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Aid for trade policy effectiveness and the middle income

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The COVID-19 pandemic has made it necessary for all countries and donors to re-evaluate the effectiveness of development policies as countries across the globe seek to reverse the negative growth rates and set their economies back on the path of recovery following the worldwide recession caused by the pandemic. The Aid for Trade (AfT) policy commenced in 2006 with the objective to promote economic growth in developing countries through export expansion. AfT has 3 main components, namely, Aid for Policies and Trade Adjustments, Aid for Trade Infrastructure, and Aid for Building Productive Capacity. Considering that economic growth is a prerequisite for escaping the Middle-Income Trap (MIT), this study seeks to investigate the potential role of AfT in helping countries escape the MIT by answering the following question: How has each of the 3 components of AfT impacted economic growth in middle-income countries? To answer this question, data for 73 middle-income AfT beneficiary countries over the period 2008-2018 were analysed using hierarchical multiple regression, dynamic panel regression, and quantile regression models. The findings suggest that AfT can contribute to growth but it cannot be relied upon as the main engine of growth and vehicle for escaping the MIT.

Keywords: *Aid for Trade, middle-income trap, economic growth*
Jel code: *F35, F43, O11, O57*

Introduction

Before the onset of the COVID-19 pandemic, many middle-income countries were grappling with what has been described in recent economics literature and development circles as the 'middle-income trap' (MIT) – a relatively new concept that describes the challenges middle-income countries face in advancing to high-income status. Estimates from the world bank indicate that only 13 out of 101 middle-income countries in 1960 were able to advance to high income by the year 2008 (World Bank 2012). The fact that a very limited number of countries are able to advance from middle income to high income has intrigued researchers whiles prompting policy makers and international development organisations to seek solutions due to excessive inequality and lack of social protection in affected countries (Foxley 2016; Glawe–Wagner 2016).

The challenges facing middle-income countries have been made even worse by the COVID-19 pandemic. Whilst the COVID-19 pandemic has impeded economic growth globally in all regions of the world (HLPE 2020, IMF, 2020), middle-income countries have been among the most affected (World Bank, 2020). For instance, an estimated 72 million representing about 80% of the new people who have now become poor as a consequence of the COVID-19 pandemic are in middle-income countries (World Bank, 2020). To make matters worse, the rate of unemployment was also projected to increase by 10% in middle-income countries as a result of COVID-19 (IMF, 2020). IMF (2020) also points out that global growth contraction as a result of the

pandemic for 2020 is estimated at – 3.5 percent, and recovery is going to be more difficult for middle-income countries compared to the advanced countries. Therefore, economic recovery from the pandemic and escaping the MIT would require innovative and more sustainable sources of economic growth.

Since the introduction of the MIT concept by Gill and Kharas (2007), several researchers have investigated the causes and possible solutions to the MIT. Low human capital, unfavourable demographics, weak governance and institutions, poor infrastructure, structure of economy, and low technological development are some of the factors that have been attributed to the MIT in the literature (World Bank 2012; Aiyar et al. 2013, Glawe–Wagner 2016, WEF 2016, Wang et al. 2018). Nevertheless, these factors are still inconclusive and debated in the literature (Leven 2019). That notwithstanding, there is a general consensus that some level of sustained economic growth is required for countries to escape the MIT (Acheampong–Udvari 2020, Leven 2019). As Foxley (2016) has observed, the MIT is characterized by a slowdown in growth due to an inability to achieve continuous improvements in competitiveness and productivity. Thus, Felipe et al. (2012) posits that escaping the MIT would require an annual growth rate of at least 3.5 and 4.7% sustained for a period of 14 and 28 years for upper-middle-income and lower-middle-income countries respectively.

In recognition of the importance of economic growth in improving the development status of nations, the Sustainable Development Goals (SDG) 8 has a target to sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries by 2030 (UN, 2015; UN, 2017). Meanwhile, economic growth is determined by the interaction of several endogenous and exogenous factors such as foreign direct investment (FDI), foreign aid and international trade (Todaro and Smith, 2015). As part of efforts to promote economic growth in developing countries, the Aid for Trade (AfT) policy was officially launched by the OECD and WTO in December. The AfT policy was developed in recognition of the potential of international trade as an engine of economic growth and poverty reduction coupled in view of the evidence that participation in international trade has been unequal over the years, with developing countries being more disadvantaged (OECD – WTO 2019). The objective of the AfT was therefore to have official development assistance (ODA) specifically targeted at activities that facilitate export expansion and diversification in developing countries with the view to bolstering the contribution of exports to economic growth with the expectation that this growth would translate into sustained poverty reduction (OECD – WTO, 2011, 2017 2019). AfT has 3 main components, namely, (1) aid for building trade infrastructure, (2) aid for building trade capacity, and (3) aid for trade policies and regulations (OECD – WTO, 2011, 2017, 2019). A study conducted by OECD and WTO in 2011 indicates that economic growth is one of the most important goals that both donors and recipient countries would like to achieve with AfT.

Since the inception of AfT policy about 15 years ago in 2006, over USD 400 billion of ODA have been disbursed to build trade capacity in developing countries (OECD – WTO 2019). Several empirical studies have also investigated the impacts of AfT on various dimensions of economic development. For instance, various empirical studies have found that AfT has a positive effect on multiple measures of export performance, poverty reduction, total employment, and attracting FDI (OECD – WTO

2019). What is still missing in the literature is the direct impact of total AfT and the various components of AfT on economic growth. Furthermore, studies on AfT have also not concentrated on middle-income countries and the potential of the AfT to help these countries to escape the MIT. Since the main objective of the AfT is to promote economic growth in developing countries through export expansion, could the MIT help countries to escape the MIT? Which of the 3 components of AfT has the greatest impact on economic growth, thus, the greatest potential for escaping the MIT?

To answer the research questions, this study uses dynamic panel and quantile regression models to analyse the impact of AfT and its components on economic growth in 73 middle-countries between 2008 and 2018. The next section discusses the concept, theoretical background, and empirical literature on the MIT and AfT. This is followed by an overview of the methodology and the data. The paper concludes with the key findings, conclusions and recommendations.

2. Theoretical and conceptual issues

Both the concept of MIT and the AfT policy appeared in the economics literature around the same time. The term 'middle-income trap' first appeared in a World Bank report authored by Gill and Kharas (2007), whereas the AfT initiative was officially launched in December 2005 but the implementation began in 2006, a year before the introduction of the term MIT. Although both concepts have received enormous attention over the past decade, the nexus between AfT and the MIT is yet to be empirically examined.

2.1. The middle-income trap

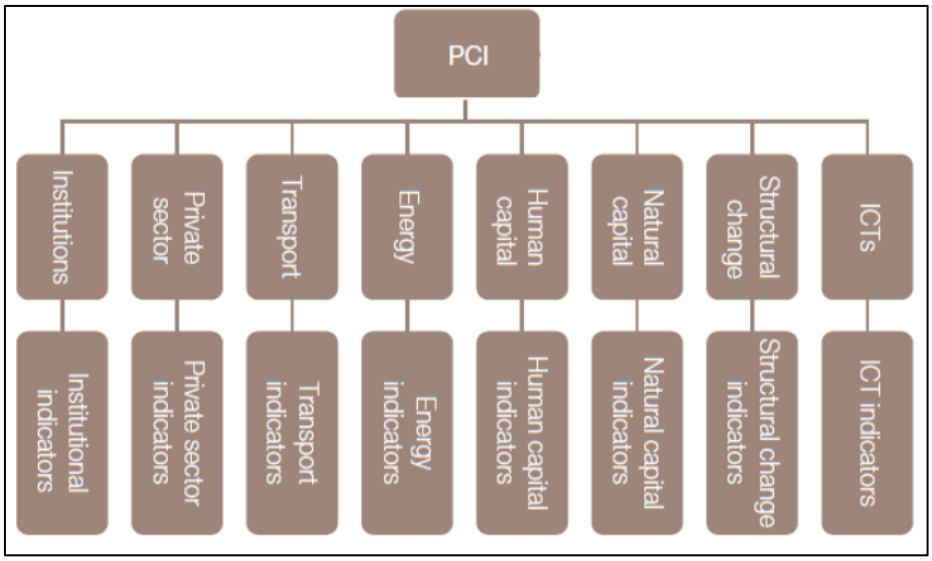
The MIT as a concept is still emerging with various definitions and approaches in determining which countries are "stuck in trap" in the literature (Glawe and Wagner, 2016). Nevertheless, Foxley (2016) concludes that the MIT is characterized by the following three related conditions: (1) a slowdown in growth due to an inability to achieve continuous improvements in competitiveness and productivity; (2) excessive inequality and lack of social protection; and (3) the inability of the institutional system to provide stability, transparency, and good governance.

Some authors also attribute the MIT to institutional and structural issues within an economy such as bad governance, weak institutions, poor infrastructure, and low human capital as well as the level of technological development (Aiyar et al. 2013, Eichengreen, Glawe–Wagner, 2016, 2018, Ohno 2009; Soyyigit 2019; World Bank 2012; WEF 2016). Other authors also define the MIT in terms of economic growth stagnation that keeps countries within the middle-income bracket for a long period of time (Eichengreen et al. 2013; Aiyar et al. 2013; Felipe et al. 2012; Gill–Kharas 2007, 2015; Glawe–Wagner 2016, 2018). Some authors posit that countries must remain in the middle-income bracket for at least 40 to 50 years to be considered as being trapped in the MIT but the exact duration is still inconclusive.

The World Bank classifies countries into 4 income groups, namely, high-income, upper-middle-income (UMI), lower-middle-income (LMI), and low-income, based on their annual gross national income (GNI) per capita calculated on the basis of the Atlas Method. Based on the World Bank's classifications, countries in the high-

income bracket are considered as developed, whereas those in the other income brackets are considered as developing countries. Similar to the views expressed in MIT studies discussed above, a recent study by UNCTAD (2021) in the development of the Productive Capacities Index (PCI) has found that the productive capacities of countries related to structural change, human capital, energy, institutions and ICTs differ by income groups with the more developed countries having higher scores on the PCI. In this regard, UNCTAD (2021) has also argued that investments in the productive capacities of countries is a key for escaping the MIT. Furthermore, the PCI is a framework that can "enable policymakers to understand the time and capacities needed to break the middle-income trap and lay the foundation for inclusive and sustainable economic growth and development" (UNCTAD, 2021, 32–33).

Figure 1 Productive Capacity Index and components



Source: UNCTAD (2021, 15).

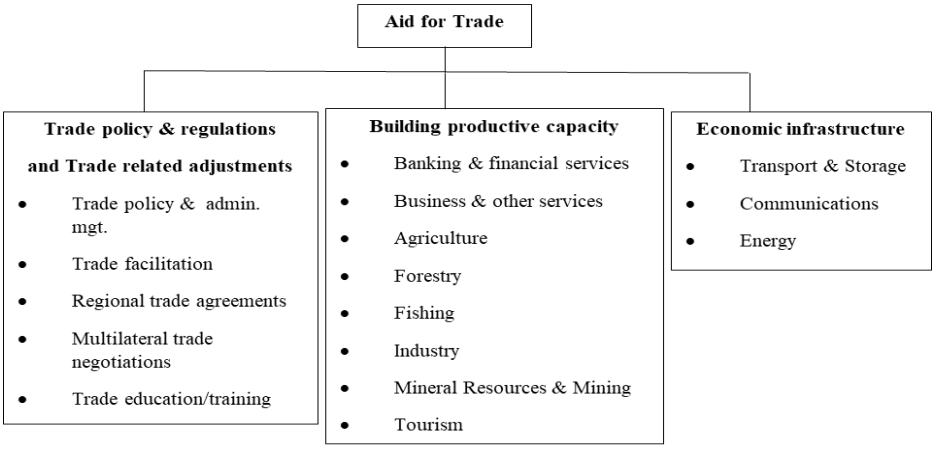
The various perspectives about the MIT have also informed various policy prescriptions on how countries can escape the MIT. Although different solutions have been proposed for escaping the MIT, it can also be concluded that the MIT is a complex phenomenon that is influenced be the interplay of several factors, as noted by Foxley (2016) and UNCTAD (2021). Furthermore, escaping the MIT requires sustained economic growth (Acheampong and Udvari, 2020) although the exact engines of achieving this growth is still inconclusive. Considering that the MIT is still an evolving phenomenon and that the solution has been elusive, this paper explores the potential role of AfT in helping countries escape the MIT.

2.2. The Aid for Trade Policy

The Aid for Trade (AfT) policy initiative was introduced by the Organisation for Economic Co-operation and Development (OECD) and the World Trade Organisation (WTO) in 2005 in recognition of the potential of international trade as an engine of economic growth and poverty reduction. As a part of efforts to assist developing countries address the supply side factors that inhibit their export diversification and effective participation in international trade, the AfT was introduced with the view that it could also enhance growth prospects and reduce poverty in developing countries (Udvari 2014, WTO – OECD 2019).

According to the OECD – WTO (2017), AfT flows are a subset of ODA which is defined by the OECD as grants and loans provided by the official sector with the main objective to promote economic development and welfare of developing countries. ODA and aid-for-trade flows are reported as gross disbursements in million US dollars. AfT flows are classified under 3 broad categories, namely, (1) aid for trade policy and regulations and trade-related adjustment (AfPR); (2) aid for economic infrastructure (AfEI); and (3) aid for building productive capacity (AfBPC). Figure 2 outlines the components of each of the 3 categories of AfT.

Figure 2 Components of Aid for Trade



Source: Author's construct based on OECD – WTO (2019, 519-525).

2.3. Empirical studies on Aid for Trade

Empirical studies on AfT have predominantly focused on the impact of AfT on exports. These studies have generally found positive impacts. Ghimire et al. (2016), for instance, found a positive and significant effect of AfT on multiple measures of export performance, however, with diminishing returns. Zarzoso et al. (2017) also investigated the effectiveness of AfT using a panel quantile regression approach and found that AfT has a positive impact on exports, particularly for countries that export less in volumes. Hühne et al. (2014) also found that AfT has a positive impact on the exports of beneficiary countries to donor countries as well as imports of beneficiary countries from donor countries.

Besides the impact of AfT on exports, some researchers have also investigated the impact of AfT on other economic variables. For instance, Lee – Ries investigated the impact of AfT on FDI and found that AfT had a positive impact on bilateral greenfield investment, noting that aid for trade for infrastructure and productive capacity are strongly associated with investment. Similarly, Roy (2017) noted that AfT can play a supportive role in improving the policy environment and helping beneficiary countries to attract FDI. Durowah (2017) also anlysed the role of AfT and FDI in poverty reduction based on panel data for 91 developing countries and found that AfT has a positive effect on poverty reduction although the impacts differed by countries. In spite of the positive findings, Jakupec and Kelly (2015) concluded that the paramount aim of AfT, which is to reduce poverty in developing recipient countries, has to a great extent not been achieved. At the same time, the existing studies suggest that AfT has positive impacts on exports and FDI, which can both positively impact growth, the impacts of AfT on growth, which is the ultimate aim of the AfT policy initiative, has received little attention in the literature. The objective of this paper is to fill this empirical gap and contribute another dimension to the evolving MIT literature by investigating the potential role of AfT in promoting growth in middle-income countries. If it is found that AfT positively contributes to economic growth, then it could be concluded that AfT has the potential to help countries to escape the MIT.

3. Materials and methods

Since the objective of this study is to explore the potential role of AfT in escaping the MIT, the study has concentrated on AfT beneficiaries that were classified as middle-income in 2006 when the AfT policy began. In order to include as many countries as possible, the study period spans from 2008 to 2018 due to data constraints. Based on World Bank historical classification of countries, in the year 2006 when the AfT began there were a total of 95 countries classified as middle-income. Out of the 95 middle-income countries, OECD data indicates 83 of these countries have been recipients of aid for trade (See Table 1). Out of the 83 AfT recipient middle-income countries, 73 constituted the final sample due to incomplete data on the various variables (See Appendix 1 for the list of countries). Table 1 also summarises the key variables and sources of data for this study.

Table 1 Study variables, measurements, and data sources

Variable	Measurement	Source
Aid for Trade (AfT) Components (See Figure 2)	Current USD in millions - Average of sub-components	OECD
Total export of goods and services	USD current prices in millions	UNCTADstat
GDP	USD at constant prices (2015) in millions	UNCTADstat
GDP per capita	USD at constant prices (2015) per capita	UNCTADstat
Productive Capacity Index (CPI) components (See Figure 1)	Score: 0-100	UNCTADstat
Foreign Direct Investment (FDI)	US dollars at current prices	UNCTADstat

Source: own construction

Data analysis

The data were analysed using descriptive statistics, correlation analysis, and regression analysis. The descriptive statistics were used to understand the distribution of the key variables, while correlation analysis was used to test if there were any significant statistical relationship between the study variables. The descriptives and correlations were also informed the regression models used in this study. In view of the study objectives, 3 different multiple regression approaches were used. These approaches were hierarchical multiple regression (also called sequential regression), dynamic panel regression, and panel quantile regression. Before conducting the analysis, preliminary robustness tests were conducted to ensure that the assumptions of normality, linearity, homoscedasticity, independence of residuals were not violated. In order to address issues of endogeneity as many relevant variables as possible were considered whilst the analyses were also disaggregated to the income group and country levels.

Regression models

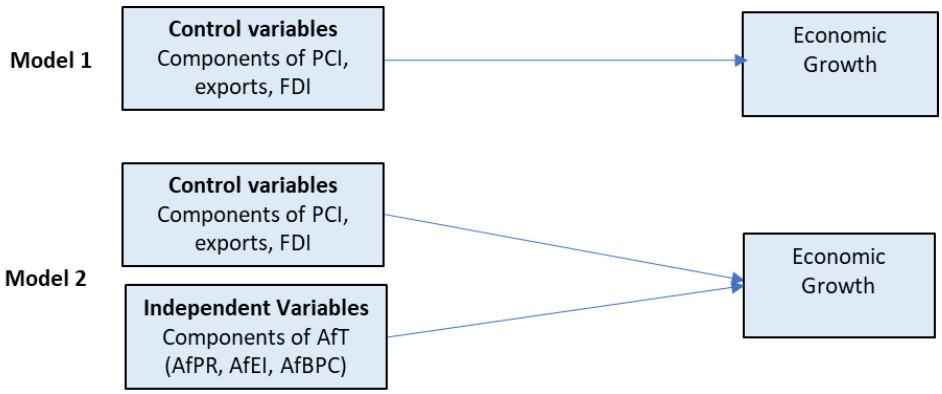
The general static model for this study can be represented by the following equation:

$$y_{it} = \alpha_i + \beta_i X_{it}{}' + e_{it} \quad (1)$$

Where *y* is the dependent variable (economic growth – LnGDP, LnPercaitaGDP, and LnGNIpercapita); α is the constant; β is the coefficient for the set of $X_{it}{}'$ independent variables (LnAfPR, LnAfEI, LnAfBPC, ZFDI, Human Capital, Institutions, Energy, Private Sector, Structural Change, ICTs, Transportation) for 'i' cross sections (73 countries) and 't' time periods (11 years).

Since, the objective of the study is to understand the potential role of AfT in helping countries to escape the MIT, the study first applied a hierarchical multiple regression. With this approach, variables or sets of variables are entered into the model in steps (or blocks), with each independent variable being assessed in terms of what it adds to the prediction of the dependent variable after the previous variables have been controlled for (Pallant, 2011). The contribution of the additional variables to explaining changes in the dependent variable is measured by the R^2 change. Based on existing MIT literature and economic growth theory, the study sought to investigate the unique contributions of the 3 components of AfT to economic growth when other determinants of economic growth are controlled for. Therefore, the hierarchical multiple regression was estimated using two models. The variables used to estimate the models are depicted in Figure 3. The analysis was also disaggregated by upper and lower middle-income groups in order to determine whether the impacts were different for the respective groups.

Figure 3 Hierarchical regression models



Source: Author's construct

Dynamic panel regression model

In addition to understanding the unique contribution of the AfT components to economic growth, the study also sought to understand the short and long term impacts of the AfT components on economic growth. This required the use of a dynamic panel regression model in order to address the issue of autocorrelation that was found. The dynamic linear panel regression model can be represented as follows (in notation based on Arellano (2003):

$$y_{it} = \alpha y_{i,t-i} + \beta' x_{it} + \eta_i + v_{it} \quad (1)$$

Where $\boldsymbol{y}$ is the dependent variable, $\boldsymbol{x}$ represents the explanatory variables. $\boldsymbol{\alpha}$ is the coefficient of the lags of the dependent variable. β' is the coefficient for time independent variables (LnAfPR, LnAfBPC, LnAfEI); η_i is the cross-section effect; and v_{it} *is* the white noise or error term. When explanatory variables are also lagged as was desired in our study, Arellano's equation can be represented as follows:

$$y_{it} = \alpha y_{i,t-i} + \beta_0 + \beta_1 x_{it} + \beta_2 x_{i,t-1} + \eta_i + v_{it} \quad (2)$$

In order to address autocorrelation in the model, the first lag of the dependent was used as an instrument. Before running this model, the Augmented Dickey-Fuller (ADF) unit root test was also conducted. All the variables were significant at level and 1st difference. Equation 2 was estimated using 3 separate 2-step dynamic panel regression where LnGDP, lnGDP per capita, and LnGNI per capita where the respective 3 dependent variables; however, the model with the GNI per capita did not meet the assumptions of the Sargan over-identification test. To overcome this, quantile regression was used.

Quantile regression

In order to address the issues of heteroskedasticy, autocorrelation, non-normality, and outliers, the panel quantile regression model was used. Quantile regression permits a more complete description of the conditional distribution than conditional mean

analysis alone since the model allows the population to be divided into segments with equal proportions of the reference population in each segment (Koenker, 2001; IHS Global Inc, 2017). The quantile regression can be represented as follows:

$$y_i = x_i{}'\beta_q + e_i \quad (3)$$

Where β_q is the vector of unknown parameters associated with the q^{th} quantile. Quantile regression offers a robust method of modelling relationships since it does not require strong distributional assumptions such as linearity, homoscedasticity, and normality, which are perquisites for regression models based on the conditional mean. The quantile regression is also able to handle outliers in the dependent variables. It should be noted that each of the 3 regression approaches were used to answer different aspects of the research question, which is why different variables were included in the respective estimates. The results for the various analyses are discussed in the next section.

4. Key findings and discussions

4.1. Distribution of Aid for Trade components

A descriptive analysis of the distribution of the 3 components of AfT components for the 73 middle-income countries in this study revealed that the LMI group of countries received more of each component than the UMI group of countries.

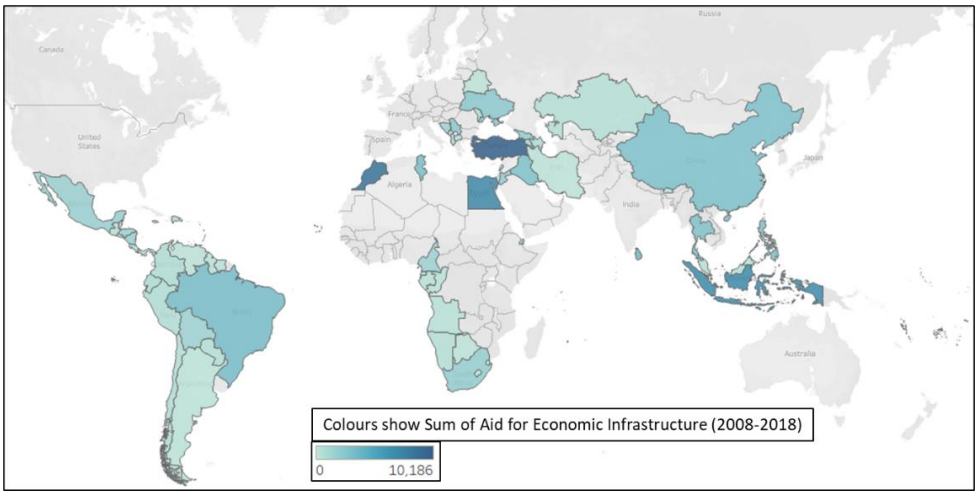
Table 2 Distribution of Aid for Trade components by income groups 2008–2018

Income Group		**AfEI**	**AfBPC**	**AfPR**
LMI	N	308	308	308
	Mean	154.88	55.83	2.71
	Median	57.52	32.18	0.72
	Minimum	0.02	0.59	0.00
	Maximum	1,534.07	1,079.02	43.75
	Std. Deviation	231.14	88.82	4.88
	Std. Error of Mean	13.17	5.06	0.28
UMI	N	495	495	495
	Mean	79.15	37.56	3.74
	Median	16.10	16.51	0.51
	Minimum	0.00	0.00	0.00
	Maximum	1,532.29	577.89	247.16
	Std. Deviation	168.00	69.01	15.97
	Std. Error of Mean	7.55	3.10	0.72
All 73 Countries	N	803.00	803.00	803.00
	Mean	108.20	44.57	3.35
	Median	28.31	20.16	0.62
	Minimum	0.00	0.00	0.00
	Maximum	1,534.07	1,079.02	247.16
	Std. Deviation	197.97	77.67	12.90
	Std. Error of Mean	6.99	2.74	0.46

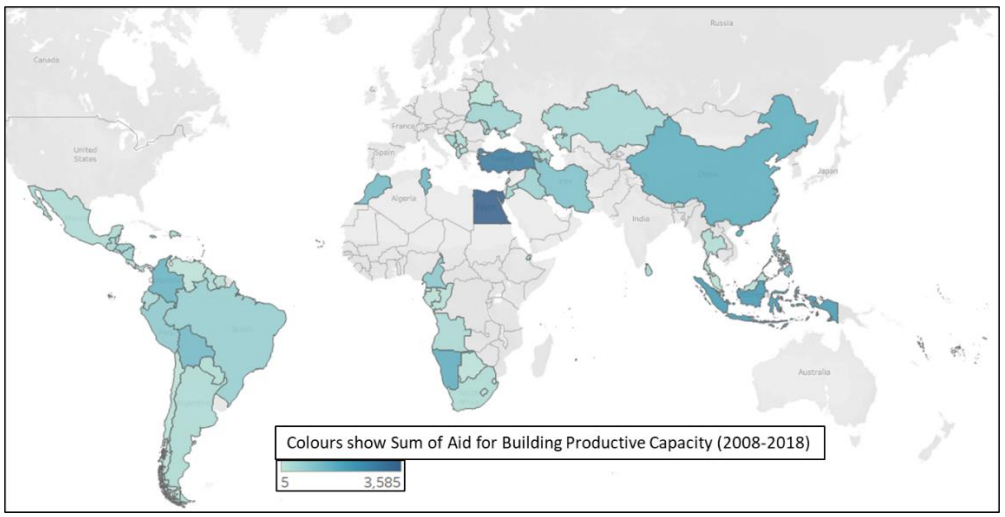
Source: Author's calculations

An analysis of the distribution of AfEI revealed that the top 5 recipients of this component of AfT were Turkey, Morocco, Egypt, Indonesia, and Sri Lanka (See Map 1). These countries were followed by Brazil, Tunisia, China, Iraq, and Thailand in that order.For the AfBPC, the top 10 recipients of this component of AfT were Egypt, Turkey, Indonesia, China, Namibia, Colombia, Tunisia, Bolivia, Morocco, Philippines (See Map 2).

Map 1 Distribution of Aid for Economic Infrastructure 2008–2018



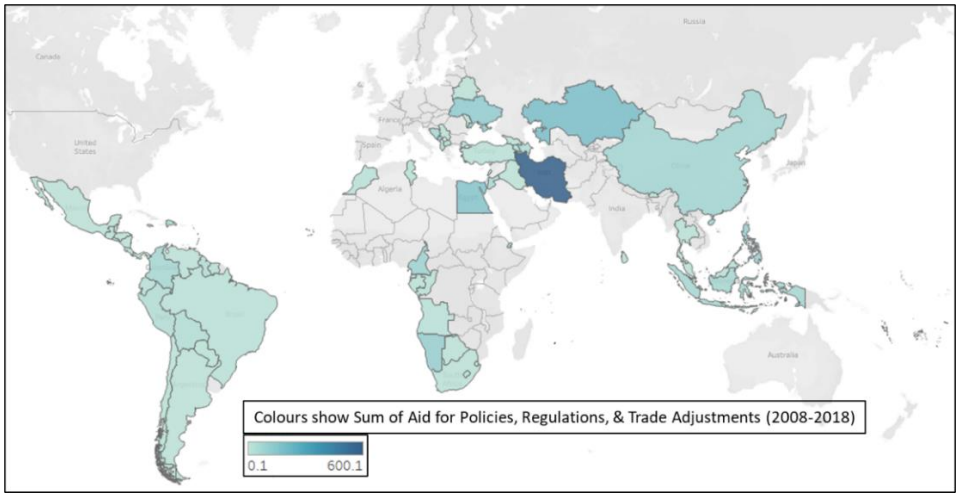
Map 2 Distribution of Aid for Building Productive Capacity 2008–2018



Source: Author's construct based on data from OECD

With regards to the Aid for Policies, Regulations, and Trade Adjustments, the study finds that Iran, Kazakhstan, Egypt, Grenada, Ukraine, Montenegro, St. Vincent and the Grenadines, Namibia, and the Philippines were the largest recipient of this AfT (see Map 3).

Map 3 Distribution of Aid for Policies, Regulations, and Trade Adjustments 2008–2018



Source: Author's construct based on data from OECD

4.2. Relationship between Aid for Trade components and economic growth

Before investigating the potential of the AfT components in helping middle-income countries to escape the MIT, the study used Pearsons product moment correlation (r) analysis to test if there was any significant relationship between the components of AfT and economic growth. This analysis done to provide a basis for the subsequent regression analyses.

Table 3 The components of AfT have a significant positive relationship with GDP

		LnGDP	**LnGDC**	**LnGNI**
LnAfPR	r	0.086*	-0.134**	-0.130**
	p-value	0.015	0	0
	N	803	803	803
LnAfEI	r	0.298**	-0.373**	-0.349**
	p-value	0	0	0
	N	803	803	803
LnAfBPC	r	0.283**	-0.255**	-0.256**
	p-value	0	0	0
	N	803	803	803

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Source: Author's calculations

The correlation analysis found a significant positive relationship between the AfT components and GDP, but the relationship between the components and per capita income was found to be negative although significant as well. This finding suggests that

for the sample countries as a whole, higher levels of AfT were associated with higher levels of economic growth but not per capita income. Due to endogeneity issues, the study compared the relationships between the AfT components and growth between the UMI and LMI countries. The study finds a significant positive relationship between the components and GDP in both countries; however, the relationship was stronger in countries classified as LMI. As indicated in Table 3, the Aid for Building Productive Capacity had the strongest relationship (r=0.8) followed by the Aid for Economic Infrastructure (r=0.6).

Table 3 Income groups influences relationship between AfT components and growth

		Lower Middle-Income			**Upper Middle-Income**		
		LnGDP	**LnGDC**	**LnGNI**	**LnGDP**	**LnGDC**	**LnGNI**
LnAfPR	r	0.189**	-0.056	-0.028	0.057	-0.165**	-0.169**
	p-value	0.001	0.33	0.626	0.204	0	0
	N	308	308	308	495	495	495
LnAfEI	r	0.563**	-0.046	-0.022	0.338**	-0.403**	-0.355**
	p-value	0	0.419	0.699	0	0	0
	N	308	308	308	495	495	495
LnAfBPC	r	0.790**	0.09	0.008	0.185**	-0.292**	-0.263**
	p-value	0	0.114	0.888	0	0	0
	N	308	308	308	495	495	495

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Source: Author's calculations

4.3. The potential of AfT components in escaping the middle-income trap

In order to determine the potential of the AfT components in helping countries to the escape the MIT the study investigated the impact of the AfT components on economic growth in the 73 countries after the various determinants of economic growth were controlled for using hierarchical multiple regression analysis. The study found a significant R^2 change between models 1 and 2 indicating that the components of AfT make a statistically significant unique contribution to economic growth in the middle-income countrie; however, the change was very minimal, not even up to 1% (Table 4).

Table 4 Results of hierarchical regression – Model Summary

Dependent variable	LnGDP		LnGDP per capita		LnGNI per capita	
Model	1	2	1	2	1	2
R	0.983a	0.984b	0.724a	0.799b	0.720a	0.793b
R^2	0.967	0.968	0.524	0.639	0.518	0.629
Adjusted R	0.967	0.967	0.517	0.633	0.512	0.622
R^2 change	-	0.000	-	0.115	-	0.111
Sig. F Change	-	0.019	-	0	-	0

a. Predictors: (Constant), Transport, Energy, ZFDI, Institution, ICT, Natural Capital,

Source: Author's calculations

An examination of the significance values of each of the independent variables indicates that only the Aid for Policies, Regulations, and Trade Adjustments (LnAfPR) had a significant impact on GDP when the other determinants of economic growth were controlled for, but its contribution was also very weak ($\beta = 0.022$). Similarly, the dynamic panel regression results show that only the LnAfPR and Aid for Building Productive Capacity had significant positive impacts on GDP but the impacts were not immediate. Only the previous year's AfT of these components had a significant impact on the current year's GDP.

Table 5 Results of 2-step dynamic panel, using 584 observations. Included 73 cross-sectional units. H-matrix as per Ox/DPD

Dependent variable LnGDP			Dependent variable LnGDP per capita		
	Coefficient	*p*-value		Coefficient	*p*-value
LnGDP(-1)	0.881945	<0.0001	LnGDC(-1)	0.912317	<0.0001***
const	0.00208478	0.3748	const	0.000353	0.8257
LnAfBPC	0.000859937	0.5716	LnAfBPC	0.000265	0.8413
LnAfBPC-1	0.00243704	0.0308**	LnAfBPC-1	0.001585	0.2073
LnAfBPC-2	0.00158957	0.47	LnAfBPC-2	0.001297	0.5651
LnAfPR	−4.60099e-05	0.7866	LnAfPR	0.000135	0.4642
LnAfPR-1	0.000282165	0.0861*	LnAfPR-1	0.000389	0.0698*
LnAfPR-2	−5.42381e-05	0.7351	LnAfPR-2	−0.000115766	0.5275
LnAfEI	−0.000463885	0.6256	LnAfEI	−6.02884e-05	0.9488
LnAfEI-1	−0.000720625	0.6495	LnAfEI-1	−0.000507571	0.7193
LnAfEI-2	−0.000465123	0.561	LnAfEI-2	−0.000526476	0.5023
Test for AR(1) errors: [0.0078]			Test for AR(1) errors: z = [0.0067]		
Test for AR(2) errors: [0.6683]			Test for AR(2) errors: [0.6901]		
Sargan test: = 38.462 [0.6683]			Sargan test: 43.5763 [0.4468]		
Pesaran CD test - *p*-value = 0.0569231			Pesaran CD test: *p*-value = 0.0506166		

**significant at 5%; *significant at 10%

Source: Author's calculations

Finally, the study sought to determine whether the growth level of countries determined the impact of the AfT components. The quantile regression estimates revealed that, in all quantiles, the AfBPC and AfEI had positive impacts; however, the AfPR only had positive impacts on GDP in the 80th and 90th quantiles. Generally, the impact of the various components of AfT had the greatest impacts in the lower quantiles (see Table 6 and Figure 4).

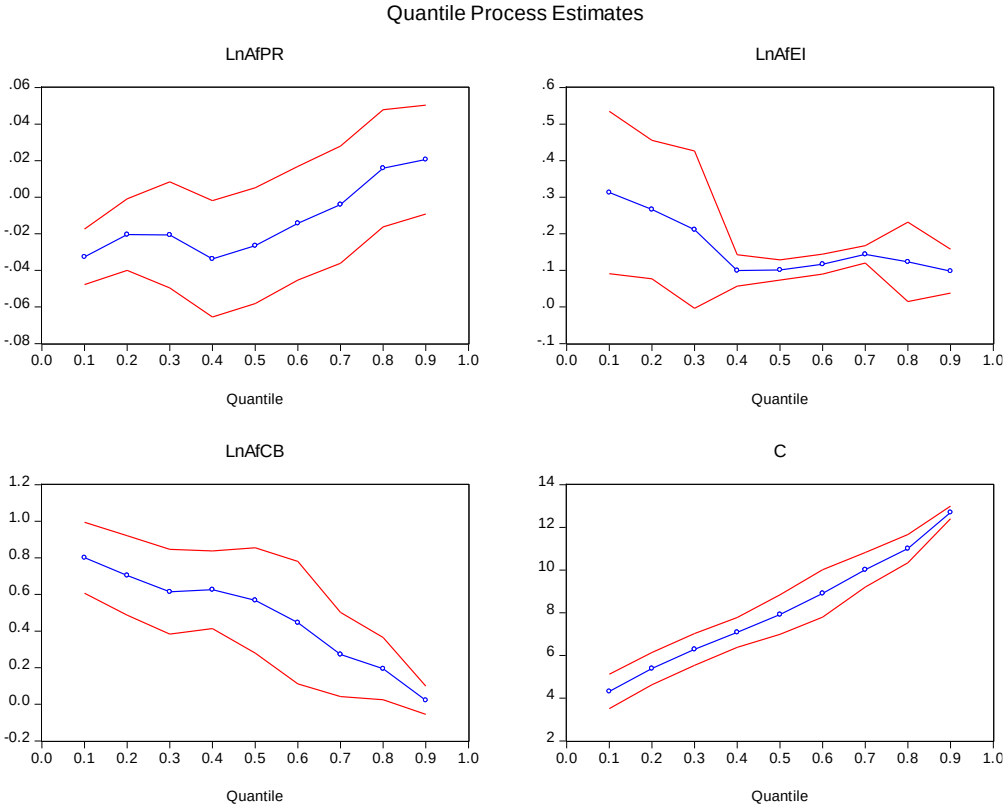
Table 6 Results of Quantile Regression

Quantile Process Estimates
Equation: UNTITLED
Specification: LNGDP LNPR LNTI LNCB C
Estimated equation quantile tau = 0.5
Number of process quantiles: 10
Display all coefficients

	Quantile	Coefficient	Std. Error	t-Statistic	Prob.
LnAfPR	0.100	-0.032588	0.007722	-4.219968	0.0000
	0.200	-0.020412	0.009959	-2.049631	0.0407
	0.300	-0.020592	0.014782	-1.393042	0.1640
	0.400	-0.033706	0.016231	-2.076621	0.0382
	0.500	-0.026458	0.016138	-1.639455	0.1015
	0.600	-0.014215	0.015833	-0.897849	0.3695
	0.700	-0.004041	0.016346	-0.247196	0.8048
	0.800	0.015864	0.016340	0.970869	0.3319
	0.900	0.020603	0.015191	1.356310	0.1754
LnAfEI	0.100	0.312905	0.113205	2.764053	0.0058
	0.200	0.266361	0.096599	2.757402	0.0060
	0.300	0.211296	0.109650	1.927012	0.0543
	0.400	0.099731	0.021923	4.549132	0.0000
	0.500	0.101251	0.014027	7.218448	0.0000
	0.600	0.117116	0.013901	8.424908	0.0000
	0.700	0.144037	0.012135	11.86944	0.0000
	0.800	0.123571	0.055375	2.231529	0.0259
	0.900	0.097992	0.030659	3.196195	0.0014
LnAfBPC	0.100	0.800925	0.098883	8.099764	0.0000
	0.200	0.703942	0.110526	6.369040	0.0000
	0.300	0.614821	0.118247	5.199450	0.0000
	0.400	0.626167	0.108192	5.787539	0.0000
	0.500	0.567731	0.146807	3.867181	0.0001
	0.600	0.446198	0.170810	2.612239	0.0092
	0.700	0.271864	0.117280	2.318075	0.0207
	0.800	0.194957	0.086764	2.246982	0.0249
	0.900	0.022234	0.039393	0.564410	0.5726

Source: Author's calculations

Figure 4 Results of Quantile Regression



Source: Author's calculations

5. Conclusion

The study has investigated the potential of the 3 components of AfT in helping middle-income countries to escape the MIT. To address this objective, the study has analysed data for 73 middle-income AfT recipients from 2008 to 2018 using 3 different multiple regression approaches, namely, hierarchical multiple regression, dynamic panel regression, and quantile regression models. The study sought to answer 2 main research questions: (1) Do the components of AfT make unique significant contributions to growth in middle-income countries when other determinants of growth are controlled for? (2) Which of the 3 components of AfT has the greatest impact on economic growth in middle-income countries? The study has found that the components of AfT have a significant impact on growth in middle-income countries but impact varied across countries. For instance, the study has found that AfBPC (r=0.8) and AfEI (r=0.6) had a significant and strong positive relationship with GDP in the LMI countries, but the relationships were weak in the UMI countries, r=0.2 and r=0.3, respectively. When other determinants of growth such as productive capacity indicators, exports, and FDI were controlled for, the results of the hierarchical multiple regression have shown that only Aid for Policies, Regulations, and Adjustments had the greatest positive impact on

GDP, but the impact was very weak. This finding was confirmed by a dynamic panel regression. On the other hand, the results of the quantile regression analysis showed that, whereas the impact of AfPR on growth was negative in all quantiles except for the 80th and 90th, the impact was positive in all quantiles for both the AfBPC and AfEI. Furthermore, the impacts were more positive and stronger in countries with lower GDP. Since, the components of AfT have positive impacts on growth in the middle-income countries, it can be concluded that the AfT can contribute to countries escaping the MIT. However, this study has shown that the impact of AfT on growth is asymmetrical across countries in different income groups. Furthermore, other variables such as exports, FDI and productive capacity of countries and more significant impacts on economic growth. Therefore, AfT cannot be relied upon as a major driver of economic growth and escaping the MIT although AfT can make a significant contribution in some countries. Further in-depth country case studies and comparative studies would, however, be required to understand the unique country characteristics that accounts for the impacts of AfT in various countries as well as the asymmetrical impacts of AfT in beneficiary countries respectively.

References

Acheampong, T. Y. – Udvari, B. (2020): The potential role of aid in escaping the middle-income trap. *Society and Economy*, 42, 4, 420–441.

Aiyar, S. – Duval, R. – Puy, D. – Wu, Y., – Zhang, L. (2013): Growth Slowdowns and the Middle-Income Trap. *IMF Working Paper WP/13/71*. Washington: International Monetary Fund.

Arellano, M. (2003): *Panel Data Econometrics.* Oxford: Oxford University Press.

Durowah, O. (2017): *The role of aid for trade and foreign direct investment in poverty reduction: a panel data analysis of 91 developing countries*, South Dakota State University, http://openprairie.sdstate.edu/etd/1187

Eichengreen, B. – Park, D. – Shin, K. (2013): *Growth Slowdowns Redux: New Evidence on the Middle Income Trap.* Cambridge: National Bureau of Economic Research.

Felipe, J. – Abdon, A. – Kumar, U. (2012): T*racking the Middle-income Trap: What Is It, Who Is in It, and Why?* Levy Economics Institute of Bard College, Working Paper No. 715.

Foxley, A. (2016). Inclusive Development: Escaping the Middle-Income Trap. In Foxley, A. – Stallings, B. (Eds.) *Innovation and inclusion in Latin America: strategies to avoid the middle income trap*. Berlin: Springer, pp. 33–57.

Ghimire, S. – Mukherjee, D. – Alvi, E. (2016). Aid for Trade and export performance of developing countries. *Applied Econometrics and International Development, 16,* 1, 23–34.

Gill, I. – Kharas, H. (2007): *An East Asian Renaissance, Ideas for Economic Growth*. Washington DC: World Bank.

Gill, I. – Kharas, H. (2015): *The Middle-Income Trap Turns Ten. Policy Research Working Paper No.7403.* Washington DC: World Bank.

Glawe, L. – Wagner, H. (2016): *The middle-income trap - definitions, theories and countries concerned: a literature survey*. Hagen: Munich Personal RePEc Archive.

Glawe, L. – Wagner, H. (2018): *The Middle-Income Trap 2.0, the Increasing Role of Human Capital in the Age of Automation and Implications for Developing Asia*. CEAMeS Discussion Paper No. 15. Hagen: Center for East Asia Macroeconomic Studies.

HLPE (2020): *Food security and nutrition: building a global narrative towards 2030.* Rome: High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security of the Food and Agriculture Organization of the United Nations. http://www.fao.org/3/ca9733en/ca9733en.pdf (Accessed: 5 March 2021).

Hühne, P. – Meyer, B. – Nunnenkamp, P. (2014): Who benefits from aid for trade? Comparing the effects on recipient versus donor exports. *Journal of Development Studies*, 50, 9, 1275–1288.

IHS Global Inc. (2017): *EViews 10 User's Guide II.* Irvine: HIS Global Inc.

IMF (2020): *World Economic Outlook October 2020.* Washington D.C. International Monetary Fund. https://www.imf.org/-/media/Files/Publications/WEO/2020/October/English/text.ashx (Accessed: 6 March 2021).

IMF (2021): *World Economic Outlook Update January 2021*. Washington D.C. International Monetary Fund. https://www.imf.org/-/media/Files/Publications/WEO/2021/Update/January/English/text.ashx (Accessed: 6 March 2021).

Jakupec, V. – Kelly, M. (Eds). (2015): *Assessing the impact of foreign aid: value for money and aid for trade.* Academic Press.

Koenker R. – Hallock K. F. (2001): Quantile Regression. *Journal of Economic Perspectives*, 1, 4, 143–156.

Leven, B. (2019): Middle-Income Trap: The Case of Poland. *Business and Economics Research Journal*, 10, 5, 1029–1038. https://doi.org/10.20409/berj.2019.219

OECD. (2020a): Official Development Assistance – definition and Coverage. Paris: Organisation for Economic Co-operation and Development. http://www.oecd.org/development/financing-sustainabledevelopment/

OECD (2020b): Aid-for-Trade statistical queries. Available at http://www.oecd.org/dac/aft/aid-for-tradestatisticalqueries.htm

OECD – WTO (2007): *Aid for trade at a glance 2007. 1st global review.* Executive summary. Geneva and Paris: World Trade Organization and OECD Publishing.

OECD – WTO (2011): *Aid for trade at a glance 2011*. Geneva and Paris: World Trade Organization and OECD Publishing.

OECD – WTO (2017): *Aid for Trade at a Glance 2017: Promoting Trade, Inclusiveness and Connectivity for Sustainable Development*. Geneva and Paris: World Trade Organization and OECD Publishing.

OECD – WTO (2019): *Aid for Trade at a Glance Report 2019, Economic Empowerment and Diversification*. Geneva and Paris: World Trade Organization and OECD Publishing.

Ohno, K. (2009): Avoiding the Middle-income Trap: Renovating Industrial Policy Formulation in Vietnam. *ASEAN Economic Bulletin* 26, 1, 25–43.

Pallant, J. (2011): *Survival manual. A step by step guide to data analysis using SPSS*, 4.

Riddell, A. – Niño-Zarazúa, M. (2016): The effectiveness of foreign aid to education: What can be learned?. *International Journal of Educational Development 48*: 23–36.

Soyyigit, S. (2019): The Relationship Between Middle Income Trap and Structural Transformation: The Case of Selected Countries. *CEJEME*, 11, 4, 217–235.

Todaro, M. P. – Smith, S. C. (2015): *Economic development 12th Edition*. Upper Sadle River: Pearson.

Udvari, B. (2014): Impacts of Aid for Trade on Trade with the EU, the Role of Old and New Member States. *Journal of Global Policy and Governance, 3*, 77–93. doi: http://dx.doi.org/10.14666/2194-7740-3-1-006.

Udvari, B. (2016): *The Aid for Trade initiative and the export performance of the Iberian EU-countries* (Working Paper No. 225). Budapest: Centre for Economic and Regional Studies HAS Institute of World Economics.

Udvari, B. (2017): Export Performance of the Baltic States: The Effects of the Aid for Trade Initiative. *Romanian J. Eur. Aff., 17*, 108.

Udvari, B. – Ampah, I. K. (2018): Impacts of Aid for Innovation on Economic Growth in the Sub-Saharan African Countries. *Mediterranean Journal of Social Science* 9(4): Sciendo. Doi: 10.2478/mjss-2018-0119.

UN (2015): *Transforming Our World: The 2030 Agenda for Sustainable Development.* New York: United Nations.

UN (2017): *Resolution adopted by the General Assembly on 6 July 2017, A/RES/71/313: Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development.* New York: United Nations.

UNCTAD (2021): *Productive Capacities Index, Methodological Approach and Results*. Geneva: United Nations Conference on Trade and Development.

WEF (2016): *The Global Competitiveness Report 2016–2017.* Geneva: World Economic Forum.

World Bank (2012): *China 2030, Building a Modern, Harmonious, and Creative High-Income Society.* Washington DC: World Bank.

World Bank (2020): *Poverty and Shared Prosperty Report 2020, Reversals of Fortune.* Washington D.C.: World Bank.

World Bank (2021): *How does the World Bank classify countries?* Washington D.C.: World Bank. https://datahelpdesk.worldbank.org/knowledgebase/articles/378834-how-does-the-world-bank-classify-countries (Accessed 6 March 2021).

Zarzoso, M. I. – Nowak Lehmann, D. F. – Rehwald, K. (2017): Is aid for trade effective? A panel quantile regression approach. *Review of Development Economics*, 21, 175–203, https://doi.org/10.1111/rode.12322

Appendix 1: List of 83 Aid for Trade recipients in 2006

LMI countries	UMI countries
1. Albania	1. Argentina
2. Angola	2. Belize
3. Armenia	3. Botswana
4. Azerbaijan	4. Brazil
5. Belarus	5. Chile
6. Bhutan	6. Costa Rica
7. Bolivia	**7. Croatia***
8. Bosnia and Herzegovina	8. Dominica
9. Cameroon	9. Equatorial Guinea
10. Cape Verde	10. Gabon
11. China	11. Grenada
12. Colombia	12. Kazakhstan
13. Congo, Rep.	13. Lebanon
14. Cuba*	**14. Libya***
15. Djibouti	15. Malaysia
16. Dominican Republic	16. Mauritius
17. Ecuador	17. Mexico
18. Egypt, Arab Rep.	18. Montenegro
19. El Salvador	**19. Northern Mariana Islands***
20. Fiji	**20. Palau***
21. Georgia	21. Panama
22. Guatemala	22. Serbia
23. Guyana	23. Seychelles
24. Honduras	24. South Africa
25. Indonesia	25. St. Kitts and Nevis
26. Iran, Islamic Rep.	26. St. Lucia
27. Iraq	27. St. Vincent and the Grenadines
28. Jamaica	28. Turkey
29. Jordan	29. Venezuela
30. Kiribati	**30. West Bank and Gaza Strip***
31. Lesotho	
32. Maldives	
33. Marshall Islands*	
34. Micronesia, Fed. Sts.*	
35. Moldova	
36. Morocco	
37. Namibia	
38. Nicaragua	
39. North Macedonia	
40. Paraguay	
41. Peru	
42. Philippines	
43. Samoa	
44. Sri Lanka	
45. Suriname	Note: * Countries were omitted from the study due to inadequate data.
46. Swaziland	
47. Syrian Arab Republic*	
48. Thailand	
49. Tonga	
50. Tunisia	
51. Turkmenistan*	
52. Ukraine	
53. Vanuatu	

Appendix 2: Results of hierarchical multiple regression

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	1.615	.266		6.078	.000					
	LnEx	.903	.012	.874	77.993	.000	.979	.942	.511	.342	2.925
	ZFDI	.143	.021	.063	6.841	.000	.533	.240	.045	.506	1.977
	Human Capital	.034	.004	.089	7.648	.000	.308	.266	.050	.320	3.126
	ICT	-.037	.007	-.054	-5.298	.000	.191	-.188	-.035	.413	2.422
	Structural Change	.013	.007	.020	1.818	.069	.516	.066	.012	.340	2.942
	Institution	-.006	.002	-.032	-3.623	.000	-.320	-.130	-.024	.540	1.851
	Natural Capital	-.006	.002	-.022	-2.675	.008	.273	-.096	-.018	.641	1.561
	Private Sector	-.005	.003	-.015	-1.487	.137	-.032	-.054	-.010	.408	2.451
	Energy	.010	.004	.018	2.356	.019	.271	.085	.015	.704	1.421
	Transport	-.028	.003	-.083	-9.054	.000	-.497	-.311	-.059	.512	1.953
2	(Constant)	1.680	.270		6.224	.000					
	LnEx	.904	.012	.874	77.745	.000	.979	.942	.507	.336	2.976
	ZFDI	.134	.021	.059	6.321	.000	.533	.223	.041	.492	2.033
	Human Capital	.031	.005	.082	6.883	.000	.308	.242	.045	.302	3.310
	ICT	-.032	.007	-.046	-4.410	.000	.191	-.158	-.029	.383	2.613
	Structural Change	.017	.007	.026	2.306	.021	.516	.083	.015	.329	3.041
	Institution	-.006	.002	-.032	-3.623	.000	-.320	-.130	-.024	.538	1.858
	Natural Capital	-.006	.002	-.022	-2.684	.007	.273	-.097	-.018	.628	1.593
	Private Sector	-.005	.003	-.016	-1.598	.110	-.032	-.058	-.010	.404	2.478
	Energy	.008	.004	.016	2.009	.045	.271	.073	.013	.687	1.455
	Transport	-.027	.003	-.079	-8.555	.000	-.497	-.296	-.056	.498	2.009
	LnPR	.007	.002	.022	3.001	.003	.086	.108	.020	.779	1.284
	LnTI	.003	.004	.006	.794	.427	.298	.029	.005	.699	1.431
	LnCB	-.006	.009	-.005	-.668	.504	.283	-.024	-.004	.653	1.532

a. Dependent Variable: LnGDP

Appendix 3: Unit root test results

Unit Root Test

Null Hypothesis: HUMAN_CAPITAL has a unit root
Exogenous: Constant
Lag Length: 11 (Automatic - based on SIC, maxlag=20)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.490903	0.0000
Test critical values:	1% level	-3.438638	
	5% level	-2.865088	
	10% level	-2.568715	

*MacKinnon (1996) one-sided *p*-values.

Null Hypothesis: INSTITUTION has a unit root
Exogenous: Constant
Lag Length: 11 (Automatic - based on SIC, maxlag=20)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.315335	0.0000
Test critical values:	1% level	-3.438638	
	5% level	-2.865088	
	10% level	-2.568715	

*MacKinnon (1996) one-sided *p*-values.

Null Hypothesis: PRODUCTIVE_INDEX has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=20)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.141780	0.0000
Test critical values:	1% level	-3.438454	
	5% level	-2.865007	
	10% level	-2.568671	

*MacKinnon (1996) one-sided *p*-values.

Null Hypothesis: ICT has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=20)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-8.586594	0.0000

Test critical values:	1% level	-3.438402
	5% level	-2.864984
	10% level	-2.568659

*MacKinnon (1996) one-sided *p*-values.

Null Hypothesis: STRUCTURAL_CHANGE has a unit root
Exogenous: Constant
Lag Length: 11 (Automatic - based on SIC, maxlag=20)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.869246	0.0000
Test critical values:	1% level	-3.438638	
	5% level	-2.865088	
	10% level	-2.568715	

*MacKinnon (1996) one-sided *p*-values.

Null Hypothesis: LNCB has a unit root
Exogenous: Constant
Lag Length: 2 (Automatic - based on SIC, maxlag=20)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.507085	0.0000
Test critical values:	1% level	-3.438299	
	5% level	-2.864938	
	10% level	-2.568634	

*MacKinnon (1996) one-sided *p*-values.

Null Hypothesis: LNEX has a unit root
Exogenous: Constant
Lag Length: 11 (Automatic - based on SIC, maxlag=20)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.778344	0.0001
Test critical values:	1% level	-3.439867	
	5% level	-2.865630	
	10% level	-2.569005	

*MacKinnon (1996) one-sided *p*-values.

Null Hypothesis: LNGNI has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=20)

		t-Statistic	Prob.*

Augmented Dickey-Fuller test statistic		-7.375849	0.0000
Test critical values:	1% level	-3.438278	
	5% level	-2.864929	
	10% level	-2.568629	

*MacKinnon (1996) one-sided *p*-values.

Null Hypothesis: LNTI has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=20)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-10.92060	0.0000
Test critical values:	1% level	-3.438288	
	5% level	-2.864934	
	10% level	-2.568632	

*MacKinnon (1996) one-sided *p*-values.

Null Hypothesis: LNPR has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=20)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-11.10893	0.0000
Test critical values:	1% level	-3.438288	
	5% level	-2.864934	
	10% level	-2.568632	

*MacKinnon (1996) one-sided *p*-values.

Null Hypothesis: LNGDP has a unit root
Exogenous: Constant
Lag Length: 11 (Automatic - based on SIC, maxlag=20)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.207240	0.0000
Test critical values:	1% level	-3.438391	
	5% level	-2.864979	
	10% level	-2.568656	

*MacKinnon (1996) one-sided *p*-values.

Null Hypothesis: LNGDC has a unit root

Exogenous: Constant
Lag Length: 11 (Automatic - based on SIC, maxlag=20)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.789210	0.0000
Test critical values:	1% level	-3.438391	
	5% level	-2.864979	
	10% level	-2.568656	

*MacKinnon (1996) one-sided *p*-values.