION

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ABSTRACT

The purpose of this study is to examine the effect of international trade on education in developed and developing countries. This study determines whether the improvement in international trade has a good or bad effect on education. A systematic empirical study based on the Generalized Method of Moments (GMM) has been undertaken by this study. This study concentrates on the time frame from year 1980 to 2007 with 90 countries; 32 and 58 countries from developed and developing countries, respectively. The empirical results evidently indicate that the total trade does not influence education. However, the improvement in education is due to the roles of real GDP per capita in developed countries.

Keywords: *International trade, education, generalized method of moments, panel data*

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1. Introduction

International trade has played an increasing role in the world economy over the past decades as proven by the fact that the growth of real trade has exceeded the world output. World exports of goods and services nearly tripled in the year between 1990 and 2007, which is a 7.0 per cent annual average growth rate. Additionally, foreign direct

investment (FDI) increased 9 folds between 1990 and 2008.[1] More people are moving abroad,[2] more investors are buying foreign stocks, and more companies are expanding to overseas markets. However, the volume of world merchandise trade grew 5.0 per cent in 2011, accompanied by global output growth of 2.4 per cent. This marks a significant slowdown growth rate from 2010, when trade advanced 13.8 per cent and output expanded by 3.8 per cent.[3] In fact, a slower growth in both trade and output was expected in year 2011, and multiple economic shocks held back their economic activity and trade during that year.[4]

The linkages between international trade and education have drawn attention nowadays. International trade is likely to advance standards of education through providing individuals with better encouragements to develop their expertise. One of the obvious direct effects of trade on education can be observe in better specialty. Such as, a potential increase in the demand for outsourcing personnel in India and in most developing countries has led the information technology (IT) training institutions to grow rapidly. At the same time, other groups have better admittance to education; this can indirectly get better health and life expectancy. It is not simply due to better knowledge of hygiene but due to better life achievement and empowerment resulting from being capable to connect individual abilities. Our hypothesis is that openness to trade will help raise the levels of education and the index of education rate of adult literacy as well as gross enrolment ratio. This is because education facilitates individual to achieve employments and better living. It will also contribute to the whole development and achieve a higher income per capita.

Human Development and Education in Developed and Developing Countries

Human development is a development of expanding individual's options. It puts the importance on the three essentials for individual; to lead a lengthy and well life, to obtain knowledge, as well as to have rights to use resources required for a respectable living standard. Once these important options are not offered, a lot of other chances stay unreachable. The Human Development Index (HDI) has become a standard for measuring human development. Its element indices assess life expectancy, literacy and education, as well as GDP per capita. The HDI is a statistical tool used to measure a country's overall achievement in its social and economic dimensions. The social and economic dimensions of a country are based on the health of people, their level of education obtained and their standard of living.

What has influence the fast growth in trade on human development, both in developed and developing countries? It is difficult to evaluate such an enormous area, which reports for almost 60 per cent of the population in the world. This is also very various as there are differences in wealth as seen in the per-capita income in the

[1] World Bank, 2010.
[2] They are moving temporarily or permanently.
[3] UNCTAD, 2011 and WTO, 2012.
[4] The nuclear incident, tsunami, and earthquake that beat Japan in March 2011 suddenly lower the country's exports in the second quarter, whereas flooding in Thailand decrease the supply of key parts and components in the fourth quarter as well as further distort networks of global production. Turmoil in North African countries takes a toll on the region's exports, particularly in Libya, where oil production and exports plunge. Lastly, negative gross domestic product (GDP) growth in the European Union diminish demand for imported goods in the fourth quarter as the euro sovereign debt crisis came to a head (WTO, 2012).

wealthiest nation is above 30 times more than in the poorest. Among the nations as well, there are remarkable differences among the wealthiest and the poorest, together in wages and the quality of life.

Table 1. Education Index in Developed and Developing Countries (1980 – 2011)

HDI Rank	Developed Countries; High HD	Education Index				
		1980	1990	2000	2010	2011
1	Iceland	0.644	0.727	0.839	0.912	0.912
2	Norway	0.725	0.820	0.946	0.985	0.985
3	Canada	0.811	0.927	0.883	0.927	0.927
12	Finland	0.699	0.877	0.803	0.877	0.877
13	Denmark	0.732	0.924	0.872	0.924	0.924
14	Austria	0.640	0.858	0.785	0.858	0.858
15	United States	0.868	0.939	0.937	0.939	0.939
21	United Kingdom	0.656	0.815	0.778	0.815	0.815
23	Germany	0.608	0.928	0.86	0.928	0.928
33	Portugal	0.472	0.739	0.691	0.739	0.739
	Developing Countries; High HD					
46	Argentina	0.583	0.806	0.751	0.806	0.806
47	Uruguay	0.581	0.763	0.707	0.763	0.763
51	Mexico	0.429	0.726	0.631	0.726	0.726
63	Malaysia	0.423	0.730	0.654	0.73	0.730
70	Brazil	0.402	0.663	0.599	0.663	0.663
	Developing Countries; Medium HD					
76	Turkey	0.298	0.583	0.503	0.583	0.583
81	Thailand	0.361	0.597	0.516	0.597	0.597
84	Iran	0.279	0.640	0.528	0.64	0.640
102	Philippines	0.525	0.684	0.636	0.684	0.684
109	Indonesia	0.346	0.584	0.484	0.584	0.584

Notes: The indices values in this table were calculated using a consistent methodology and data series. They are not strictly comparable with those in earlier Human Development Reports.
(Source: UNDP, International Human Development Indicators, 2011).
Download the data: http://hdrstats.undp.org/en/indicators/default.html

Economic growth links trade to human development in which it could directly benefit human development through economic growth. All at once, trade could broaden individual's options through enlarging markets for goods and services and through offering steady income for families. Likewise, trade is able to enhance individual's economic participation in presenting employment, access to credit and markets for goods. Such developments allow individuals to be able to promote contribution in political. Additionally, higher employment directs to better earnings that, if use on health and education will enlarge individual's competencies. Moreover, governments

are able to exploit trade's economic benefits to enhance equity[5] within dissimilar groups of people or nations.

For instance, the countries displayed here are selected from developed and developing countries showed the pattern of the education index. The distributions of those countries from 1980 to 2011 are revealed in Table 1. The initial column reveals the HDI rank for that particular country. For developed countries, the dataset selects from 32 countries. All these countries are high in human development. During that period, the indices are increasing for each country. Meanwhile, for developing countries, the dataset is selected from 58 countries, which consists of high and medium human development countries. Obviously, the indices showed an increasing pattern throughout that period. In a comparative sense, the education index in developed countries are relatively higher than developing countries. The other nations are not included in the calculations because their data were missing for a year and some more than few years of the indices.

The objective of this study is twofold. First, it examine the link between international trade and education in developed and developing countries. Second, to determine the effect of international trade on education in developed and developing economies. The organisation of this paper is as follows: section 2 discusses an overview of related empirical evidence on international trade and education. An explanation of the empirical model and econometric methodology is given in section 3. Section 4 describes the data employed in the analysis, while the discussion of the estimation results is reported in section 5 and finally section 6 summarises and concludes.

2. Literature Review

Studies by Noorbakhsh (1996) was the starting point of criticism on the use of the GDP per capita for measuring the level of development in different countries can possibly be traced back to the initiating United Nations Reports in which definite suggestions were made against the exploit of this indicator as a measure of the level of living. Accordingly, the academic world, particularly from the 1970s onwards, started to look for different kind of indicators to explain economic development. In 1980, the World Development Report begun to incorporate the measurement of poverty with indicators for instance nutrition, life expectancy, infant mortality, and the schooling rate.

Detail examination by Davies and Quinlivan (2006) made effort to deal with counterargument that "there is more to life than income" by investigating the impact of trade on countries' social developments as considered by a composite measure of education, literacy, also income published in the UNDP. By operating a generalized method of moments (GMM) procedure in a framework of panel data, they found that a significantly positive connection between enhancements in social welfare and augmented trade. They also concluded that enlarge in per-capita trade is linked with a following cycle of raises in the growth of the HDI. The cycle raised in the growth of the HDI arise such that past around five years, one-half of the full adjust in HDI has been comprehended.

The study of the impact of trade on social development then carried out by Gunduz et al. (2009). They found identical findings in terms of the positive relationship

[5] If earliest situations of earnings, assets, and work allocation, also access to credit, trainings/education and health care services are unbalanced, a transform in trade policy could not offer improved effects to the disadvantages groups.

between trade and social development for different sample classifications of selected 106 countries over the period 1975 through 2005. That study exposed that the impact of logarithmic difference of per capita trade on the adjustments in HDI is positive and significant for the four categories; high income OECD, high income non-OECD, upper middle income as well as lower middle income. Nevertheless, this significant effect vanishes for the low income category. It indicated that even though middle or high-income countries are able to gain from trade, it does not improve the human development in low-income countries. When the only education and life expectancy components take into consideration, the trade variable becomes significant just in the high income as well as higher middle income countries. This variable is not significant for the lower middle and low income countries.

In another study, Hamid and Amin (2011) investigated the impact of trade on the Organization of Islamic Conference (OIC) countries' social developments as computed by the HDI utilizing the GMM procedure in a panel data distributed lag model between 1980 and 2005, with a five-year increment with annual data between 2000 and 2009. They made comparisons across OIC countries rooted in three classifications by income; high income, middle income, as well as low income countries. They found that trade have a significant positive impact on HDI for the entire income categories, but insignificant impact on non-income HDI. Their finding specifies that trade influences human development only through income channels, and it does not affect other components, for instance longevity, literacy level also educational attainment.

Study by Sarker et al. (2006) argued that HDI have to incorporate income equality measures (EQ) as well in calculation to the three measures of life expectancy (LE), education (ED) and per capita GDP at the purchasing power parity (CPI), conventionally incorporated into it. They employed data on life expectancy, educational index also per capita income based on the HDR of UNDP for the year 2004. Based on the information on Gini coefficients of income distribution existing in the HDR for a mixture of years they as well created an index to assess equality in distribution of per capita income. Their study utilized the data of Gini coefficients of 13 years from 1990 to 2002. Due to the limitations of available data on income distribution, they select 125 countries for construction of distribution-augmented HDI. The indices were focused to the principal component analysis (PCA) and two composite indices of Human Development; namely per capita income composite index (PCHDI) exclusive of equality index and per capita income distribution-adjusted composite index (DAPCHDI) with its inclusion were obtained. They computed the human development DAPCHDI and demonstrated that the level of countries on the basis of this type of HDI varied considerably from the level considered in the HDR of UNDP. As a result, this study suggested that within-country income distribution have to be given its due significance in global comparison of countries.

Furthermore, a comparative study by Mishra (2007) attempted to re-calculate the DAPCHDI through the data given by Sarker et al. (2006) as to compare the composite index. The HDR-2005 or the HDR-2006 inserts little to the HDR-2004 database. He also calculates DAPCHDI with a new method, which dissimilar to the PCA that intends at utilizing the sum of squared coefficients of correlation between the composite index and the constituent variables.

The HDRs have been inclined to concentrate on various central functioning. While the exposure is essentially limited by data limitations, the crucial object is to incorporate all the crucial functioning that are central for quality of life, changeable from such elementary ones as avoidable morbidity and preventable mortality to being

educated, having happy lives, achieving self-respect and respect from others, being socially incorporated, and the rest. In sequence with the significance of freedom in judging the advantages enjoyed by adult individual, it is essential, to respect individual's actual functioning, and also their ability to reach the functioning they have reason to choose (Sen, 1980 and 1987; Nussbaum and Sen, 1993).

3. Empirical Model and the Econometric Methodology

In order to determine the effect of international trade on education, model is estimated based on equation:

$$ln\ EDI_{it} = \alpha + \emptyset ln\ EDI_{i,t-1} + \beta_1 ln\ T_{it} + \beta_2 ln\ RGDPC_{it} + \beta_3 ln\ L_{it} + \beta_4 ln\ INS_{it} + \varepsilon_{it},$$

where *EDI* indicates education index, *T* indicates total trade, *RGDPC* indicates the real GDP per capita, *L* indicates employment, *INS* indicates institutions, ε_{it} denotes the error term, *i* and *t* denote countries and years, respectively. The lagged dependent variable is incorporated to allow for the partial modification of EDI to its long run equilibrium value. Consequently, the entire coefficients of beta correspond to effect in short-run where, effect in long-run can be derived by dividing every the betas with $1 - \emptyset$. All the variables are used in logarithms. All models include the lagged dependent variable to eliminate serial correlation. All models are estimated by the generalized method of moments (GMM) techniques.

GMM estimator has more advantages compared to cross-section technique. In particular, this estimator controls for endogeneity of all explanatory variables, accounts for unobserved country-specific effects and allows the inclusion of lagged dependent variables as regressors. Baltagi (2005) argued that lots of economic connections are dynamic in nature. One of the benefits of panel data is that they let researchers to recognize the dynamics of modification. Consequently, a large number of researches have arranged with dynamic effects.

Baltagi (2005) argued that the IV method may give consistent results, but not necessarily efficient because the method neglects the difference structure of the error term, Δu_{it}, and does not include all available moment conditions. As a conclusion, in order to get consistent and efficient results, more powerful methods should be employed. Therefore, Arellano and Bond (1991) proposed GMM. This method does not only take into account the orthogonality condition between $y_{i,t-2}$ and Δu_{it} but also the difference structure of Δu_{it} itself. The method has benefits, it estimates the panel data, as shown by previous literatures, to deal with unobserved individual effect, the endogeneity of explanatory variables as well as the use of lagged dependent variables by applying a full set of moment conditions without ignoring the difference structure on the residual disturbances, Δu_{it} (Baltagi, 2005).

The GMM estimators consist of both first-difference, GMM (DIF-GMM) and system GMM (SYS-GMM) and are progressively more popular in assessing dynamic panel data sets. DIF-GMM was created by Arellano and Bond (1991), whereas SYS-GMM created by Blundell and Bond (1998). However, as revealed by Blundell and Bond (1998) and Bond et al. (2001), the DIF-GMM estimator has been found to have poor finite sample properties, in terms of bias and imprecision, while lagged levels of the series are only weakly correlated with subsequent first-differences. They as well

confirm that DIF-GMM may be dependent on a large downward finite-sample bias, mostly when the number of time periods available is small.

Recent findings show that the estimates produced by the DIF-GMM estimator are likely to suffer from biasness and imprecision. This problem can be traced in the use of weak instruments of lagged levels for the first difference model. This is because the correlation between the series of instruments and $\Delta y_{i,t-1}$ is weak due to the model in levels approaches a pure random walk or the ratio of variance of country-specific time-invariant effects to variance of disturbance term is large (Bond, 2002). As a result, the SYS-GMM estimator is more proper than the DIF-GMM for this study, and will be used as the core method in discussing our results.

Arellano and Bond (1991) proposed two specification tests to deal with the GMM estimator's consistency; that is, a second-order serial correlation test for the first-differenced residual *m*2 statistics and a Sargan/Hansen test for the over identifying restrictions' validity. Firstly, an Arellano–Bond test for autocorrelation has to be used to verify that the assessed results will not have autocorrelation. This is because Δv_{it} is mathematically connected to $\Delta v_{i,t-1}$ through the share of $v_{i,t-1}$ in Δv_{it}, negative first-order serial correlation is likely in differences, so confirmation of it is uninformative. For that reason, to make sure that the first-order serial correlation in levels, we seem for second-order correlation (AR(2)) in differences, with the idea that this will identify correlation between the $v_{i,t-1}$ in Δv_{it} and the $v_{i,t-2}$ in $\Delta v_{i,t-2}$ (Roodman, 2009). If the value of Arellano–Bond statistic is in excess of the critical level of 0.1, afterwards we can conclude that our model has no autocorrelation.

This serial correlation test tests the hypothesis that there is no serial correlation among error terms in the first-difference equation. Normally, the first-difference errors are auto-correlated. Therefore, rejecting the first-order null hypothesis does not indicate that the GMM models are misspecified. The models are only misspecified when the null is rejected at higher orders, specifically the second-order null. Baltagi (2005) disputes that this test is important since it recognizes the consistency of the GMM estimators such that, $E(\Delta\varepsilon_{it}\Delta\varepsilon_{i,t-2}) = 0$. The insertion of the time dummies raises the number of instruments variables to be added into the matrix. All estimations will be employed using one-step and two-step estimation. For the two-step GMM, Windmeijer's (2000; 2005) correction was used.

Second, the Sargan tested for validity of the instruments has to be reported. The use of this test is to make sure that the instruments are exogenous. The null hypothesis is that IV is not correlated with the residuals. If the Sargan statistic goes above the χ^2 critical value, the model can be rejected (Hansen, 2005). The Sargan tested of over-identifying restrictions tests the validity the moment conditions required in the GMMs (Blundell et al., 2000). Indeed, it is a double-edge sword to test for the model specification and orthogonality conditions (Baum et al., 2002). Once the moment conditions (orthogonality conditions) hold, the instruments are valid yet suitable and the model is correctly specified.

4. Data and Sources

To investigate the effects of international trade on education, we use the dataset consists of panel observations of 90 countries; 32 of developed and 58 of developing countries. Based on human development categorizations, all countries comprised in the HDI are categorized into one of three clusters of attainment in human development; high human

development (HDI of 0.800 or above), medium human development (HDI of 0.500–0.799) and low human development (HDI of less than 0.500).

For developed countries, all the 32 selected countries are in high human development. While, for developing countries, there are both in high and medium human development. Data on the education (*EDI*) are available in 5-year increments (with the exception of the most recent year) for the period 1980 through 2007. These data were taken from International Human Development Indicators (IHDI) and accessed from the IHDI dataset on http://hdr.undp.org. It is measured by the index number.

Table 2. Sources of Data

Variable	Source	Unit of Measurement
Education (*EDI*)	International Human Development Indicators	Index number
RGDPC (*RGDPC*)	World Development Indicators	PPP price
Total trade (*T*)	World Development Indicators	Per cent of GDP
Employment (*L*)	International Financial Statistics	Number of persons
Institutions (*INS*)	International Country Risk Guide	Index number

In this study, there are four independent variables of interest namely, real GDP per capita (*RGDPC*), total trade (*T*), employment (*L*), and institutions (*INS*). The real GDP per capita (*RGDPC*) is based on purchasing power parity, PPP-adjusted and taken from the World Bank's World Development Indicators (WDI) 2010 dataset. It is measured by the constant 2005 international dollars. GDP adjusted by PPP has the advantage of expressing income in comparable units in terms of living standards across countries. Total trade (*T*) data in per cent of GDP also have been obtained from the World Bank's World Development Indicators (WDI) 2010 dataset. Data on employment (*L*) were obtained from the International Monetary Fund (IMF), International Financial Statistics (IFS), 2008. It is also measured by the number of persons in thousands. And lastly, institutions (*INS*) dataset was collected by the Integrated Risk Information System (IRIS) Center from the International Country Risk Guide (ICRG). This study uses 5 political risk components to measure the overall institutional quality, namely; government stability, corruption, law and order, democratic accountability, and bureaucracy quality. Table 2 above provides the summary of data sources.

5. Estimation Results

Descriptive Statistics and Correlations

Table 3 reports the informative descriptive statistics on trade and education. Statistics are indicated for the developed and developing countries. There are five variables, including education, real GDP per capita, total trade, employment, and institutions. Four statistical items are examined, namely, mean, standard deviation, min, and max.

Three characteristics of the data are worth mentioning. First, there is considerable variation among the developed countries in the five variables; education ranges from 0.73 to 0.99, GDP per capita ranges from 6,841.39 to 48,169.51, total trade ranges from 17.53 to 172.16, employment ranges from 0.23 to 144,068.00, and institutions ranges from 6.47 to 49.17. Similar variation is also observed for the

developing countries. Second, the mean values for the two variables; education and GDP per capita are higher in developed countries than the developing countries. The mean values for total trade and employment are higher in developing countries compared to developed countries. The mean value for institutions is higher in developed countries than the developing countries.

Table 3. Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
A: Developed Countries (N = 32)					
Education	176	0.93	0.05	0.73	0.99
Real GDP per capita	184	21841.88	8802.96	6841.39	48169.51
Total trade	166	80.01	37.80	17.53	172.16
Employment	148	14602.52	26308.19	0.23	144068.00
Institutions	174	40.16	8.39	6.47	49.17
B: Developing Countries (N = 58)					
Education	316	0.72	0.16	0.24	0.96
Real GDP per capita	336	8218.98	11377.52	603.94	86654.53
Total trade	332	80.31	47.69	13.42	423.63
Employment	195	24215.82	94239.66	0.29	740409.50
Institutions	292	26.36	6.67	5.26	41.04

Third, the standard deviation for education are higher in developing countries compared to developed countries. The standard deviation for GDP per capita is higher in developing countries than from developed countries. Specifically, the standard deviation for total trade and employment are higher in developing countries compared to developed countries. However, the standard deviation for institutions is higher in developed countries than in developing countries. Table 4 presents the correlation analysis between trade and education for developed and developing countries.

Table 4. Correlations Matrix

Variable	Education	Real GDP per capita	Total trade	Employment	Institutions
A: Developed Countries (N = 32)					
Education	1				
Real GDP per capita	0.4640	1			
Total trade	0.0234	-0.2075	1		
Employment	0.2730	0.2900	-0.6930	1	
Institutions	0.2861	0.5091	-0.1833	0.1984	1
B: Developing Countries (N = 58)					
Education	1				
Real GDP per capita	0.4128	1			
Total trade	0.1885	0.2494	1		
Employment	-0.0243	-0.1847	-0.4533	1	
Institutions	0.1375	0.3546	0.1042	0.1377	1

Empirical Results and Discussion

Turning to the empirical results of trade and education as indicated in Table 5. The effect of total trade is positive and statistically insignificant in developed and developing countries. However, the value of coefficient is higher for developing countries than developed countries. The insignificant coefficient of total trade means that holding other variable constant, a raise in total trade does not manipulate the education. In spite of this, the total trade variable enters the regression equation with the expected sign as shown in developed and developing countries coefficient. This finding is consistent with Gunduz et al. (2009), where they found evidence that trade per capita is insignificant with positive coefficient for the lower middle as well as low-income countries. Hence, it implies that trade per capita does not improve the education in lower middle and low income countries.

The estimated coefficient of real GDP per capita is positive and statistically significant at the 5% level for developed countries. Likewise, this finding is consistent with Shoham et al. (2011), where they gathered evidence that a significant and positive connection was found between the GDPPC and literacy rate. In fact, wealthier countries, with a higher *per capita* product, tend towards a higher literacy rate. This can be explained by the fact that wealthy countries are able to channel more resources, both private and public, to education. Thus, this finding suggests that an improvement in real GDP per capita will advance the education in developed countries.

The institutions are statistically significant at the 10% level and negative coefficient in developed countries. This finding contradicts with Alonso and Garcimartín (2004), where they gathered evidence that the institutional quality was significant with positive sign. They decided to look into the determinants of institutional quality in view of education together as an endogenous as well as exogenous variable. This finding proposed that an improvement in institutions will decrease education in developed countries. To summarize, the improvement in education is due to the roles of real GDP per capita in developed countries.

Table 5. Result of Panel Estimation

	A: Developed Countries		**B: Developing Countries**	
	DIF-GMM	**SYS-GMM**	**DIF-GMM**	**SYS-GMM**
Constant		0.1198		0.0338
		(0.2246)		(0.2043)
ln $EDI_{i,\ t\text{-}1}$	0.6521***	0.6485***	0.7332***	0.9488***
	(0.2273)	(0.2088)	(0.1587)	(0.0784)
ln T_{it}	-0.1229	0.0025	0.0604*	0.0046
	(0.1242)	(0.0120)	(0.0347)	(0.0080)
ln $RGDPC_{it}$	-0.0242	0.0477**	0.0233	-0.0106
	(0.0545)	(0.0224)	(0.0295)	(0.0209)
ln L_{it}	-0.1341***	-0.0033	0.0086	0.0001
	(0.0537)	(0.0038)	(0.0094)	(0.0036)
ln INS_{it}	-0.0484	-0.1610*	-0.0008	0.0238
	(0.1964)	(0.0863)	(0.0132)	(0.0186)
Number of observations	76	104	115	156
Number of countries	27	28	38	39
Number of instruments	18	20	31	32
Arellano-Bond test for AR(1) (*p*-value)	0.298	0.221	0.019**	0.012***
Arellano-Bond test for AR(2) (*p*-value)	0.114	0.259	0.575	0.354
Hansen test	10.00	10.02	22.75	24.68
(*p*-value)	(0.350)	(0.439)	(0.416)	(0.313)

Notes: All models are estimated using the Arellano and Bond dynamic panel GMM estimations (Stata xtabond2 command). The variables are defined as follows: *EDI* = Education; *T* = Total trade; *RGDPC* = Real GDP per capita; *L* = Employment; *INS* = Institutions. ***, ** and * indicate 1%, 5% and 10% significance levels, respectively. Figures in the parentheses are standard error. All standard errors for both GMMs are robust. The dependent variable is education index, ln EDI_{it}. Time dummies are included in all models.

6. Conclusion

The key finding for the second issue highlights the role of employment channel in influencing the effect of trade on human development. Therefore, to sustain and improve the human development, a set of complementary policies that extends beyond the focus on trade and industrial policies must be put in place. Our results support these initiatives aiming at encouraging trade through a combination of policies predominantly through formal education and skill upgrading.

According to OECD (2005), given the rather unfavorable indicators of educational attainment would be the promotion of education in its common element, for instance, horizontally. This would involve acting on pre-secondary, secondary, as well as tertiary levels of education. It would also suggest that generalizing admission to education to population, offsetting failure from secondary school, as well as adapting courses and channeling them to regions that are purposely demanded by current and prospective employers. A measure that could be employed would be to adjust the supply of secondary, tertiary, also technical courses to the strategy explained.[6]

In doing so, government will appropriately channel larger funding on education and training. This would involve a selection of what should be publicly provided or more emphasized, and what could be offered in term of training and education by private stakeholders. Obviously, the function of the private sector in the practice is significantly essential. Private entities can act as an assortment of fronts, particularly in providing on-the-job and external training to their employees, preparing new workers to undertake new tasks, offering opportunities for continuous education, and even collaborating with the Government's initiatives. Public investments are kept in mind in cooperation national as well as international considerations. Normally an investment type will stay greatly identical; nevertheless, it may have to adjust to boost international competitiveness. Hence, when focusing on physical infrastructure, government should wisely certify that they are namely; telecommunications systems, ports, roads, and railways, are successfully parallel to both national needs as well as the necessity of getting goods and services rapidly and reasonably to global markets.

As revealed in the starting of this study, even though international trade and development can create high income as well as economic growth, its transformation into equivalent enhancements in human development is not automatic. It is based on the size to which the character of economic growth and pattern influence particular dimensions of human development. In addition, it is able to be significantly controlled by proper public policies that can be employed to make sure that trade benefits human development. Therefore, valuable and suitable public policies should be further prepared and practiced as to reach the inspired effects of multi-dimensional human development in the true sense of the word. Overall, their policy implications for these issues are interconnected. Nevertheless, there are no perfect solutions; however, there are opportunities to make a difference for the better.

[6] For instance, Ireland enlarged vividly the number of courses offered to engineers, mostly in electronics, in turn with its fine-tuned industrial objective; Costa Rica attracted Intel and starts a commitment to changing secondary education curriculum to stress on electronics and English; also other cases exist in countries such as Malaysia, Singapore and Thailand.

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Appendix

Table A. List of Countries

32 Developed Countries		58 Developing Countries	
Australia	Japan	Algeria	Kuwait
Austria	Latvia	Argentina	Malaysia
Belgium	Lithuania	Armenia	Mauritius
Canada	Malta	Bahrain	Mexico
Cyprus	Netherlands	Belarus	Moldova
Czech Republic	New Zealand	Belize	Morocco
Denmark	Norway	Bolivia	Namibia
Estonia	Poland	Botswana	Nicaragua
Finland	Portugal	Brazil	Nigeria
France	Romania	Brunei	Pakistan
Germany	Slovenia	Cameroon	Panama
Greece	Spain	Chile	Papua New Guinea
Hungary	Sweden	China	Paraguay
Iceland	Switzerland	Colombia	Peru
Ireland	United Kingdom	Congo	Philippines
Italy	United States	Costa Rica	Singapore
		Cote d'Ivoire	South Africa
		Croatia	Sri Lanka
		Dominican Republic	Swaziland
		Ecuador	Syrian Arab Republic
		Egypt	Tajikistan
		El Salvador	Thailand
		Guatemala	Trinidad and Tobago
		Honduras	Tunisia
		India	Turkey
		Indonesia	United Arab Emirates
		Iran	Uruguay
		Jordan	Venezuela
		Kazakhstan	Viet Nam

Note: The World Bank classification of developed and developing countries has been used based on July 2008 lists (http://web.worldbank.org/).