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Aid for Trade and Economic Growth: Does the Quality of Institutions Matter?

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Abstract

This paper investigates the impact of Aid for Trade inflows on economic growth in developing countries, and whether this impact is dependent on the institutional quality of these countries. The empirical analysis covers 75 recipient countries over the 2009- 2018 period. This study applies the Quantile Regression approach. The empirical findings of the third objective suggested the significant impact of the aggregate Aid for Trade inflows over the full sample, precisely, the low-income recipients. In terms of its categories, Aid for Trade for productive capacity building generates the largest positive impact on the economic growth of the receiver countries followed by Aid for Trade for trade policy and regulation, while Aid for Trade for economic infrastructure was observed to have the weakest positive effect. Furthermore, Aid for Trade interaction with institutional variables was found to be negative. However, these coefficients appear to converge toward positive in the case of countries with better institutional quality (high-income recipients).

Keywords: Aid for Trade, Economic Growth, Institutional Quality, Quantile Regression Approach, Developing Countries.

Introduction

Since the foundation of the Development Assistance Committee (DAC) in 1961, the members of the DAC were persuaded to enhance financial and technical aid to developing and less developed countries, by adjusting this aid to their demands and desires in the form of loans or grants on suitable terms (OECD, 2018). In consequence, Official development assistance (ODA), more generally referred to as foreign aid (Moreira, 2005), began to flow dramatically in these nations, with average yearly disbursements ranging from US$ 5.3 billion in the 1960s to US$ 22.8 billion in the 1980s[1]. The net ODA continued to grow over the past 48 years, to reach 146.6 billion in 2017 globally as the Organization of Economic Corporation and Development (OECD) reports (OECD, 2018). Going back to the Multilateral Trade Negotiation

[1] Calculated using data from OECD's International Development Statistics online **www.oecd.org/dac/stats/idsonline**

(MTN) in Uruguay round, developing nations started seeking monetary support for compromises made in trade liberalization deals, along with an expansion in ODA, to help promote incorporation into the world trading regime (Martínez-Zarzoso et al., 2017). To serve the latter objective, the World Trade Organization (WTO) members in collaboration with the OECD launched a new type of ODA inflows which is related to trade activities was launched by the name "Aid for Trade (AfT)" in 2005 during the WTO Hong Kong Ministerial Declaration (Gnangnon, 2016).

According to the WTO (2006) Task Force, "Aid for Trade is allocated to help developing nations to expand their exports of products and services, to incorporate into the global trading regime, and profit from trade freedom and greater market accessibility. Effective AfT will boost potential economic growth and reduce poverty in recipient countries, as well as enhance multilateral trade policy changes and more equitably disperse international advantages across and amongst the recipient nations" (OECD/WTO, 2013; 146). Until 2019, both bilateral and multilateral donors allocated a sum of 409 USD billion as AfT disbursements (Benziane et al., 2022). However, the question may rise did these large disbursements of AfT were effective in boosting greater growth rates in the AfT recipient countries? To answer this crucial question, this study explores the impact of AfT inflows on economic growth in 75 AfT recipient countries.

This study assesses the role of institutional quality in enhancing the AfT effectiveness. To the best of our knowledge, a considerable amount of empirical works have been conducted on the effect of overall ODA on economic growth (For instance, Gyimah-Brempong et al (2012); Sothan (2018); Kargbo & Sen (2014); Sethi et al (2019) in the recipient countries. Moreover, Several empirical works have highlighted the critical role of the institutional quality of recipient countries in experiencing higher foreign aid- growth positive impact (for instance, Burnside & Dollar, 2004; Collier & Dollar, 2002; Kim 2011). Despite the earlier mentioned idea, with a regard to a specific impact of one critical component of ODA, which represents AfT inflows (OECD/WTO, 2017), only one empirical study by Roy et al (2021) has empirically explored the growth impact of the AfT for trade policy and regulations category. Therefore, this study contributes significantly towards the expansion of the literature by investigating the effect of aggregate AfT including its two largest categories (AfT for economic infrastructure and AfT for productive capacity building) on economic growth in 75 recipient countries instead of 50 as in Roy et al (2021) study. Another critical difference is that Roy et al (2021) interacted AfT for trade policy and regulations with political stability variable to measure its conditional behavior. This study is considered to be the first study to examine the conditional impact of total Aid for Trade inflows with six institutional quality variables including (rule of law, government effectiveness, control of corruption, regulatory quality).

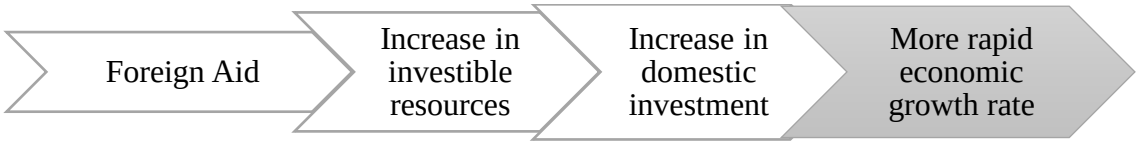
Last but not least, Roy et al (2021) applied the fixed effects and the two-step difference and system GMM estimation techniques, however, However, this is the first study to analyse the effect of AfT inflows on economic growth by employing the quantile regression approach. This method allows to discover whether this effect is greater in the low-income countries or least developed countries (LDCs) than in the high-income recipients. Thus, investigating the accuracy of the main purpose of AfT, comprising in "helping developing countries, particularly least developed countries to use trade more effectively to enhance economic growth and reduce poverty" (OECD/WTO, 2013; Page 146). The rest of the paper is structured as follows. Section 2 presents the review of the literature. Section 3 describes the econometric models and strategies in addition to the data. Section 4 discusses the empirical results. Section 5 concludes the paper with some policy implications and recommendations.

Literature Review

Theoritical Framework

The effectiveness of foreign aid has been a subject of a long debate since the 1930s where Harold and Domar developed the initial study during the 1930s and 1940s periods. The authors focused primarily on the role of accumulation of physical capital in determining economic growth and argued that foreign aid plays a critical role in filling the saving gap in developing countries. In guidance of the hypothesis of Harold and Domar, the McKinnon Foreign Exchange Constraint Model (MFECM) proposed that foreign aid is a mechanism for greater economic growth for all developing countries facing bottlenecks in trade. Furthermore, the MFECM argued that foreign aid helps eradicate the industrial bottlenecks present in developing countries by supplying essential goods of which they are not capable of producing.

Based on the MFECM Model, many studies (e.g Ekanayake & Chatrna (2010); Kargbo (2012); Tadesse (2011) Defended the view that foreign aid contributed positively to growth. The MFECM is based on the Chenery & Bruno (1962) model concepts, preceded by Chenery & Strout (1966) popular dual gap model (Two-Gap Model). Chenery & Strout (1966) proposed the theory of "two-gap" that backed the Harold-Domar growth model. They indicated that, aside from the saving gap, foreign aid offers capital funds for the capital goods importations of developing countries. In the same sense, Adelman & Chenery (1966) formed a causal series of positive effects of foreign resource enrollment through loans, free grants, direct investment, etc, into a developing economy in the following broad version:



Following the "Two gaps" model of Chenery & Strout (1966), and the modern growth theory which highlights the role of institutions, multiple studies have used various methodologies and samples, and reported that aid has a major positive impact on growth (exp. Hansen & Tarp, 2000; Moreira, 2005; Karras, 2006 etc.). Chenery & Strout (1966) introduced the third gap in human capital development, that is developing countries with a shortage of technological capabilities, administrative skills that can be used effectively in the process of production activities, Foreign technical aid is needed in this case to complete such insufficiency (Burke & Ahmadi-Esfahani, 2006). The assumption of the Harold Domar models and two gap concepts is that all foreign aid funds are used to cover the financing gap for national expenditure, this would result in higher levels of investment.

Ultimately, following the massive debt crisis of the 1980s, neo-structuralist researchers such as Bacha (1990); Taylor (1990) inserted the "three gap model" which is a fiscal gap among government revenue and expenses. The latter model assumes that state budget limits could be binding rather than foreign exchange restrictions or a reduction in overall savings. If foreign aid enhances government income, it will be viewed as fostering economic growth. Additionally, the Big Push Theory (BPT) is yet another vital theory supportive of previous theories. It essentially implies that a large investment package (a major push) is needed to overcome the barriers to developed countries ' economic growth. However, the issue is that developing countries typically cannot afford to spend such large amounts of money. In this respect, according to the BPT, foreign aid facilitates the capital deficit difficulties of the

developing countries by providing the appropriate quantity of foreign exchange reserves at a subsidized price.

Empirical Review

Due to the small empirical evidence on the forward linkage between AfT and economic growth, this section proves the earlier linkage by firstly demonstrating the only AfT-growth empirical study, secondly, by discussing the empirical work regarding both the impact of overall foreign aid (ODA) inflows on economic growth.

Effect of Aid for Trade on Economic Growth

Roy et al., (2021) conducted the first empirical analysis on the effect of AfT inflows for trade policy and regulations on sustained GDP per capita growth in 50 recipient countries from 2005 to 2017, and whether this impact is conditioned on the political stability in these countries political. Using fixed effects, two-step difference, and system GMM estimating methods. The study confirmed that AfT for trade policy and regulations increases sustainable economic growth throughout the entire sample of countries, However, under a stable political environment, this beneficial impact remains nearly the same for the low and lower-middle-income recipients, whereas for the upper-middle-income recipients this impact nearly doubled. These results have significant policy implications for donors and international development organizations, who recommend that as per capita economic growth increases in aid nations, it is increasingly desirable to direct money toward formulating and executing trade policies and regulations.

Effect of Overall Foreign Aid on Economic Growth

The empirical work on the effectiveness of foreign aid on the economic growth of the recipient countries is wide and increasing, particularly after (Burnside & Dollar, 2000). Various studies have used various parameters, measurements and estimation techniques to draw multiple conclusions. Many studies found that aid has had a positive effect on growth Hansen & Tarp (2000, 2001); Ndambendia & Njoupouognigni, 2010; Clemens et al., 2012; Askarov & Doucouliagos, 2015; Nwaogu & Ryan, 2015). However, some other studies concluded that there are negative growth effects from aid (Easterly, 2003; Roodman, 2007; Doucouliagos & Paldam, 2009; Kosack, 2003; Rajan & Subramanian, 2008). Therefore, this sub-section attempts to review and discusses both these positive and negative growth effect studies.

Positive Effect

Using an analytic framework to evaluate the aid growth relationships, Hansen & Tarp (2000 found a robust and positive aid–growth link even in countries hampered by an unfavourable policy environment. In a later study, the same authors Hansen & Tarp (2001) found that aid boosts the growth ratio, improves net savings, and increases investment. This outcome is also not contingent on a good policy. On the other hand, Burnside & Dollar (2004) conducted the most famous study on aid conditionality, believing that if aid inflows are consistently distributed toward countries with effective policies, it may have a positive impact on growth. In similar results, Collier & Dollar (2002) reinvestigated the later results by Burnside & Dollar (2000) and found that aid effectiveness depends upon the policy environment and aid is subject to diminishing marginal returns. These findings are also consistent with the studies of (Mekasha & Tarp, 2013; Tan, 2009; Nwaogu & Ryan, 2015; Sothan 2018; Sethi et al., 2019).

For instance, Mekasha & Tarp (2013) used data from 68 aid-growth studies from 1970 to 2004 to conduct a meta-analysis. In their research, they discovered that foreign aid has a significant effect on growth. Nwaogu & Ryan (2015) investigated how FDI, foreign aid, and remittances affect growth in 53 African and 34 Latin American and Caribbean nations. Foreign aid was found to be positively linked to growth over all countries in both regions. Askarov & Doucouliagos (2015) empirically explored whether aid stimulates economic growth by applying the Burnside & Dollar (2000) model, on data of 32 transition economies over the period from 1990 to 2012. The Researchers found that aid has, on average, a positive and statistically meaningful impact on GDP growth per capita. Nevertheless, this impact is not doing better when connecting with a successful policy. Furthermore, Sothan (2018) used the autoregressive distributive lag (ARDL) technique to investigate the growth effect of foreign aid in Cambodia from 1980 to 2014. Foreign aid has a significant beneficial impact on economic growth exclusively in the short term, according to empirical evidence. On the contrary, it has a negative long-term impact. Last but not least, Sethi et al (2019) experimentally investigated the correlation between foreign aid and growth in India and Sri Lanka. The empirical results reported a long-term beneficial effect of foreign aid in India. However, foreign aid has no positive impact on economic growth in Sri Lanka, both in the longer term and in the shorter term.

Negative Effect

Numerous studies assume the negative impact of aid on growth in many nations. Ali & Isse (2005) explored the influence of foreign aid on economic growth. The empirical analysis indicated the negative impact of foreign aid even after interacting with policy variables. Rajan & Subramanian (2008) examined the impacts of foreign aid on growth in a large number of nations and found that foreign aid had a negative influence on growth. Foreign aid, according to the two researchers, does not boost growth even in a favourable policy climate. Using the ARDL approach, Khan & Ahmed (2007) focused on determining whether foreign aid is a positive or a negative for Pakistan. Foreign aid appeared to harm growth. The additional empirical literature has suggested that foreign aid has adverse implications on growth (e.g, Ang, 2010; Young & Sheehan, 2014; Wagner, 2014; Tang & Bundhoo, 2017). Tang & Bundhoo (2017) examined the impact of foreign aid on the economic growth of 10 SSA countries for 23 years from 1990 to 2012. The findings suggested the insignificant impact of foreign aid on economic growth. However, when it interacted with policy variables, this effect turned out to be positive, this result indicates that foreign aid seems to rise the growth rate in a supportive policy environment Similarly, Ang (2010) found a negative direct impact of foreign on growth, however, its indirect impact through financial openness is positive. Therefore, adequate liberalization in the financial system of the recipient country is a critical requirement for effective foreign aid. Utilizing a panel of 116 recipient countries from 1970 to 2010, Young & Sheehan (2014) demonstrated that aid inflows are not significantly connected to growth when controlling with institutional quality. In addition, Wagner (2014) analysed panel data of 89 developing countries over the 1970- 2009 time period. The findings showed that many countries do not achieve a significant marginal return of aid because they actually may not obtain enough of it. The degree of economic vulnerability also appeared to be crucial in understanding how growth reacts to aid flows.

Data and Method

Conceptual Framework and the Selection of Control Variables

The new growth theory (endogenous growth theory) presented by Grossman & Helpman (1991); Batiz & Romer (1991); Romer (1990) is developed to address the deficiencies of the neoclassical growth theory (exogenous growth theory) proposed by Solow-Swan in 1956. It illustrates the long-term growth rate of an economy based on endogenous elements as against exogenous factors by the neoclassical growth theory. According to Chenery (1967), the endogenous growth theory assumes that long-term growth is a result of human capital investment, implying human capital accumulation and technological growth. Where, human capital is accumulated through knowledge, which is acquired through learning by doing, training and schooling, and technological growth is attained through innovation and invention. Nevertheless, the degree of innovation and invention depends on the degree of accumulation with human capital.

Chenery (1967) further claimed that the economic growth of developing countries is constrained by several constraints, such as exchange rate, savings, human capital, and the level of technological development. These constraints limit the level of their domestic investment and technological diffusion. Foreign aid (ODA) inflows are argued to facilitate filling these gaps thereby supporting their domestic public investment in education, health, and infrastructure. It also assists in filling the foreign exchange gaps through which the recipient country will be able to import capital goods that are embodied with new technology. Additionally, foreign aid may affect growth in the LDCs via various channels. It might supplement local resource mobilization resulting in higher accumulation rates. Second, aid may enable countries to buy crucial inputs that boost production and make current capacity more efficient. Aid might as well assist to finance structural and institutional changes (Gyimah et al., 2012). All these benefits are important ingredients of growth described by the endogenous growth models. Therefore, this study applies the endogenous growth model to investigate the impact of AfT on the economic growth of 75 recipient countries.

Model Specification

To investigate the impact of AfT inflows on the economic growth of 75 recipient countries, this study adopts the linear model following theoretical postulations of the endogenous growth theory as specified in model (1) below:

$$\text{GDPC}_{i,t} = \alpha_0 + \alpha_1 HumCap_{i,t} + \alpha_2 GCF_{i,t} + \alpha_3 TO_{i,t} + \mu_i + \eta_t + \varepsilon_{i,t} \qquad (1)$$

Where *i* represents the recipient country, t denotes the time period, μi stands for the specific effects of recipient country i; ηt are year-fixed effects; εit is the standard error term. GDPC is the dependent variable specified in this study as the real GDP per capita. it is commonly expressed as an indicator of the country's economic well-being. Countries with the lowest real per capita GDP are considered the least developed countries and are expected to be provided with more assistance in terms of AfT to boost their economic growth and eventually to increase their real per capita income. This growth measure was extensively used in the economic growth theoretical literature (for instance, Solow, 1956; Swan, 1956; Mankiw et al., 1992) and empirical literature (For instance, Eriș & Ulașan, 2013; Azman-Saini & Law 2010; Alguacil et al., 2011). HumCap represents the human capital. It is the skills, knowledge and other forms of intangible assets acquired by individuals to create value for themselves, and the economy at large. It is developed through education to increase the productivity of workers. In the endogenous growth model, human capital has been theoretically regarded as a significant parameter (Arrow, 1962; Romer, 1990). Empirically, human capital has been

largely utilized in the growth model by several studies, (for example, Su & Liu, 2016; Teixeira & Queirós, 2016).

GCF is the measure of physical capital. It is formerly known as gross domestic investment and it comprises outlays on additions of fixed assets of the country and net changes in the level of inventories. The correlation between physical capital and economic growth is projected to be positive because more capital investment in a country is increasing economic activity. It is widely used in the growth literature (For instance, Law & Singh, 2014; Musila & Yiheyis, 2015). TO is the trade openness which represents the technological growth in the model. It is used by a variety of growth literature (ex, (Alesina & Dollar, 2000; Askarov & Doucouliagos, 2015; Nwaogu & Ryan, 2015). AfT could be seen as a tool used by donors to encourage countries with a protected trade regime to liberalize their trade policies. It is used as a proxy for technological growth. This is because it is believed in the theory of international trade that trade openness is a promoter of economic growth through the transfer of technology and capital from technologically advanced countries to less advanced ones. Several changes were made to model (1) to achieve the study's intended goal by including the main independent variable "Aid for Trade". In addition, some other control variables were adopted from the aid-growth literature (Hansen & Tarp, 2001; Nwaogu & Ryan, 2015; Askarov & Doucouliagos, 2015). Thus, model (2) is modified as follow:

$$\ln(\text{GDPC})_{i,t} = \alpha_0 + \alpha_1 \ln(\text{GDPC})_{it-1} + \alpha_2 \ln(AfTTOTCST)_{i,t} + \alpha_3 \ln(HumCap)_{i,t} + \alpha_4 \ln(GCF)_{i,t} + \alpha_5 \ln(TO)_{i,t} + \alpha_6 POP_{i,t} + \alpha_7 INFL_{i,t} + \alpha_8 \ln(FDI)_{i,t} + \alpha_9 \ln(FDI)_{i,t}\mu_i + + \alpha_{10} InstQual_{i,t} + \mu_i + \eta_t + \varepsilon_{i,t} \quad (2)$$

The variable "*AfTTOTCST*" is the variable of interest, which is measured as the real value of total AfT variables (in constant $US 2018) received by the recipient country i from all donors. This measure is adopted by many AfT literature (for example, Gnangnon, 2019; Ly-My & Lee, 2019).*"POP"* is the population growth rate of the recipient country i. Population growth is commonly used in the growth model by several empirical studies (for instance, Huang & Xie, 2013). "*INFL*" represents the inflation rate of the recipient country i. It is a crucial factor in deciding the growth rate of an economy. This measure is used by several aid-growth literature (for instance, Sethi 2019; Azam 2021). *"FDI"* represents the foreign direct investment inflows in the recipient country i as a share of its GDP. It is known as an investment made by an investor in the form of a portfolio investment or a firm in the form of a multinational company in another country to take benefit of a business opportunity. "InstQual" represents the mean institutional quality variable of recipient country i. Logarithms for the dependent variable (real GDP per capita) and the other independent variables have been used to reduce their skewness. According to the aid literature, numerous aid programmes are contingent on the receiving country's institutional quality (e.g., Burnside & Dollar, 2000; Gyimah-Brempong et al., 2012; Hayat, 2019).

The panel dataset is unbalanced and covers 75 countries over the 2009 to 2018 period. The choice of the list of these countries and the period is dictated by data availability and methodology applied. Appendix A.4 presents the list of countries utilized in the study. The utilization of the natural log in our models is because variables (including real AfT disbursements and real GDP per capita) differ across a great range and have a skewed distribution. In addition, it enables us to interpret the regression estimates as elasticities. Log real AfT disbursements has been largely in many AfT studies (For instance, Gnangnon, 2019a;

Gnangnon, 2020; Ly-My et al., 2021). Besides evaluating the direct impact of AfT on economic growth, an indirect relation (via institutional quality) has been evaluated and the model used to capture this situation is specified as:

$$\ln(\text{GDPC})_{i,t} = \alpha_0 + \alpha_1 \ln(\text{GDPC})_{it-1} + \alpha_2 \ln(AfTTOTCST)_{i,t} + \alpha_3[\ln(AfTTOTCST) * InstQual_{i,t}] + \alpha_4 \ln(HumCap_{i,t}) + \alpha_5 \ln(GCF_{i,t}) + +\alpha_6 \ln(TO_{i,t}) + \alpha_7 POP_{i,t} + \alpha_8 INFL_{i,t} + \alpha_9 \ln(FDI)_{i,t} + \alpha_{10} InstQual_{i,t} + \mu_i + \eta_t + \varepsilon_{i,t} \quad (3)$$

Where other variables are as previously defined, the interaction variable "*AfTTOTCST*InstQual*" represents the vector for the interaction term between aggregate AfT and institutional quality variables. Four institutional variables (control of corruption, government effectiveness, regulatory quality, and rule of law,.) have interacted with total AfT inflows in this analysis. Besides the effect of aggregate AfT effect along with its interaction effect with institutional quality variables this objective explores the effect of AfT categories separately, and the equation regarding these effects is specified as follows:

$$\ln(\text{GDPC})_{i,t} = \alpha_0 + \alpha_1 \ln(\text{GDPC})_{it-1} + \alpha_2 \ln(AfTINFCST)_{i,t} + \alpha_3 \ln(AfTPCBCST)_{i,t} + \alpha_4 \ln(AfTPCBCST)_{i,t} + \alpha_5 \ln(HumCap_{i,t}) + \alpha_6 \ln(GCF_{i,t}) + +\alpha_7 \ln(TO_{i,t}) + \alpha_8 POP_{i,t} + \alpha_9 INFL_{i,t} + \alpha_{10} \ln(FDI)_{i,t} + \alpha_{11} InstQual_{i,t} + \mu_i + \eta_t + \varepsilon_{i,t} \quad (4)$$

Where other variables are as previously defined, AfTINFCST represents the real AfT inflows for economic infrastructure, while AfTPCBCST represents AfT for productive capacity building, and AfTPOLCST represents the AfT for trade policies and regulations. All these categories are in real values (in constant $US 2018). Therefore, natural Logarithms have been introduced to reduce their skewness.

Data Sources and Descriptions

The current study uses panel data set for 75 recipient countries that are obtained for the 2009-2018 period. The choice of the base year was announced by the availability of data for some important variables. Data for AfT variables were extracted and calculated from the OECD/DAC- International Development Statistics (IDS) online databases. Total AfT data covers the following three categories: AfT Economic Infrastructure (transport and storage (210), communications (220), and energy generation and supply (230). AfT Productive Capacity Building (banking and financial services (240), business and other services (250), agriculture (311), forestry (312), fishing (313), industry (321), mineral resources and mining (322), and tourism (332). AfT category and regulations cover trade policy and regulations and trade-related adjustment (331). Data on the other control variables such as Human Capital (education), gross capital formation (GCF), FDI, inflation, trade openness, GDP per capita, and Population Growth are obtained from the World Development Indicators of the World Bank (2019). Institutional quality data was received from the Worldwide Governance Indicator (WGI) of the World Bank (2019). Table.1 below displays the outcomes of the descriptive statistics of the main variables applied in the model. The variables measurements, observations, means, minimum and maximum, and standard deviations values of all variables. Table 2 provide the correlation matrix of all variables utilized in the analysis There is a virtually negative linear association between AfT total, including its all three main categories with the real GDP per capita. The negative correlation between AfT and the GDP per capita might simply indicate that more AfT is received by lower-income countries than higher-income countries, not a representation of a causal effect on growth rates. Table 3 shows the samle of countries utilized in the study

Table 1
Descriptive statistics of variables

Table 2

Variables	Obs	Mean	Std. Dev.	Min	Max
RGDPC	750	3467.928	3421.144	210.804	15190.099
AfTTOTCST	748	359.485	506.694	3.274	3832.739
AfTINFCST	748	217.504	347.351	0.215	3180.471
AfTPCBCST	748	135.835	206.291	1.036	2013.82
AfTPOLCST	744	6.179	16.211	0.005	249.356
HumCap	750	2.246	0.568	1.156	3.514
GCF	743	25.57	9.143	4.704	77.89
INFL	744	5.358	4.687	-2.815	48.7
POP	750	1.694	1.099	-1.799	5.432
TO	744	74.298	32.105	20.723	208.307
FDI	750	4.791	7.95	-37.155	103.337
INSQUA	750	-0.422	0.513	-1.67	1.22
CONTCORRUP	750	-0.498	0.564	-1.504	1.582
GOVEFFECT	750	-0.417	0.586	-2.078	1.273
REGQUA	750	-0.498	0.564	-1.504	1.582
RULELAW	750	-0.417	0.586	-2.078	1.273

Correlation of Variables

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) log (RGDPC)	1.000															
(2) log (AfTTOTCST)	-0.289	1.000														
(3) log (AfTINFTCST)	-0.261	0.935	1.000													
(4) log (AfTPCBCST)	-0.345	0.902	0.733	1.000												
(5) log (AfTPOLCST)	-0.240	0.503	0.435	0.494	1.000											
(6) log (HUMCAP)	0.725	-0.196	-0.157	-0.266	-0.066	1.000										
(7) log (GCF)	0.104	0.022	0.104	-0.049	0.024	0.051	1.000									
(8) log (TO)	0.124	-0.358	-0.268	-0.411	-0.218	0.268	0.193	1.000								
(9) INFL	-0.222	0.232	0.218	0.245	0.129	-0.057	-0.060	-0.115	1.000							
(10) POP	-0.563	0.139	0.125	0.188	0.105	-0.598	-0.007	-0.208	0.092	1.000						
(11) log (FDI)	0.067	-0.130	-0.094	-0.142	-0.060	0.109	0.232	0.444	-0.001	-0.002	1.000					
(12) MEAN_INSQUA	0.673	-0.311	-0.250	-0.362	-0.318	0.444	0.097	0.201	-0.140	-0.354	0.193	1.000				
(13) Cont Corrup	0.561	-0.274	-0.232	-0.306	-0.341	0.279	0.084	0.111	-0.100	-0.220	0.108	0.889	1.000			
(14) Gov Effective	0.739	-0.144	-0.100	-0.226	-0.184	0.534	0.156	0.143	-0.170	-0.394	0.061	0.874	0.790	1.000		

		9	8	2	1				6	4						
(15) Reg Quality	0.671	-0.203	-0.166	-0.250	-0.184	0.450	0.043	0.125	-0.181	-0.376	0.143	0.876	0.725	0.851	1.000	
(16) Rule Law	0.582	-0.143	-0.090	-0.214	-0.240	0.361	0.134	0.117	-0.065	-0.220	0.119	0.918	0.878	0.859	0.810	1.000

Table 3
List of countries utilized in the study.

Albania	**Ghana**	**Nepal**
Algeria	Guatemala	Nicaragua
Armenia	Haiti	Niger
Bangladesh	Honduras	Nigeria
Benin	India	Pakistan
Bolivia	Indonesia	Panama
Botswana	Jamaica	Peru
Brazil	Jordan	Philippines
Burkina Faso	Kenya	Rwanda
Burundi	Kyrgyz Republic	Senegal
Cambodia	Lao PDR	Serbia
Cameroon	Lesotho	Sierra Leone
Chile	Liberia	Sri Lanka
China	Madagascar	Tajikistan
Colombia	Malawi	Tanzania
Congo, Dem. Rep.	Malaysia	Thailand
Congo, Rep.	Mali	Togo
Costa Rica	Mauritania	Tunisia
Cote d'Ivoire	Mauritius	Turkey
Dominican Republic	Mexico	Uganda
Ecuador	Moldova	Ukraine
Egypt, Arab Rep.	Mongolia	Uruguay
El Salvador	Morocco	Viet Nam
Ethiopia	Mozambique	Zambia
Fiji	Namibia	Zimbabwe

Estimation Technique

The fixed effects and the GMM approachs evaluate how the mean of the dependent variable changes as the explanatory variables change. Although these findings may be useful for policymakers, it may be worthwhile to use the quantile regression to see if the influence of AfT inflows on economic growth differs between quantiles. To put it another way, investigating whether the AfT effect is stronger or weaker among low-income beneficiaries

compared to high-income recipients. Therefore, using the quantile regression technique, it would be useful to investigate the impact of AfT at many levels, resulting in more good policy implications. Quantile regression has attracted considerable concern in both the theoretical and the empirical work in the case of panel data, (Gu & Volgushev, 2019). It enables the investigation of a wide range of conditional quantiles, revealing a wide range of conditional heterogeneity, as well as accounting for unobserved individual effects (Kato et al., 2012). This would offer a more flexible approach to the analysis of panel data than that afforded by the classical Gaussian fixed and random effects estimation (Kato et al., 2012). Therefore, this study employs quantile regression for panel data, as presented by (Canay, 2011). To account for fixed effects, this author proposes a simple modification, supposing that these effects are position shifters. In other terms, fixed effects act as variables that have the same influence on all quantiles. The author presents a two-step approach that includes estimating country fixed effects (FE) using a within-FE model as a first step, As a second step, the consistently estimated fixed effect is used to demean the dependent variable (log real GDP per capita), and this demeaned variable is employed as a dependent variable in quantile regression. The estimated $\tilde{\mu}_i$ are used to transform "Log (RGDPC)" into $\tilde{Y}_{it} = \log(Y_{it}) - \tilde{\mu}_i$. Where Y_{it} represents here RGDPC variable.

Empirical Results

Due to the dynamic nature of economic growth a one-year lag of the dependent (GDP per capita) is introduced. Moreover, since AfT main variables are strongly correlated with each other as well as with the overall AfT. Thus, the effect of each category is estimated individualy to avoid the multicollinearity. Table 1 below contains the overall effect of AfT on economic growth effect. Tables 2 and 3 consider the role of institutional quality in achieving the later effect. Tables 4,5 and 6 represent the outcomes regarding the effect AfT for economic infrastructure, AfT for productive capacity building, and AfT for trade policy and regulations on the economic growth of 75 recipient countries. The quantile regression is based on five different quantiles, including the 10th, 25th, 50th, 75th and the 90th. The 10th quantile of growth distribution represents countries with low income and the 90th quantile those with high income. It can be observed that all coefficients of the lagged dependent variable across the quantile regression results tables are positive and significant at 1% levels and this justifies the estimation of a dynamic model and suggests that the previous rate of economic growth adjust very quickly to its future value independently of the control variables in the model.

Aggregate Aid for Trade and Economic Growth

Table 4 results below show that the impact of the aggregate AfT on economic growth is highly different between low-growth and high-growth countries across the quantile regressions, with the estimated 10th quantile coefficient being at least twice that of the 75th quantile, while at the 90th quantile GDP per capita turned to be negatively associated with AfT. In other words, a 1% increase in total AfT leads to a 0. 3%-point increase in the real GDP per capita of the high-income recipient, and this effect is more than two times in the case of lowest-income recipients (the elasticity is equal to 0.8% point). These findings suggest that the effect of total AfT is stronger on low-income recipient countries than on high-income recipients. This significant positive impact of AfT is in line with the majority of the AfT literature (for instance, Ghimire et al., 2016; Martínez-Zarzoso et al., 2017; Ly-My et al., 2021; Gnangnon 2019). On other hand, the coefficients of all other control variables have signs that are consistent with the theoretical postulation and economic intuition except trade openness, which seems to be

insignificant with a negative sign. Firstly, Human capital development has been considered to be very crucial in promoting economic growth by the endogenous growth theory. This assertion is obvious from table 1 since the growth-human capital relation is positive and statistically significant at the 1% level. Moreover, the development of the physical capital (GCF) also appears to be positive and significant at the 1 % level. While the inflation rate as expected is significantly negative with growth at the 1 % level. This result supports the negative influence as stated in Bittencourt et al., (2015) study.

A considerable number of studies (Li & Zhang, 2007; Herzer et al., 2012, just to mention a few) find a negative influence of population growth on economic growth. The results in table 4 below show that population growth affects economic growth negatively and significantly at the 1% level. For trade openness, the results suggest a negative and a non-significant impact on economic growth at any level this result confirms the findings of (Kim & Lin, 2009; Ulaşan, 2015; Trejos & Barboza, 2015). Kim & Lin (2009) found a significant threshold impact that greater trade openness harms the economic growth of low-income economies. Kim & Lin (2009) findings explain the negative growth impact of trade openness since low-income countries represent the majority of recipient countries in the current study sample. The nexus of FDI-growth in this study turns out to be positive and statistically significant, the quality of institutions in the recipient countries is positively associated with the real GDP per capita. These positive findings are in line with the theoretical considerations and majority of empirical studies (see Hayat, 2019; Salman et al., 2019), and illustrate the importance of policy execution in driving higher growth rates in recipient countries.

Table 4

Results of panel quantile regression. Impact of aggregate Aid for Trade on economic growth.

VARIABLES	(1) Q10	(1) Q25	(1) Q50	(1) Q75	(1) Q90
Log (RGDPC)$_{t-1}$	0.97096***	0.98132***	0.96590***	0.98641***	0.96469***
	(0.00057)	(0.00096)	(0.00082)	(0.00044)	(0.00294)
Log (AfTTOTCST)	0.00821***	0.00567***	0.00388***	0.00373***	-0.00919***
	(0.00059)	(0.00040)	(0.00023)	(0.00026)	(0.00308)
Log (HumCap)	0.02689***	0.00651***	0.05486***	0.02189***	0.08688***
	(0.00247)	(0.00185)	(0.00160)	(0.00123)	(0.00949)
Log (GCF)	0.04419***	0.04824***	0.06215***	0.06180***	0.07332***
	(0.00289)	(0.00173)	(0.00095)	(0.00065)	(0.00867)
INFL	-0.00173***	-0.00081***	-0.00144***	-0.00065***	0.00134***
	(0.00029)	(0.00008)	(0.00007)	(0.00003)	(0.00029)
POP	-0.01755***	-0.00894***	-0.02000***	-0.01462***	-0.01345***
	(0.00044)	(0.00262)	(0.00038)	(0.00020)	(0.00273)
Log (TO)	-0.03050***	-0.02655***	-0.01752***	-0.00479***	-0.01790***
	(0.00499)	(0.00257)	(0.00085)	(0.00057)	(0.00570)
Log (FDI)	0.00544***	0.00872***	0.00615***	0.01137***	0.01146***
	(0.00133)	(0.00083)	(0.00054)	(0.00026)	(0.00370)
INSQUA	0.03625***	0.02961***	0.02683***	0.00736***	0.00789*
	(0.00108)	(0.00083)	(0.00139)	(0.00081)	(0.00421)
Observations	582	582	582	582	582
Number of groups	75	75	75	75	75

Notes: Dependent variable is the real GDP per capita. The significance levels are indicated as follow: ***, ** and * for 1%, 5% and 10% respectively. Robust standard errors are reported in brackets. Country fixed effects are taken into account and year dummies are included in all regressions. Quantile regression results are based on 1000 bootstrapping repetitions.

Aggregate Aid for Trade and Economic growth: Considering the Role of Institutional Quality

This section provides an analysis of institutional quality and its role in the AfT-Growth nexus. In other words, examining whether the quality of an institution is a crucial driver for the AfT-Growth linkage. Four institutional variables have been used in the analysis including, control of corruption, government effectiveness, rule of law, and regulatory quality. Table 5 demonstrates the conditional impact of control of corruption and government effectiveness in the AfT- Growth linkage, while table 6 shows the rule of law and regulatory quality conditional impact. It is clearly demonstrated from both tables that all four institutional quality variables appear to be associated with higher GDP per capita in the recipient countries. However, the results suggest that all interaction coefficients are negative and statistically significant across all quantiles, which is contrary to what one may expect from economic intuition. Particularly, total AfT leads to a 0.45% decrease in the real GDP per capita of the lower-growth countries when interacting with the control of corruption variable, and this effect is less than half in the high-growth recipient (-0.23%). Furthermore, when interacting with government effectiveness, total AfT leads to a 0.54% decrease in the real GDP per capita of low-income recipients and a drop of 0.17% in the case of high-income recipients. The interaction term (AfT*REGQUAL) is negative and strongly significant at the 1% level in all quantiles. Precisely, total AfT leads to a 0.53% decrease in the growth of low-income recipients and a decrease of 0.21% in the case of high-income recipients. The interaction term (AfT*Ruleoflaw) also turned out to be negative across all quantiles with these results being significant at the 1% level except for the highest quantile (table 6).

These results indicate that countries with stronger institutional quality (in this case the higher in-come recipients) experience a lower negative interaction impact of on the economic growth com-paring to the lower income ones. In other words, if recipient countries strengthen their control of corruption and the quality of their governance, they would have a positive interaction coefficient. With regards to the control variables, the results show that in almost all quantiles, the variables have maintained their expected signs with some exceptions across quantiles, albeit some variables in some quantiles. Results relating to control variables are broadly in line with those reported in Tables 4. All the institutional variables display a rising in economic growth as the coefficients of these variables are positive and statistically significant.

Table 5
Impact of aggregate Aid for Trade on economic growth: Considering the role of control of corruption and government effectiveness.

VARIABLES	q10	q25	Q50	q75	q90
Log (GDPC)$_{t-1}$	0.96897***	0.97764***	0.97941***	0.98295***	0.99188***
	(0.00058)	(0.00113)	(0.00081)	(0.00183)	(0.00093)
Log (AfTTOTCST)	0.00716***	0.00582***	0.00432***	0.00252***	0.00187**
	(0.00033)	(0.00031)	(0.00043)	(0.00058)	(0.00074)
ContCorrup	0.04828***	0.04615***	0.03869***	0.01439***	0.01268***
	(0.00313)	(0.00161)	(0.00252)	(0.00216)	(0.00448)
Log (AfTTOTCST) $*$	-	-	-	-	-0.00233**
ContCorrup	0.00459***	0.00442***	0.00427***	0.00278***	
	(0.00047)	(0.00078)	(0.00064)	(0.00075)	(0.00095)
Log (HumCap)	0.05299***	0.01409***	0.03260***	0.03400***	0.02736***
	(0.00312)	(0.00461)	(0.00153)	(0.00518)	(0.00287)
Log (GCF)	0.05197***	0.04937***	0.04732***	0.06950***	0.07126***
	(0.00105)	(0.00104)	(0.00090)	(0.00376)	(0.00198)
INFL	-	-	-	-	-0.00045**
	0.00156***	0.00078***	0.00077***	0.00135***	
	(0.00007)	(0.00002)	(0.00007)	(0.00021)	(0.00019)
POP	-	-	-	-	-
	0.02148***	0.02067***	0.01479***	0.01018***	0.00819***
	(0.00069)	(0.00042)	(0.00053)	(0.00089)	(0.00060)
Log (TO)	-	-	-	0.00676***	-
	0.03747***	0.02114***	0.00768***		0.01310***
	(0.00098)	(0.00084)	(0.00164)	(0.00259)	(0.00168)
Log (FDI)	0.00297***	0.00696***	0.00451***	0.00608***	0.00419***
	(0.00039)	(0.00027)	(0.00034)	(0.00061)	(0.00043)
Log (GDPC)$_{t-1}$	0.96350***	0.96625***	0.97406***	0.98210***	0.99276***
	(0.00103)	(0.00138)	(0.00064)	(0.00084)	(0.00221)
Log (AfTTOTCST)	0.00718***	0.00329***	0.00326***	0.00350***	0.00100**
	(0.00030)	(0.00111)	(0.00065)	(0.00018)	(0.00042)
GovEffect	0.08087***	0.07298***	0.04265***	0.02116***	0.01619***
	(0.00603)	(0.00242)	(0.00340)	(0.00148)	(0.00355)
Log (AfTTOTCST) $*$	-	-	-	-	-
GovEffect	0.00540***	0.00502***	0.00298***	0.00222***	0.00174***
	(0.00107)	(0.00100)	(0.00064)	(0.00036)	(0.00041)
Log (HumCap)	0.01717***	0.01560***	0.00633	0.01144***	0.00742
	(0.00662)	(0.00319)	(0.00593)	(0.00208)	(0.00909)
Log (GCF)	0.06189***	0.04705***	0.04083***	0.05676***	0.07401***
	(0.00100)	(0.00235)	(0.00134)	(0.00082)	(0.00243)
INFL	-0.00054**	-	-0.00017**	-	0.00090***
		0.00096***		0.00100***	

Notes: Dependent variable is the real GDP per capita. The significance levels are indicated as follow: ***, ** and * for 1%, 5% and 10% respectively. Robust standard errors are reported in brackets. Country fixed effects are taken into account and year dummies are included in all regressions. Quantile regression results are based on 1000 bootstrapping repetitions.

Aid for Trade Categories and Economic Growth

In this section, the effect of the AfT categories on the real GDP per capita is compared. The effect of each category is estimated seperatly to avoid the problem of perfect multicollinearity that could be generated among the AfT categories. According to table 7 below, AfT for economic infrastructure has positive coefficients with economic growth in all quantiles except for the 90th quantile which shows a negative impact. These positive coefficients are all statistically significant at the 1% level. The results also indicate that AfT for economic infrastructure mostly affects the economic growth at the lower quantile (the 10th quantile), with an increase of 0.37%, starting from this point the impact massively went down to reach 0.17% at the 50th quantile and -0.092% at the 90th quantiles. Broadly, this category appears to have the weakest positive impact in comparison to the other two components.

Table 7
Impact of Aid for Trade for economic infrastructure on economic growth.

VARIABLES	(1) q10	(1) q25	(1) q50	(1) q75	(1) q90
Log (GDPC)$_{t-1}$	0.95247***	0.97236***	0.95889***	0.98577***	0.97024***
	(0.01156)	(0.00192)	(0.00140)	(0.00053)	(0.00426)
Log (AfTINFCST)	0.00377***	0.00200***	0.00179***	0.00152***	-0.00092***
	(0.00082)	(0.00028)	(0.00015)	(0.00010)	(0.00016)
Log (HumCap)	0.04970***	0.02004***	0.06962***	0.01691***	0.04391***
	(0.00312)	(0.00604)	(0.00253)	(0.00158)	(0.01064)
Log (GCF)	0.04553***	0.05848***	0.06549***	0.06123***	0.07990***
	(0.00931)	(0.00234)	(0.00202)	(0.00044)	(0.00305)
INFL	-0.00118***	-0.00051***	-0.00093***	-0.00027**	0.00080***
	(0.00029)	(0.00008)	(0.00009)	(0.00011)	(0.00021)
POP	-0.01848***	-0.01501***	-0.01833***	-0.01528***	-0.01424***
	(0.00212)	(0.00118)	(0.00048)	(0.00023)	(0.00046)
Log (TO)	-0.03670***	-0.02118***	-0.01757***	-0.00864***	-0.00783***
	(0.00261)	(0.00169)	(0.00063)	(0.00060)	(0.00055)
Log (FDI)	0.00179**	0.00261***	0.00071**	0.01130***	0.00444***
	(0.00072)	(0.00076)	(0.00034)	(0.00024)	(0.00142)
INSQUA	0.04851***	0.02157***	0.03976***	0.00604***	0.01687***
	(0.01522)	(0.00129)	(0.00154)	(0.00068)	(0.00498)
Observations	582	582	582	582	582
Number of groups	75	75	75	75	75

Notes: Dependent variable is the real GDP per capita. The significance levels are indicated as follow: ***, ** and * for 1%, 5% and 10% respectively. Robust standard errors are reported in brackets. Country fixed effects are taken into account and year dummies are included in all regressions. Quantile regression results are based on 1000 bootstrapping repetitions.

On the other hand, AfT productive capacity building is effectively increasing economic growth in all quantiles. It is crucial to note that this category generates the greatest impact among all other categories. As it is demonstrated in Table 8, an additional 10% of AfT for productive capacity building is, on average, associated with a 0.98%-point increase in the real GDP per capita of the low-income recipients. This effect has dropped to a 0.10% in the case of high-income recipients. Similar to the other two major categories, AfT for trade policy and

regulations generate positive coefficients in all quantiles, especially for the 10th quantile. In addition, it is found to have the lowest positive impact at the 90th quantile. This category' results show a 1% significant level at all quantiles. Particularly, a 10% increase in this component drives the economic growth of the lower-income countries to increase by 0.76%, while a 90% increase leads to a 0.17% increase only (Table 9).

Table 5
Impact of Aid for Trade for productive capacity building on economic growth.

	(1)	(1)	(1)	(1)	(1)
VARIABLES	q10	q25	q50	q75	q90
Log $(GDPC)_{t-1}$	0.96663***	0.97609***	0.97401***	0.97094***	0.98588***
	(0.00111)	(0.00096)	(0.00156)	(0.00388)	(0.00116)
Log (AfTPCBCST)	0.00982***	0.00772***	0.00476***	0.00231***	0.00103***
	(0.00092)	(0.00044)	(0.00083)	(0.00050)	(0.00026)
Log (HumCap)	0.04713***	0.00410***	0.02108***	0.03906***	0.00594**
	(0.00464)	(0.00142)	(0.00248)	(0.01139)	(0.00291)
Log (GCF)	0.07119***	0.03650***	0.03725***	0.06187***	0.06995***
	(0.00227)	(0.00190)	(0.00240)	(0.00191)	(0.00076)
INFL	-0.00208***	-0.00089***	-0.00039***	-0.00233***	0.00024***
	(0.00030)	(0.00010)	(0.00012)	(0.00044)	(0.00008)
POP	-0.01750***	-0.01791***	-0.01482***	-0.01522***	-0.00912***
	(0.00062)	(0.00073)	(0.00093)	(0.00064)	(0.00031)
Log (TO)	-0.02076***	-0.02155***	-0.00429**	-0.01799***	-0.00262*
	(0.00160)	(0.00248)	(0.00182)	(0.00328)	(0.00145)
Log (FDI)	-0.00131*	0.00653***	0.00146***	0.00784***	0.00741***
	(0.00078)	(0.00056)	(0.00054)	(0.00063)	(0.00045)
INSQUA	0.03963***	0.03230***	0.03817***	0.01810***	0.00719***
	(0.00231)	(0.00175)	(0.00374)	(0.00129)	(0.00136)
Observations	582	582	582	582	582
Number of groups	75	75	75	75	75

Notes: Dependent variable is the real GDP per capita. The significance levels are indicated as follow: ***, ** and * for 1%, 5% and 10% respectively. Robust standard errors are reported in brackets. Country fixed effects are taken into account and year dummies are included in all regressions. Quantile regression results are based on 1000 bootstrapping repetitions

Table 6
Impact of Aid for Trade for policy and regulations on economic growth.

VARIABLES	(1) q10	(1) q25	(1) q50	(1) q75	(1) Q90
Log (GDPC)$_{t-1}$	0.97590***	0.97943***	0.96943***	0.98411***	0.96505***
	(0.00102)	(0.00079)	(0.00137)	(0.00135)	(0.00244)
Log (AfTPOLCST)	0.00768***	0.00341***	0.00223***	0.00218***	0.00172***
	(0.00013)	(0.00035)	(0.00041)	(0.00030)	(0.00040)
Log (HumCap)	-0.02019***	-0.03242***	0.06277***	0.02645***	0.06195***
	(0.00188)	(0.00438)	(0.00437)	(0.00242)	(0.00571)
Log (GCF)	0.05573***	0.05283***	0.05674***	0.07170***	0.09902***
	(0.00071)	(0.00167)	(0.00102)	(0.00256)	(0.00402)
INFL	-0.00168***	-0.00059***	-0.00079***	-0.00040***	-0.00074***
	(0.00006)	(0.00008)	(0.00011)	(0.00006)	(0.00016)
POP	-0.02534***	-0.01601***	-0.01690***	-0.01648***	-0.01272***
	(0.00036)	(0.00057)	(0.00099)	(0.00082)	(0.00058)
Log (TO)	-0.02441***	-0.01534***	-0.02134***	-0.00850***	-0.01242***
	(0.00123)	(0.00158)	(0.00098)	(0.00056)	(0.00132)
Log (FDI)	-0.00618***	0.00265***	0.00540***	0.00723***	0.00287***
	(0.00031)	(0.00075)	(0.00083)	(0.00033)	(0.00094)
INSQUA	0.05019***	0.03132***	0.03618***	0.00741***	0.01082***
	(0.00111)	(0.00155)	(0.00140)	(0.00228)	(0.00124)
Observations	578	578	578	578	578
Number of groups	75	75	75	75	75

Notes: Dependent variable is the real GDP per capita. The significance levels are indicated as follow: ***, ** and * for 1%, 5% and 10% respectively. Robust standard errors are reported in brackets. Country fixed effects are taken into account and year dummies are included in all regressions. Quantile regression results are based on 1000 bootstrapping repetitions.

Therefore, it appears that AfT for productive capacity building category which ultimately funds the agricultural, industrial, financial, and exportable goods and services sectors exerts the highest effect on economic wellbeing, followed by AfT policy and regulations which related to multilateral trade negotiations and trade facilitation. Whereas, AfT for economic infrastructure category which helps to reduce trade costs, to build infrastructure, and to generate energy exerts the lowest effect on the economic wellbeing of the recipient countries. Results relating to control variables are broadly in line with those reported in previous tables. The mean institutional variable over the full sample displays a rising in economic growth over time, as the coefficient of this variable is positive and statistically significant.At last, it is reasonable to conclude that the effect of the aggregate AfT and its three categories on growth is similar. They all have the greatest impact on the low-income recipients compared to high-income recipients.

Conclusion

This paper contributes to the existing literature on foreign aid and economic growth by investigating the effect of accumulated AfT inflows, including its main components, on

economic growth in 75 recipient countries over the 2009-2018 period, and whether this effect is conditioned by the institutional quality of these recipients. The empirical analysis based on the panel quantile regression approach demonstrates significant positive effect of the aggregate AfT inflows over the full sample of recipient countries, precisely, the lowest-income countries. In other words, low-income nations could benefit the most from increasing AfT disbursements, this would also facilitate their transition to the highest-growing economies. These findings meet with the main purpose of AfT which is "to aid developing countries, notably LDCs to construct trade-related infrastructure, and policy reforms to benefit from the WTO agreements and broadly expand their trade". Effective AfT will boost potential economic growth and reduce poverty in recipient countries, as well as enhance multilateral trade policy changes and more equitably disperse international advantages across and amongst the recipient nations" (OECD/WTO, 2013; page 146). In terms of its subcategories, AfT productive capacity building generates the largest positive effect on the economic growth of the recipient countries followed by AfT for trade policy and regulation, while AfT for economic infrastructure is observed to have the weakest positive effect. AfT interaction with institutional variables is found to be negative. However, these interactions coefficients appear to converge towards positive in the case of countries with the better institutional quality (high income recipients), suggesting that a significant improvement in institution quality may eventually result in a positive AfT effect. In other words, as institutional variables get better, the aggregate AfT coefficients tend to be positive.

The study has several policy implications for both donors and recipients alike. The strongest positive association between AfT inflows and the low-income recipients implies that AfT donors might distribute more of total AfT inflows, particularly AfT for productive capacity building to these countries to boost their growth rates. In addition, as most institutional quality variables are positively associated with recipients' economic growth, AfT inflows allocation must be directed toward improving the quality of institutions and governance to reduce corruption and increase the effectiveness of AfT in these countries. Moreover, when aiming at boosting growth faster in a certain recipient country, donors could allocate more of AfT for productive capacity building, and AfT for trade policy and regulations. Furthermore, AfT should be distributed carefully, with institutional quality being one of the most important factors in a country's eligibility for AfT. As a result, donors should keep a close eye on the recipient's governance and institutional behaviour, as well as perform periodic evaluations of their progress. Recipient countries might also strengthen their institutions and promote good governance. This would result in a more efficient allocation of AfT inflows, ultimately leading to higher growth rates and development.

In this study, the effect of AfT inflows is examined studied on a large sample of countries containing developing countries with both low-middle and upper-middle-income, in addition to lower-income countries or in other terms least developed countries. Therefore, caution should be exercised when drawing conclusions based on individual nations. Further studies on individual countries are needed to investigate this matter. Moreover, Due to the unavailability of AfT data for some countries in some years, besides the unavailability of some key variables such as financial development and inflation. This study covers a sample of 75 recipient countries over the 2009-2018 period. Thus, if data for relevant variables accumulates or good proxies for certain important variables are formed, a longer period and a larger sample of countries can provide a long panel time series analysis. We leave this for future research.

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