7 Trade facilitation and trade flows: Evidence from Africa

Boopen Seetanah, Rajah Vinesh Sannassee, Sheereen Fauzel*

Abstract

This chapter investigates the impact of trade facilitation on trade flows for a sample of 20 African economies over the period 2007–2014. Using a panel vector autoregressive framework, it finds that trade facilitation enhances trade flows in those African countries. Economic growth, investment and the presence of regional trade agreements were also found to be ingredients of trade. Further analysis supports a bi-causal and reinforcing relationship between trade facilitation and trade flows, and the level of country development and presence of regional trade agreements were found to be factors that enhance trade facilitation. Interestingly, trade facilitation is also reported to have some positive effects on economic growth and level of investment.

7.1 Introduction

The prevalence of trade facilitation in the face of increasing trade costs as a result of inefficiencies at various levels during the movement of goods was duly recognized during the 1996 WTO Ministerial Conference in Singapore. The simplification of trade procedures and coordination of trade processes has been part of the WTO's framework and negotiations agenda since August 2004.

In December 2013, the WTO achieved another landmark when members concluded negotiations on the WTO Agreement on Trade Facilitation (TFA) at the Bali Ministerial Conference. The TFA essentially contained provisions for release and clearance of goods and ensured effective cooperation between customs and other authorities on trade facilitation and customs compliance. A Trade Facilitation Agreement Facility (TFAF) was created to provide technical assistance and capacity-building to developing and least-developed countries (LDCs), to support them in the full implementation of the new Agreement. According to the World Trade Report 2015 (WTO, 2015), the TFA has the potential to increase world trade by up to US$ 1 trillion per annum. Near the end of 2015, 63 WTO members had ratified the TFA.

Broadly, trade facilitation is defined by the WTR (2015) as the "simplification and harmonization of international trade procedures" or, more specifically, the "activities, practices and formalities involved in collecting, presenting, communicating and processing data required for the movement of goods in international trade". More generally, trade facilitation relates to the ease of moving goods across borders, and this relates most notably to the efficiency of customs administration and other agencies, the quality of physical infrastructure and having a competent logistics sector.

As such, trade facilitation essentially aims at harmonizing certain rules between countries to promote greater efficiency, transparency and predictability, based on norms, standards and internationally accepted practices, and may constitute a very important source of increased competitiveness for any given country, given its potential to reduce trade barriers and costs (Scorza, 2007; Sá Porto and Macedo, 2011). In addition, any improvement in processes and procedures translating into greater trade facilitation may be beneficial to a country by way of: (i) increased total factor productivity as a result of reduced levels of human and material input (Canuto, 2012); (ii) gains in trade, which can serve to increase income, which in turn may foster human development (Wilson, Mann and Otsuki, 2003); and (iii) greater offerings and choices to the public and to consumers as a consequence of

the increase in trade. All these benefits taken together can only serve to enhance living standards (Rippel, 2011).

Unfortunately, the benefits to be had from trade facilitation are yet to materialize for most African countries, despite the implementation of major trade reforms across the continent by way of trade liberalization, regional initiatives and other multilateral agreements. Although tariff levels are at an all-time low, the multitude of non-tariff measures is negatively impacting on the cost and ease of doing business on the continent (Arvis et al., 2013). In this regard, Moïsé and Sorescu (2013) argue that inefficient border procedures have caused a large reduction in revenues – up to 5 per cent of GDP – in African countries, which has led to the argument that Africa is still widely recognized as the place where importers and exporters face far greater obstacles in trade than in any other region in the world (Seck, 2014). Consequently, there is the distinct belief that the implementation of measures aimed at eliminating such non-tariff measures, and hence at facilitating trade, should help reduce the transaction costs associated with trade, which could result in significant economic gains.

Indeed, trade facilitation can avail African exporters of numerous opportunities if hard infrastructure and technical advice are backed by equally ambitious policy reforms. For instance, the trade facilitation aspect of the WTO negotiations that focuses on transactions at the border, such as documentary requirements, transparency of customs clearance and transit procedures, and disciplines on fees and taxes, can only serve to improve border and transit management procedures and their implementation and thereby remove obstacles to trade in goods. Interestingly, reporting in 2013 on trade facilitation from an African perspective, the United Nations Economic Commission for Africa (UNECA, 2013) observed that African countries and regional economic communities were already active in aligning their trade measures with the TFA. The Chirundu one-stop-border post between Zambia and Zimbabwe is one such case, and has resulted in annual savings of US$ 486 million (UNECA, 2013). Some African countries have already ratified the TFA, including Botswana, Côte d'Ivoire, Kenya, Mauritius, Niger and Zambia. The World Trade Report 2015 (WTO, 2015) also found that full implementation of the TFA is bound to reduce global trade costs by an average of 14.3 per cent, and that African countries and LDCs are expected to benefit significantly from the TFA, by capturing more than half of the available gains. Such measures will contribute to the expansion of world trade, further helping developing countries and LDCs to integrate into the global economy. This is why it is crucial for governments to embark on a major overhaul of their myriad existing policies with the aim of positively impacting on the ease and costs of doing business in their respective countries.

Given the above, the present study attempts to measure the impact of trade facilitation on trade flows, focusing on Africa. The World Bank's Logistics Performance Index (LPI) data is used as a proxy for trade facilitation in a trade model for 20 countries over the period 2007–2014,[1] Given the dynamic nature of trade, and in the presence of endogeneity, this study is based on a panel vector autoregressive (PVAR)[2] framework, which removes specification restrictions a priori. The LPI also allows for identification of the effect of different components of trade facilitation on trade. The results stemming from this study should provide important insights for policy-makers and other stakeholders involved in the formulation of policies aimed at fostering the ease and costs of doing business.

The rest of this chapter is organized as follows: section 2 reviews the related literature; section 3 discusses the estimation strategy and the key estimation issues and provides an overview of the data; section 4 discusses the results; and section 5 concludes and attempts to provide the overarching policy implications and resulting recommendations.

7.2 Related literature

One of the pioneering works on trade facilitation[3] was that of Wilson, Mann and Otsuki (2003). They analysed the relationship between trade facilitation and trade flows in the Asia-Pacific region using four indicators for measuring trade facilitation: port efficiency, customs environment, regulatory environment and e-business use. Their results demonstrate that regulatory barriers and port inefficiency have had a negative effect on trade, while improvements in customs and e-business use positively impacted on trade. Similarly, Clark, Dollar and Micco (2004), in their study of the determinants of shipping costs to the United States, using a large database on shipments of products from different ports around the world, showed that an increase in port efficiency would reduce shipping costs substantially.

In addition, in their follow-up paper, Wilson, Mann and Otsuki (2005) considerably expanded their sample of countries and found that trade facilitation improvements were associated with enhanced exports and imports. In this regard, the authors showed that improvements in the different components of trade facilitation would be associated with a US$ 377 billion increase in trade flows.[4] Fink, Mattoo and Neagu (2005) also confirmed that international variations in bilateral communications costs had a significant influence on bilateral trade flows. In their study, they found that a 10 per cent decrease in the bilateral calling price was associated with an 8 per cent increase in bilateral trade. Djankov, Freund and Pham (2006), using 2005 data from the World Bank's Doing Business survey on time taken to export and import, estimated that, on average, each additional day a

product is delayed prior to being shipped would reduce trade by at least 1 per cent. Using various indices of trade restrictiveness and trade facilitation developed at the World Bank in a gravity model, Hoekman and Nicita (2008) observed that, despite preferential access programmes, tariffs and non-tariff barriers were significant sources of trade restrictiveness for low-income countries.

Furthermore, several studies have also proceeded to estimate the potential effects of trade facilitation on the well-being of countries using alternatively computable general equilibrium (CGE) models. CGE models involve modelling trade facilitation as a reduction in the costs of international trade or as an improvement in the productivity of the international transportation sector (Wilson, Mann and Otsuki, 2003). One such example is the APEC (1999) study that estimated the impact of trade liberalization and trade facilitation measures. The results indicated that trade facilitation measures could expand trade by 1.3 per cent within APEC countries. Similarly, Abe and Wilson (2008), who explored the impact of institutional trade facilitation indicators, found that reducing corruption and improving transparency in APEC countries to the average level of the region would have increased regional trade by 11 per cent.

Global patterns of trade costs and trade flows also reveal significant cross-country differences. Arvis et al. (2013) provide evidence that trade costs are declining with income per capita. As a result, developed countries are experiencing a faster decrease in trade costs than developing countries. Furthermore, studies focusing on sub-Saharan Africa have uncovered evidence that maritime transport connectivity and logistics performance are very important determinants of bilateral trade costs. Therefore, facilitation reforms in these areas would bring Africa closer to its trading partners and could reap significant economic gains. Zaki (2014) first used a gravity model to calculate the *ad valorem* tariff equivalent[5] of the time to export and import. He next assumed that trade facilitation reform will lead to a 50 per cent reduction in these *ad valorem* trade costs, and, finally, used the MIRAGE CGE model to measure the trade impact. The results showed that developing countries tend to see the largest increases in both exports and imports. Following the trade facilitation reforms, sub-Saharan African, Asian, Latin American and Middle Eastern countries saw their exports increase, by 22.3 per cent, 16.2 per cent, 16.2 per cent, and 13.8 per cent, respectively. Similarly, imports increased by almost the same magnitude.

In one of the very few studies focusing on the African experience, Portugal-Perez and Wilson (2010) provide evidence that trade facilitation is significant for Africa in both the short and the long run. The gravity-model results clearly indicate that trade facilitation measures could yield increased trade flows, as compared with reduction

in tariffs. Improvements in logistics in Ethiopia are one example, representing the equivalent of a 7.6 per cent decrease in the *ad valorem* tariff.

Using detailed data on transit, documentation and ports and customs delays on Africa's exports, Freund and Rocha (2010) reported that transit delays had the most economically and statistically significant effect on African exports. They found that a one-day reduction in inland travel times led to a 7 per cent increase in exports. Similarly, Hummels and Schaur (2013) suggested that reducing transit time by one day could drive trade at a magnitude equivalent to a reduction in the *ad valorem* tariff by 0.6 to 2.1 per cent. These results were consistent with many findings in the literature that view time as a trade barrier (Djankov, Freund and Pham, 2006; Nordås, Pinali and Grosso, 2006).

Furthermore, studies have also shown that the quality of trade infrastructure, reducing export and import processes, implementation of new technologies and improving the regulatory environment were crucial elements contributing to reduced transit time. Earlier work by Limão and Venables (2001) showed that deterioration in the infrastructure from the median to the 75th percentile would reduce trade volumes by approximately 28 per cent. Similarly, Iwanow and Kirkpatrick (2009) suggested that the low performance of the African manufacturing sector in export markets could largely be attributed to poor infrastructure and the institutional environment. The study employed a gravity model and the results indicated that trade facilitation could be the key to increasing Africa's trade potential in manufactured goods.

More specifically, Njinkeu, Wilson and Fosso (2008), analysing the impact of reforms on port efficiency, the customs environment, the regulatory environment and service infrastructure, found that improvements in port efficiency and service infrastructure were the primary factors driving intra-African trade expansion. Disdier et al. (2010), who included infrastructure variables in his study, found that gains from trade facilitation would almost only arise for developing countries, in particular in sub-Saharan Africa.

Finally, there is also strong empirical evidence that trade facilitation can have a positive impact on firms' performance. For instance, as trade costs decline, productivity increases (Bernard, Jensen and Schott, 2006). Clarke (2005), for instance, argued that the main reasons why African manufacturers did not witness significant increases in their exports were restrictive trade, customs regulation and poor customs administration. All of these suggest that African firms could greatly benefit from trade facilitation, provided they could identify the obstacles in trade and accordingly implement appropriate reforms to ease trade and accumulate the benefits of international trade.

7.3 Methodology

The present study aims to analyse the impact of trade facilitation on trade performance in 20 selected African countries over the period 2007–2014. To construct the econometric model, reference is made to various previous studies, including Wilson (2011) and Felipe and Kumar (2010) proposed model is essentially a trade model augmented with a trade facilitation proxy:

$$TRADE = f(LPI, GDP, POPULATION, INVT, RTA) \quad (1)$$

However, because of the variance-stabilizing properties of log transformation, the log values of the variables are used and such log values yield a more clear-cut interpretation of the coefficients in terms of percentage change.

Hence, converting all the variables in logarithmic terms yields:

$$LTRADE = \alpha_0 + \beta_1 LLPIxt + \beta_2 LGDPxt + \beta_3 LPOPxt + \beta_4 LINVTxt + \beta_5 RTAxt + \mu_{xt} (2)$$

where:

LTradeLLPI, LGDP, LPOP, LINVT, RTA are the logs of trade openness, trade facilitation, GDP per capita, population, investment and regional trade agreement (RTA), respectively;

$\beta_1 \ldots \beta_5$ represent the parameter estimates;

μ is the random disturbance term.

Variables definition

Dependent variable: Trade openness

Edwards (1992), among others, has argued that trade openness implicitly refers to the trade policy orientation of specific nations (for a similar analogy, see Krueger (1997) and Wacziarg and Horn Welch (2008)). However, other authors, including Rodriguez and Rodrik (2001), viewed the notion of trade openness as being more complex, covering not only the trade policy orientation of countries but also a set of other domestic policies, which together make the country more or less outwardly oriented. Other studies, such as Wilson (2011) have adopted a more global view of trade openness that covers not only the policy dimension but also all other non-policy factors that clearly have an impact on trade and on the outward orientation of countries.

Thus, many different measures of trade openness have been proposed and used in empirical analyses. Measures based on trade flows, which have been commonly used in empirical analyses, mostly relate to the most global definition of trade openness. Trade dependency ratios are the most popular of these measures (Dollar and Kraay, 2004; Squalli and Wilson, 2011). In the present study, the sum of imports and exports as a percentage of GDP is used to measure trade flows.

Independent variables

Trade facilitation and the Logistics Performance Index (LPI)

Hertel and Mirza (2009) and Hoekman and Nicita (2008) used the World Bank's LPI and Doing Business report within a gravity framework to model trade facilitation. Using the indices of trade restrictiveness and trade facilitation developed at the World Bank, these authors suggested that tariffs and non-tariff measures continued to be a significant source of trade restrictiveness for low-income countries despite preferential access programmes. Such a finding could be explained by the fact that the value of trade preferences was quite limited.

For the purpose of the present study, the LPI (2007-2014) is used to measure how well countries connect to international logistics networks. According to the World Bank, the LPI "helps countries identify the challenges and opportunities they face in their trade logistics performance and what they can do to improve. Based on a worldwide survey of operators on the ground – such as global freight forwarders and express carriers – the LPI provides in-depth knowledge and feedback on the logistics 'friendliness' of the countries in which the operators do business and those with which they trade. It provides an informed qualitative assessment of the global logistics environment for the benefit of government and trade practitioners alike."[6] The LPI website features the index as an interactive cross-country benchmarking tool.

The LPI is a multi-dimensional assessment of logistic performance. It summarizes the performance of countries through six dimensions that capture the most important aspects of the logistics environment as quoted by Arvis et al. (2014):

- Customs: efficiency of the customs clearance process;
- Infrastructure: quality of trade and transport-related infrastructure;
- International shipments: ease of arranging competitively priced shipments;
- Logistics quality: competence and quality of logistics services;
- Tracking and tracing: ability to track and trace consignments;
- Timeliness: frequency with which shipments reach the consignee within the scheduled or expected time.

The LPI provides not only a comprehensive assessment of logistics performance worldwide but also an analysis of performance trends, which makes it possible to understand trends over time. It also comprises of a set of domestic performance indicators that is not included in the overall country score. Moreover, it includes quantitative information on particular aspects of international supply chains in respondents' countries of work, including import/export, lead time, supply chain costs, customs clearance and the percentage of shipments subjected to physical inspection).

GDP per capita

An increase in economic growth can serve to boost the level of trade in an economy and a decrease to reduce it. For instance, the more goods and services are being produced by an economy, the greater the propensity to trade in terms of both imports and exports (WTO, 2015). Hence, GDP per capita is added in the model to examine the link between trade and economic growth for the sample of countries included in this study.

Population growth

Following Wilson (2011), population growth is included as another control variable in the study. Indeed, an increase in population will have an impact on trade flows in the countries concerned.

Investment

For the purpose of the present study, the investment variable includes domestic investment as a percentage of GDP to account for the relationship between trade openness and investment for the sample of countries. A positive and statistically significant relationship between investment and trade flows is expected (OECD, 2009).

Regional trade agreement

An increase in trade volumes can be the result of trade creation emanating from a regional trade agreement. In addition, countries having a common official language, and countries having had a common colonizer or a colonial relationship are also likely to trade more intensively. In the present study, a binary dummy variable is included for countries between which trade agreements have been made (Wilson, 2011).

Sources of data

The data were extracted from the World Bank LPI Database (2007-2014).[7]

Estimation issues

Before estimating the equation, it is important to test whether the variables are stationary and thus verify the time series properties of the data. The panel root test, commonly known as IPS (Im, Pesaran, and Shin, 2003), was used to test the stationarity of the variables. The IPS static is based on averaging individual augmented Dickey-Fuller (ADF) unit root tests and has a standard normal distribution once adjusted in a particular manner. The result shows that the series are non-stationary at their level and stationary at their first difference at 5 per cent level of significance. This entails that the series follow an I (1) process.

Endogeneity issues and the panel vector autoregressive (PVAR) model

However, there may still be the possibility of losing dynamic information, even within a panel data framework. In addition, it is likely that there exist dynamic feedbacks and indirect effects among the variables in the above function and the inclusion of such feedbacks is essential to the modelling of the study's hypotheses. Indeed, while it may be argued that trade facilitation can directly affect trade flows, it is also true that the latter may in turn have a bearing on the propensity to augment trade facilitation, thus resulting in reverse causation.

Given the possibility of endogeneity and causality issues, the study used vector auto regression (VAR) on panel data to enable consideration of the complex relationship that might exist between trade flows and trade facilitation. Moreover, panel VARs (PVARs) are particularly suited to addressing the macroeconomic issues that are currently at the centre of academic and policy discussions, as they are able to: (i) capture both static and dynamic interdependencies; (ii) treat the links across units in an unrestricted fashion; (iii) easily incorporate time variations in the coefficients and in the variance of the shocks; and (iv) account for cross-sectional dynamic heterogeneities (Canova and Ciccarelli, 2013).

The present study specifies a first-order VAR model as follows:

$$Z_{it} = \Gamma_0 + \Gamma_1 Z_{it-1} + \mu_t + \varepsilon_t$$

$$Z_{it} = \Gamma_0 + \Gamma_1 Z_{it-1} + \mu_t + \varepsilon_t \qquad (3)$$

where Z_{it} is a six-variable vector (Trade, LPI, investment, GDP per capita, population, regional trade agreement) and the variables are as defined above. The model uses i to index countries and t to index time; τ is the parameters and ε is the error term. The lower case variables are the natural log of the respective upper case variables.

7.4 Results

Table 7.1 is a composite table. Each column can be viewed and analysed as an independent function, i.e. each column corresponds to an equation in the PVAR. The variable named in the first cell of each column is viewed as the dependent variable. The estimated coefficient of the explanatory variables is reported in the cells.

The results shown in Table 7.1 demonstrate that the coefficient of trade facilitation is positive and significant. The results tend to suggest that trade facilitation has had a positive and significant effect on trade flows for the sample of African countries included in the study over the period 2007–2014. Additionally, a 1 per cent increase in the index of trade facilitation contributed to a 0.77 per cent increase in trade flows. Such a finding is unsurprising given the expectation that an improvement in trade facilitation measures in relation to a country does generate significant trade benefits to its economy. For instance, the results of this study support the empirical findings of Wilson, Mann, and Otsuki (2005) and Djankov, Freund and Pham (2006), which reveal positive and significant benefits from trade facilitation and trade flows, respectively. Arvis et al. (2013) suggest that the joint effect of maritime transport connectivity and logistics can even be as high as that of geographical distance.

Table 7.1 Results from the PVAR model

Variable	LN_TRADE	LN_LPI	LN_GDP	LN_INVT	LN_POP	RTA
LN_TRADE(-1)	0.898828**	0.11320**	0.18646**	0.068656**	-0.007892***	-7.40E-15
LN_LPI(-1)	0.77321*	0.763475**	0.101736*	0.221450*	-5.64E-05**	-8.21E-15
LN_GDP(-1)	0.09135***	0.10980***	0.995617**	0.001414**	-0.004470***	-5.89E-16
LN_INVT(-1)	0.41420**	-0.000959	0.11337**	0.789414**	0.000845***	-1.97E-14
LN_POP(-1)	0.23378	0.009966***	0.017124**	-0.011664**	1.000346***	-3.01E-15
RTA(-1)	0.68632**	0.47635**	0.10912**	-0.048083**	-0.018158***	1.000000
C	0.997085	-0.105805	-0.073324	1.391000	0.098682*	1.68E-13
R-squared	0.810920	0.785345	0.980164	0.699892	0.999967	0.999999

*significant at 10 per cent; ** significant at 5 per cent; ***significant at 1 per cent.

The results of the present study also confirm the importance of trade facilitation in Africa and supplement the work of Njinkeu, Wilson and Fosso (2008), who found that improvements in port efficiency and service infrastructures were the primary factors driving intra-African trade expansion. Freund and Rocha (2010) reported that transit delays were significant deterrents to African exports. In this regard, Lesser and Moisé-Leeman (2009) have also argued that trade facilitation measures aiming at overcoming border bottlenecks could significantly reduce informal cross-border trade in sub-Saharan Africa.

The above findings provide support for the major trade reforms that have been implemented with success in Africa over the last few years. For instance, trade liberalization has been implemented, as well as regional integration initiatives, including bilateral and multilateral trade agreements, which have together led to substantial decreases in the level of tariffs for the African region. Nonetheless, non-tariff barriers remain a major concern and they have had a very significant negative impact on trade flows in the African region. Indeed, it is well documented that Africa is the continent where importers and exporters face the most difficulties in comparison with the rest of the world. On average, it can take up to 31 days to ship a container from Africa to elsewhere in the world.

Also, in terms of documentation requirements, the evidence suggests that operating in Africa entails a greater volume of paperwork. As regards the LPI (2007-2014), African countries had an average score of 2.47 out of 5, below the world average (excluding Africa) of 3.07. Such an environment can only mean higher trade costs for firms operating in Africa (Arvis et al., 2013). Consequently, such a situation unequivocally leads to higher prices and thus discourages both imports and exports. Therefore, the implementation of measures geared towards improving trade facilitation can only bode well for striving African nations.

Economic growth is also seen to be an important determinant of trade flows – the higher the level of growth, the higher the level of international trade. In addition, on analysis of Table 7.1 (GDP column), it can also be argued that an increase in trade does lead to an increase in economic growth. Empirically, there is evidence that international trade affects economic growth positively by facilitating capital accumulation, industrial structure upgrading, technological progress and institutional advancement. More precisely, an increase in imports of capital and intermediate products that are not available in the domestic market may result in a rise in the productivity of the manufacturing sector (Lee, 1995). Similarly, more active participation in the international market by promoting exports may lead to more intense competition and to improvement in the terms of productivity (Wagner, 2007).

As regards the investment element, the results demonstrate that an increase in investment in the countries under consideration has had a positive impact on trade flows. For instance, a 1 per cent increase in investment has led to a 0.41 per cent increase in trade flows over the period 2007–2014. Such a finding may be due to the positive influence that investment may have on both imports and exports. Also, the results demonstrate the existence of a bi-directional relationship between investment and trade flows. Thus, an increase in investment also leads to an increase in trade flows and vice versa. Moreover, a positive and significant relationship was found for the regional trade agreement element, which may be due to trade creation as a result of countries joining a regional initiative. Finally, no significant relationship was found between population and trade although, intuitively, a positive and significant relationship was expected.

Furthermore, the VAR framework enabled more interesting insights on endogeneity issues, as well as on indirect effects, to be gauged. For instance, in relation to the LPI equation, it can be argued that a reverse causation exists, which indicates that trade flows was also an element that impacted on trade facilitation. The results show that a 1 per cent increase in trade has resulted in a 0.11 per cent increase in trade facilitation over the period under investigation. Such a result highlights the prevalence of the role played by the level of trade in reducing trade barriers, thus supporting a bi-causal relationship and reinforcing the relationship between trade facilitation and trade flows. It also supports the findings of the study by Wilson (2011). Additionally, the level of development and presence of regional trade agreements were deemed to be significant determinants of trade facilitation (as recorded in the LPI). Finally, trade facilitation is also reported to positively impact on economic growth (Table 7.1 GDP column) and the level of investment (Table 7.1 investment column).

The impulse response function

Generally, the impulse response analysis tends to confirm the above results. The impulse response analysis quantifies the reaction of every single variable in the model on an exogenous shock to the model. The main interest of the study was to investigate the impact of trade facilitation on trade flows. The results from the impulse response function shows that a 1 standard deviation shock to trade facilitation has led to an immediate positive response in trade flows (Figure 7.1).

Figure 7.1 Response of ln_trade to Generalized One standard deviation
ln_LPI innovation
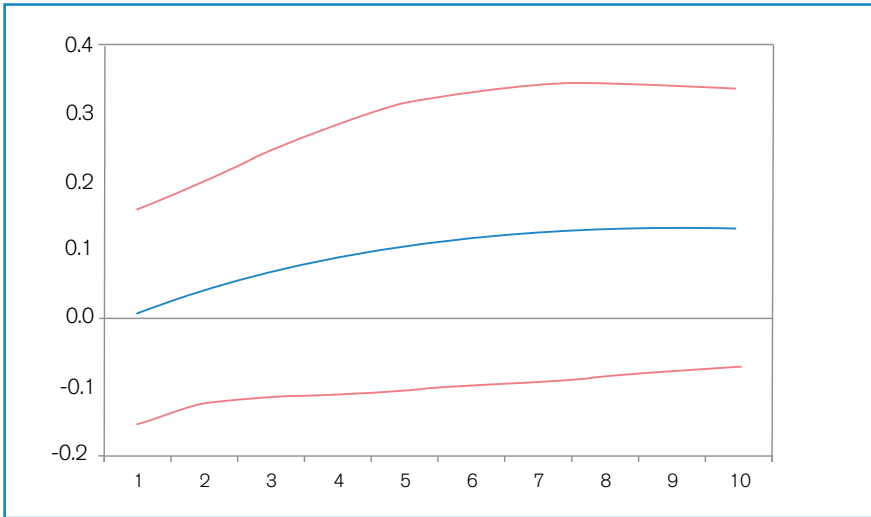
The X axis shows the periods and the y axis shows the response of ln_trade to
Generalized One standard deviation in ln_LPI innovation. The blue line represents
the response of ln_trade to Generalized One standard deviation in ln_LPI
innovation, and the red lines represent the 95 per cent confidence interval.

7.5 Conclusions

The present study aimed to measure the impact of trade facilitation on trade flows
for a sample of 20 African economies over the period 2007–2014 within a panel
vector autoregressive (PVAR) framework. Using the World Bank's LPI as the main
proxy for trade facilitation, the study found that trade facilitation has had a positive
and significant effect on trade flows for the sample countries. The research also
reported that a 1 per cent increase in trade facilitation contributed to a 0.77 per
cent increase in trade flow. Such a finding lends support to the existing literature,
which has overwhelmingly argued that an improvement in trade facilitation
measures in a country generates significant trade benefits to that economy.
Economic growth, investment and regional trade agreements were also found to
be significant ingredients fostering trade flows.

Additionally, the results delineated through the VAR framework highlighted the
presence of a reverse causation between trade levels and trade facilitation,
supporting a bi-causal relationship and thereby reinforcing the interplay between

trade facilitation and trade flows. Interestingly, the study also reported that country development levels and the existence of regional trade agreements were crucial ingredients that served to enhance trade facilitation as measured by the LPI. Last, but not least, trade facilitation was also reported to have some positive effects on economic growth and the level of investment.

These findings have far-reaching implications, particularly as they clearly highlight the fundamental importance of trade facilitation in fostering trade. In this regard, one can argue that it is crucial for these African countries to prolong their endeavours to implement reforms geared towards reducing tariffs, mostly through regional initiatives, but also, and more importantly, geared towards the reduction and/or elimination of non-tariff measures, which substantially add to trade costs. In this regard, for there to be effective reforms, a clear understanding is required of the various elements that make up the trade cost landscape and the way they interact to generate low performance in the first instance. In addition, there needs to be the requisite political will to embark on such reforms; such reforms should not only happen in the host country, but also in its trading partners. An understanding of the mechanisms that underlie special interest at both ends of the bilateral trade relationship is as crucial as knowledge of the extent of the trade gains associated with reducing trade costs.

However, current figures with respect to the prevailing transaction costs in Africa do not bode well. Figures from the UNECA study of trade facilitation from an African perspective (UNECA, 2013) reveal that Africa remains by far one of the regions where international trade is most expensive. In addition, documentation requirements in Africa appear to be extremely cumbersome by international standards and African LDCs have more expensive customs and terminal handling costs than do other countries. Conversely, African small island developing states, similarly to those elsewhere, appear to face significantly lower costs for exports, in terms of both overall costs and costs for customs and terminal-based handling.

Given the various challenges these countries face, there is an undeniable need for the adoption of measures and policies geared towards reducing trade costs. The elimination and/or reduction of non-tariff barriers, such as numerous border controls and frequent goods inspection, and the elimination of a number of licences, related to both the import and export of goods and raw materials, will significantly reduce the costs of operations and also increase the speed at which trading operations are carried out.

Appendix Table 7.1: Descriptive statistics

	LPI	GDP per capita	Investment	Population	Trade flows
Mean	2.447838	2606.176	24.35870	21614599	76.17391
Median	2.441341	1055.500	24.00000	14243703	74.00000
Maximum	3.260000	15253.00	43.00000	1.77E+08	138.0000
Minimum	1.770000	243.0000	5.000000	649404.0	31.00000
Standard Deviation	0.264072	3343.442	7.435819	34812565	24.25693
Skewness	0.460597	1.859502	0.312092	3.168627	0.412073
Kurtosis	4.231168	5.699992	3.090582	12.60944	2.597301

Endnotes

1.   Angola, Burkina Faso, Cameroon, Chad, Comoros, Côte d'Ivoire, Djibouti, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Madagascar, Mali, Mauritius, Namibia, Niger, Nigeria, Rwanda, Senegal.

2.   In VAR models all variables are treated as endogenous and interdependent, both in a dynamic and in a static sense.

3.   For an extensive review of the literature, see Maur and Wilson (2010).

4.   For studies with similar outcomes, see Hertel and Mirza (2009) and Portugal-Perez and Wilson (2010) for South Asia; Souza and Burnquist (2011) and Sá Porto et al. (2013) for Latin America; Hummels and Schaur (2013) for the US; and Sá Porto, Canuto and Morini (2015) for a pool of 72 countries.

5.   This is a calculation of the cost of the time taken to complete export or import procedures expressed as a tariff computed as a percentage of the price of the good.

6.   http://lpi.worldbank.org/

7.   See Appendix Table 7.1.

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