TRADING FOR SDGS: TRADE LIBERALIZATION AND HUMAN DEVELOPMENT IN THE EMERGING ECONOMIES

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ABSTRACT

This study examines the effect of trade liberalization on human development which is the core focus of sustainable development goals (SDGs). It uses trade openness as proxy to trade liberalization and human development index (HDI) as well as its three sub-indexes namely education, health, and income as indicators of human development. The study focuses on emerging economies as the research sample considering their significance in the world trade and deals with a panel data set of 43 emerging countries for the period of 1995-2014. Due to cross-sectional dependence in the data set Driscoll-Kraay estimator has been applied to the regression models. The effect of trade openness on HDI and its three sub-indexes is identified for all the emerging economies and their three subgroups such as EAGLE, NEST and other emerging countries separately for the robustness of the analysis. The results of the study suggest that higher trade openness significantly progresses human development status in the emerging economies in all aspects. Both human capital accumulation and per capita GDP have a positive impact on human development whereas the effect of GDP growth is negative. The religious and cultural factors show a mixed effect on human development in the emerging economies.

1. INTRODUCTION

Every end has a new beginning as the 2015 deadline of the millennium development goals (MDGs) which was operational from 2000 to 2015 has created the new journey of sustainable development goals (SDGs) as major components of 2030 Agenda adopted by UN member states on 25th September 2015 (UN, 2015). SDGs aim at "transforming the world" with the intention to eradicate the shortcomings of MDGs through implementing its 17 goals and 169 targets by 2030. The 2030 agenda integrates the economic, social and environmental dimensions of sustainable development which will be applied to all countries in the world. The agenda takes GDP growth as the fundamental tool for achieving sustainable development because GDP growth leads to economic growth with societal progress (Adams and Tobin, 2014). Economic growth is the first and foremost generator of domestic resources needed to achieve the SDGs, and in this case, international trade acts as a major player because international trade is considered as the engine of rapid economic growth for an economy.

Achieving sustainable development globally has been considered as a major concern of the international communities for several decades which results in the creation of SDGs. SDGs are much more potential and developed regarding their scope, aspirations, and the vision of development than MDGs (Esquivel and Sweetman, 2016). The core focus of Sustainable Development Goals is to ensure human progress through eradicating human disparities and deprivations. SDGs encompass five key areas critically significant for the humanity and the planet namely people, planet, peace, prosperity and partnership which would drastically transform human development status in the next decade and a half. Indeed, these goals stand for political intention for accelerating and sustaining human development as well as practical implementation of human development approach (UNDP, 2015).

The 2030 Agenda for SDGs acknowledges international trade as a central mechanism for achieving a number of the specific goals and targets of SDGs (Hoekman, 2016). The think-tank concerned with formulating and achieving SDGs targets to substantial increase in world trade consistent with SDGs and tries to integrate sustainable development into trade policy. As trade is highly related to each of the three dimensions of sustainable development goals it has to be a part of coherent policy framework of sustainable development (Tipping and Wolfe, 2015). Moreover, the outcome of 3rd international conference on financing for development titled Adis Ababa Action Agenda states the significance of trade in achieving SDGs in paragraph 66 as follows (UN, 2015) "With appropriate supporting policies, infrastructure, and an educated workforce, trade can also help to promote productive employment and decent work, women's empowerment, and food security, as well as a reduction in inequality, and contribute to achieving the sustainable development goals."

Realizing the human development aspects of sustainable development goals and significance of trade in achieving SDGs discussed so far this study will examine whether trade liberalization really has substantial positive impact on improving human development in emerging economies and thus help move towards the achievement of SDGs.

The objective of this study is to examine the effect of trade liberalization on various aspects of human development which consequently provides significant supports in achieving SDGs. For this purpose, the study uses trade openness (share of export and import to GDP) as a proxy to trade liberalization and human development index (HDI) developed by UNDP and its sub-indexes namely education; health and income as indicators of human development in different aspects. The study deals with a panel of 43 emerging countries and covers the period of 1995-2014 based on the availability of the data.[1] The panel countries are further sub divided into three groups namely EAGLE; NEST; and other emerging countries based on their economic characteristics (as given detail in Appendix 1) to reduce the problem of heterogeneity and have a robust result. Due to the presence of cross-sectional dependence in the panel data sets the study applies Driscol-Kraay estimator as it is robust to all forms of cross-sectional dependence and the standard error estimates of Driscol-Kraay estimation technique are robust to disturbances being heteroskedastic; autocorrelated and cross-sectionally dependent (Hoechle, 2007).

This study focuses on emerging economies due to their importance in the world economy and expanding role in the world trade. These economies are characterized by high economic growth, high level of economic openness and scale of economies and are in the transitional phase between developing and developed status. They comprise around 80% of world population and contribute more than 50% of global trading activities. So, emerging economies will be one of the best research focuses on examining the effect of trade liberalization on human development and will provide relevant policy suggestions in advancing human development status and achieving SDGs through trade.

The remainder of the study is designed as follows. Section 2 broadly reviews literature in the related field. Section 3 describes the sample, measures of trade liberalization and the gender gap. It also discusses the

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[1]The list of the countries as proposed by BBVA research is given in Appendix 1.

econometric methodology and estimation procedure used in the study. Section 4 reports the regression results and analysis. Finally, section 5 draws the concluding remarks and suggests policy implications.

2. REVIEW OF LITERATURE

Since the times of Adam Smith, David Ricardo and Miler central debate lies on the issue that whether free trade should be the policy objective of a country (Bhagwati, 1994). Despite long lasting controversies regarding the impact of trade on income, a number of the research findings show a positive link between free trade and income (Frankel and Romer, 1999; Irwin and Tervio, 2000; Dollar and Kraay, 2004).

Many theoretical and empirical studies provide evidence that free trade plays key role in ensuring a better life and offering substantial socio-economic opportunities for the people of both developed and developing countries (Chacholiades and Chacholiades, 1978; Krugman, 1993; Mcculloch, 1993; Mussa, 1993; Kenen, 2000; Coughlin, 2002; Griswold, 2003).

On the contrary, these studies were criticized saying that development should mean more than raising income (Bhagwati, 1993; Bhagwati and Daly, 1993; Bhagwati, 1994; Lash, 1997). According to their argument, trade is nothing but a zero-sum game where the rich get richer, and the poor become poorer. It is also argued that free trade negatively impacts indigenous culture as well as undermine national sovereignty (Lash, 1996; Panagariya and Bhagwati, 1996; Sweeney, 1998; Weidenbaum, 1999; Quinlivan, 2000).

An extensive study has been done to identify the impact of trade liberalization on different aspects of the economy. Most of the studies focused on identifying the impact of trade on economic growth, poverty, and inequality. A positive association between trade and economic growth has been identified by a number of empirical studies (Dollar, 1992; Berg and Schmidt, 1994; Sachs and Warner, 1995; Harrison, 1996; Edwards, 1997; Edwards, 1998; Haveman *et al.*, 2001; Sohn and Lee, 2010; Sun and Heshmati, 2010; Nannicini and Billmeier, 2011; Chilosi and Federico, 2013; Zeren and Ari, 2013; Jouini, 2014; Kuo *et al.*, 2014; Sungming, 2014; Hystad and Jensen, 2015; Prabhakar *et al.*, 2015; Were, 2015; Greaney and Karacaovali, 2016; Manwaa and Wijeweerab, 2016; Silberberger and Koniger, 2016; Sokolovmladenovic *et al.*, 2017; Zahonogo, 2017).

In the field of trade liberalization and poverty nexus, most of the studies found positive impact of trade on poverty reduction, for example, (Dollar, 1992; Sachs and Warner, 1995; Edwards, 1998; Bannister and Thugge, 2001; Goldberg and Pavcnik, 2004; Hertel and Reimer, 2005; Bussolo and Round, 2006; Harrison, 2006; Hertel and Winters, 2006; Nissanke and Thorbecke, 2006; Goldberg and Pavcnik, 2007; Bergh and Nilsson, 2014; Kelbore, 2015; Kiskatos and Sparrow, 2015). On the contrary, some studies identified that trade increases poverty (Huang and Singh, 2011; Jeanneney and Kpodar, 2011) whereas several studies found little or no impact on trade in reducing poverty (Dollar and Kraay, 2001; Dollar and Kraay, 2002; Dollar and Kraay, 2004; Wade, 2004; Jensen and Tarp, 2005; Bardhan, 2006; Beck *et al.*, 2007; Kpodar and Singh, 2011; Ocran and Adjasi, 2013).

In identifying the impact of trade on income inequality, several studies have been performed, and the findings are mixed. Major portion of the literature identified that higher trade openness increases inequality in the country for example but not limited to (Revenga, 1997; Milner and Wright, 1998; Levinsohn, 1999; Ravallion, 2001; Epifani, 2003; Lundberg and Squire, 2003; Melitz, 2003; Xu, 2003; Khondker and Raihan, 2004; Annabi *et al.*, 2005; Milanovic, 2005; Yeaple, 2005; Bustos, 2007; Conte and Vivarelli, 2007; Meschi and Vivarelli, 2009; Barua and Chakraborty, 2010; Bergh and Nilsson, 2010; Li and Coxhead, 2011; Ezcurra and Rodriguezpose, 2013; Furusawa and Konishi, 2013; Grossman and Helpman, 2014).On the other hand, some studies concluded that trade reduces income inequality (Bourguignon and Morrisson, 1990; Wood, 1995; Calderón and Chong, 2001; Cornia and Kiiski, 2001; Ravallion, 2001; Lundberg and Squire, 2003; Wade, 2004; Milanovic and Squire, 2005; Easterly, 2006; Demir *et al.*, 2012) and some studies found mixed results (Meschi and Vivarelli, 2009; Nissanke and Thorbecke, 2010; Castilho *et al.*, 2012; Perera *et al.*, 2014; Hepenstrick and Tarasov, 2015).

Despite a large number of studies focusing the impact of trade on economic growth, poverty alleviation, and income inequality very few studies have been made to identify the association between trade and human development. Arimah (2002) in his study related the level of human development with the country's macroeconomic factors and identified that these factors are the key determinants of the level of human development of an economy, and economic growth is positively linked with human development.

To identify the linkage between trade and human development an in-depth study was made by Davies and Quinlivan (2006) using GMM procedure on a panel of 154 countries over the period of 1972-2002 and taking HDI as a measure of human development. They found a high positive association between trade and human development. However, the study did not address some important issues. Firstly, the sample of the study consists of 154 countries including the developed, developing as well as least developed countries. The study identified the impact of trade on human development on the countries as a whole without classifying them according to their level of economic development. Later, the study made by Gunduz et al. (2009) proved that the impact of trade varies according to the country's level of development. The second important issue is that HDI is the geometric average of three indices namely education; health and income but the study only examined the impact of trade on composite HDI. Thirdly, the study took only trade and its lag as explanatory variables and overlooked other control variables that can affect HDI and its sub-indexes.

Gunduz et al. (2009) performed further extensive research to identify the linkage between trade and social development classifying all the countries into four groups i.e., high, upper middle, lower middle, and low income group and the study concluded that positive relationship between trade and human development holds valid only for high and middle-income groups but diminished in lower middle-income groups when non-income HDI is taken into consideration. Another study was done by Hamid and Mohd (2013) for the same purpose in OIC countries and concluded that trade positively affects the high-income countries, not the low-income countries. Although these studies grouped the countries in different income levels the other issues discussed above are still overlooked.

Compared to previous studies, this study is unique and robust because it fulfills the gap in examining the linkage between trade and human development and addresses a number of vital issues at a time. Firstly, the study focuses on the emerging economies which share similar characteristics in economic growth, economic openness, and scale of economies. These countries hold high significance in the world economy, and they do more than 50% world trading activities. They are further divided into three groups i.e. EAGLE, NEST and other emerging countries based on their economic growth and other economic characteristics. The linkage between trade and human development has been identified for the emerging economies as well as for all of its subgroups. Secondly, this study examines the effect of trade on human development for the composite HDI along with all of its three sub-indexes namely education; health; and income. The study uses different control variables that affect HDI and its indicators. Moreover, two dummy variables i.e. religion and culture are also included in the regression models to identify the effect of religious and cultural factors on human development.

3. DATA DESCRIPTION AND METHODOLOGY

The panel data set of the sample of this study consists of 45 emerging economies for the period of 1995-2014. However, because of the unavailability of human development index data, the study deals with 43 countries out of 45 emerging economies. All the countries listed in the emerging economies group were further subdivided into three groups such as EAGLE; NEST; and other emerging economies based on their economic growth and prospects (as given detail in Appendix 1) to have robust result and in-depth analysis. Thus, the study will provide crucial policy analysis and suggestions regarding the trade's effect on the human development of the trading partners which in turn helps in determining the significance of trade in achieving SDGs.

3.1. Measures of Trade Liberalization and Human Development

This study uses trade openness (trade to GDP ratio) as an indicator of trade liberalization to examine its effect on human development. Measuring the level of human development in an economy is a long debated economic issue as human development covers several economic factors and has several dimensions. This study utilizes the Human Development Index (HDI) value reported by UNDP as a measure of social or human development, and it is claimed as the perfect indicator of social well-being because HDI not only considers income as a proxy to development but also assigns equal weight to life expectancy and education as a measure of human development.

Although different assumptions underlying HDI and procedure of its calculation have been challenged in several literatures of development economic (Panigrahi and Sivramkrishna, 2002; Chakravarty, 2003; Chowdhury and Squire, 2006; Rahman, 2007) HDI is still considered as a widely accepted index for measuring social welfare.

To identify the impact of trade liberalization on all aspects of human development, this study uses all the sub-indexes of HDI as well as composite HDI to have a robust result. The HDI and all of its sub-indexes have a value between 1 and 0 where 1 indicates the highest level of human development and higher value is expected.[2]

3.2. Econometric Methodology and Estimation Procedure

To identify the effect of trade openness on different aspects of human development the study uses the following basic regression equation:

$$y_{it} = \beta_0 + \beta_1 TO_{it} + \gamma X_{it} + \varepsilon_{it} \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots.(1)$$

Where, y represents human development index (HDI)/ income index/ education index/health index, $TO_{i,t}$ stands for the trade openness as measured by trade to GDP ratio of country i at period t , $X_{i,t}$ represents the set of control variables affecting human development indexes, $\varepsilon_{i,t}$ denotes the error term.

The study uses various control variables to strengthen the linkage between trade liberalization and human development. These variables also act as potential determinants of social welfare of an economy. The study controls GDP growth to test economic growth's impact on human development, per capita GDP to measure impact of average income on human development, secondary school enrollment rate to control for human capital accumulation, labor force participation rate to identify its impact on the social well-being, CO_2 emissions and average health expenditure to identify the impact of environmental degradation and health expenses respectively on human development. The two dummy variables namely religion and culture examine that whether human development varies significantly across religion and culture.[3]

The control variables used for all dependent variables are not same except a few because the composite HDI and its sub-indexes cover diversified and different issues of human development i.e. education, health and income. So, the regression equations for 4 dependent variables will be as follows:

$$y(HDI)_{it} = \beta_0 + \beta_1 TO_{it} + \beta_2 Growth_{it} + \beta_3 GDPpc_{it} + \beta_4 Healthexp_{it} + \beta_5 CO_{2it} + \beta_6 Secenrl_{it} + \beta_7 LFPR_{it} + \beta_8 Reldum + \beta_9 Culdum + \varepsilon_{it} \qquad \ldots\ldots\ldots.(2)$$

$$y(Edu)_{it} = \beta_0 + \beta_1 TO_{it} + \beta_2 Growth_{it} + \beta_3 GDPpc_{it} + \beta_4 LFPR_{it} + \beta_5 Secenrl_{it} + \beta_6 Reldum + \beta_7 Culdum + \varepsilon_{it} \qquad \ldots\ldots\ldots.(3)$$

$$y(Inc)_{it} = \beta_0 + \beta_1 TO_{it} + \beta_2 Growth_{it} + \beta_3 GDPpc_{it} + \beta_4 LFPR_{it} + \beta_5 Secenrl_{it} + \beta_6 Reldum + \beta_7 Culdum + \varepsilon_{it} \qquad \ldots\ldots\ldots.(4)$$

$$y(Health)_{it} = \beta_0 + \beta_1 TO_{it} + \beta_2 Growth_{it} + \beta_3 GDPpc_{it} + \beta_4 Healthexp_{it} + \beta_5 CO_{2it} + \beta_6 Secenrl_{it} + \beta_7 LFPR_{it} + \beta_8 Reldum + \beta_9 Culdum + \varepsilon_{it} \qquad \ldots\ldots\ldots.(5)$$

Where, y(HDI), y(Edu), y(Inc) and y(Health) represent the value of human development index/education index/ income index/ health index respectively , i and t indicate country and time period respectively.

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[2] The method of HDI calculation is summarized in Appendix 2.

[3] The detail description of the variables is provided in the appendix 3 with their sources.

Growth= GDP growth of the country which represents Economic growth; GDPpc = GDP per capita; LFPR= labor force participation rate; Healthexp =Health expenditure per capita, Co_2= quantity of CO_2 emissions; Secenrl= Secondary school enrollment rate; Reldum = dummy variable representing religion and it takes 1 for Muslim country otherwise 0, Culdum = dummy variable representing culture moreover, it takes 1 for Asian countries otherwise 0.

Cross-sectional dependence is a significant factor in panel data estimation, and it is a general issue for microeconomic panels especially in the case of datasets with long time periods (Baltagi, 2005). Hoechle (2007) states that panel data estimation models which overlook the cross-sectional dependence issue lead to severely biased and inconsistent results. According to Petersen (2007) a major portion of the papers published recently in the leading finance journals do not appropriately adjust the standard errors. While most studies provide heteroscedasticity and autocorrelation consistent standard errors cross-sectional or spatial dependence of the data sets is widely overlooked. So all the panel data sets must be checked for cross-sectional dependence for robust and consistent regression results.

This study applies Pesaran (2004) CD test to identify whether the residuals of the regression models are spatially independent and here the null hypothesis is that residuals are cross-sectionally uncorrelated. The test results conclude that residuals are highly cross-sectionally correlated in all the data sets of the regression equations used in this study.

When some assumptions of the regression models are violated robust standard errors are commonly applied to have valid statistical inference. The commonly used estimators are developed by Huber (1967); Eicker (1967) and White (1980) which are heteroscedasticity consistent and assume that residuals are independently distributed. Further, Arellano (1987); Froot (1989); Rogers (1993) and Newey and West (1986) developed estimators which relax the assumption of independently distributed residuals, but they produce consistent standard errors only when the residuals are correlated within the group. The GMM approach outlined by Arellano and Bover (1995) and further developed by Blundell and Bond (1998) are also popular estimators used widely. However, none of the above estimators consider cross sectional dependence.[4]

Driscoll and Kraay (1998) developed a nonparametric covariance matrix estimator which produces heteroscedasticity consistent standard errors that are robust to all forms of spatial and temporal dependence. Hoechle (2007) proved that Driscoll and Kraay standard errors produce significantly consistent results than those of other covariance matrix estimators in the presence cross-sectional dependence in panel data. Using alternative formulation of Hausman test and robust inference Hoechle (2007) showed that the Driscol-Kraay coefficient estimates from pooled OLS estimation give consistent and robust result. Considering the issues discussed above this study applies Driscol-Kraay estimator using pooled OLS regression.

4. REGRESSION REPORT AND ANALYSIS

Table 1 presents the outcome of the regression models on trade openness, as a proxy to trade liberalization and HDI as an indicator of human development. The table reports the results for all the emerging economies as a whole as well as for all the sub-groups of emerging economies namely EAGLE, NEST and other emerging countries.

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[4] A comparison of different estimation technique with their stata command is provided in Appendix 4.

Table-1. Trade Openness and Human Development Index (HDI) (regression results of equation 2)

Variables	All Emerging Economies	EAGLE	NEST	Other Emerging Countries
Constant	-.3994192 (.0324006)***	-.489653 (.0610822)***	-.0595071 (.1269223)	-.3148102 (.0340372)***
Trade Openness	.0724091 (.0033442)***	.1632817 (.0146114)***	.0645944 (.0093204)***	.0489262 (.013896)***
GDP Growth	-.0005322 (.0003118)	-.0005766 (.0003572)	-.0003388 (.000533)	-.0005245 (.0002157)**
GDP per capita	.10537 (.001847)***	-.0005365 (.0451446)	.0608586 (.0256818)**	.1022079 (.0031339)***
CO_2 Emission	.0020306 (.0018854)	-.0400022 (.0074603)***	-.0218516 (.0102320**	.0097865 (.0039685)**
Health Expenditure	-.0000774 (.0000314)**	.1141262 (.0419228)**	.063656 (.0223551)***	-.0000627 (.0000311)*
Labor Force Participation Rate	-.0284487 (.0115524)**	.2343238 (.028497)***	-.0455985 (.0336651)	-.1164598 (.0147181)***
Secondary School Enrollment Rate	.3357338 (.0117515)***	.2333622 (.0332306)***	.247011 (.0163636)***	.3873841 (.0104874)***
Religion Dummy	-.0156863 (.0018724)***	-.0073463 (.0118598)	.0120144 (.0061291)*	-.0481903 (.0031786)***
Culture Dummy	.0032166 (.0028829)	.0419796 (.0072227)***	-.0012533 (.0039481)	.0209453 (.0028514)***
Pesaran CD Test p-value	0.0000	0.0000	0.0000	0.0000
Number of Observations	675	126	267	282
Number of Groups	42	7	18	17
R^2	0.9065	0.9748	0.8729	0.9521

Note: The table presents the results for the estimated coefficients and their Driscol-Kraay standard errors in parenthesis. The p-value of Pesaran CD test, Number of observation, Number of Groups and R^2 value are also reported. *, **, and *** denote statistically significant coefficient at the 1%, 5%, and 10% levels, respectively. Because of cross-sectional dependence in the data sets Driscol-Kraay estimator has been applied and Driscol-Kraay standard errors are reported in the table.

The regression results show that trade has a statistically significant positive effect on HDI at 1% level. It indicates that higher trade openness significantly improves the human development of the emerging economies as well as of all of its subgroups. GDP growth has negative but significant impact on human development whereas per capita GDP is significantly positively related to human development except for the case of EAGLE countries. It infers that higher economic growth reduces human development level of emerging economies and all of its subgroups and per capita income increases human development level. The effect of CO_2 emission and health expenditure is opposite. The level of CO_2 emission is positively related to human development whereas health expenditure has negative linkage with human development of all emerging economies but for the three subgroups, they suggest mixed effect. It means that the impact of CO_2 emission and health expenditure varies across countries. Increasing participation in the labor force reduces HD status whereas higher human capital accumulation represented by secondary school enrollment rate improves HD of emerging economies and its subgroups significantly. The regression results also suggest that religion and culture have opposite effect on HDI. Religion negatively impacts HD which indicates that lower HD level is experienced in Muslim countries compared to non-Muslim countries while culture dummy is positively related to HD which infers that Asian-countries have higher HD value compared to non-Asian emerging economies.

The regression results of table 1 only report the impact of trade openness on composite HDI. However, the results of the regression models on trade openness and three sub-indexes of HDI namely education, health, and income index are summarized in the subsequent three tables respectively.

Table-2. Trade Openness and Education Index (regression results of equation 3)

Variables	All Emerging Economies	EAGLE	NEST	Other Emerging Countries
Constant	-.7451212 (.0778475)***	-1.138435 (.1400051)***	-.7878941 (.1528916)***	-.2756579 (.0861859)***
Trade Openness	.1227108 (.0149825)***	.0985363 (.0395125)**	.0824846 (.0155969)***	.0816124 (.0358402)**
GDP Growth	-.0007136 (.0008445)	-.0036042 (.0010345)***	-.0008553 (.000959)	-.0006216 (.0009712)
GDP per capita	(.0523906) .0093585***	(.1326733) .0260281***	(.0751683) .0133182***	(.067723) .0073109***
Labor Force Participation Rate	-.1767272 (.0267084)***	.0251303 (.0530078)	-.0729605 (.0492519)	-.4628749 (.0535553)***
Secondary School enrollment Rate	.6833459 (.0348159)***	.5348679 (.090802)***	.6009669 (.0372983)***	.7222744 (.0535442)***
Religion Dummy	-.0658616 (.0047341)***	-.0207926 (.0063999)***	-.0113804 (.0104608)	-.1320019 (.0074556)***
Culture Dummy	.0070251 (.0023657)***	.1061523 (.0153118)***	-.0240857 (.0114033)**	.0065054 (.0067509)
Pesaran CD Test p-value Number of Observations Number of Groups R²	0.0000 700 42 0.8234	0.0935 130 7 0.8679	0.0000 277 18 0.8200	0.0000 293 17 0.8808

Note: The table presents the results for the estimated coefficients and their Driscol-Kraay standard errors in parenthesis. The p-value of Pesaran CD test, Number of observation, Number of Groups and R² value are also reported. *, **, and *** denote statistically significant coefficient at the 1%, 5% and 10% levels, respectively. Because of cross-sectional dependence in the data sets Driscol-Kraay estimator has been applied and Driscol-Kraay standard errors are reported in the table.

The regression results reported in the following tables suggest that trade openness has significant positive linkage with all three sub-indexes of HDI which infers that higher trade openness results in higher educational attainment, better health as well as higher income in the emerging economies. The linkage of GDP growth and per capita GDP with three sub-indexes of HDI holds the same as the case of trade and composite HDI. That means GDP growth is negatively associated with three sub-indexes of HDI whereas per capita GDP has positive linkage with them for all emerging economies and its subgroups except very few cases. The effect of human capital accumulation as indicated by SSER on three sub-indexes of HDI is highly positive except a few cases which conclude that higher educational attainment ensures a higher level of HD in the emerging economies as well as its subgroups.

Table-3. Trade Openness and Health Index (regression results of equation 4)

Variables	All Emerging Economies	EAGLE	NEST	Other Emerging Countries
Constant	.3004652 (.0695708)***	-.8701852 (.0615008)***	1.59694 (.2821056)***	.5348922 (.0480681)***
Trade Openness	.0195269 (.0046858)***	.1176989 (.0122431)***	.036055 (.0107159)***	-.0123454 (.0146882)
GDP Growth	-.0000657 (.0004835)	-.000874 (.0003593)***	-.0009026 (.0006463)	-.0006306 (.0007632)***
GDP per capita	.0775067 (.0067379)***	.0353688 (.0402301)	-.0202835 (.0492717)	.0733273 (.0055136)***
CO_2 Emission	-.007263 (.0018502)***	.1202756 (.0089094)***	-.136945 (.0250149)***	.0104021 (.0030942)***
Health Expenditure	-.0000236 (.0000113)**	.0059037 (.0395914)	.1442254 (.0480177)***	.0000736 (.0000235)***
Labor Force Participation Rate	.0664705 (.0174896)***	.4866191 (.0516811)***	-.1963826 (.0951586)*	-.2462475 (.040255)***
Secondary School enrollment Rate	.047486 (.0333667)	-.1002462 (.050456)*	-.054639 (.0204856)**	.2079928 (.0413347)***
Religion Dummy	-.0028936 (.0022517)	.0494641 (.009884)***	.0068528 (.0119919)	-.0040404 (.0059832)
Culture Dummy	-.0060958 (.0030743)*	-.1627116 (.0133508)***	.0415068 (.0138312)***	.002542 (.0042369)
Pesaran CD Test p-value Number of Observations Number of Groups R²	0.0000 675 42 0.3785	0.0000 126 7 0.9251	0.0000 267 18 0.3774	0.0000 282 17 0.7123

Note: The table presents the results for the estimated coefficients and their Driscol-Kraay standard errors in parenthesis. The p-value of Pesaran CD test, Number of observation, Number of Groups and R² value are also reported. *, **, and *** denote statistically significant coefficient at the 1%, 5% and 10% levels, respectively. Because of cross-sectional dependence in the data sets Driscol-Kraay estimator has been applied and Driscol-Kraay standard errors are reported in the table.

Table-4. Trade Openness and Income Index (regression results of equation 5)

Variables	All Emerging Economies	EAGLE	NEST	Other Emerging Countries
Constant	.2367805 (.6117283)	-.2736257 (.1085004)**	8.848519 (7.835326)	-1.214939 (.1389593)***
Trade Openness	.208331 (.171098)	.1168166 (.0267821)***	-.3726519 (.495848)	-.0017504 (.0402149)
GDP Growth	.0055486 (.0061132)	-.0026042 (.000408)***	.0502897 (.0535312)	-.000358 (.0006827)
GDP per capita	-.0570796 (.2664005)	.1326883 (.0192238)***	-.5207225 (.7222397)	.1636696 (.0067289)***
Labor Force Participation Rate	-.7033766 (.6687275)	-.1002416 (.0611446)	-6.927638 (5.965639)	.4709959 (.0592287)***
Secondary School enrollment Rate	.8172728 (.6750288)	.2636178 (.084913)***	3.408542 (3.04821)	.266121 (.0359273)***
Religion Dummy	-.2963579 (.3073378)	.008331 (.0047777)*	-1.438049 (1.37534)	.0279204 (.0119499)***
Culture Dummy	.4129762 (.3720637)	-.0055662 (.0083376)	1.844168 (1.722997)	.0461726 (.0111877)***
Pesaran CD Test p-value Number of Observations Number of Groups R²	0.0000 700 42 0.0070	0.0000 130 7 0.9308	0.0000 277 18 0.0275	0.0000 293 17 0.9227

Note: The table presents the results for the estimated coefficients and their Driscol-Kraay standard errors in parenthesis. The p-value of Pesaran CD test, Number of observation, Number of Groups and R² value are also reported. *, **, and *** denote statistically significant coefficient at the 1%, 5% and 10% levels, respectively. Because of cross-sectional dependence in the data sets Driscol-Kraay estimator has been applied, and Driscol-Kraay standard errors are reported in the table.

The linkage of labor force participation with three sub-indexes of HDI is diverse. It has a negative impact on education and income whereas its impact on health is mixed. Religion is negatively associated with education whereas culture has a positive association. It means that Muslims countries have lower educational attainment whereas Asian emerging economies experience higher value in education index. For other two sub-indexes, the impact of the two dummies is mixed.

5. CONCLUSION

Sustainable development goals (SDGs) adopted by UN are global agenda to ensure sustainable development by 2030 and progress of human development status is the central focus of SDGs. In the agenda of SDGs, trade is acknowledged as the key mechanism for achieving a number of goals and targets of SDGs. Considering the significance of SDGs to sustain human development and the significant role of trade in achieving SDGs this study examines the effect of trade openness in improving human development in the emerging economies. It uses trade openness as a proxy to trade liberalization and human development index (HDI) as well as its three sub-indexes namely education, health and income proposed and prepared by the UNDP as indicators of human development. Some control variables have been used in the regression model to have a robust linkage between trade and human development indicators. The study focuses on the emerging economies as they play a significant role in the world trade and they are in the transitional phase between developing and developed status. As the panel datasets used in this study have cross-sectional dependence, it applies Driscol-Kraay estimator in the regression models. This nonparametric covariance matrix estimator produces robust results in all forms of cross-sectional dependence, and standard error estimates are robust to disturbances being heteroscedastic, autocorrelated and cross-sectionally dependent. To find out more different and depth insight, the linkage between trade and human development has been identified for all the emerging economies as well as their three subgroups namely EAGLE, NEST and other emerging countries.

The results of the study suggest that higher trade openness substantially progresses human development status as measured by HDI as well as its three sub-indexes in the emerging economies and all of its subgroups. Higher human capital accumulation measured by secondary school enrollment rate and average income measured by per capita GDP also improves human development level in the emerging economies whereas economic growth

negatively impacts human development except for few cases. The effects of other control variables and two dummies on HDI as well as its sub-indexes are mixed.

This study provides important policy suggestions. The results of the study infer that higher trade openness substantially increases the human development level in the emerging economies in all cases. Human capital accumulation and average income also positively affect human development status whereas religion has a negative impact on human development, especially on education. So significant attention should be given to higher trade openness as well as human capital accumulation and average income to sustain human development and achieve SDGs. Attempts should also be taken to help people get rid of the religious ignorance. In examining the linkage between trade and human development, this study uses human development index (HDI) as an indicator of human development. Different other measures of social welfare are also available. Further studies can be done to identify the effect of trade on social welfare from different perspectives and using other measures.

REFERENCES

Adams, B. and K. Tobin, 2014. Confronting development. A critical assessment of the UN's sustainable development goals. New York: Rosa Luxemburg Stiftung, New York Office.

Annabi, N., F. Cissé, J. Cockburn and B. Decaluwe, 2005. Trade liberalisation, growth and poverty in Senegal: A dynamic microsimulation CGE model analysis.

Arellano, M., 1987. Practitioners' corner: Computing robust standard errors for within-groups estimators. Oxford bulletin of Economics and Statistics, 49(4): 431–434. *View at Google Scholar | View at Publisher*

Arellano, M. and O. Bover, 1995. Another look at the instrumental variable estimation of error-components models. Journal of Econometrics, 68(1): 29-51. *View at Google Scholar | View at Publisher*

Arimah, B.C., 2002. Nature, determinants and prospects for sustainable development in the Arab region. Arab Development Challenges of the New Millennium, 429.

Baltagi, B.H., 2005. Econometric analysis of panel data. John Wiley & Sons.

Bannister, G.J. and K. Thugge, 2001. International trade and poverty alleviation. International Monetary Fund, 1.

Bardhan, P., 2006. Globalization and rural poverty. World Development, 34(8): 1393-1404. *View at Google Scholar | View at Publisher*

Barua, A. and P. Chakraborty, 2010. Does openness affect regional inequality? A case study for India. Review of Development Economics, 14(3): 447-465. *View at Google Scholar | View at Publisher*

Beck, T., A. Demirgüç-Kunt and R. Levine, 2007. Finance, inequality and the poor. Journal of Economic Growth, 12(1): 27-49. *View at Google Scholar*

Berg, H.V.D. and J.R. Schmidt, 1994. Foreign trade and economic growth: Time series evidence from Latin America. Journal of International Trade & Economic Development, 3(3): 249-268. *View at Google Scholar*

Bergh, A. and T. Nilsson, 2010. Do liberalization and globalization increase income inequality. European Journal of Political Economy, 26(4): 488-505. *View at Google Scholar | View at Publisher*

Bergh, A. and T. Nilsson, 2014. Is globalization reducing absolute poverty. World Development, 62: 42-61. *View at Google Scholar | View at Publisher*

Bhagwati, J., 1993. Does free trade harm the environment. Scientific American: 58-72.

Bhagwati, J., 1994. Free trade: Old and new challenges. Economic Journal, 104(423): 231-246.

Bhagwati, J. and H. Daly, 1993. Debate: Does free trade harm the environment? Scientific American, 269(5): 17-29. *View at Google Scholar*

Blundell, R. and S. Bond, 1998. Initial conditions and moment restrictions in dynamic panel data models. Journal of Econometrics, 87(1): 115-143. *View at Google Scholar | View at Publisher*

Bourguignon, F. and C. Morrisson, 1990. Income distribution, development and foreign trade: A cross-sectional analysis. European Economic Review, 34(6): 1113-1132. *View at Google Scholar | View at Publisher*

Bussolo, M. and J.I. Round, 2006. Globalisation and poverty: Channels and policy responses. Routledge.

Bustos, P., 2007. The impact of trade on technology and skill upgrading evidence from Argentina. Working Papers (Universitat Pompeu Fabra. Departamento de Economía y Empresa)(1189): 1.

Calderón, C. and A. Chong, 2001. External sector and income inequality in interdependent economies using a dynamic panel data approach. Economics Letters, 71(2): 225-231. *View at Google Scholar | View at Publisher*

Castilho, M., M. Menéndez and A. Sztulman, 2012. Trade liberalization, inequality, and poverty in Brazilian states. World Development, 40(4): 821-835. *View at Google Scholar | View at Publisher*

Chacholiades, M. and M. Chacholiades, 1978. International trade theory and policy.

Chakravarty, S.R., 2003. A generalized human development index. Review of Development Economics, 7(1): 99-114. *View at Google Scholar | View at Publisher*

Chilosi, D. and G. Federico, 2013. Asian globalizations: Market integration, trade and economic growth, 1800-1938. Economic History Working Papers. L. S. O. E. A. P. London: Science. Houghton Street. No: 183/2013.

Chowdhury, S. and L. Squire, 2006. Setting weights for aggregate indices: An application to the commitment to development index and human development index. Journal of Development Studies, 42(5): 761-771. *View at Google Scholar | View at Publisher*

Conte, A. and M. Vivarelli, 2007. Globalization and employment: Imported skill biased technological change in developing countries.

Cornia, G.A. and S. Kiiski, 2001. Trends in income distribution in the post-world war ii period. UNU World Institute for Development Economics Research.

Coughlin, C.C., 2002. The controversy over free trade: The gap between economists and the general public. Federal Reserve Bank of St. Louis Review, 84(January/February 2002).

Davies, A. and G. Quinlivan, 2006. A panel data analysis of the impact of trade on human development. Journal of Socio-Economics, 35(5): 868-876. *View at Google Scholar | View at Publisher*

Demir, F., J. Ju and Y. Zhou, 2012. Income inequality and structures of international trade. Asia-Pacific Journal of Accounting & Economics, 19(2): 167-180. *View at Google Scholar | View at Publisher*

Dollar, D., 1992. Outward-oriented developing economies really do grow more rapidly: Evidence from 95 LDCs 1976-1985. Economic Development and Cultural Change, 40(3): 523-544. *View at Google Scholar | View at Publisher*

Dollar, D. and A. Kraay, 2001. Trade, growth, and poverty. World Bank, Development Research Group, Macroeconomics and Growth.

Dollar, D. and A. Kraay, 2002. Growth is good for the poor. Journal of Economic Growth, 7(3): 195-225. *View at Google Scholar*

Dollar, D. and A. Kraay, 2004. Trade, growth, and poverty. Economic Journal, 114(493): F22-F49. *View at Google Scholar*

Driscoll, J.C. and A. Kraay, 1998. Consistent covariance matrix estimation with spatially dependent panel data. Review of Economics and Statistics, 80(4): 549-560. *View at Google Scholar | View at Publisher*

Easterly, W., 2006. Globalization, prosperity, and poverty. Ann Harrison, editor, Globalization and Poverty, forthcoming. University of Chicago Press for NBER.

Edwards, S., 1997. Trade policy, growth, and income distribution. American Economic Review, 87(2): 205-210. *View at Google Scholar*

Edwards, S., 1998. Openness, productivity and growth: What do we really know? Economic Journal, 108(447): 383-398. *View at Google Scholar | View at Publisher*

Eicker, F., 1967. Limit theorems for regressions with unequal and dependent errors. Proceedings of the Fifth Berkeley Symposium on Mathematical Statistics and Probability, University of California Press, Berkeley. Ed. L. LeCam and J. Neyman. pp: 59–82.

Epifani, P., 2003. Trade liberalization, firm performances and labor market outcomes in the developing world, what can we learn from micro-level data? Rivista Italiana Degli Economisti, 8(3): 455-486. *View at Google Scholar*

Esquivel, V. and C. Sweetman, 2016. Gender and the sustainable development goals. Gender & Development, 24(1): 1–8. *View at Google Scholar | View at Publisher*

Ezcurra, R. and A. Rodriguezpose, 2013. Does economic globalization affect regional inequality? A cross-country analysis. World Development, 52: 92-103. *View at Google Scholar | View at Publisher*

Frankel, J.A. and D.H. Romer, 1999. Does trade cause growth. American Economic Review, 89(3): 379-399. *View at Google Scholar*

Froot, K.A., 1989. Consistent covariance matrix estimation with cross-sectional dependence and heteroskedasticity in financial data. Journal of Financial and Quantitative Analysis, 24(3): 333–355. *View at Google Scholar | View at Publisher*

Furusawa, T. and H. Konishi, 2013. International trade and income inequality. No. 849. Boston College Department of Economics.

Goldberg, P.K. and N. Pavcnik, 2004. Trade, inequality, and poverty: What do we know? Evidence from recent trade liberalization episodes in developing countries. (No. w10593). National Bureau of Economic Research.

Goldberg, P.K. and N. Pavcnik, 2007. Distributional effects of globalization in developing countries. Journal of economic Literature, 45(1): 39-82. *View at Google Scholar*

Greaney, T.M. and B. Karacaovali, 2016. Trade, growth and economic inequality in the Asia-pacific region. Journal of Asian Economics, 48: 1-5.

Griswold, D.T., 2003. Free-trade agreements: Steppingstones to a more open world. Cato Institute.

Grossman, G.M. and E. Helpman, 2014. Growth, trade, and inequality. N. w20502. National Bureau of Economic Research.

Gunduz, U., M. Hisarciklilar and T. Kaya, 2009. The impact of trade on social developmen. International Journal of Social, Behavioral, Educational, Economic and Management Engineering, 3(6). *View at Google Scholar*

Hamid, Z. and A.R. Mohd, 2013. Trade and human development in OIC countries: A panel data analysis. Islamic Economic Studies 21(2): 55-70. *View at Google Scholar | View at Publisher*

Harrison, A., 1996. Openness and growth: A time-series, cross-country analysis for developing countries. Journal of Development Economics, 48(2): 419-447. *View at Google Scholar | View at Publisher*

Harrison, A., 2006. Globalization and poverty. No. w12347. National Bureau of Economic Research.

Haveman, J.D., V. Lei and J.S. Netz, 2001. International integration and growth: A survey and empirical investigation. Review of Development Economics, 5(2): 289-311. *View at Google Scholar | View at Publisher*

Hepenstrick, C. and A. Tarasov, 2015. Trade openness and cross-country income differences. Review of International Economics, 23(2): 271-302. *View at Google Scholar | View at Publisher*

Hertel, T.W. and J. Reimer, 2005. Predicting the poverty impacts of trade reform. Journal of International Trade & Economic Development, 14(4): 377-405. *View at Google Scholar | View at Publisher*

Hertel, T.W. and L.A. Winters, 2006. Poverty and the WTO: Impacts of the Doha development agenda. Washington, DC: World Bank and Palgrave Macmillan.

Hoechle, D., 2007. Robust standard errors for panel regressions with cross-sectional dependence. Stata Journal, 7(3): 281-312. *View at Google Scholar*

Hoekman, B., 2016. Trade and the SDGs: Making 'means of implementation' a reality. Commonwealth Trade Hot Topics.

Huang, M.Y. and M.R.J. Singh, 2011. Financial deepening, property rights and poverty: Evidence from Sub-Saharan Africa. International Monetary Fund.

Huber, P., 1967. The behavior of maximum likelihood estimates under non-standard conditions. Proceedings of the Fifth Berkeley Symposium in Mathematical Statistics and Probability, Berkeley, CA: University of California Press, 1: 221–233.

Hystad, J.T. and H.G. Jensen, 2015. Economic growth – is openness to international trade beneficial? An empirical analysis of economic growth and trade policy. Master of Science in Economics and Business Administration, Norwegian School of Economics.

Irwin, D.A. and M. Tervio, 2000. Does trade raise income? Evidence from the twentieth century. Journal of International Economics, 58(1): 1-18. *View at Google Scholar*

Jeanneney, S.G. and K. Kpodar, 2011. Financial development and poverty reduction: Can there be a benefit without a cost? Journal of Development Studies, 47(1): 143-163. *View at Google Scholar | View at Publisher*

Jensen, H.T. and F. Tarp, 2005. Trade liberalization and spatial inequality: A methodological innovation in Vietnamese perspective. Review of Development Economics, 9(1): 69-86. *View at Google Scholar | View at Publisher*

Jouini, J., 2014. Linkage between international trade and economic growth in GCC countries: Empirical evidence from PMG estimation approach. Journal of International Trade & Economic Development, 24(3): 341-372. *View at Publisher*

Kelbore, Z.G., 2015. Trade openness, structural transformation, and poverty reduction: Empirical evidence from Africa. M. P. N. 65537, Munich Personal RePEc Archive.

Kenen, P.B., 2000. The international economy. Cambridge University Press.

Khondker, B.H. and S. Raihan, 2004. Welfare and poverty impacts of policy reforms in Bangladesh: A general equilibrium approach. Seventh Annual Global Economic Conference.

Kiskatos, K. and R. Sparrow, 2015. Poverty, labor markets and trade liberalization in Indonesia. Journal of Development Economics, 117: 94-106. *View at Google Scholar | View at Publisher*

Kpodar, K. and R.J. Singh, 2011. Does financial structure matter for poverty? Evidence from developing countries. Evidence from Developing Countries (December 1, 2011). World Bank Policy Research Working Paper Series.

Krugman, P., 1993. The narrow and broad arguments for free trade. American Economic Review, 83(2): 362-366. *View at Google Scholar*

Kuo, K., C. Lee and C. Fang, 2014. Free trade and economic growth. Australian Economic Papers, 53(1-2): 69-76. *View at Google Scholar | View at Publisher*

Lash, W.H., 1996. The exaggerated demise of the nation state. Center for the Study of American Business, Washington University.

Lash, W.H., 1997. Green showdown at the WTO. Center for the Study of American Business, Washington University 8 (Contemporary Issues Series No. 85).

Levinsohn, J., 1999. Employment responses to international liberalization in Chile. Journal of International Economics, 47(2): 321-344. *View at Google Scholar | View at Publisher*

Li, M. and I. Coxhead, 2011. Trade and inequality with limited labor mobility: Theory and evidence from China. Review of Development Economics, 15(1): 48-65. *View at Google Scholar | View at Publisher*

Lundberg, M. and L. Squire, 2003. The simultaneous evolution of growth and inequality. Economic Journal, 113(487): 326-344. *View at Google Scholar | View at Publisher*

Manwaa, F. and A. Wijeweerab, 2016. Trade liberalisation and economic growth link: The case of Southern African custom union countries. Economic Analysis and Policy, 51: 12–21. *View at Google Scholar | View at Publisher*

Mcculloch, R., 1993. The optimality of free trade: Science or religion? American Economic Review, 83(2): 367-371. *View at Google Scholar*

Melitz, M., 2003. The impact of trade on aggregate industry productivity and intra-industry reallocations. Econometrica, 71(6): 1695-1725. *View at Google Scholar | View at Publisher*

Meschi, E. and M. Vivarelli, 2009. Trade and income inequality in developing countries. World Development, 37(2): 287-302. *View at Google Scholar | View at Publisher*

Milanovic, B., 2005. Can we discern the effect of globalization on income distribution? Evidence from household surveys. World Bank Economic Review, 19(1): 21-44. *View at Google Scholar | View at Publisher*

Milanovic, B. and L. Squire, 2005. Does tariff liberalization increase wage inequality? Some empirical evidence. No. w11046. National Bureau of Economic Research.

Milner, C. and P. Wright, 1998. Modelling labour market adjustment to trade liberalisation in an industrialising economy. Economic Journal, 108(447): 509-528. *View at Google Scholar | View at Publisher*

Mussa, M., 1993. Making the practical case for freer trade. American Economic Review, 83(2): 372-376. *View at Google Scholar*

Nannicini, T. and A. Billmeier, 2011. Economies in transition: How important is trade openness for growth? Oxford Bulletin of Economics and Statistics, 73(3): 287-314. *View at Google Scholar | View at Publisher*

Newey, W.K. and K.D. West, 1986. A simple, positive semi-definite, heteroskedasticity and autocorrelationconsistent covariance matrix. Econometrica, 55(3): 703-708. *View at Google Scholar*

Nissanke, M. and E. Thorbecke, 2006. The impact of globalization on the world's poor: Transmission mechanisms. Journal of Economic Literature, 46(1): 179-182.

Nissanke, M. and E. Thorbecke, 2010. Globalization, poverty, and inequality in Latin America: Findings from case studies. World Development, 38(6): 797-802. *View at Google Scholar | View at Publisher*

Ocran, M.K. and C.K.D. Adjasi, 2013. Trade liberalisation and poverty: Empirical evidence from household surveys in Ghana. Journal of International Trade Law and Policy, 8(1): 40-59.

Panagariya, A. and J. Bhagwati, 1996. The economics of preferential trade agreements. Aei Press.

Panigrahi, R. and S. Sivramkrishna, 2002. An adjusted human development index: Robust country rankings with respect to the choice of fixed maximum and minimum indicator values. Journal of Human Development, 3(2): 301-311. *View at Google Scholar | View at Publisher*

Perera, S., M. Siriwardana and S. Mounter, 2014. Reducing poverty and income inequality in Sri Lanka: Does trade liberalisation help? Journal of The Asia Pacific Economy, 19(4): 629-655. *View at Google Scholar | View at Publisher*

Pesaran, M.H., 2004. General diagnostic tests for cross section dependence in panels, faculty of economics, University of Cambridge. Cambridge Working Papers in Economics No. 0435.

Petersen, M.A., 2007. Estimating standard errors in finance panel data sets: Comparing approaches. Review of Financial Studies, 22(1): 435-480.

Prabhakar, A.C., M. Azam, B. Bakhtyar and Y. Ibrahim, 2015. Foreign direct investment, trade and economic growth: A new paradigm of the BRICS. Modern Applied Science, 9(12): 32-42. *View at Google Scholar | View at Publisher*

Quinlivan, G., 2000. The multilaterals. World & I Magazine, Washington Times, 15: 267-285.

Rahman, T., 2007. Measuring the well-being across countries. Applied Economics Letters, 14(11): 779-783. *View at Google Scholar | View at Publisher*

Ravallion, M., 2001. Growth, inequality and poverty: Looking beyond averages. World Development, 29(11): 1803-1815. *View at Google Scholar | View at Publisher*

Revenga, A., 1997. Employment and wage effects of trade liberalization: The case of Mexican manufacturing. Journal of labor Economics, 15(S3): S20-S43. *View at Google Scholar | View at Publisher*

Rogers, W., 1993. Sg17: Regression standard errors in clustered samples. Stata Technical Bulletin, 13: 19-23.

Sachs, J.D. and A.M. Warner, 1995. Economic convergence and economic policies. National Bureau of Economic Research, 30(2016): 1-10.

Silberberger, M. and J. Koniger, 2016. Regulation, trade and economic growth. Economic Systems, 40(2): 308-322. *View at Google Scholar | View at Publisher*

Sohn, C. and H. Lee, 2010. Trade structure, FTAs, and economic growth. Review of Development Economics, 14(3): 683-698. *View at Google Scholar | View at Publisher*

Sokolovmladenovic, S., M. Milovancevic and I. Mladenovic, 2017. Evaluation of trade influence on economic growth rate by computational intelligence approach. Physica A-Statistical Mechanics and Its Applications, 465: 358-362. *View at Google Scholar | View at Publisher*

Sun, P. and A. Heshmati, 2010. International trade and its effects on economic growth in China. I. D. N. 5151.

Sungming, H., 2014. Foreign direct investment, trade and economic growth in Taiwan. Modern Economy, 05(01): 21-23. *View at Google Scholar | View at Publisher*

Sweeney, J., 1998. Fast-track negotiating authority: The facts. Heritage Foudation.

Tipping, A. and R. Wolfe, 2015. Trade and sustainable development: Options for follow-up and review of the trade-related elements of the post-2015 agenda and financing for development. Manitoba: IISD & ICTSD.

UN, 2015. Transforming our world: The 2030 agenda for sustainable development. Retrieved from http://www.un.org/ga/search/view_doc.asp?symbol=A/70/L.1&referer=/english/&Lang=E [Accessed 7 June, 2016].

UNDP, 2015. Human development report 2015: Work for human development.

Wade, R.H., 2004. Is globalization reducing poverty and inequality. World Development, 32(4): 567-589. *View at Google Scholar | View at Publisher*

Weidenbaum, M., 1999. Is America slipping in international trade? USA Today-New York, 128(2650): 20-21. *View at Google Scholar*

Were, M., 2015. Differential effects of trade on economic growth and investment: A cross-country empirical investigation. Journal of African Trade, 2(1-2): 71-85. *View at Google Scholar | View at Publisher*

White, H., 1980. A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. Econometrica, 48(4): 817–838. *View at Google Scholar | View at Publisher*

Wood, A., 1995. North-South trade, employment, and inequality: Changing fortunes in a skill-driven world. Oxford University Press.

Xu, B., 2003. Trade liberalization, wage inequality, and endogenously determined nontraded goods. Journal of International Economics, 60(2): 417-431. *View at Google Scholar | View at Publisher*

Yeaple, S.R., 2005. A simple model of firm heterogeneity, international trade, and wages. Journal of international Economics, 65(1): 1-20. *View at Google Scholar | View at Publisher*

Zahonogo, P., 2017. Trade and economic growth in developing countries: Evidence from Sub-Saharan Africa. Journal of African Trade

Zeren, F. and A. Ari, 2013. Trade openness and economic growth: A panel causality test. International Journal of Business and Social Science, 4(9): 317-332. *View at Google Scholar*

Appendices

Appendix 1

List of Emerging Economics

EAGLEs (emerging and growth-leading economies): Expected Incremental GDP in the next 10 years to be larger than the average of the G7 economies, excluding the US. The countries are: Brazil, China, India, Indonesia, Mexico, Russia, and Turkey

NEST: Expected Incremental GDP in the next decade to be lower than the average of the G6 economies (G7 excluding the US) but higher than Italy's. They are: Argentina, Bangladesh, Chile, Colombia, Egypt, Iran, Iraq, Kazakhstan, Malaysia, Nigeria, Pakistan, Peru, Philippines, Poland, Qatar, Saudi Arabia, South Africa, Thailand, and Vietnam

Other emerging markets: Bahrain, Bulgaria, Czech Republic, Estonia, Hungary, Jordan, Kuwait, Latvia, Lithuania, Mauritius, Oman, Romania, Slovakia, Sri Lanka, Sudan, Tunisia, United Arab Emirates, Ukraine, Venezuela

Note: The list of emerging economies and their classification was given as per BBVA Research list as of March 2014. Source: Wikipedia access date November 22, 2016

Appendix 2: The method of HDI calculation

The Human Development Index (HDI) is a summary measure of achievements in key dimensions of human development: a long and healthy life, access to knowledge and a decent standard of living. The HDI is the geometric mean of normalized indices for each of the three dimensions.

To determine the value of HDI for each country UNDP establishes a dimension index which comprises income index (GDP Index) education index and life expectancy index (Health Index). The education index is the arithmetic average of mean years of schooling index and expected years of schooling index. Minimum and maximum values (goalposts) are set in order to transform the indicators expressed in different units into indices between 0 and 1.

Dimension	Indicator	Minimum	Maximum
Health	Life expectancy (years)	20	85
Education	Expected years of schooling	0	18
	Mean years of schooling	0	15
Standard of living	Gross national income per capita (2011 PPP $)	100	75,000

Dimension index = actual value – minimum value / maximum value – minimum value.

The HDI is the geometric mean of the three dimensional indices: HDI = $(I_{Health} . I_{Education} . I_{Income})^{1/3}$

Note: The detail procedure of HDI calculation is given in the Human Development Report published by UNDP in each year. This appendix provides the summary of HDI calculation method as per recent Human Development Report published in 2015 which describe the procedure in detail.

Appendix-3. The detail description of control variables with their sources.

Name of the Variables	Symbol	Description	Source
Trade openness	TO	Sum of exports/imports of goods and services as a share of GDP.	WDI 2016
Human Development Index	HDI	The Human Development Index (HDI) is a summary measure of achievements in key dimensions of human development: a long and healthy life, access to knowledge and a decent standard of living. The HDI is the geometric mean of normalized indices for each of the three dimensions namely education index, health index and income index.	UNDP Public data explorer
Education Index	Edu	Sub-index of the Human Development Index	UNDP Public data explorer
Health Index	Health	Sub-index of the Human Development Index	UNDP Public data explorer
Income Index	Inc	Sub-index of the Human Development Index	UNDP Public data explorer
GDP growth	Growth	Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2005 U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.	WDI 2017
GDP per capita	GDPpc	GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars.	WDI 2017
Health expenditure per capita	Healthexp	Total health expenditure is the sum of public and private health expenditures as a ratio of total population. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities, and	WDI 2017

		emergency aid designated for health but does not include provision of water and sanitation. Data are in current U.S. dollars.	
CO₂ Emission	CO₂	Carbon dioxide emissions are those stemming from the burning of fossil fuels and the manufacture of cement. They include carbon dioxide produced during consumption of solid, liquid, and gas fuels and gas flaring.	WDI 2017
Secondary School Enrollment Rate	Secenrl	Gross enrollment ratio is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. Secondary education completes the provision of basic education that began at the primary level, and aims at laying the foundations for lifelong learning and human development, by offering more subject- or skill-oriented instruction using more specialized teachers.	WDI 2017
Labor Force Participation Rate	LFPR	Labor force participation rate is the proportion of the population ages 15 and older that is economically active: all people who supply labor for the production of goods and services during a specified period.	WDI 2017
Religion Dummy	Reldum	Dummy variable representing religion. It takes 1 for Muslim countries otherwise 0.	
Culture Dummy	Culdum	Dummy variable representing culture. It takes 1 for Asian countries otherwise 0.	

Appendix-4. A comparison of different estimation techniques with stata command

Command	Option	SE estimates are robust to disturbances being	Notes
reg, xtreg	robust	heteroscedastic	
reg, xtreg	cluster()	heteroscedastic and autocorrelated	
xtregar		autocorrelated with AR(1)[1]	
newey		heteroscedastic and autocorrelated of type MA(q)[2]	
xtgls	panels(), corr()	heteroscedastic, contemporaneously cross-sectionally correlated, and autocorrelated of type AR(1)	$N < T$ required for feasibility; tends to produce optimistic SE estimates
xtpcse	correlation()	heteroscedastic, contemporaneously cross-sectionally correlated, and autocorrelated of type AR(1)	large-scale panel regressions with xtpcse take a lot of time
xtscc		heteroscedastic, autocorrelated with MA(q), and cross-sectionally dependent	

1 AR(1) refers to first-order autoregression

2 MA(q) denotes autocorrelation of the moving average type with lag length q.

Source: Hoechle (2007).