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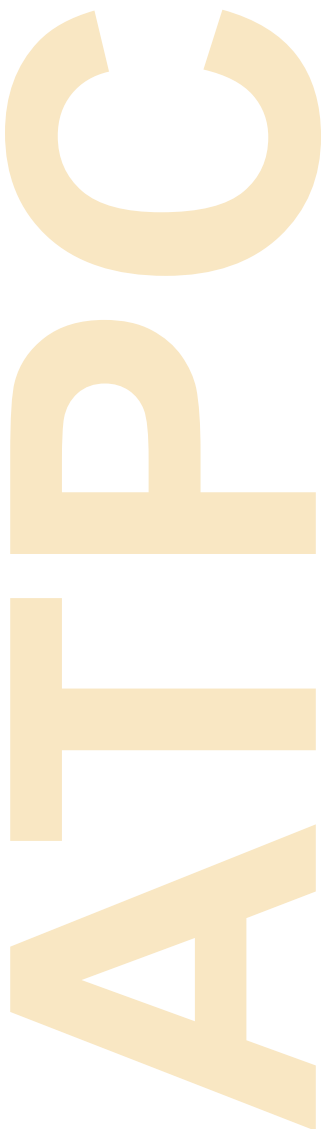
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Economic Commission for Africa

## African Trade Policy Centre



# Monitoring Aid for Trade in Africa: An Assessment of the Effectiveness of the Aid for Trade

Stephen N. Karingi and Vincent Leyaro

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The views expressed are those of the authors and do not necessarily reflect those of the United Nations.

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# Abstract

Africa has consistently under performed both in trade and economic growth relative to other continents. Against this reality, there is consensus among the international community that Aid for Trade is one way through which developing countries; particularly African ones can be assisted to overcome their binding trade constraints and ensure their effective participation in the global trading system. Yet, despite its importance, it is still an open question on how effective Aid for Trade is in improving trade-related outcomes. While there are several studies that have looked at the rationale of Aid for Trade, there is hardly any quantitative empirical evidence on its impact; especially for Africa. This paper tries to fill the gap on the effects of Aid for Trade on trade capacity constraints and trade performance outcomes in Africa. Using data on specific categories of aid for trade, which is matched with specific desired trade-related outcomes, and applying *ex post* econometric analysis, the study assesses whether Aid for Trade in Africa has had any significant impact. The findings of this study seems to suggest that aid for trade in Africa, controlling for other factors, matters both for addressing trade capacity constraints and promoting trade. The study finds that Aid for Trade reduces cost of trading, promotes export diversification as well as improving Africa's trade competitiveness. This therefore has serious policy implications for Africa as a whole, and individual countries in particular if they are to benefit from trade reforms.

**JEL Classification:** O10, F10, F35.

**Keywords:** Aid for Trade, Africa's trade capacity, aid effectiveness, Africa





# 1. Introduction

Although trade and not foreign aid should be Africa's ultimate target due to its enormous potential for promoting growth and reducing poverty; Africa, especially Sub Saharan Africa (SSA), has exhibited a poor trade and growth performance for over three decades now. Yeats and Amjadi (1996) for example, noted that, from the mid 1950s to early 1990s, the share of SSA's global trade fell dramatically from three per cent to one percent.<sup>1</sup> In value terms, ECA and AUC (2009 and 2010) show that in spite of the rally in the commodity prices in a good part of the first decade of this century, Africa's share hovers around three per cent. Intra-regional trade in Africa has remained miniscule, accounting for around 12 per cent of cross-border trade and on average for 5.3 per cent of gross domestic product (Soko, 2006). A more recent analysis<sup>2</sup> of intra-African trade by the ECA, AUC and AfDB confirms that the performance has remained at about ten per cent for many years now, with limited signs of improvement.

Besides the low share of global trade, Africa has failed to take advantage of market access extended through preferential schemes such as Generalized System of Preferences (GSP) by some of the developed countries and Everything-But-Arms (EBA) under the European Union's Lome Convention. The region has also not been able to optimise the full trade benefits from the different regional integration arrangements. Above all, Africa has failed to transform and diversify its exports away from relying on exports of few primary commodities to manufacturing and services trade.

In order to gauge the quantitative evidence on the effects of aid for trade in Africa, this study does three things. First, the study reviews the evidence piece by piece by bringing various strands on the effects of aid on trade. Specifically, it looks at the evidence on how trade costs reduce trade in Africa. The focus here is the evidence on the benefits of trade facilitation broadly defined, in reducing trade costs. The study also broaches on the evidence for SSA that aid promotes growth and trade conditional on other factors such as investment. The second thing that the study does is to try and establish an empirical link between different categories of aid for trade (trade related infrastructure, trade productive capacity, trade policy and regulation, and trade adjustment) and trade capacity indicators (diversification index, competitiveness index, logistic performance index, trading across border index, and intra-regional trade index). Third, the study seeks a further empirical link between the trade capacity indicators that are the target of aid for trade and trade performance indicators (real growth rate of total trade, trade integration, total trade share of world markets, and export concentration index). The three focus areas are in addition to data analysis on the flow of aid to trade, status of trade constraints and trade performance in Africa.

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1 A decline that implies associated export-earning losses of about \$65 billion annually.

2 See ECA, AUC and AfDB (2010), *Assessing Regional Integration in Africa IV: Enhancing Intra-African Trade*, Economic Commission for Africa, Addis Ababa, Ethiopia.

This paper is organised as follows. Section 2 reviews the literature on the main causes of Africa's trade tragedy. Section 3 reviews strand of evidence on the effects of aid on trade costs, trade and growth. The specification and method used to estimate the effects of aid for trade on indicators of trade capacity constraints and thereafter on indicators of trade performance, data sources and descriptions are presented in Section 4. Section 5 presents and discusses the results of the effects of aid for trade on trade capacity performance and trade performance indicators. Section 6 concludes by drawing policy implications.

## 2. The Main Causes of Africa's Trade Tragedy: Literature Review

Most of the literature in the 1980s argued that the main causes of Africa's trade tragedy were mainly internal factors. This perception that internal factors were responsible for African tragedy was enhanced by early series of detailed country studies complimented with some cross-country statistical analyses by Little et al. (1970), Balassa (1971), Krueger (1978), Bhagwati (1978) and Papageorgiou, et al. (1991). All these studies reached the same conclusion, that Africa's own policy of import substitution<sup>3</sup> adopted by most countries in 1960s and 1970s that resulted in the introduction of tight trade restrictions and misaligned exchange rates were to be blamed. Domestic policy distortions in terms of high tariffs barriers, it was argued, raised international trade costs as well as budget and balance of payment deficits (Amjadi and Yeats, 1996). This was manifested in the structural macroeconomic imbalances of 1980s in the internal and external accounts of most African countries and which were manifested in the economic crises that ensued as commodity prices collapsed and the aftershocks of the oil-crises continued to take root. Considering the poor performance of the African economies and the contrasting evidence from the Asian countries that pursued outward oriented strategies and export-led growth in 1960s and 1970s and achieved phenomenal performance; the World Bank, the International Monetary Fund and the major donors insisted that Africa's own exchange rate and trade policies were the primary causes of its trade marginalisation. They therefore argued that orthodox macroeconomic management (and in particular trade liberalization) represented the road to economic recovery in Africa and that more adjustment, not less, was required. The argument was simple. The exposure of Africa to competitive international trade environment would promote its most needed economic growth that will subsequently vanquish poverty.

There were counter arguments against the World Bank and IMF positions, such as the alternative to structural adjustment policies by the Economic Commission for Africa (see ECA, 1989) that it was the falling commodity prices and external protection in OECD markets that were largely to blame. However, the Bretton Woods Institutions' proposition regarding Africa economic crises was more influential. Consequently, by mid 1980s and early 1990s almost all of African countries had implemented comprehensive and substantial trade reforms. But contrary to the expectations, despite most African countries implementing comprehensive and substantial trade reforms by early 1990s, export response to trade liberalization have remained sluggish and disappointing (Morrissey et al. 2005), questioning the earlier perception that Africa's slow economic growth was essentially a trade policy phenomenon. Trade liberalisation has not weaned Africa from exporting mainly primary products to the rest of the world;

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<sup>3</sup> This policy option was as an outcome of a widespread view, developed by economists and policymakers such as Prebisch (1950) and Singer (1950) in 1950s that argued that, such a policy was the best way for developing countries to industrialize.

neither increased its share of global trade nor its share of intra-regional trade<sup>4</sup>. Africa's marginalisation has continued unabated and the region continues to fall further behind other regions of the world, in both trade and growth terms.

It is not surprising that Africa is in the position it is because the factors that are high in determining trade performance, growth and promoting development globally have been low and with limited effects in promoting trade, growth and development in Africa. This then begs the question: what is it about the structure of African exports that may explain poor performance, of exports and of export-led growth? In recent times, especially from late 1990s, a number of studies have emerged seeking to explain why Africa failed to benefit from trade. The attention has shifted to possible (internal) domestic causes for slow growth and poor trade performance in Africa.<sup>5</sup> Some researchers have argued that institutional arrangements (governance, rent seeking, corruption and policies), market institutions (bureaucracy and competition) and social norms matters are the cause (see North 1990 and Dollar et al. 2003). There are those who have argued that political factors such as ethnic fractionalization, lack of democracy, quality of governance and high incidences of conflict among others are to be blame (Gyimah-Brempong et al. 1999). Many studies have also demonstrated that the poor quality of infrastructure or the related issue of low productivity of public investment (to provide physical and human capital) are the factors behind the poor performance (Krugman 1990; Collier et al. 1999; and ECA, AUC and AfDB 2010). In addition to the infrastructure constraints, there have also been arguments that structural factors such as geography, natural barriers to trade and resource endowment hence higher trade costs are also a significant part of the explanation (Mbabazi et al. 2008; Dufrenot et al. 2009; Leyaro, 2010).

Morrissey (2009) reviews evidence on the extent of trade costs, mainly transport and logistics (transport-related) costs in Africa and their effects. The study found that SSA on average has far higher transport costs than elsewhere and that they have been a major constraint on SSA trade and growth. Edward (2008) also summarizes the sources of Africa marginalization in world and regional trade and attributes it to weak infrastructural, institutional and regulatory environment that are seen to inhibit export supply response. High internal transport costs and long delays in Africa, according to Djankov et al. (2006), are to blame. Limao and Venables (2001) showed that high transport costs related to poor infrastructure explain Africa's underperformance in trade. Collier (2000) and Elbadawi (2001) also showed that high transactions costs associated with poor investment climate are bad for manufactures exporters. Other researchers like Foroutan et al. (1993), Rodrik (1997) and Wood et al. (2001) argued that Africa is marginalised because it has not grown; its trade composition reflects endowments due to the underlying factors such as income, geography and size. In summary, what all these studies are saying is that, structural

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<sup>4</sup> See successive editions of *Economic Report on Africa* prepared by the ECA and AUC. Specifically, ECA and AUC (2007, 2008, 2009 and 2010).

<sup>5</sup> This shift in attention was largely provoked by the fact that, in spite of Africa's opening up to international trade in terms of trade liberalisation and many other regional and bilateral trade agreements, marginalization has continued. Even though, the debate as to the relative importance of policy-induced and exogenous problems has continued.

factors in terms of weak infrastructure, weak institutions and weak supply response capacities are the main trade binding constraints in Africa that have raised trade costs. They have also hindered Africa from conferring many potential benefit of increased trade integration.

In order for Africa to move from the periphery and be a central partner and a player in the global economy, benefiting from globalisation and exiting from aid dependency, it has to address its most binding trade constraints. For this to happen, it has to institute measures, reforms and investments that lower trade costs, as pointed in many empirical studies, as critical prerequisites both for trade and growth performance. Investment in infrastructure, especially roads (transportation), and supporting improvements in logistics and services (trade facilitation), especially customs, ports and administrative procedures are crucial. These will help reduce trade costs for example, which has been shown to be appropriate areas for intervention to reduce trade costs in Africa (Morrissey, 2009). It is based on this motivation and rationale, that the international community and donors continue to re-affirm their continued support, as agreed in the Hong Kong WTO Ministerial Declaration of 2005, for additional and better aid towards trade. Building on 1996 Singapore Declaration which initiated the process of bring trade facilitation in the Doha Work Programme, the Aid for Trade main aim is to assist developing countries to overcome constraints to trade. While there are several studies that have looked at the rationale of aid for trade as well as for the need for more aid, with an exception of Cali and *te* Velde (2009), there are very few statistical quantitative evidence that have assessed the impact of aid for trade; especially for Africa. There is therefore an urgent need to know whether aid for trade works generally and particularly for Africa. That is, whether aid for trade reduces trade costs/constraints, expands export diversifications, promotes competitiveness and increases world and region trade. This empirical study on the effectiveness of Aid for Trade in Africa is one amongst these few studies that are trying to fill this gap.

### 3. Evidence on the Effects of Aid for Trade

This review brings together various strands of evidence on the effects of aid for trade, which include: evidence on how trade costs reduce trade, especially for SSA; evidence on the benefits of aid for trade and trade facilitation in reducing trade costs and the evidence for SSA on how aid via various channels expands trade and promotes growth. This section reviews evidence on the extent of trade costs and the negative effects associated with high trade costs on trade performance. The focus is on comparative cross-country and country case studies, specifically for sub-Saharan Africa (SSA). Trade costs can be defined broadly or narrowly. The focus here is on the broad definition of trade costs<sup>6</sup>, comprising transport costs (freight and time, including delays and uncertainty); trade policy barriers (tariff and non-tariff); marketing costs (access, information, search, distribution); and other transaction costs such as costs of enforcing contracts, currency, legal and regulatory costs, and compliance with standards and other requirements.

#### 3.1 Trade Costs and Trade Performance

Though trade theorists and policymakers have until recently ignored trade costs, as tariffs have fallen substantially due to trade liberalisation, it has become clear that trade costs are significant barriers to international trade in Africa. Milner et al. (2000), for Uganda, illustrates how, as trade policy barriers are reduced, the relative importance of trade costs in terms of transport costs as barriers to trade have increased in Sub-Saharan Africa.<sup>7</sup> Compared to other developing countries, trade costs in SSA are much higher and have had severe impacts on export performance (Wilson, 2008). Transport and logistics costs make the largest share of overall trade costs in Africa (Morrissey, 2009). Higher unit transport, distribution and logistics (transport related) costs raise trade costs, which undercut competitiveness of exporters from Africa.<sup>8</sup> Indirectly, due to higher transport costs, the effective costs of imported inputs are raised. But at the same time, higher cost of imports may as well lower competition of domestic producers of import competing products. Besides reducing trade, there are many channels through which high transport costs harm the wider economy in Africa. One, it hinders efficient production that discourage foreign direct investment, the absence of which stifles benefits for countries from spillovers and technology transfers

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6 This matches with the broad definition of trade facilitation that encompasses weak infrastructure, institutions and regulatory environment and supply response constraints that aims at reducing the costs of international trade transactions. This definition too is in line with UNECA (2004) definition.

7 Despite technological advances in shipping freight, as international shipping is characterized by cartels, transport costs have not declined in SSA. The land transport tends to be higher (per unit distance) and more important (as share of transport) in SSA than other regions (Teravaninthorn and Raballand, 2009).

8 For comprehensive review of economic literature on trade costs (where trade costs adopt a very broad definition, where almost the entire margin between production and retail price is considered as the trade costs) see Anderson and Van Wincoop (2004). For general discussion on logistic costs see Arvis et al. (2007a).

from the multinationals. Table 2.1 summarize some empirical studies<sup>9</sup> on the effects of higher trade costs on trade performance.

**Table 3.1: Effects of Trade Costs on Trade Performance**

| Study                       | Effects of Trade Costs on Trade  |
|-----------------------------|--|
| Teravaninthorn et al (2009) | A recent world bank study identified, investigated and quantified the determinants of high prices for road transport services in SSA, seen as a major factor explaining slow economic growth and marginal trade performance. Transport prices for most African landlocked countries range from 15 to 20 % of import costs – a figure 3 to 4 times more that most developed countries.  |
| Morrissey (2009)            | SSA on average has far higher transport costs than elsewhere. The cif/fob ratio that is used to measure international transport costs are equivalent to almost 20% of the export (fob) price; transport costs add 18.7% to the unit cost, which suggests that international transport costs for SSA were about twice the level for developing countries in other regions and almost four times the level for industrial countries. |
| Morrissey (2009)            | Measuring international transport costs using freight costs it is cheaper to ship a container to an African country than to ship it back. Landlocked countries face the highest costs charges 2.5 to 4.0 times the baseline costs of shipping to Uganda (i.e. across Africa) are often higher than costs of freight to the US reflecting the fact that costs of intra-African trade are very high.                                 |
| Portugal-Perez et al (2008) | Measure international trade costs as average export and import fees on a 20-foot container (excluding tariffs and trade taxes) and find that average costs in sub-Saharan African countries are twice the level in OECD countries.   |
| Morrissey (2007)            | Reviews evidence on transport costs for Kenya, Tanzania and Uganda since the early 1990s. Evidence for East African countries shows that transport costs remain high, and in particular are a significant cost (tax) to exporters, and overall costs have not fallen since the mid-1990s.  |
| Djankov et al (2006)        | Use data on the average time taken to transport a 20-foot container from a factory in the largest business city to the most accessible port for 126 countries  |
| Lima and Venables (2001)    | Estimate that poor infrastructure adds 40% to unit transport costs in coastal economies and 60% in landlocked economies.   |
| Milner et al, (2000),       | Illustrate how for Uganda, as trade policy barriers are reduced, the relative importance of transport costs as barriers to trade has increased in sub-Saharan Africa.  |

Source: Author's Own Compilation

The general problem in SSA is poor and costly land infrastructure, poor quality of institutions and weak productive capacities, as summarized in most empirical studies. Although the measures of transport costs are rough estimates of averages, and should not be considered as good quantitative indicators of the (excess) costs facing exporters or imports of particular products, they are indicative of the relative costs facing SSA countries. Some of the summarized studies in Table 3.1 contain significant and relevant qualitative and quantitative information of the extent to which transport costs broadly defined increase the international trade costs of SSA countries. It follows that measures to reduce trade costs, promote efficient and improved logistics services will confer many potential benefits of trade integration to African countries.

<sup>9</sup> A longer version of this paper contains tables in the appendix with additional empirical studies that were reviewed.

## 3.2 Aid for Trade and Trade Costs

The direct impact of aid for trade (or trade facilitations) is to reduce trade costs; in particular lowering unit transport and distribution costs. A number of studies, either at country, regional or cross-country levels that compliments each other, provide strong evidence that more aid to trade and trade facilitation, some of which are summarized in Table 3.2 have a positive and significant impact on trade-related outcomes. Lower trade costs clearly benefits exporters directly as it enhance competitiveness, increase diversification and also indirectly insofar as the effective costs of imported inputs are reduced. On the other hand, the lower costs of imports will increase competition faced by domestic producers of import-competing products. Some producers will become more efficient in the face of competition, but some will suffer adjustment costs as a result of lower natural (trade cost) protection. There are also potential indirect economy-wide benefits as efficient logistics (lower trade costs) encourage more efficient production (i.e. diversifications) and help to attract and retain Foreign Direct Investment (FDI).<sup>10</sup>

**Table 3.2: Aid for Trade on Trade Performance**

| Study                        | Effects of Aid for Trade Facilitation on Trade Performance  |
|------------------------------|---|
| Cali et al. (2009)           | Examined the effects of aid for trade on the costs of trading and on the level of and changes in exports. They find that aid for trade facilitation reduces the costs of trading. Aid to economic infrastructure and to productive capacities has a positive and significant impact on exports. Sectoral analysis indicates that aid to economic infrastructure is more beneficial for mining and manufacturing exports.  |
| Morrissey (2009)             | Trade facilitation and improving the environment for producers enhance the capacity for trade; improved trade facilitation can: significantly lower trade costs, especially reducing time delays; bring about significant increases in the volume of trade, imports and exports, and generally enhance competitiveness; support increases in government revenue and collection efficiency and generally contributes to welfare improvements and economic growth.    |
| Teravaninthorn et al. (2009) | Identify the most effective measures to reduce transport costs as reducing fuel costs and investing in road rehabilitation (maintenance and new roads). Reduction of border-crossing delays is considered less important in East, West and Central Africa than for Southern Africa (which tends to have better road infrastructure and services, but delays are a major factor in high prices).   |
| Milner et al (2008)          | Comprehensively review evidence of trade facilitation (TF) in developing countries that incorporate transportation, distribution and communication issues. Their review identifies types of TF that increase revenue collections efficiency, reduce trade costs and promote greater regional cooperation.   |
| Helble et al. (2008)         | Using detail data on aid flows from OECD, they estimated the responsiveness of trade flows to specific types of foreign aid. Aid directed toward promoting trade enhances trade performance of recipient countries: a 1% increase of aid to trade policy and regulatory reform (amounting to about US \$11.million) could generate a global increase of trade of about US\$818 million. As the rate of return on every dollar is about US\$697 in additional trade. |

<sup>10</sup> The presence of foreign investors, especially multinational firms, can provide benefits through knowledge spillovers and technology transfer (some of which relate to improving logistics); access to marketing and management skills; and training of workers.



Although there is heterogeneity on how different categories of aid affects trade, for example, while aid to economic infrastructure is strongly related to trade in some countries or regions of the world, in other countries or regions it is reforms to and improvement in regulatory framework that is more strongly related to trade. Majority of empirical studies on the effects of aid for trade, as summarized in Table 3.2, conclude that aid for trade facilitations lower trade costs to importers and exporters through different channels and thus is positively associated with expanding trade. The aid toward trade facilitation examined in these studies includes: improved transportations and logistics services; streamlining customs procedures; improving port efficiency; harmonizing to international standards among others.

### **3.3 Aid, Trade and Growth**

Despite the importance of aid for trade generally and trade facilitation specifically in lowering trade costs and enhancing trade, the relationship between aid and trade or aid and growth have remained contentious and tenuous. This can be explained by the complexity of linkages that need investigating and by the limited availability of data identifying direct links between aid and trade or and growth. Moreover, the effects of aid are a product of complex causality chain running from aid to country outcomes and embedded on a number of conditional factors both domestic and external (Bourguignon and Sundberg, 2007). Although the relationship between aid and trade is positive and significant, the main issue of concern has been on direction of causality. Up until 1990s aid was considered to be tied to donor's trade, leading to policy endogeneity in donor countries. The endogeneity too could run in the other direction from trade to aid, as donors would be attracted to allocate aid to those countries they trade most with (Morrisey, 1993; Osei et al., 2004). Besides the causality concern and hence the endogeneity problem, most results on the effects of aid on trade suggests a positive relationship (Helble, et al. 2009).

On the relationship between aid and growth: though there is a larger body of empirical evidence, there is at the same time wide disagreements, especially on aggregate data, regarding whether aid positively boosts growth (Burnside and Dollar, 2000; Rajan and Subramanian, 2005). The findings from such studies have been at best mixed, with no consensus on the direction of effects, let alone size. Such unsettled results are attributable to a number of factors. One is the type of aid delivered and its motives (either it is for humanitarian or for policy conditionalities) and absorptive capacity in recipient countries. Bourguignon and Sundberg (2007) argue that these mixed results are not surprising given the heterogeneity of aid motives and the complex causality chain linking foreign aid to growth. Another explanation is the aid-induced appreciation of real exchange rate that lower exports and so induce Dutch disease. But if aid goes through investment, which in turn improve infrastructure and productive uses, rather than going to consumption and other projects with less growth potential, this might help to remove or minimize the

Dutch disease effect of aid (Adam, 2006).<sup>11</sup> The exchange rate therefore is a key channel through which aid gains could be eroded, resulting in the mixed growth outcomes.

In addition to these, there is a number of other factors that may explain the inconclusiveness and insignificancies of research on aid and growth. The impact of aid might depend on domestic economic policies, institutions and other conditions. Burnside and Dollar (2000) argue that aid has no identifiable additional effect on growth once other factors have been accounted for including economic policies. Aid raises growth only in countries with good policies. Hansen and Tarp (2001) point to the lack of a satisfactory theoretical framework underpinning the empirical analysis.<sup>12</sup> Moreover, the direction of causality (from aid to growth or vice-versa) is to some extent still an unresolved issue. Furthermore, many other studies have shown that the lack of positive relationship between aid and growth or mixed results is largely related to the specifications, methods, data and time coverage used.<sup>13</sup> Thus, it is not only that there is no well-established theoretical channels (direct and indirect) that establish a causal link between aid and trade or aid and growth, but even the empirical evidence remains contentious and tenuous.

The foregoing notwithstanding, consensus has recently been emerging that the effects of aid is heterogeneous and conditional on other factors. The evidence also suggests these effects are non-linear and might involve some thresholds. They are also specific in nature and depend on disaggregated data. A number of studies that have disaggregated or decomposed aid by type or category, using different specifications and applying different methodologies have returned good results. McPherson and Rakowski (2001) use a multi-equation system and find that the impact of aid on GDP per capita growth is positive but indirect through investment. The fact that aid affects growth through investment is largely echoed by Gomanee et al. (2005) who found that each one percentage point increase in the ratio of aid to GNP contributes one-third of one percentage point to growth. Clemens et al. (2004) split aid into different types and identified the type of aid that could plausibly stimulate growth in the short-run by including: budget and balance of payments support, investments in infrastructure, and aid for productive sectors. They find a large positive effect of this type of aid on short-term growth. A few studies have quantified the effects of infrastructure provision on trade and growth and all find a positive correlation. Francois and Manchin (2007) estimate a large panel of bilateral trade flows over the period 1988-2002 for a number of countries and focus on the effects of communications and transport infrastructure. They estimated that an increase of one standard deviation (from the mean) in the communications infrastructure raises the volume of trade by roughly 11 percent, compared to a 7 percent effect of transport infrastructure and a 2 percent effect on trade from tariffs. In the case of LDCs, transport is more important than communications. The effects of communications infrastructure on trade grow as a country reaches the middle income range.

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11 Gomanee et al. (2005) have established evidence for SSA that aid promote growth via investment.

12 The simple neoclassical growth model of capital accumulation does not offer a framework to derive an exact empirical specification for the very complex relationship as the one between aid and growth.

13 See for example Hansen and Tarp (2001); Rajan and Subramanian (2005 and 2007), Doucouliagos and Paldam (2007).

Buys et al. (2006) find that upgrading a primary road network connecting the major 83 urban areas in SSA would expand overland trade within SSA by around US\$250 billion over 15 years<sup>14</sup>.

More recently, Cali et al. (2009) assess the effectiveness of aid for trade, that is, whether aid for trade reduces countries' trading costs, help them to become more competitive and increase their trade. Using data for 120 developing countries, they find that aid for trade reduces the costs of trading. Aid to economic infrastructure and productive capacity has significant positive effects on exporting. Using country and sector specific data over the period 1973-2006, they also find that aid for trade fosters exports, although the relationship is non-linear and the effect depends on a careful specification of the types of aid and exports.<sup>15</sup>

Although the focus of this study is neither on the effects of aid on trade nor aid on growth, however, it reviews this broad literature to highlight the complexities involved when trying to pin down the effects of aid for trade on traded or growth which helps to guide empirical specifications.

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<sup>14</sup> Other studies have quantified the positive relation between infrastructure and growth, although they have been unable to properly address the problem of causality (e.g. Canning et al., 1994; Canning, 1998).

<sup>15</sup> These findings enhance the literature on the impact of aid on growth and help to make the case for the importance of aid for trade and that more additional aid, as called for by the WTO Task Force under the Aid for Trade initiative, could indeed be effective in promoting development.

## 4. Empirical Estimation Methods and Data

### 4.1 Empirical Estimation Methods

As reviewed in Section 3.3, it seems natural to hypothesise that more aid to specific categories of aid such as to economic infrastructure and productive sectors should foster trade and growth. That allows a more precise identification of channels through which aid affects trade and growth and so departs from the aid-growth puzzle by isolating the impacts of specific types of aid on specific outcomes. The focus here is twofold. In the first step the study seeks to see if the aid for trade that Africa has been receiving has addressed (improved) the most binding trade constraints the region has been facing. Having established that, in the second step, the study explores whether the improved trade capacity indicators have helped promote trade in Africa, to begin with, and so boost growth and overall development in the medium to long term. Thus, the study tests for effects of total trade-related aid and specific types of aid for trade on trade-related outcomes, including: export diversifications; trade competitiveness; transport and logistics costs; costs of trading across the borders; exports and trade performance. Appendix A summarizes the conceptual framework this study follows.

Therefore, the first question then is, has aid for trade been able to address most of the trade capacity bottlenecks the region has been facing for years. Hence, the baseline specification links different categories of aid for trade and trade capacity indicator (as shown in Appendix Figure 3.1), controlling for other key variables in each respective specification based on two generic models. First is the cross-section specification, and given that this averages over entire period, it can be thought of as capturing the medium to long-term effects. The cross-section specification thus becomes:

$$TCI_i = \alpha + X_i'\beta_1 + AfT_i\gamma + \mu_i \quad (4.1)$$

Where  $TCI_i$  are trade capacity indicators: export diversification; trade competitiveness; transport and logistics costs; and costs of trading across the borders. These are used to proxy for the binding trade constraints that Africa is facing.  $AfT_i$  is aid for trade and its categories: trade policy and regulation; economic infrastructure; building productive capacity and trade-related adjustment.  $X_i$  are the control variables for each of the specifications given the core determinants of the proxy for the trade constraints. For example in the case for export diversifications, amongst other things, the study controls for the level of development of the country which is measured by GDP per capita, the size of the country which is measured by the population, the level of development of human capital (productivity) the country

has attained which is measured by secondary education and macro policies of the country including industrial policy captured by the openness index. This specification is similar to that in Cali et al. (2009) where cost of trading for example was the trade capacity constraint. To capture whether aid for trade facilitation under the category of trade policy and regulation address trade constraint, Cali et al. (2009) related export costs and categories of aid for trade for developing countries.

The second generic specifications are a panel specification. Unlike crossectional specification, panel data, where the same country is followed in successive years, facilitates estimation of parameters capturing the dynamic relationship in a linear dynamic model. But more importantly, estimating equations (4.1) could be biased for a number of reasons, mainly due to: omitted variables due to unobserved country heterogeneity; measurement errors; and some variables being endogenous for a number of reasons. Hence the panel specification to address most of these econometric nuisances becomes:

$$TCI_i = \alpha + X_i' \beta_1 + AfT_i \gamma + \eta_i + \lambda_i + \varepsilon_i \quad (4.2)$$

The variables here are as defined before. With this specification, given the credibility of data, one can apply various estimators including: fixed and random effects, instrumental variables and GMM estimators.

After the first stage estimation, in the second stage, to establish both the direct and conditional effects of aid for trade on trade performance in Africa the study allows for and estimates an interaction effects model between aid for trade and trade performance. This is specified as follows:

$$P_i = \alpha + X_i' \beta_1 + AfT_i * \mathcal{T} I_i' \gamma + \eta_i + \lambda_i + \varepsilon_i \quad (4.3)$$

With the exception of interaction term in equation (4.3), other variables are as defined before, but the explanatory variables of interest are trade performance indicators  $P_i$ , controlling for other covariates. For sensitivity and robustness check, in explaining the flow of trade in Africa to the rest of the world, the gravity model in its basic form augmenting it for the variables of interests can also be applied.

## 4.2 Data Description and Analysis

In addition to reviewing the evidence on the effects of aid for trade in section 3, in this section, the patterns and trends on the flow of aid for trade (AfT) and its potential effects on trade-related outcome, that is, trade capacity and trade performance indicators are explored. Besides aid for trade, other determinants of

trade constraints and trade performance indicators are considered. This helps to give the feel of potential effects of aid for trade generally, but more importantly what types of aid are tied with what type of outcomes.

Aid for trade comes from two main sources, that is Development Assistance Committee (DAC) member countries and multilateral organizations. The flows are tracked through the OECD Creditor Reporting System (CRS) aid activity database. The categories are aligned to the WTO AFT Task Force definitions: trade policy and regulation; economic infrastructure; building productive capacity, trade related adjustment and trade development.<sup>16</sup> For the various trade capacity and trade performance indices, different sources of data are used, as will be shown.

Table 4.1 summarizes the flow of aid for trade decomposed in the various categories. Overall, between 2002 and 2007 donors continued to honour their commitment of increasing more and better aid for trade. The total aid for trade increased from USD 13.7 billion in 2002 to UD 25 billion, an increment equivalent to 84 percent (this is despite a slow increment between 2002 and 2004). Looking at 2008, most aid for trade went to economic infrastructure (transport and storage, communications and energy generation and supply) and building productive capacity (banking and financial services, business and other services, agriculture, forestry, fishing, industry and mineral resources and mining). This is obvious, given the nature of investment to these areas that are capital intensive compared to those of trade policy and regulation or trade related adjustment. However, that is not to say that the larger the spending on these areas, the higher are the returns in terms of reducing the supply side constraints.

**Table 4.1: Total AFT Flows (US\$ millions, Commitments)**

| AFT                          | 2002  | 2003  | 2004  | 2005   | 2006   | 2007   | 2008   |
|------------------------------|-------|-------|-------|--------|--------|--------|--------|
| Trade Policy and Regulation  | 699   | 586   | 662   | 750    | 1125   | 875    | 1273   |
| Economic Infrastructure      | 6566  | 7539  | 12532 | 11118  | 12147  | 12870  | 21154  |
| Building Productive capacity | 3449  | 4645  | 5014  | 5900   | 5366   | 6235   | 8127   |
| Structural Adjustment        | 2950  | 5600  | 3691  | 5131   | 4744   | 4947   | 11986  |
| Total AFT:                   | 13664 | 18370 | 21899 | 22899  | 23382  | 24927  | 42540  |
| Total ODA:                   | 64715 | 89746 | 98444 | 122519 | 128202 | 126908 | 158197 |

**Source:** Computations based on aid activity database of OECD (2009)

16 This database has covered a number of AFT for trade related activities since mid 1970s and the reporting to the OECD CRS has keep on improving. Other sources of AFT are Other Official Flows (OOF, which can be termed as Non DAC donors, thus, the OECD CRS aid activity data base partially reflects the Aid for Trade), some of which are reported to OECD CRS while others to DAC but not to OECD CRS (Gordon, 2009). Donors reporting OOF to the CRS are: World Bank; African Development Bank; Asian Development Bank; Inter-American Development Bank and International Fund for Agricultural Development. Donors reporting OOF to the DAC but not to the CRS: International Finance Corporation; Caribbean Development Bank and European Bank of Reconstruction and Development.

The rationale for more and better aid for trade is to overcome the supply side domestic constraints and trade-related infrastructure capacity that have hindered Africa from harnessing the benefit of trade integration. By channelling aid towards the binding trade constraints, it would if effective help lower trade costs, and consequently boost trade, diversify exports, and increase trade competitiveness. Other positive results would be increased export productivity, improved linkages with the domestic economy and increased adjustment capacity. As a result, this helps to promote growth, reduce poverty and enhance development. Using recent information on the indicators of trade capacity, this study first assesses raw data to establish whether the flow of aid for trade has had any effects in lowering trade costs in Africa in terms of: export diversification; trade competitiveness; transport and logistics costs and ease of trading across borders. This is then linked to trade performance outcomes, economic growth and development in the second stage.

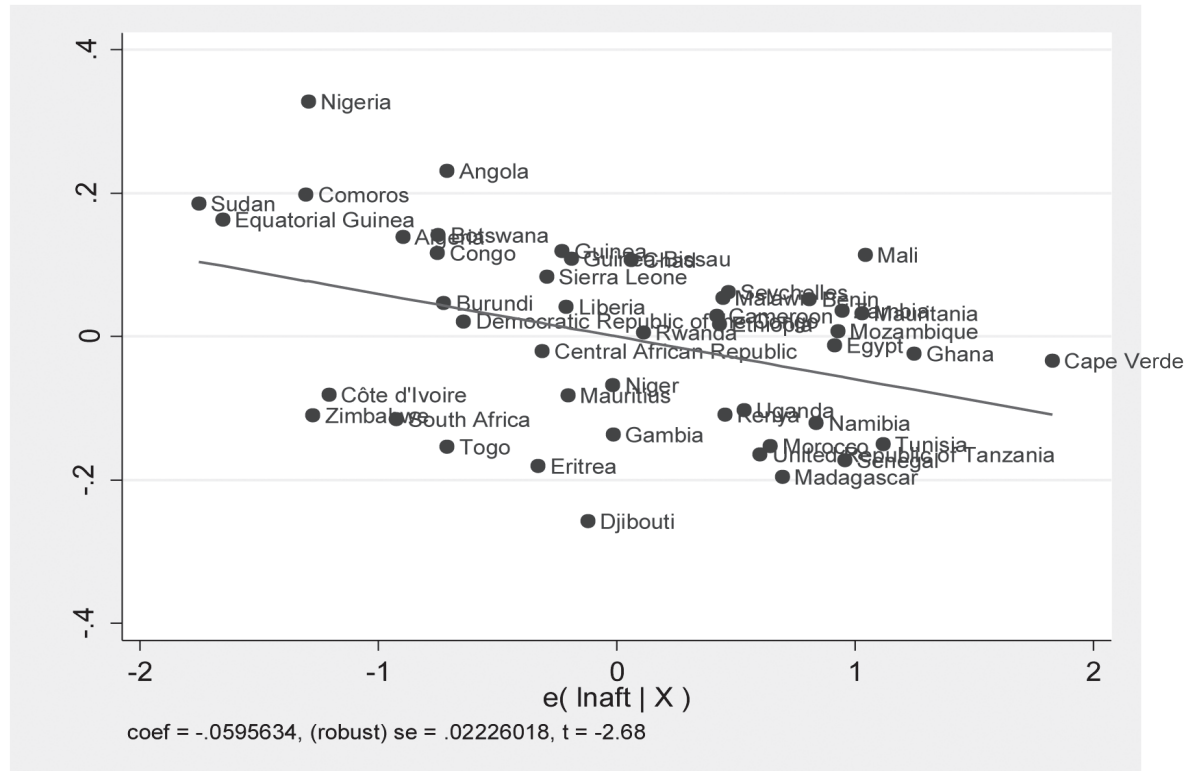
### **Export Diversification**

The trend of Africa's export diversification over time in relation to flow of Aid for Trade is considered in this sub-section. Though there are various determinants of diversifications, investment, particularly in infrastructure, is the most important determinant of diversification<sup>17</sup>. It is associated with higher trade value, higher export productivity, improved competitiveness and low export volatility. Most determinants of diversification are linked directly to the four broad categories of AfT. Since the flow of AfT to Africa has been increasing, one expectation is that diversification of Africa trade and economy should have improved. Figure 1 plots the relationship between export diversification and aid for trade.

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17 See ECA and AUC (2007), *Economic Report on Africa 2007: Accelerating Africa's Development through Diversification*, Economic Commission for Africa, Addis Ababa, Ethiopia

### Figure 4.1: Relationship between Export Diversification and Aid for Trade



**Source:** Author's Own Compilation

There are lags before AfT affects trading costs. However, a comparison of Africa's diversification index in the 1980s or in 1990s with today shows some improvement. The index has improved from 0.73 in 1995 to 0.58 in 2008. This suggests that, despite trailing most other developing regions; the efforts Africa is making towards addressing her binding trade constraints are starting to pay off. Substantial heterogeneity remains among regions and individual countries. West Africa, North Africa and to a lesser extent East Africa, have performed relatively better than Central and Southern Africa. However, there is a plausible relationship between AfT and the improvement in the diversification index. As shown in Figure 4.1, more allocation of aid for trade generally increases export diversification in Africa.

## Trade Competitiveness

Aid for Trade if effective, should also have positive impact on trade competitiveness. The ECA's trade competitiveness index has three components that match categories of the AfT. These components are:



trade-enabling environment index (TEI); productive resource index (PRI); and infrastructure index (II). Being trade focused and Africa focused; this competitiveness index is an invaluable indicator of whether AfT works in Africa. It has elements that capture both improvement in trade costs and trade performance. It not only allows a comparison of trade performance, but also where interventions should be focused.

Unfortunately, the trade competitiveness index covered only 30 African countries for the period 1980-2001. Its extension and improved coverage would constitute a useful tool for assessing the effectiveness of AfT. Suffice to note that for the period covered by the index, there was discernible improvement in the latter years of the assessment. However, most of the countries fell in the moderately competitive cluster. The key investigation remains whether the composition of the various clusters has changed and if this has to do with the AfT. To compliment the limited coverage and more dated character of the trade competitiveness index; this study employs the Global Competitiveness index to undertake similar analysis.

### **Global Competitiveness Index**

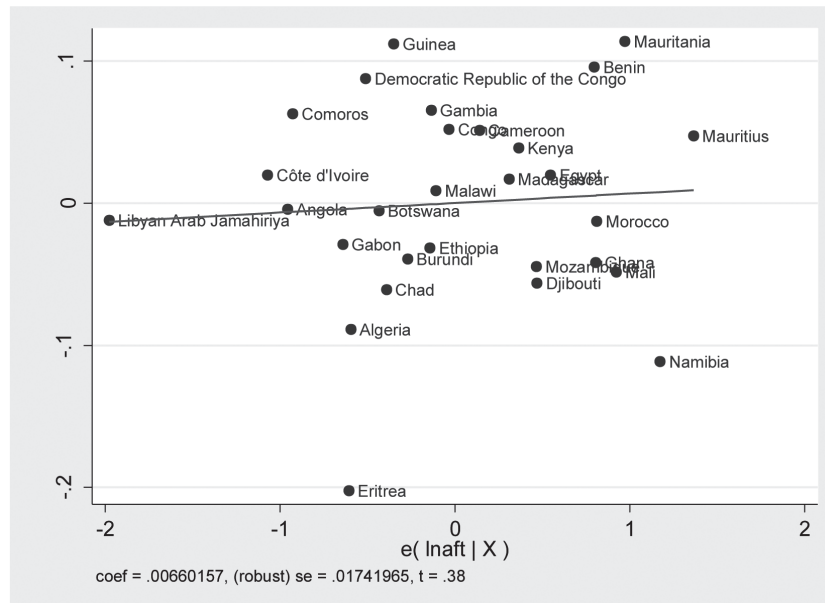
This index enables an international context view of Africa's competitiveness. One of its components is the enabling trade index (ETI). This offers a direct link to the AfT interventions in trade facilitation and logistics. The scores and rankings for African countries were compared over time, in order to provide insights as to whether there has been overall improvement on Africa's competitiveness for the period 2005 – 2010. Given the lag effects of AfT, in particular in infrastructure investments, it is still reasonable to include the most recent rankings and scores for 2010.

An assessment was done to see whether there has been upward movement both in ranking and scores for individual African countries against other countries between the two periods. It was established that between 2005 and 2006, 10 out of 26 countries in 2006, have improved in their competitiveness relative to other countries. Between 2006 and 2007, 11 out of 26 countries in 2007 have improved in their competitiveness relative to other countries. Between 2007 and 2008, 18 countries out of 29 achieved improved rankings relative other countries. And 22 countries out of 34 between 2008 and 2009 improved rankings compared to other countries. Overall, 50 per cent of 31 African countries have registered improvements in competitiveness rankings. Even though, the poorest performing countries are also African. What this indicates is that, there are some signs of encouragement and improvement in Africa in terms of its competitiveness, albeit only for some countries.

## Logistic Performance

As shown in many empirical studies, transport and logistics (transport related) costs have been recognized as an important aspect of trade costs in Africa.<sup>18</sup> Analysis of the World Bank's two sets of logistics performance index released in 2007 and 2009, indicate that, controlling for the level of development, better logistics performance is strongly associated with trade expansion, export diversification, and economic growth. In general, analysis of the 2009 LPI suggests that investments and reforms towards addressing the logistics bottlenecks are yielding expected results. While Africa's performance in general appears to be improving, it is driven mainly by better results in countries such as South Africa. Moreover, a good number of African countries have improved their domestic regulations, resulting in improved LPIs. This is the case with a country like Uganda, which though landlocked, has registered improvements in the 2009 index when compared to that of 2007. There are others too that have seen remarkable improvement including: Senegal, Tanzania, Uganda, Mauritius, Madagascar and Niger, to mention a few. But is there a link between this performance and AfT. Figure 4.2 relates the LP1 for 2007 and 2009 with AfT and finds that the association is positive.

**Figure 4.2: Relationship between Logistic Index and Aid for Trade**



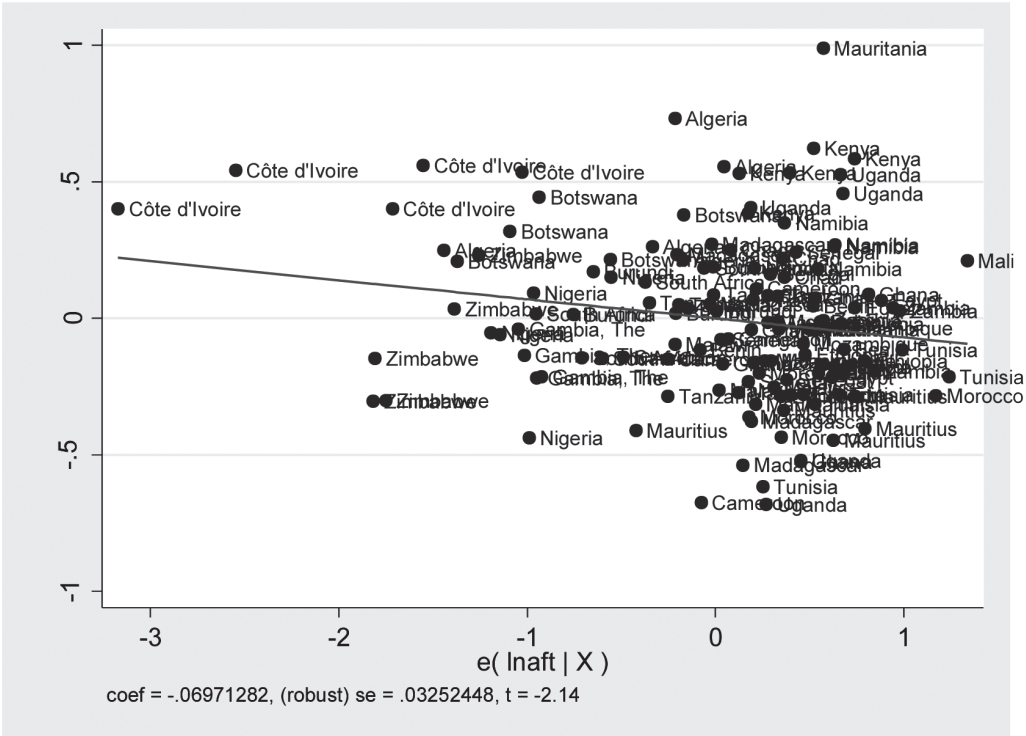
**Source:** Author's Own Compilation

<sup>18</sup> Port efficiency is an important determinant of trade flows, and exports are more sensitive to port efficiency than imports. The efficiency of customs procedures is more important for imports than for exports, as would be expected, although other aspects of the regulatory environment are more important for exports (Morrissey, 2009).

### Ease of Trading Across Border

Regarding the ease of doing business, the most relevant component to the assessment of AfT is the trading across borders index. This index captures the time taken by customs to clear imports and exports and the cost of exporting and importing goods, across countries and over time. In this section, the ease of doing business index was used to assess the current performance of Africa relative to the rest of the world. Out of 183 countries ranked in 2009 and 2010, 51 are from Africa. The comparison for this indicator is only for two years. 24 countries have shown relative improvement in their ease of doing business global index, while 6 countries remain at the same level. Some countries like Rwanda have done extremely well in the recent rankings. Although the five bottom countries (i.e. most difficult countries to do business) come from Africa, some progress is being made in terms of improving business climate.

**Figure 4.3: Relationship between Export Costs and Aid for Trade**



**Source:** Author's Own Compilation

## 5. Trade Capacity Performance and Aid for Trade in Africa

We start the discussion of our econometric results, where we apply conventional OLS based on equation (4.2) to the pooled cross-sections, by first estimating the effects of Aid for Trade generally and its categories on the trade costs. Higher trade costs in Africa, as explained, are proxied by indicators of trade capacity constraints: export diversifications; trade competitiveness; logistic performance and ease of trading across borders. The results for the effects of Aid for Trade on Africa's export diversification (the dependent variable) are reported in Table 5.1. In our baseline specifications, we control for GDP per capita that captures the country's level of development; population that captures the size of the country; secondary education that captures the level of human capital development and openness that captures the macro policies of the country.

**Table 5.1: Aid for Trade and Export Diversification in Africa, 1998 -2008**

|                               | POLS<br>(1)           | POLS<br>(2)           | POLS<br>(3)           | POLS<br>(4)           | POLS<br>(5)           |
|-------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <i>Year dummies</i>           | Yes                   | Yes                   | Yes                   | Yes                   | Yes                   |
| <i>LN</i> GDP                 | -0.021**<br>(-2.023)  | -0.018*<br>(-1.726)   | -0.014<br>(-1.333)    | -0.0001<br>(-0.036)   | -0.022**<br>(-2.142)  |
| <i>LN</i> POP <i>N</i>        | -0.007<br>(-0.999)    | -0.004<br>(-0.474)    | -0.021***<br>(-3.378) | -0.012<br>(-1.537)    | 0.001<br>(0.078)      |
| <i>LN</i> SEC                 | -0.038***<br>(-2.765) | -0.040***<br>(-2.990) | -0.080***<br>(-4.877) | -0.052***<br>(-3.971) | -0.038***<br>(-2.847) |
| <i>LN</i> OPEN                | 0.039**<br>(2.132)    | 0.040**<br>(2.293)    | 0.046***<br>(2.779)   | 0.058***<br>(3.440)   | 0.038**<br>(2.176)    |
| <i>Lag</i> LN <i>ECN</i> INFR | -0.023***<br>(-4.895) |                       |                       |                       |                       |
| <i>Lag</i> LN <i>PRC</i> PTY  |                       | -0.032***<br>(-5.458) |                       |                       |                       |
| <i>Lag</i> LN <i>TP</i> REG   |                       |                       | -0.011*<br>(-1.698)   |                       |                       |
| <i>Lag</i> LN <i>TRADS</i> NT |                       |                       |                       | -0.0003*<br>(-1.680)  |                       |
| <i>Lag</i> LN <i>AF</i> T     |                       |                       |                       |                       | -0.035***<br>(-6.111) |
| <i>Constant</i>               | 0.646***<br>(5.333)   | 0.612***<br>(5.241)   | 0.755***<br>(6.834)   | 0.455***<br>(3.490)   | 0.625***<br>(5.447)   |

|                      | POLS<br>(1) | POLS<br>(2) | POLS<br>(3) | POLS<br>(4) | POLS<br>(5) |
|----------------------|-------------|-------------|-------------|-------------|-------------|
| <i>F-Test</i>        | 0.000       | 0.000       | 0.000       | 0.000       | 0.000       |
| <i>R2</i>            | 0.747       | 0.747       | 0.805       | 0.722       | 0.744       |
| <i>N</i>             | 457         | 460         | 388         | 420         | 460         |
| <i>Breusch Pagan</i> | 12.53       | 12.12       | 10.87       | 11.99       | 12.42       |
| <i>Jarque-Bera</i>   |             |             |             |             |             |

*Notes:* POLS is pooled OLS. Figures in parentheses are t-ratios: \*\*\* denotes significant at 1 percent level, \*\* significant at 5 percent and \* significant at 10 percent. Outliers tested for using Belsley *et al* (1980) The F-test supports the hypothesis that all coefficients are jointly significant (i.e. rejects the null that all are zero. Diagnostic tests (using the Breusch Pagan (BP) heteroskedasticity test and Jarque-Bera (JB) test on residuals for normality) reveal no evidence of heteroskedasticity and the normality assumption of the error term is not violated. Tests support the functional form used. The critical values of tests (for degrees of freedom) are BP  $\sim \chi^2$  (critical value = ...(. DF) and .. (... DF), JB  $\sim \chi^2_{(2)} = \dots$

Most of the covariates have the expected signs and are statistically significant. As expected, the coefficient on GDP per capita is negative and significant, implying that higher level of economic development is associated with higher export diversifications. This is as attested in the data analysis, which is true for the more developed economies in the regions like South Africa, Mauritius, Tunisia, Egypt, Nigeria and Kenya. Population size also is associated with increased export diversification, though not significant for most specifications. The coefficient on secondary education is negative and statistically significant for all specifications, implying higher productivity of the working population of the country is associated with higher export diversifications. The coefficient on openness, which reflects the country's policy stance, is positive and significant; implying that openness in Africa has adverse effects on export diversification. Export diversification has not responded to trade liberalisation in Africa to date. The possible explanation is that franking measures are required for trade liberalisation to lead to improved diversification. Otherwise, based on theoretical expectations, trade liberalisation should ideally result in more specialisation on the basis of comparative advantage. The Aid for Trade is supposed to provide these accompanying measures that are essential to enabling countries that are opening up their trade to develop new dynamic sectors.

Column 1 reports the effects of aid for trade towards economic infrastructure on export diversifications in Africa. The coefficient on economic infrastructure is negative and statistically significant, implying that one per cent increase in the investment in economic infrastructure improves export diversification index by 0.02 per cent. The effect of aid for trade to productive capacity reported in Column 2 also leads to an improvement in the diversification outcome and is statistically significant. Thus, a one per cent increase in investment in aid for trade to productive capacity building enhances export diversification by 0.03 per cent. Aid to trade policy and regulation in Column 3 and aid for trade towards trade adjustment in Column 4, though they have similar effects on export diversification in Africa, as in the case of economic

infrastructure and productive capacity, their magnitudes are relatively small; as they improve export diversification index by between 0.01 and 0.003 per cent respectively. In aggregate terms, as reported in Column 5, a one per cent increase in AfT improves the export diversity as measured by the index by 0.04 per cent. Results in levels and for the respective specifications are reported in the Appendix Table C1, which shows how many dollars are required for each of the categories of aid for trade to achieve the respective levels of exports diversifications.

Table 5.2 reports results for the effects of Aid for Trade on trade competitiveness (the dependent variable) in Africa. The same specification (i.e. equation 4.2) is estimated, but controlling for one more different variable, that is, costs of exports. Costs of production, as shown, are the main determinants of any country's competitiveness, as they influence both the quality and prices of the produced goods and services. Controlling for the costs of exports yields the expected and robust results. The coefficient on costs of exports is negative and statistically significant, implying higher exports costs reduce a country's competitiveness. On the other hand, the country's level of economic development as captured both by GDP per capita and human capital are positively associated with higher trade competitiveness. This is echoed by the positive and statistically significant coefficient on both GDP per capita and secondary education.

The effects of aid for trade to economic infrastructure on a country's trade competitiveness are reported in Column 1. The coefficient on aid to economic infrastructure is positive and statistically significant, implying that a one per cent increase in investment in economic infrastructure increases competitiveness of a country by 0.01 per cent. Slightly higher effects are derived from aid for trade that is directed to productive capacity. The coefficient on aid to productive capacity is positive and statistically significant; implying a one per cent increase in aid to productive capacity increases the country's competitiveness by 0.02 per cent. This is the same as the effects of trade-related adjustment on a country's competitiveness as shown in Column 4, which is 0.02 per cent. Like aid directed to economic infrastructure, aid towards trade policy and regulations, as shown in Column 3, increases competitiveness by 0.01 per cent. On aggregate terms, the effects of aid for trade as reported in Column 5 positively affects the country's competitiveness, the compounding effects is 0.002 per cent. To understand what these means in terms of unit costs spending in dollars to improve Africa's trade competitiveness, we replicate and report the same estimations at levels in Appendix Table B2.

**Table 5.2:** Aid for Trade and Global Competitiveness in Africa, 2005 -2010

|                      | POLS<br>(1)            | POLS<br>(2)            | POLS<br>(3)            | POLS<br>(4)            | POLS<br>(5)            |
|----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| <i>Year dummies</i>  | Yes                    | Yes                    | Yes                    | Yes                    | Yes                    |
| <i>LNGDP</i>         | 0.069***<br>(4.916)    | 0.074***<br>(4.697)    | 0.042***<br>(3.924)    | 0.068***<br>(4.626)    | 0.070***<br>(4.837)    |
| <i>LNSEC</i>         | 0.055**<br>(2.324)     | 0.054**<br>(2.312)     | 0.102***<br>(5.318)    | 0.050**<br>(2.027)     | 0.054**<br>(2.292)     |
| <i>XCOST</i>         | -0.0004***<br>(-6.322) | -0.0004***<br>(-6.296) | -0.0004***<br>(-5.473) | -0.0004***<br>(-6.449) | -0.0004***<br>(-6.254) |
| <i>LagLNECNINFR</i>  | 0.013**<br>(2.356)     |                        |                        |                        |                        |
| <i>LagLNPRCPTY</i>   |                        | 0.020**<br>(2.298)     |                        |                        |                        |
| <i>LagLNTPREG</i>    |                        |                        | 0.009*<br>(1.644)      |                        |                        |
| <i>LagLNTRADSNT</i>  |                        |                        |                        | 0.017**<br>(2.228)     |                        |
| <i>LagLNAfT</i>      |                        |                        |                        |                        | 0.016**<br>(2.131)     |
| <i>Constant</i>      | 0.559***<br>(7.420)    | 0.505***<br>(5.039)    | 0.628***<br>(12.192)   | 0.573***<br>(6.315)    | 0.532***<br>(5.955)    |
| <i>F-Test</i>        | 0.000                  | 0.000                  | 0.000                  | 0.000                  | 0.000                  |
| <i>R2</i>            | 0.747                  | 0.747                  | 0.805                  | 0.722                  | 0.744                  |
| <i>N</i>             | 104                    | 104                    | 90                     | 98                     | 104                    |
| <i>Breusch Pagan</i> | 5.17                   | 4.96                   | 3.83                   | 4.73                   | 5.06                   |
| <i>Jarque-Bera</i>   |                        |                        |                        |                        |                        |

Notes: As in Table 5.1

Appendix Tables B2 and B3 report the results for the effects of aid for trade and its four categories on the transport and logistics costs in Africa both in log and levels. Though marginally significant (as we do not have stable data here), aid for trade positively affects transport and logistics costs in Africa.

Table 5.3 presents results on the effects of aid for trade on ease of trading across the borders in Africa, using costs of exports as the main dependent variable. Export costs are in dollars per 20-foot container. Other related costs, which too serve as control variables are the number of documents and days to export. In addition, being a landlocked country has more detrimental effects on costs of exports than being a

coastal country. Thus both being landlocked and number of days to export in a country are controlled for. Both coefficient are positive and statistically significant, implying being landlocked increases costs of exporting in Africa and so are the number of days to export (an alternative to using number of days to exports is to use lagged exports costs). Column 1 reports the effects of aid to economic infrastructure on costs of exporting in Africa. The coefficient on aid to economic infrastructure is negative and statistically significant, which means that a one per cent increase reduces costs of exporting by 0.1 per cent. This is similar to the effects of aid towards productive capacity, which too reduces export costs by 0.1 per cent. This magnitude as close to what the study by Cali et al. (2009) found on how aid towards trade facilitation reduces the costs of trading. Unlike Cali et al. (2009) findings however, aid to trade policy and regulations and trade-related adjustment appear to have no significant impact in Africa's costs of trading, as shown in Columns 3 and 4, respectively. In aggregate term, as shown in Column 5, a one per cent increase in spending on aid for trade reduces costs of exports by 0.11 %. To get the feel, what this means in terms of dollars spent, Appendix Table C5 reports the estimates for the same specification but in levels.

**Table 5.3: Aid for Trade and Export Costs of Trading in Africa, 2002 -2009**

|                     | POLS<br>(1)           | POLS<br>(2)          | POLS<br>(3)         | POLS<br>(4)         | POLS<br>(5)         |
|---------------------|-----------------------|----------------------|---------------------|---------------------|---------------------|
| <i>Year dummies</i> | Yes                   | Yes                  | Yes                 | Yes                 | Yes                 |
| <i>LNGDP</i>        | 0.067<br>(1.210)      | 0.047<br>(0.803)     | 0.031<br>(0.545)    | 0.075<br>(1.456)    | 0.055<br>(0.940)    |
| <i>LNPOPN</i>       | 0.037<br>(1.223)      | 0.025<br>(0.700)     | -0.011<br>(-0.362)  | -0.039<br>(-1.113)  | 0.044<br>(1.306)    |
| <i>LNSEC</i>        | -0.096<br>(-1.552)    | -0.082<br>(-1.264)   | -0.014<br>(-0.197)  | -0.034<br>(-0.543)  | -0.090<br>(-1.420)  |
| <i>XDAYS</i>        | 0.019***<br>(5.509)   | 0.019***<br>(5.404)  | 0.025***<br>(6.118) | 0.021***<br>(5.823) | 0.019***<br>(5.455) |
| <i>LNDLCKD</i>      | 0.201*<br>(1.713)     | 0.249**<br>(2.061)   | 0.139*<br>(1.919)   | 0.295**<br>(2.343)  | 0.215*<br>(1.816)   |
| <i>LagLNECNINFR</i> | -0.089***<br>(-3.063) |                      |                     |                     |                     |
| <i>LagLNPRCPTY</i>  |                       | -0.091**<br>(-2.025) |                     |                     |                     |
| <i>LagLNTPREG</i>   |                       |                      | 0.020<br>(0.739)    |                     |                     |
| <i>LagLNTRADSNT</i> |                       |                      |                     | 0.034<br>(0.733)    |                     |



|                            | POLS<br>(1)          | POLS<br>(2)          | POLS<br>(3)          | POLS<br>(4)          | POLS<br>(5)           |
|----------------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|
| <i>LagLNA<sub>IT</sub></i> |                      |                      |                      |                      | -0.114***<br>(-3.044) |
| <i>Constant</i>            | 6.365***<br>(15.956) | 6.547***<br>(16.823) | 6.239***<br>(17.862) | 6.242***<br>(14.953) | 6.575***<br>(15.587)  |
| <i>F-Test</i>              | 0.000                | 0.000                | 0.000                | 0.000                | 0.000                 |
| <i>R<sup>2</sup></i>       | 0.647                | 0.630                | 0.670                | 0.656                | 0.645                 |
| <i>N</i>                   | 110                  | 110                  | 94                   | 102                  | 110                   |
| <i>Breusch Pagan</i>       | 4.08                 | 4.42                 | 3.28                 | 3.88                 | 4.24                  |
| <i>Jarque-Bera</i>         |                      |                      |                      |                      |                       |

Notes: As in Table5.1

## 6. Summary and Policy Implications

What has been observed from the reviewed evidence in this study can be summarised as follows: high transport costs, especially for SSA, reduce trade; aid for broadly defined trade facilitations, especially for SSA, reduce trading costs. Moreover, aid through investment, amongst other channels in SSA, expands trade and promotes growth. The data analysis has also shown that Africa is receiving a substantial share of AfT since 2002 and there is evidence that the indicators of trade binding constraints are improving. Therefore, the findings of this study seems to suggest that aid for trade in Africa, controlling for other factors, matters both for addressing trade capacity constraints and promoting trade. This is because the study finds that Aid for Trade reduces cost of trading; promotes export diversification as well as improving Africa's trade competitiveness. Furthermore, conditional on the trade capacity constraints, aid for trade expands trade in Africa. There might be thresholds for the trade capacity constraints below which aid for trade has positive effects on trade outcome and above which it may be beyond the optimal. But these thresholds were not established in this study.

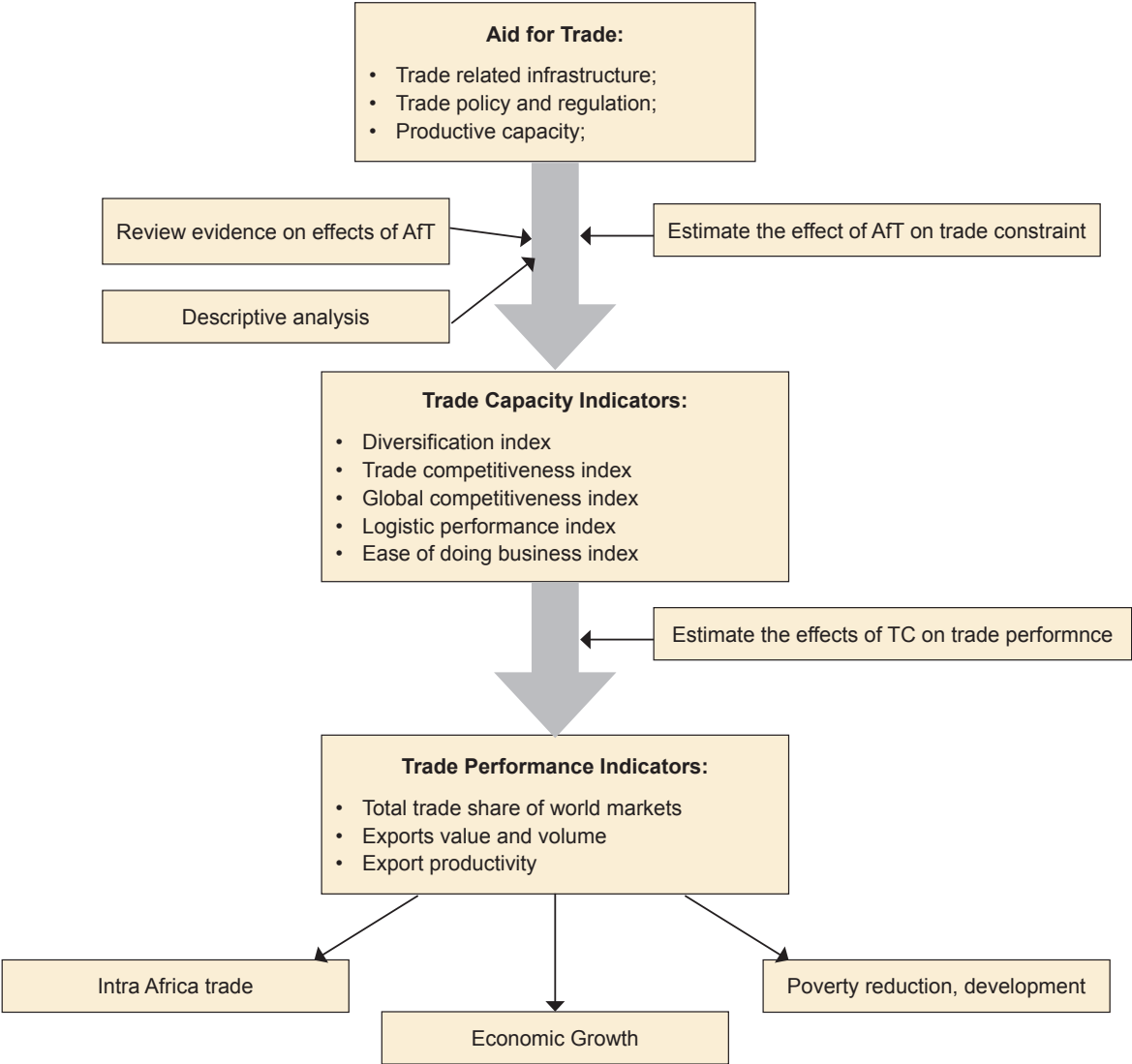
Africa's trade marginalization in global arena that is manifested in its very low share of global trade, low share of intra-regional trade, low level of export diversification and failure to fully utilise the preferential markets has continued unabated for three decades now. An attempt to reverse the course in the 1980s and 1990s through structural and trade reforms seems to have borne no fruitful results. The main reason is that the most binding constraints that have hindered the region from benefiting from trade is not tariffs (trade policy factor) rather it is the non-tariff (non-trade policy factors), particularly poor infrastructure and weak productive capacity. Therefore, for Africa to be a player in the global economy and be able to benefit from globalization, it needs focused attention towards addressing the most binding trade constraints. Considering the flow of aid for trade that Africa has been receiving for sometimes now, the question one asks is, has the aid for trade managed to address Africa's most binding trade constraints and enhance its trade performance. This study is an attempt towards that end, to quantitatively assess the effectiveness of aid for trade in Africa. This is done in four stages: first, reviewing the existing evidence on possible effects of aid for trade; second, undertaking descriptive data analysis; third, estimating the effects of AfT on trade capacity indices and fourth, estimating the effects of trade capacity indices on trade performance indices.

Using data on specific categories of aid for trade, which is matched with specific desired trade-related outcomes, and applying *ex post* econometric analysis, the study has assessed whether Aid for Trade in Africa has had any significant impact. The findings of the study seems to suggest that aid for trade in Africa, controlling for other factors, matters both for addressing trade capacity constraints and promoting trade. The study finds that Aid for Trade reduces cost of trading, promotes export diversification as well as improving Africa's trade competitiveness. Conditional on improvement in the trade capacity constraints,

aid for trade is expected to affect trade, growth and by extension development positively. This therefore has serious policy implications for Africa as a whole and individual country in particular if they are to benefit from trade reforms.

# Appendix A: Conceptual Framework

## Effects of Aid for Trade - Conceptual Framework



## Appendix B: Results and Discussion

**Table B1: Aid for Trade and Export Diversification in Africa, 1998 -2008**

|                        | POLS<br>(1)            | POLS<br>(2)          | POLS<br>(3)           | POLS<br>(4)           | POLS<br>(5)            |
|------------------------|------------------------|----------------------|-----------------------|-----------------------|------------------------|
| <i>Year dummies</i>    | Yes                    | Yes                  | Yes                   | Yes                   | Yes                    |
| <i>LN</i> GDP          | -0.033**<br>(-2.048)   | -0.029*<br>(-1.843)  | -0.015<br>(-0.954)    | 0.003<br>(0.167)      | -0.024<br>(-1.427)     |
| <i>LN</i> POP <i>N</i> | -0.018<br>(-1.567)     | -0.025**<br>(-2.192) | -0.032***<br>(-3.746) | -0.013<br>(-1.123)    | -0.015<br>(-1.187)     |
| <i>LN</i> SEC          | -0.047**<br>(-2.265)   | -0.052**<br>(-2.483) | -0.130***<br>(-5.277) | -0.081***<br>(-4.025) | -0.050**<br>(-2.229)   |
| <i>LN</i> OPEN         | 0.067**<br>(2.349)     | 0.060**<br>(2.128)   | 0.077***<br>(2.989)   | 0.100***<br>(3.847)   | 0.066**<br>(2.210)     |
| <i>Lag</i> ECNINFR     | -0.0004***<br>(-4.201) |                      |                       |                       |                        |
| <i>Lag</i> PRCPTY      |                        | -0.001**<br>(-2.463) |                       |                       |                        |
| <i>Lag</i> TPREG       |                        |                      | 0.0000<br>(0.442)     |                       |                        |
| <i>Lag</i> TRADSNT     |                        |                      |                       | -0.001*<br>(-1.671)   |                        |
| <i>Lag</i> AfT         |                        |                      |                       |                       | -0.0003***<br>(-4.240) |
| <i>Constant</i>        | 0.833***<br>(4.162)    | 0.875***<br>(4.492)  | 1.005***<br>(5.916)   | 0.484**<br>(2.379)    | 0.748***<br>(3.534)    |
| <i>F-Test</i>          | 0.000                  | 0.000                | 0.000                 | 0.000                 | 0.000                  |
| <i>R</i> <sup>2</sup>  | 0.747                  | 0.747                | 0.805                 | 0.722                 | 0.744                  |
| <i>N</i>               | 457                    | 460                  | 387                   | 420                   | 414                    |
| <i>Breusch Pagan</i>   |                        |                      |                       |                       |                        |
| <i>Jarque-Bera</i>     |                        |                      |                       |                       |                        |

Notes: As in Table 5.1

**Table B2: Aid for Trade and Global Competitiveness in Africa, 2005 -2010**

|                      | <b>POLS</b>            | <b>POLS</b>            | <b>POLS</b>            | <b>POLS</b>            | <b>POLS</b>            |
|----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                      | <b>(1)</b>             | <b>(2)</b>             | <b>(3)</b>             | <b>(4)</b>             | <b>(5)</b>             |
| <i>Year dummies</i>  | Yes                    | Yes                    | Yes                    | Yes                    | Yes                    |
| <i>LNGDP</i>         | 0.267***<br>(5.369)    | 0.282***<br>(5.370)    | 0.151***<br>(4.251)    | 0.253***<br>(5.260)    | 0.274***<br>(5.328)    |
| <i>LNSEC</i>         | 0.176**<br>(2.154)     | 0.171**<br>(2.208)     | 0.395***<br>(6.093)    | 0.152*<br>(1.824)      | 0.168**<br>(2.048)     |
| <i>XCOST</i>         | -0.0002***<br>(-6.172) | -0.0002***<br>(-6.426) | -0.0002***<br>(-5.003) | -0.0002***<br>(-6.291) | -0.0002***<br>(-6.277) |
| <i>LagECNINFR</i>    | 0.001**<br>(2.568)     |                        |                        |                        |                        |
| <i>LagPRCPTY</i>     |                        | 0.001**<br>(2.148)     |                        |                        |                        |
| <i>LagTPREG</i>      |                        |                        | -0.001<br>(-1.235)     |                        |                        |
| <i>LagTRADSNT</i>    |                        |                        |                        | 0.002*<br>(1.849)      |                        |
| <i>LagAfT</i>        |                        |                        |                        |                        | 0.0003**<br>(2.083)    |
| <i>Constant</i>      | 1.086***<br>(4.910)    | 0.980***<br>(3.807)    | 1.208***<br>(6.548)    | 1.267***<br>(5.646)    | 1.061***<br>(4.526)    |
| <i>R2</i>            | 0.753                  | 0.756                  | 0.807                  | 0.730                  | 0.752                  |
| <i>F-Test</i>        | 0.000                  | 0.000                  | 0.000                  | 0.000                  | 0.000                  |
| <i>N</i>             | 104                    | 104                    | 90                     | 98                     | 104                    |
| <i>Breusch Pagan</i> | 5.11                   | 5.21                   | 3.76                   | 4.92                   | 5.17                   |
| <i>Jarque-Bera</i>   |                        |                        |                        |                        |                        |

Notes: As in Table 5.1

**Table B3: Aid for Trade and Logistic Costs in Africa, 2002 -2009**

|                      | <b>POLS</b>        | <b>POLS</b>        | <b>POLS</b>        | <b>POLS</b>      | <b>POLS</b>        |
|----------------------|--------------------|--------------------|--------------------|------------------|--------------------|
|                      | <b>(1)</b>         | <b>(2)</b>         | <b>(3)</b>         | <b>(4)</b>       | <b>(5)</b>         |
| <i>Year dummies</i>  | Yes                | Yes                | Yes                | Yes              | Yes                |
| <i>LNGDP</i>         | 0.013<br>(0.629)   | 0.011<br>(0.562)   | 0.008<br>(0.403)   | 0.011<br>(0.514) | 0.011<br>(0.542)   |
| <i>LNPOPN</i>        | 0.000<br>(0.029)   | -0.009<br>(-0.978) | 0.006<br>(0.770)   | 0.008<br>(0.470) | -0.002<br>(-0.207) |
| <i>LNSEC</i>         | -0.002<br>(-0.107) | -0.002<br>(-0.099) | -0.005<br>(-0.199) | 0.003<br>(0.158) | -0.002<br>(-0.110) |
| <i>LagLNECNINFR</i>  | 0.011*<br>(1.659)  |                    |                    |                  |                    |
| <i>LagLNPRCPTY</i>   |                    | 0.022*<br>(1.722)  |                    |                  |                    |
| <i>LagLNTPREG</i>    |                    |                    | 0.004<br>(0.628)   |                  |                    |
| <i>LagLNTRADSNT</i>  |                    |                    |                    | 0.003<br>(0.153) |                    |
| <i>LagLNAfT</i>      |                    |                    |                    |                  | 0.012*<br>(1.685)  |
| <i>Constant</i>      | 0.250*<br>(1.706)  | 0.310**<br>(2.601) | 0.271<br>(1.600)   | 0.205<br>(1.142) | 0.268*<br>(1.927)  |
| <i>F-Test</i>        |                    |                    |                    |                  |                    |
| <i>R2</i>            | 0.122              | 0.158              | 0.077              | 0.084            | 0.108              |
| <i>N</i>             | 27                 | 27                 | 26                 | 24               | 28                 |
| <i>Breusch Pagan</i> |                    |                    |                    |                  |                    |
| <i>Jarque-Bera</i>   |                    |                    |                    |                  |                    |

Notes: As in Table 5.1

**Table B4: Aid for Trade and Logistic Costs in Africa, 2002 -2009 [level model]**

|                        | POLS<br>(1)         | POLS<br>(2)         | POLS<br>(3)        | POLS<br>(4)        | POLS<br>(5)         |
|------------------------|---------------------|---------------------|--------------------|--------------------|---------------------|
| <i>Year dummies</i>    | Yes                 | Yes                 | Yes                | Yes                | Yes                 |
| <i>LN</i> GDP          | 0.046<br>(0.456)    | 0.035<br>(0.360)    | 0.029<br>(0.281)   | 0.044<br>(0.421)   | 0.010<br>(0.538)    |
| <i>LN</i> POP <i>N</i> | -0.001<br>(-0.021)  | -0.002<br>(-0.052)  | 0.026<br>(0.617)   | 0.007<br>(0.114)   | -0.002<br>(-0.305)  |
| <i>LN</i> SEC          | -0.014<br>(-0.128)  | -0.022<br>(-0.204)  | -0.025<br>(-0.219) | -0.001<br>(-0.007) | -0.008<br>(-0.382)  |
| <i>Lag</i> ECNINFR     | 0.001<br>(0.991)    |                     |                    |                    |                     |
| <i>Lag</i> PRCPTY      |                     | 0.001*<br>(1.658)   |                    |                    |                     |
| <i>Lag</i> TPREG       |                     |                     | 0.002<br>(1.277)   |                    |                     |
| <i>Lag</i> TRADSNT     |                     |                     |                    | 0.002<br>(0.984)   |                     |
| <i>Lag</i> AfT         |                     |                     |                    |                    | 0.0002*<br>(1.672)  |
| <i>Constant</i>        | 2.071***<br>(3.477) | 2.196***<br>(3.601) | 2.028**<br>(2.305) | 1.965**<br>(2.205) | 0.334***<br>(2.935) |
| <i>F-Test</i>          |                     |                     |                    |                    |                     |
| <i>R</i> <sup>2</sup>  | 0.086               | 0.094               | 0.099              | 0.100              | 0.114               |
| <i>N</i>               | 27.000              | 27.000              | 26.000             | 24.000             | 28.000              |
| <i>Breusch Pagan</i>   |                     |                     |                    |                    |                     |
| <i>Jarque-Bera</i>     |                     |                     |                    |                    |                     |

Notes: As in Table 5.1



**Table B5: Aid for Trade and Export Costs of Trading in Africa, 2002 -2009**

|                      | POLS<br>(1)          | POLS<br>(2)          | POLS<br>(3)          | POLS<br>(4)          | POLS<br>(5)          |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| <i>Year dummies</i>  | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| <i>GDP</i>           | 0.003<br>(0.132)     | -0.003<br>(-0.169)   | 0.007<br>(0.330)     | 0.001<br>(0.061)     | -0.003<br>(-0.156)   |
| <i>POP</i>           | -0.001<br>(-0.641)   | -0.001<br>(-0.646)   | -0.002<br>(-0.851)   | -0.002<br>(-1.309)   | -0.001<br>(-0.618)   |
| <i>SEC</i>           | 1.959<br>(0.709)     | 2.585<br>(0.936)     | 2.838<br>(0.750)     | 6.090*<br>(1.918)    | 2.750<br>(0.996)     |
| <i>XDAYS</i>         | 45.816***<br>(4.246) | 46.448***<br>(4.405) | 55.570***<br>(4.990) | 52.763***<br>(4.747) | 46.057***<br>(4.254) |
| <i>LNDLCKD</i>       | 131.257<br>(0.528)   | 143.565<br>(0.576)   | -71.247<br>(-0.234)  | 74.193<br>(0.280)    | 129.226<br>(0.519)   |
| <i>LagECNINFR</i>    | -1.131**<br>(-2.268) |                      |                      |                      |                      |
| <i>LagPRCPTY</i>     |                      | -2.018*<br>(-1.841)  |                      |                      |                      |
| <i>LagTPREG</i>      |                      |                      | 0.476<br>(0.301)     |                      |                      |
| <i>LagTRADSNT</i>    |                      |                      |                      | -1.052<br>(-0.66)    |                      |
| <i>LagAft</i>        |                      |                      |                      |                      | -0.634**<br>(-2.018) |
| <i>Constant</i>      | 100.433<br>(0.323)   | 84.973<br>(0.284)    | -365.268<br>(-1.255) | -332.382<br>(-0.974) | 96.583<br>(0.306)    |
| <i>F-Test</i>        |                      |                      |                      |                      |                      |
| <i>R2</i>            | 0.642                | 0.639                | 0.667                | 0.661                | 0.640                |
| <i>N</i>             | 110                  | 110                  | 94                   | 102                  | 110                  |
| <i>Breusch Pagan</i> | 4.08                 | 4.08                 | 3.17                 | 3.66                 | 4.08                 |
| <i>Jarque-Bera</i>   |                      |                      |                      |                      |                      |

Notes: As in Table 5.1

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