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The Influence of Aid for Trade on Human Development in South Asia

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Abstract: Although South Asian countries have made some progress in achieving human development since the turn of the century, they are still lagging behind on important human development goals such as education, a long and healthy life, nutrition, and a good quality of life. In addition, aid for trade remained as an aid to in developing countries and considering the need to achieve human development. The aim of this study is to explore the impact of aid for trade on human development in South Asian countries for the period 2005-2019. Initially, the study performed panel unit root tests such as the Levin and Lin (LL) test and the Im, Pesaran and Shin (IPS) test to identify the unit root problem. This study also used the PMG-ARDL approach to investigate the short-term and long-term influence of aid for trade on human development. The Hausman test found that the findings of the PMG-ARDL are more efficient and consistent compared to the PMG-ARDL. The results of the PMG-ARDL show that aid for trade has a positive and significant impact on human development, both in the short and long term. Finally, this study prescribed some policy measures to address the issue of human development in general and in South Asia in particular.

Keywords: Aid for trade, human development, PMG-ARDL approach, South Asia.

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1. Introduction

Human development is one of the central considerations of a country's level of development. Development is not just about the growth of per capita income, but encompasses a multidimensional aspect of the community, such as the economy, social, political, health, education, law and security. Since the 1970s, the concept of human development has been developed by Pakistani economist Mahbub ul Haq [1]. Human development includes a variety of choices, as well as the freedom and resources to pursue these opportunities [2] [3] argues that instead of goods and income, analyzing human development should be more linked to the choice of freedom from available opportunities. [4] mentioned that opportunities, achievements, and freedom of choice are pioneers of human development. quality of life). Human Development Index proposed by the United Nations Development Program in 1990 has become the most widely used tool for assessing human progress. The human development index captures people's basic quality of life by examining three aspects: long and healthy life, knowledge and good living standards [2].

South Asia is in the Southern region of Asia. The South Asian countries are Afghanistan, Bhutan, Bangladesh, Maldives, India, Nepal, Sri Lanka and Pakistan. In the year 2017, 216 million people lived on less than US$1.90 a day, out of an estimated 736 million extremely poor people worldwide [5]. Over 850 million people over 15 years old cannot read or write, of which two-thirds of the population are women, many people in South Asian countries do not have access to health services. According to the United Nations Children's Fund reported that, 5.4 million children, more than half of them newborns; who do not live their first five years of life [6]. These statistics reflect the extent of low human development in the lives of the country's poor. The trend of the Human Development Index in South Asia is shown in Table 1, along with the ranking. Sri Lanka is placed in the high human development category with 72nd position, while Bhutan, India, Nepal. Bangladesh and Pakistan are placed in the medium human development category. Sri Lanka at 72nd led the human development index in South Asia, Bhutan is the only South Asian country to improve its position, Nepal (142nd) and Pakistan (154th) are placed at the bottom of the region.

Table 1. Human development index in South Asia.

Country	HDI	Rank
Bangladesh	0.632	133
Bhutan	0.654	129
India	0.645	131
Nepal	0.602	142
Pakistan	0.557	154
Sri Lanka	0.782	72

Source: Human Development Report (2020).

The state of the environment continued to deteriorate, and natural resources are wasted needlessly in this region. In the future, it is expected that the process will continue to worsen as the population, alongside its consumption, grows at a high rate. The biggest challenges are climate change, reduction of biological diversity, sustainable management of water resources and pollution and health effects of hazardous chemicals (Bozsik et al., 2018).

The World Trade Organization (WTO) created the Aid for Trade Initiative at the 2005 WTO Ministerial Conference in Hong Kong. This initiative aimed to support the 8th millennium development goal: to create a global partnership for development by facilitating international trade and improving market access for least developed countries, including duty-free and quota-free trade. The main objective of aid for trade is to improve competitiveness and effective participation in local, regional and world markets to improve supply-side capacity and trade-related infrastructure to improve market access; implement and adjust trade reforms; and to assist in the implementation of trade agreements. The main aid for trade is focused on competitiveness, economic infrastructure and export expansion to meet a broad development agenda that includes poverty reduction and human development. The Aid for Trade Initiative links aid and trade policies in the quest to raise living standards and human development [7].

Food exports from low-income countries should be improved through government interventions (e.g., improving the sector's labor market situation by producing own-brand food products with high added value). These countries could create jobs at home, not abroad [8]. The true wealth of a nation is its people, and the goal of human development is to generate an environment that allows people to live long, healthy, and creative lives. Human development is a development about expanding human potential and expanding human freedoms. It's about developing and improving people's capabilities. This, in turn, empowers people to make choices and lead lives they have reason to value. The main difference in living standards between nations is the difference in human capital. It is evidence from the literature that many studies have been carried out related to aid for trade, but those studies that assess the impacts of aid for trade employ quantitative analyzes and limit their focus to assessing the impact of aid for trade on trade, economic growth, export diversification and do not consider its role in human development. So far, we have not found any studies for South Asian countries in this regard. Thus, the present study is carried out to fill this gap. This research will explore the effect of aid for trade on human development in South Asia. This study will also examine the effects of various determinants, such as population, inflation, remittances and foreign direct investment, on human development in South Asia. The main objective of the study is to identify the contribution of aid for trade to human development in South Asia.

The rest of the paper is organized as follows. The second part of the article is related to the literature review. The third and fourth parts consist of the research methodology and the discussion of the results, respectively. The last section of the manuscript is related to the conclusion and policy recommendations.

2. Literature review

The literature review of this study is divided into two sections: the first offers a theoretical part and the second describes an empirical view of previous work on human development assessment and aid for trade.

The disbursement of Official Development Assistance (ODA), or what is now more commonly known as foreign aid, began after World War II [9-11]. Developing countries have received assistance when the country is suffering from economic crises, natural disasters, and emergencies. Although some assistance is provided by governments, some is provided by non-governmental organizations (NGOs) [12-14]. Lack of supply-side capacity limitations, lack of adequate trade-related infrastructure in developing countries are unable to take advantage of international trade and continued economic growth in general and human development. In 2005, members of the World Trade Organization (WTO) established Aid for Trade for developing countries to remove these barriers to trade. The World Trade Organization created a task force in February 2006 to operationalize aid for trade based on the needs of developing countries. The task force does not provide suggestions on the financial means needed, where the money should come from or how they should be prioritized. The OECD provides data corresponding to all categories defined by the World Bank Task Force and the number of studies was based on the OECD data definitions. The OECD defines aid for trade categories as economic infrastructure;

Aid goes to the energy, transport and storage and communications sector to combine domestic and international markets. Build productive capacity; included in the real sectors are banking and financial services, business and other services, fisheries and forestry, agriculture, industry and mining and tourism to promote production and export diversification and maximize comparative advantage, trade policy and regulation; Trade officials are being trained to formulate trade strategies and lead the effective implementation of trade negotiations. Other aid for trade initiatives helps with other trade-related challenges [7, 15] explored the influence of international aid on quality of life, using the human development index as a proxy for quality of life. For the years 1974 to 1985, the ordinary least squares were used to assess the purpose of the study. For democratic and autocratic countries, Kosack performs different cross-country analyses. The results suggest that aid is affective for quality of life, but aid is more affective on improving quality of life in democratic countries compared to autocratic countries.

[16] the influence of foreign aid on human development indicators was used to analyze aid effectiveness. The impacts of two types of foreign aid were examined in the study. Bilateral aid that goes directly to recipient countries from donor countries and other projected aid that is delivered to poor nations through non-governmental organizations. Two-stage least squares regression approaches and the generalized method of the Moments system were used. The study concluded that foreign aid is useful in human development based on its findings. They also found that assistance from non-governmental organizations (NGOs) is more beneficial than official bilateral assistance in reducing newborn mortality rates. They found that aid has a small but considerable job in education. [17] developed an empirical study to show an effect that aid contributes to public spending and thus contributes to well-being. Well-being measured by the human development index is a 0 to 1 level that measures various aspects of quality of life, such as health, education, and income. For a panel dataset of 38 countries over the 1980-1998, quintile regressions on welfare state were used. This study suggested that aid promotes human development by supporting government spending that improves measures of well-being. Aid-associated infant mortality and well-being have increased human development and decreased infant mortality well-being. Aid is most effective in nations with lower levels of human development, such as those at the bottom center of the welfare distribution. The research found evidence that aid is more involved in countries with lower levels of human development indicators, as increased investment in health reduces infant and child mortality rates and increases public spending on primary and secondary education. Aid has a beneficial influence on the widely used metrics of educational achievement. Government spending on social services such as sanitation, education and health are most likely to benefit the poor. Research has suggested that aid has an impact on well-being by affecting government spending. [18] conducted research for Rwanda, one of the poorest countries in the world, with a high proportion of people employed in agriculture. They used the aid for trade subcategories of trade-related policy and trade facilitation to examine the impact of aid for trade on the costs and welfare of trade. The study found that market access and the costs of trade are two of the most important factors

in human well-being. According to their findings, a 1% reduction in transport costs increases producer prices by 21%, which decreases human well-being by 7%. They concluded that trade policy assistance is the most cost-saving of trade, while trade-facilitation trade assistance generates the greatest welfare gains. Based on empirical findings, they concluded that lowering transport costs benefits the poor. [19] examined the effectiveness of aid for trade and foreign direct investment on human development for 91 underdeveloped countries in different income groups between agricultural and non-agricultural economies, they used random effects and fixed effects models. Empirical results showed that aid for trade flows had a positive influence on poverty reduction, but the effect varies between different income groups in less developed countries. They also found that aid for trade works best at reducing poverty when it is allocated to investment and trade rules and regulations, and when it is allocated to economies with low dependence on agriculture. Aid for trade focused on investment and trade laws and regulations also increases net FDI flows, but aid for trade focused on productive capacity decreases them. Keeping in view the above discussion, no studies have been conducted to explore the role of aid for trade in human development in South Asia. Therefore, this study fills in this gap in the literature.

3. Methodology

The core objective of this study is to assess the influence of aid for trade on human development in South Asia using balanced panel data for the period 2005 to 2019. Afghanistan and Maldives were not included in this study due to unavailability of necessary data for some variables. Human development was taken as a dependent variable and was measured using the human development index. The human development index is a statistical tool used to measure the human development of a country, developed by the United Nations. This index contains three main components: people's health, education, and standard of living. Aid for trade was chosen as the main independent variable in this study because it was identified as the most relevant variables for dealing with the problem of human development in South Asia for reasons (1) The reason for applying aid for trade instead of official development assistance (ODA), has a variety of objectives, some of which do not always promote human development, but aid for trade focuses on improving people's living conditions as the second most essential objective [20]. Thus, the use of aid for trade (AFT) may be more suitable than official development assistance (ODA) for the purpose of the study. The study used other important variables, including remittances, population, inflation, and foreign direct investment that contribute to human development that have been identified by previous studies [21-24].

Table 2. Description of the variables.

Abbreviation	Variables	Unit	Data sources
HDI	Human development index	Index	UNDP (2020)
AFT	Total aid for trade	Million (constant 2020 US Dollar)	OECD (2021)

POP	Population growth	Percentage	World Bank , (2021)
CPI	Inflation	Consumer price index	World bank , (2021)
REM	Remittances	Million (Current US dollar)	World Bank, (2021)
FDI	Foreign direct investment	Million (Current US dollar)	World Bank (2021)

Before using the PMG-ARDL approach, it is necessary to ensure the robustness of data stability; we examine the data for the unit root problem. For this, this study applied a panel unit root test to identify the unit root problem of each data series. When the mean, variance and covariance of the data are not constant over time, it indicates a unit rot problem. Data containing the presence of a unit root can lead to unreliable and biased estimates [25]. The following simple AR(1) model can be used to explain the unit root problem:

$$Y_{it} = \emptyset Y_{it-1} + e_{it} \quad (1)$$

Equation (1) expresses a simple autoregressive model of order 1, in which Y is any variable, $\emptyset$ is the parameter, and e_{it} shows the residual terms at time t with i number of cross-sections. There are three possible descriptions of unit root detection in the autoregressive model (1) when $\emptyset < 1$ the data are free from the unit root problem, when $\emptyset > 1$ the series is explosive and when $\emptyset = 1$ the series contains a unit root. This study applied the Levin and Lin unit root test (LL-test) developed by [26] to identify the non-stationary problem. There are three types of test equations, i.e., (i) neither intercept nor trend, (ii) intercept but no trend, and (iii) intercept and trend in the model. This study applied the second type of equation that consists of an individual intercept, but without a trend variable in the model. Equation (2) shows a mathematical form of both tests with intercept, but without a trend variable:

$$\Delta Y_{it} = a_0 + \emptyset Y_{it-1} + \sum_{s=1}^{p} \beta_i \Delta Y_{it-i} + e_{it} \quad (2)$$

Where Y is variable, a_0 represents intercept term, $\emptyset$ shows the slope coefficient of the variable Y and e_{it} shows the residual term, two subscripts such as t and i represent time period and number of cross-sections. The sum of "s" shows the number of lags used in both tests starting from 1 to p.

To explore the long- and short-term impact of aid for trade on human development, the study used the Panel Autoregressive Distributed Lag (ARDL) model based on the pooled mean group (PMG) and mean group (MG) estimates developed by [27, 28], respectively. The PMG imposes a constraint on the homogeneity of the long-term coefficients between the cross-sections, while the heterogeneity of the short-term coefficient varies. The mean group (MG) coefficient does not impose restrictions, allowing it to vary and be heterogeneous in the short and long term. However, according to [27], the PMG estimator provides an increase in the efficiency estimates in relation to the MG estimator under long-term homogeneity. To confirm this assumption of long-term homogeneity, the [29] was used in this investigation to verify if there is a significant difference between the PMG and MG estimators. Equation (3) shows the dynamic autoregressive distributed lag (ARDL) technique.

$$Ln\,HDI_{it} = \beta_o + \sum_{d=1}^{a-1} \beta_{1d}\Delta LnHDI_{it-d} + \sum_{e=0}^{b-1} \beta_{2e}\Delta Ln\,AFT_{it-e} + \sum_{h=0}^{e-1} \beta_5 h\Delta Ln\,POP_{it-h} + \sum_{l=0}^{f-1} \beta_{6l}\Delta LnCPI_{it-L} + \sum_{j=0}^{g-1} \beta_{7j}\Delta LnREM_{it-j} + \sum_{k=0}^{h-1} \beta_{5k}\Delta LnFDI_{it-k} + 0\delta_1 LnHDI_{it-1} + \delta_2 LnAFT_{it-1} + \delta_3 LnPOP_{it-1} + \delta_4 LnCPI_{it-1} + +\delta_5 LnREM_{it-1} + \delta_6 LnFDI_{it-1} - \delta_8 ECT_{it-1} + e_{it} \quad (3)$$

Here, Δ indicates the integration process after making the data stationary, the slopes of the short- and long-term parameters are represented by β and δ, and e_{it} express the residuals of cross-section i at time t in the model. The dynamic stability of the model was decided by the term $ECT_{i,t-1}$. The model is considered dynamically stable and the short-term instability in the model is automatically stabilize in the long run if the value of the ECT term is negative and significant.

4. Results and Discussions

Table 3 articulates the descriptive statistics of the data series used in this study. These are mean, maximum value, minimum value, and standard deviation. The highest average HDI value recorded for Bangladesh (0.81), and the lowest for Nepal (0.54). The highest aid for trade $1,684.32 million received by India, which is the highest aid among all other countries, with the smallest $28.62 billion received by Bhutan. The highest population growth was recorded in India (1.2%) and the lowest (0.7%) in Sri Lanka. Highest average value of consumer price index 123.2 for Nepal ,with lowest CPI value 111.55 for Sri Lanka. India has highest average value of remittances at $58317.2 million, lowest average value for Bhutan at $20.61 million. India has highest average FDI $33553.14 million, and Bhutan has the lowest FDI $ 22.20 million.

Table 3. Descriptive statistics of the variables.

Variables	Bangladesh	Bhutan	India	Nepal	Pakistan	Sri Lanka
HDI						
Mean	0.81	0.59	0.59	0.54	0.69	0.75
Max	0.85	0.65	0.64	0.60	0.74	0.78
Min	0.79	0.52	0.53	0.48	0.64	0.72
St. dev.	0.02	0.04	0.03	0.04	0.03	0.01
AFT						
Mean	488.67	28.62	1684.32	93.94	233.10	214.34
Max	1316.12	47.40	3253.25	120.17	608.96	339.04
Min	124.13	18.67	586.77	68.70	45.85	87.22
St. dev.	415.27	8.77	793.35	15.45	158.70	71.74
POP						
Mean	1.1	1.1	1.2	0.8	2.1	0.7
Max	1.1	1.4	1.5	1.8	2.2	1.1
Min	0.9	1	1.0	0.0	2	0.1
St. dev.	1.1	0.1	0.19	0.5	0.09	0.2
CPI						
Mean	120.33	120.2	119.5	123.2	117.7	111.5
Max	179.67	167.1	180.4	188.7	182.7	155.5
Min	69.15	4.84	68.04	68.50	85.7	58.2
St. dev.	36.15	32.69	38.45	41.42	40.8	30.3
REM						

Mean	11864.19	20.61	58317.2	4723.75	13427.6	5125.91
Max	18363.86	58.15	83332	8286.63	22252	7261.85
Min	4314.50	2.24	22125	2111.82	4280	1975.54
St. dev.	4054.51	19.56	17987.2	2397.44	6310.15	2058.60
FDI						
Mean	1645.21	22.20	33553.14	69.36	2532.2	801.27
Max	2831.15	75.27	50610.65	196.27	5590	1614.04
Min	456.52	2.65	7269.41	0.995	859	272.4
St. dev.	772.80	22.87	11483.12	61.15	1434.36	355.68

Table 4 and Table 5 present results of the Levin and Lin [26] and Im Pesaran and Shin [30] panel unit root tests. Here, the null hypothesis (H_0) is that the data series is non-stationary, against the alternative hypothesis (H_1) that the data series is stationary. The decision rule is if the value of p is greater than 5% critical value (0.05), we accept the null hypothesis (H_0), indicating that the data series is non-stationary Furthermore, if the value of p is less than 5% critical value (> 0.05), then we accept the alternative hypothesis (H_1), indicating that the data series is stationary. The results of panel unit root tests show that the data series *LnHDI, LnAFT, LnPOP, LnCPI* and *LnREM* are stationary at level i.e. I(0) while *LnFDI* is stationary at first difference i.e. I(1).

Table 4. The results of Levin and Lin tests.

Variables	**Intercept**		**1st Difference**			
	t-statistic	Prob.	t-stat	Prob.	Bandwidth	Conclusion
LnHDI	4.43*	< 0.01	--	--	2	I(0)
LnAFT	-3.50**	< 0.05	--	--	2	I(0)
LnPOP	-15.83*	< 0.01	--	--	2	I(0)
LnCPI	-4.62*	< 0.01	--	--	2	I(0)
LnREM	-5.33*	< 0.01	--	--	2	I(0)
LnFDI	0.61	0.73	– 8.028	< 0.01	2	I(1)

*, **, indicate significant at 1%, and 5%, respectively.

Table 5. The results of the Im Pesaran and Shin (IPS) unit root tests.

Variables	**Intercept**		**1st Difference**		
	t-stat	Prob.	t-stat	Prob.	Conclusion
LnHDI	-2.13**	<0.05	--	--	I(0)
LnAFT	-4.35*	< 0.01	--	--	I(0)
LnPOP	-4.26*	<0.01	--	--	I(0)
LnCPI	-2.06**	<0.05	--	--	I(0)
LnREM	-2.83**	<0.05	--	--	I(0)
LnFDI	-1.07	0.14	-8.29*	< 0.01	I(1)

*, **, indicate significant at 1%, and 5%, respectively.

Table 6 presents the results of the PMG-ARDL and MG-ARDL models. The PMG estimator coefficients are constrained to be homogeneous across the country in the long run but vary from country to country in the short run. The MG estimator coefficients estimate specific parameters for each country. Furthermore, comparing the findings of the PMG-ARDL and MG-ARDL estimates shows how the empirical estimates of the efficient model are affected by different estimation approaches. This study applied the Hausman test [29] to ensure consistency and a more efficient estimator between the PMG and the MG estimators. The estimated value of the Hausman test that follows the Chi-square distribution is 5.84, being statistically insignificant at 5%. The findings of the Hausman test confirmed that the PMG estimator is preferable to the MG when accepting the null hypothesis that the PMG estimator is consistent and more efficient than the MG.

Table 6. The results of Panel ARDL.

Long Run Elasticities							
		PMG Estimator			MG Estimator		
Variables	Parameters	Values	St. error	Prob.	Values	St. rror	prob.
LnAFT	δ_1	0.005**	0.002	<0.05	0.006**	0.001	<0.05
LnPOP	δ_4	-0.16**	0.004	<0.05	-0.50**	0.10	<0.05
LnCPI	δ_5	-0.18*	0.03	<0.01	-0.004**	0.01	<0.05
LnREM	δ_6	0.04**	0.01	<0.05	0.09**	0.01	<0.05
LnFDI	δ_7	0.01*	0.002	<0.01	0.036*	0.006	<0.01
Short run Elasticities							
$\Delta LnAFT$	β_1	0.003**	0.001	<0.05	0.001**	0.001	<0.05
$\Delta LnPOP$	β_4	0.03	0.11	0.7	-1.02	2.63	0.7
$\Delta LnCPI$	β_5	-0.04	0.02	0.05	-0.05	0.03	0.19
$\Delta LnREM$	β_6	0.01**	0.01	0.05	0.001**	0.01	0.05
$\Delta LnFDI$	β_7	0.003**	0.009	<0.05	0.006**	0.002	<0.05
Constant	β_2	0.10	0.19	0.58	0.10**	0.19	0.58
ECT		-0.26**	0.07	<0.05	-0.22**	0.07	<0.05

Note: *, **, ***show significant levels of 1%, 5%&10%respectively.

The results show that aid for trade has positive and significant impact on human development both in long and short run. The findings demonstrate that trade aid has a beneficial and statistically significant long-term and short-term influence on human development. In the long term, the coefficient value of AFT is 0.0057 with a chance of 5%. In South Asia, a 1% increase in trade aid will result in a 0.0057 percent improvement in human development. In the short term, the consequences of AFT are the same. In the short term, the coefficient of aid for trade is 0.0037, which is significant at 5% since the probability value is smaller than 0.05. This indicates that a 1% increase in assistance for trade will result in a 0.0037 percent improvement in human development in south Asia. In the short run aid for trade provides trade opportunity and employments which stimulates income of peoples that facilities human development [31]. In the long run aid for trade impact human development through many ways. Increased commercial activity and provides job opportunities result from improvement in trade related infrastructure. In the surrounding areas Local people have started their own business

hotels shops, and restaurants, transport, and communication centers. Private Banks have also started open their branches. Trade-induced services are growing which have favorable impacts on the lifestyle of the local people as result improves human development [32]. Aid for trade utilize productive capacities which influence human development by increased government revenue from domestic taxes, cutting costs, creates services and better governance [33]. Assistance to Trade-related capacity have been positive role in private sectors, reduced costs, develop new products, and enhance their exports. Moreover, findings are linked with development community goals such as increased worker skills, better working conditions, better worker health, job creation, poverty reduction, and enhance human development. Consumers have benefited from lower pricing [34]. [35] showed that enhanced human developments and supportive environment for employees will lead to successful corporate performance even in developing countries.

The dynamic stability of the model is determined by the error correction term (ECT), which balances the short-term imbalance in the long-term. The error correction term (ECT) coefficient value must be significant and negative for dynamic stability to exist. The coefficient value of the error correction term observed is −0.26 in the findings that is negative and significant at 5% level. Thus, it is showed that the estimated panel ARDL model is back toward equilibrium with an adjustment speed 26% per year in South Asia.

Table 7 shows the findings of the Jarque-Bera test [36] to determine the normality of the residual term. The F-statistic is followed by the Jarque–Bera test. The conclusion was made based on the probability of the F-statistic value; the rule of thumb suggests, If the p-value of the F-statistic is observed to be less than 5%, we will fail to reject the alternative hypothesis H_1 that the residual term is not normally distributed. The p- value obtained from the study is 0.62, which is more than 5%). It states that we'll go with the null hypothesis H_0, which implies that our data is regularly distributed.

Table 7. The results of diagnostic tests.

Diagnostic Tests	Test Statistics
Hausman test	5.89(0.54)
Normality test	0.90 (0.62)

5. Conclusion and policy recommendations

The current study tried to assess the impact of the Aid for Trade on human development in South Asia. Therefore, this study used 15-year balanced panel data for the period 2005-2019. The research treated human development as a dependent variable; aid for trade, population growth, inflation, remittances, and foreign direct investment are considered independent variables. Initially, the study detected the unit root problem in the data by using used the Levin and Lin (LL) and Im Pesaran and Shin (LPS) tests. This study used the penal ARDL model to explore both short- and long-term estimates in the model. The findings of the panel ARDL model found that Aid for Trade positively and significantly effects on human development in South Asia. Whereas three explanatory variables are positively and significantly affecting the human development in the long run

in South Asia, which are aid for trade, remittances and foreign direct investment, while population growth and inflation are negative but significant in the long run. Therefore, long-term results are more attractive. In the short run, explanatory variables play a significant role on influencing human development, which are AFT, inflation, remittances, and foreign direct investment, while population growth is positive but insignificant in the short run.

Based on these findings, important and exciting policy suggestions emerge. Total aid for trade has been found as an effective tool for human development in South Asia. It should be encouraged by developing effective and efficient trade policies. In this way, the human development in South Asia would be improved. South Asian region is well for its high population growth rate. This situation is not good for the human development based on our results. It's not possible to reduce population but it is possible to control the fast-growing population in future. Also, the existing population should be utilized in productive activities. Thus, the population will not be harmful for human development in South Asia. High inflation rate is not an ideal situation for any economy in the entire world. Similarly in the research findings, high inflation rate is leading to reduce the human development in the South Asia. Furthermore, it can create uncertainty regarding money market. The governments of South Asia economies will have to keep a controlled inflation rate to enhance human development in the area. Remittances can play a positive role for human development in South Asia. The governments should institute such policies which would encourage the nationals of South Asia working in foreign countries. The governments should also make sure the protection as well as basic right of their nationals working in abroad. The outcomes of the research are indicating that foreign direct investment will elevate the human development in South Asian region will have to establish an appropriate environment for business to attract the foreign in the region. The governments of South Asia will have to develop efficient and fiscal and monetary policies regarding the investment in the region. Better business environment will attract the local as well as foreign investors in South Asia.

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References

[1] A. Khodabakhshi, "Relationship between GDP and human development indices in India," in *Society of Interdisciplinary Business Research (SIBR) 2011 Conference on Interdisciplinary Business Research*, 2011.

[2] R. Croes, J. Ridderstaat, and V. Shapoval, "Extending tourism competitiveness to human development," *Annals of Tourism Research*, vol. 80, p. 102825, 2020.

[3] G. Sen, "Engendering poverty alleviation: Challenges and opportunities," 1999.

[4] A. [illegible]en, "Globalization, inequality and global protest," *Development*, vol. 45, pp. 11-16, 2002.
[5] W. Bank, "World development indicators online database. World Bank [Online]."
[6] [illegible] D. R. United Nations Development Programme, " The Next Frontier Human Development and the Anthropocene," 2020.
[7] WTO, " Recommendations of the Task Force on Aid for Trade, WT/AFT/1," Geneva2006.
[8] R. Magda and N. Bozsik, "Evaluation of Competitive Position of the Hungarian Agri-Food Product Groups on the Market of the European Union," *on European Integration 2018*, p. 974, 2018.
[9] W. Bank, "Assessing aid: What works, what doesn't, and why," 1998.
[10] A. Saleem, J. Sági, and J. Bárczi, "Modes of Islamic financing and aggregate economic output: evidence from Islamic banking industry of Pakistan," *Economic Annals-XXI*, vol. 190, 2021.
[11] E. Mahembe and N. M. Odhiambo, "Foreign aid and poverty reduction: A review of international literature," *Cogent Social Sciences*, vol. 5, p. 1625741, 2019.
[12] R. C. Riddell, *Does foreign aid really work?*: OUP Oxford, 2008.
[13] D. M. Hervie, Torone Dunay, A "The History And Impact Of Industrialization In Ghana," presented at the International Balkan and Near Eastern Social Sciences Congress Series on Economics, Business and Management, Plovdiv / Bulgaria 2020.
[14] V. Imre, E. Spaller, and V. Laszlo, "Potential effects of finance 4.0 on the employment in East Africa," *Economy and Sociology*, pp. 29-42, 2020.
[15] S. Kosack, "Effective aid: How democracy allows development aid to improve the quality of life," *World development*, vol. 31, pp. [illegible]22, 2003.
[16] N. Masud and B. Yontcheva, "Does foreign aid reduce poverty?: empirical evidence from nongovernmental and bilateral aid," [illegible]005.
[17] K. Gomanee, S. Girma, and O. Mo[illegible]sey, "Aid, public spending and human welfare: evidence from quantile regressions," *Journal of International Development: The Journal of the Development Studies Association*, vol. 17, pp. 299-309, 2005.
[18] M[illegible]anic, C. Mann, and J. Wilson, "Aid for trade facilitation," *World Bank, Washington, DC (draft)*, 2006.
[19] [illegible] Van Der Sluis and O. Durowah, "Aid for Trade and Foreign Direct Investment: Effects on Poverty Reduction," 2018.
[20] [illegible]CD/WTO, " Aid for Trade at a Glance ", Paris2011.
[21] R. H. Adams Jr, "The economic uses and impact of international remittances in rural Egypt," *Economic development and cultural change*, vol. 39[illegible]p. 695-722, 1991.
[22] [illegible]Arisman, "Determinant of human development index in ASEAN countries," *Signifikan*, vol. 7, pp. 113-122, 2018.
[23] [illegible]Yolanda, "Analysis of factors affecting inflation and its impact on human development index and poverty in Indonesia," 2017.
[24] G. Gohou and I. Soumaré, "Does foreign direct investment reduce poverty in Africa and are there regional differences?," *World [illegible]velopment*, vol. 40, pp. 75-95, 2012.
[25] [illegible]W. Granger and P. Newbold, "Spurious regressions in econometrics," *Journal of econometrics*, vol. 2, pp. 111-120, 1974.
[26] A. Levin, C.-F. Lin, and C.-S. J. Chu, "Unit root tests in panel data: asymptotic and finite-sample properties," *Journal of [illegible]nometrics*, vol. 108, pp. 1-24, 2002.
[27] M. H. Pesaran, Y. Shin, and R. P. Smith, "Pooled mean group estimation of dynamic heterogeneous panels," *Journal of the American statistical Association*, vol. 94, pp. 621-634, 1999.
[28] M. H. Pesaran and R. Smith, "Estimating long-run relationships from dynamic heterogeneous panels," *Journal of econometrics*, vol. [illegible]pp. 79-113, 1995.
[29] [illegible]A. Hausman, "Specification tests in econometrics," *Econometrica: Journal of the econometric society*, pp. 1251-1271, 1978.
[30] [illegible]n, A. Moritz, F. Steuber, V. Härle, F. Scholz, and A. Hangleiter, "Radiative carrier lifetime, momentum matrix element, and hole effective mass in GaN," *Applied Physics Letters*, vol. 70, pp. 631-633, 1997.
[31] O. (2010), "Increasing the impact of trade expansion on growth: Lessons from trade reforms for the design of aid for trade, OECD trade policy papers," 2010.
[32] C. I. –, "Trade-Development-Poverty Linkages: Reflections from Selected Asian and Sub-Saharan Africa Countries,," CUTS International, Jaipur, India.2008.
[33] UNCTAD, "The Least Developed Country: Developing Productive Capacities," *Journal of Development Studies*, vol. 43, pp. 766-[illegible], 2006.
[34] OECD/WTO, "Aid for Trade at a Glance 2015: Reducing Trade Costs for Inclusive, Sustainable Growth," WTO, Geneva/OECD Publishing, P[illegible]2015.
[35] G. Abdissa, A. Ayalew, C. B. Illés, and A. Dunay, "Effects of Corporate Entrepreneurship Dimensions on Organizational Performance: Case of Small and Medium Enterprises in Holeta Town, Ethiopia," *Journal of Open Innovation: Technology, Market, [illegible] Complexity*, vol. 7, p. 234, 2021.
[36] C. M. Jarque and A. K. Bera, "A test for normality of observations and regression residuals," *International Statistical Review/Revue Internationale de Statistique*, pp. 163-172, 1987.

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