Global Value Chain in West Africa, does trade facilitation matter?

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Abstract

The development of the global value chains has shown that all economies could benefit from globalisation. However, the lack of enablers and reforms have push down many countries out of that scene. In such circumstances, trade facilitation appears as a crucial tool to mitigate the lack of participation of such countries in the international market. Several countries have initiated policy responses to take necessary steps towards trade facilitation. One question assessed in this study is to analyzed the effects of such reforms on West African countries' participation in the global production network. Based on existing theories, such as the fragmentation theory and the search and matching theory, this study assesses survival exports from West African countries. It utilizes data from the World Integrated Trade Solution (WITS) over the 1996 - 2019 period. The results show that trade facilitation measures influence survival of trade. Moreover, the study finds the quality of institutions have considerable effects on both the global value chain participation and also on trade facilitation reforms. Several relevant insights for policymakers can be drawn as African countries are implementing the new continental trade agreement. Reforms should target more non-tariffs trade facilitation and relying on international coordination.

 Keywords: Trade facilitation, institutional quality, Global value chains, survival analysis

1 Introduction

An increased level of integration into the global value chain has appeared to be a crucial driver for growth and productivity in developing countries. Simplifying procedures and movements of goods between countries is of paramount importance. The development of international trade in the era of modern infrastructure has allowed integration and growth of developed countries. The production network is more diversified and located in many parts in the world. Therefore, production is organized in sequential processing stages in different countries that permit goods to embed more value added. The diffusion of the global value chain (henceforth, GVC) captures a huge parts of trade statistics today than some decade ago (WDR, 2020). As shown in figure 1 below, from about 38 percent in the 70s the share of GVC in global trade was above 50 percent before 2010.

In this context, one way to take advantage of these dynamics for developing countries is to undertake trade facilitation reforms and place them at the core of their long-term development policy. The seminal work of Jones and Kierzkowski [2001] shows how services such as transportation infrastructure and communication play a major role in the global production processes. According to their fragmentation theory, it is efficient to relocate production in many locations as long as service costs go down. This pattern of trade contributes to income sustainability for players involved. Moreover, the discussion between trade facilitation and duration of trade relationship emerges with the switching theory [Bernard et al., 2010] .

The time a trade relationship survive is shorter as long as suppliers are changed in a higher rate. However, insertion into the global production network leads trade relationships to survive longer [Obashi, 2010]. From their nature, goods involved in GVC cross many countries and get a value added in each of these country. One way to effectively facilitate these movements is to comprehensively create an ecosystem that suit international standards, through reforms. This study analyzes determinants of export survival for intermediate product in selected economies within West Africa. Specifically, it assesses the effects of trade facilitation and institutions' quality. It contributes to the discussion on GVC's participation in Africa, particularly through the analysis of machinery parts and component trade of West Africa economies.

This study explores the integration of these economies into the global network production. Trade is an important component of their income generation and account for large part of development's strategies undertaken. The literature shows that alongside many investments at country level, reforms such as the trade facilitation agreement signed at the multilateral level improve trade in final good as well as intermediate product [Valensisi et al., 2016]. Furthermore, this study also contributes to trade literature by providing a survival analysis in West African economies. Unlike Córcoles et al. [2012] export survival in global value chain is assessed using discrete time models, which are supposed to reduce considerable issues of endogeneity [Besedes and Blyde, 2010] . For developing countries assessing export survival is important to policymakers and bring a pathway to increase extensive and intensive margins of trade.

Beside export survival, trade facilitation is an important factor in GVC's participation. Re-
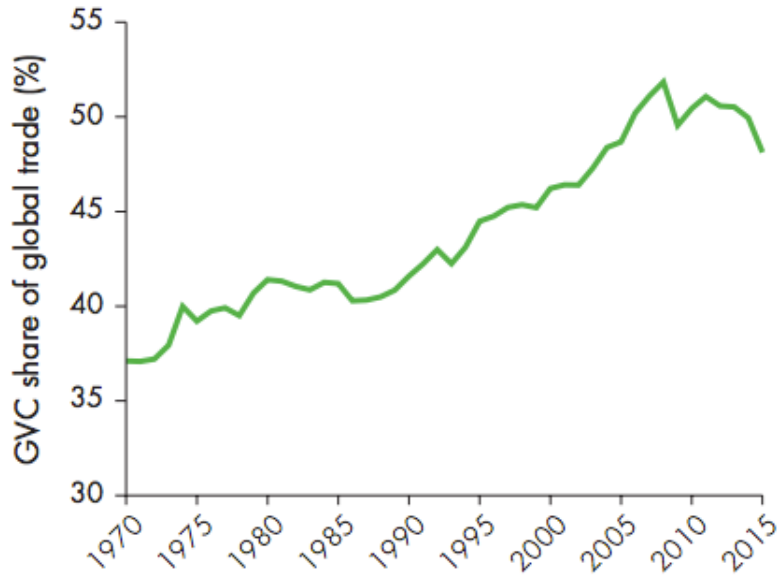
Figure 1: GVC trade growth rate
Source: World Development Report Team, WDR 2020

sults show that non-tariffs-based trade facilitation measures improve export survival in general, but more exports related to machinery parts and components (P&C). When countries share the same language, for example, it is easy to continue trading even though countries development level can play a key role. As far as trade to sub-Saharan African countries, trade facilitation as a whole does increase duration of trade. That provides insights to policymakers for implementing and enforcing different rules of origins and well as trade facilitation reforms contained in the African Continental Free Trade Agreement (AfCFTA).

The rest of the paper is organized as follows. The next section discusses a related literature on this field. Section 3 describes the econometric model as well as data and variables used. Section 4 presents the results and discussion while section 6 concludes the paper.

2 Literature review

The development of international trade theories has been sustained by numerous empirical works ranging from trade balance to extensive margins of trade. Since some decades ago new features of trade have captured scholars' attention. New trade theories have been designed to describe such behaviours. A strand of that literature focuses on the location and the fragmentation of the production [Krugman, 1980]. However, the seminal work of [Jones and Kierzkowski, 2001] on the fragmentation theory advocates that production blocks characterize production process as long as services links these blocks efficiently. The global production network therefore becomes optimal as long as the costs of service links is low enough.

Intermediate products in international market play a key role in global value chain formation

Obashi [2010] . Their evolution and sustainability inserts among the new developments of international trade theory. Since the works of Besedeš and Prusa [2006] a complete strand of the literature related to trade duration is developing faster. The theoretical underpinnings for trade duration could find roots in the product cycle theory, Search and Matching theory and product switching theory.

According to the product life cycle theory by Vernon [1992] a product is introduced, developed, consumed and exported by an advanced economy, which benefits a high ratio of skilled workers. At some point in time that product reaches a maturity age when developing economies start producing the product and further export it to the developed economies because those countries benefit from labour force and low service costs. It could be tempted to associate the end of product life to trade relationship end but it fails to fully explain the short-lived relationship in practice [Besedeš and Prusa, 2006, Hess and Persson, 2011]

Another theory referenced as the search and matching theory is proposed by Rauch and Watson [2003]. The authors explain that trade duration depends on buyers' behaviour on the international markets, which they record in three phases. In the first stage, the buyer looks for suppliers, most often from a developing country, to establish a match and start trading with a small number of orders. Then in the second stage, if the buyer finds the seller reliable, an investment can be made to increase volume traded. In case that reliability fails the relationship ends and the buyer looks for another match in the third stage. The probability of export dying early depend on the amount of failure occurred in the first and second stage.

Furthermore, the product switching theory mainly relies on firms' activities in the international market and highlights the key role played by the import country demand market [Bernard et al., 2010]. A negative demand shock is more likely to trigger a stop of trade relationship than a positive shock. Those trends in product switching are correlated to trade's duration.

2.1 Exports and trade facilitation

There are few studies in the literature that directly assess the link between duration of trade and trade facilitation. Depending on the proxy used, trade facilitation has a mixed effect on exports in general. Trade facilitation has been identified as a major barrier of international trade besides taxes, and it is more noticed for exports of goods and services, especially in developing countries [Seck, 2016]. In analysing trade facilitation there are two groups of indicators that are 'Soft' and 'Hard' infrastructures.

In general all trade facilitation proxies have a strong impacts on trade flows. In the discussion on different facilitation reforms in trade, several databases have helped, either fully or partially coupled with other databases from different sources. As example, Bourdet and Persson [2012] use the total number of days required to clear all procedure for exporting and importing as proxy for trade facilitation. Their study assessed its effect on export volumes as well as on the number of product exported. Also Limao and Venables [2001] and Márquez-Ramos and Martínez-Zarzoso [2010] utilize their own transport infrastructure index as a proxy for trade facilitation. The literature registered many studies, which revealed the

importance of trade facilitation variables independently of countries development level (e.g. Bernhofen et al. [2016]; Fugazza and Hoffmann [2017]; Fugazza and Hoffmann [2017]; Hertel et al. [2007]; Notteboom and Rodrigue [2008]).

However, using only one measure to capture trade facilitation could lead to omitted variable issues, which in turn could affect results in many ways. Different technical were developed to consider several data sources for capturing considerable quantity of information. The procedure followed by Portugal-Perez and Wilson [2012] consists of many database that allow trade facilitation measures to account both for soft and hard infrastructures. Then using their indicators on 100 countries they show that improving soft infrastructure account for economic growth and export growth, even though the study only covers the 2004-2007 period. They conclude that it is necessary to have studies differentiating between final and intermediate product exports.

This study covers that gap in the literature by providing an analysis of trade facilitation on exports. Exports duration is analysed, specifically exports regarding global value chain of designated African countries. Apart from trade facilitation, there are other covariates that impact the duration of trade, which are discussed in the next subsection.

2.2 Other determinants of trade duration

At country and firm levels many variables influenced the probability of trade relationship to die. Both time-variant and time-invariant variables have a significant impact on trade duration. Among others, market access costs, real GDP, distance, exchange rate misalignment, colonial ties, common border, and common language are critical for trade duration (Cadot et al. [2014]; Chacha et al. [2017]; Hess and Persson [2012]; Mohammed [2018]). As example one way export duration can continue comes from the influence of having a common language. Suppliers and their partners can reduce delay in terms of contract enforcement.

Each determinant of trade duration has a different mechanism through which they influence the hazard rate. Some even contradict theoretical predictions. Türkcan and Saygili [2019] especially find that for the case of Turkey exports, market diversification has a lower effect on export survival than product diversification for example. Moreover, distance taken as physical trade costs reduces the survival rate. Another important determinant is the set of economic integration agreements that partners involved in (Araujo et al. [2016]; Esteve-Pérez et al. [2013]).

3 Methodology

3.1 Econometric estimation

This study aims to assess the influence of trade facilitation on the participation of selected West African countries in the global value chain. Close to the spirit of Slany [2016], in this study, we apply a discrete-time model, following Hess and Persson [2011]. The survival analysis method is useful in investigating the conditional probability that a trade relationship will continue within a particular time interval. One advantage of such method, over

continuous-time models, is to directly consider the hazard rate dependent on explanatory variables, which could vary over overtime (Hess and Persson [2011]; Hess and Persson [2012]) .

Let us consider the event of stopping exports toward a particular market as a failure. Let T describe the time for a trade relationship continues, where T is a discrete random variable. The survival function is expressed as:

$$S(t) = (T > t) = \sum_{t_i > 1} p(t_i) \quad [1]$$

Then, we also define the hazard rate as the probability for a trade relationship to continue between times [t, t+1], given that a failure has not happened since the starting point of time. This conditional probability is written as follow:

$$H_I(t, X) = Pr(T_i < t_{i+1} | T_i > t_m) = 1 - exp(-exp(\beta' X_{it} + \gamma_t)) \quad [2]$$

Where X_{it} is a set of both time varying and no time-varying covariates that are assumed to influence the hazard rate; γ is the baseline hazard rate for the tth interval that allows the hazard rate to vary with time, and β is a vector of coefficients to be estimated. A set of dummy variables is added to take care of the duration intervals of each spell since the underlying baseline hazard is unknown. Empirically, a Gaussian error term is introduced as a random-effects indicator that deals with the problem of unobserved heterogeneity (frailty). Thereafter, the discrete-time proportional hazard model is estimated by maximizing the following log-likelihood function:

$$lnL = \sum_{i=1}^{i} \sum_{t=1}^{t_i} [y_{it} \ln(h_{it}) + (1 - y_{it}) ln(1 - h_{it})] \quad [3]$$

Where t_i are the terminal period and the underscore i refers to it varies with the country's survival spell, y_{it} is the binary dependent variable which takes the value one if the failure occurs for a country i at year t and zero otherwise. A positive (negative) coefficient indicates that the covariate reduces (increases) the survival of the spell.

A functional form can be provided as the estimation of equation [3] with a logit model as follows:

$$y_{it} = \alpha_0 + \alpha_1 X_{it} + \alpha_2 FACI_{it} + C_i + \epsilon_{it} \quad [4]$$

Where, y_{it} is the hazard rate, $FACI_{it}$ is the trade facilitation variable collected both for destination and origins countries where trade relationship exists, while i records all countries involved in business ties over time. X_{it} is a set of time-variant and time-invariant variables defined earlier that influence the dependent variable. C_i is a set of time, destination, and spell dummies to control for heterogeneity.

However, in the specification, we overcome issue of left censoring spells by excluding the year a spell has started. The main reason is the lack of clarification on whether the country started the trade during this particular year or earlier. As far as the right censoring issues concern, the survival model automatically removes the last year considered in the database to avoid

confusion as it is not clear whether the spell has stopped that year or continues. [Zhu et al., 2019]. The case of multiple spells is also considered by creating a dummy variable. The discrete-time model is estimated through different specifications to capture the behaviour of these West African countries exporters in the global value chain.

3.2 Data and variables

To assess the global value chain state in some West Africa we used P&C transactions data[1]. We use annual country-product-destination data from the World Integrated Trade Solution (WITS) database on exports from the selected countries over the period 1996 to 2019. The data is at the 6-digit level classification of the Harmonized System (HS) for chapters 84-92. Import records of destination countries are used as mirror data because they are more reliable, especially for developing countries trade statistics [Brenton et al., 2010]. In addition, we use country-specific data from the World Development Indicators database as well as gravity variables from CEP11 (Centre d'Etudes Prospectives et d'Information Internationales) database. Part of institutional quality data comes from the International Country Risk Guide (ICRG).

There are several variables to capture trade facilitation effects. Among the commonly used there are those related to the quality of different sea ports to enable each country to perform in the international market. Others focus on the business environment related to either exports or imports. Data on trade facilitation agreement provided by the World Trade Organization (WTO) is a perfect candidate but they just cover two years. For the sake of this study we use tariffs and non tariffs trade costs as proxy for trade facilitation. One advantage of such data is that it covers a longer period of time and also available for many countries. Another advantage is the fact that it also measure both 'soft' and 'hard' trade infrastructure for countries around the world. These data come from the World Bank - United Nations Economic and Social Commission for Asia and Pacific (WB-UNESCAP) database. Other detailed variables used are:

Initial export value: (in each transaction) As stated by Rauch and Watson [2003] under a context of uncertainty in the international market, the amount of initial export could give a signal whether that specific trade relationship will last longer. Also defended by Impullitti et al. [2013], large initial values help reducing the sunk entry costs in that destination.

Quality of the institutional framework: Trade of intermediate goods is highly influenced by institutional quality. Gamberoni et al. [2010] uphold a positive impact of institutional quality on the value of the trade in intermediate goods. In fact a legal framework that operates properly discourages non-compliance with contracts and increase exports duration between partners. Two set of institution quality data will be used. Governance variables from the World Bank's Worldwide Governance Indicators. These are rule of law, corruption, and governance quality to capture the confidence in compliance with contracts and property rights [Kraay et al., 2010]. The other set of variables come from the International Country Risk Guide (ICRG). There are, corruption index, government stability and democracy score

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[1]Only four countries have been considered, namely Ghana, Nigeria, Cote d'Ivoire ans Senegal. These countries are coastal and have pursued strong openness policies over years

to check whether different political regimes and corruption are important for countries to perform in the global production network.

Standard gravity variables: size of the export market (proxied by the importer's GDP), distance between trade partners, and common border. Covariates such that common currency as well as language are added to the analysis.

Variable for measuring membership in a regional integration area: in this case the ECOWAS Preferential Trade Agreement and the WAEMU countries are considered. Even though most of these agreements focus on final goods trade, there are likely to influence trade in intermediate product as well.

Other Variables: Exchange rate, foreign direct investment, financial development, population. For example, an overvalued (undervalued) currency can lower (raise) the competitiveness of the exports and harm (or favor) their duration. Obashi [2010] finds that its positive impact on duration is only significant for final goods, not for P&C.

4 Results and discussion

To explore impact of trade facilitation on the global value chain participation of ECOWAS countries, this study follows a set of econometric methods that were particularly found in exports survival literature. Using Kaplan Meier estimates, we categorize product-destination pairs for each spells and influence of covariates on the hazard rate is presented further.

4.1 Descriptive statistics

The dataset registers a total of sixty countries that imports P&C from ECOWAS countries. This amount is obtained after cancelling out trade routes that have a total value less than five hundred thousand US dollars over the whole studies period.

Figure 1 displays results from the Kaplan-Meier estimates graph. Two specifications are presented such that *figure a* presents survival rates graph globally while *figure b* show exports duration by income group destination countries. On average, among one million of spells initiated only 43% reach the second year, greater than the Kenyan average of 39% Socrates et al. [2020] and African average of 36% Kamuganga [2012]. Exports' relationship declines rapidly and are not stable between the second and the seventh year of existence. For exports involved into the global network production, the median survival period is two years, which is a higher than results observed in exports survival studies but lower when we consider the role of the traded products. Furthermore, countries are grouped by income level group and four groups are retained; namely high, middle, low income and others. That last categories registers mostly countries that fall into the lower middle-income group following the World Bank classification. Figure 1b displays Kaplan-Meier graph, where each line represents an income level group survival rate.

For exports toward high income countries, 42% of exports reach the second years while only less than 10% survive during the fourth year. One reason could come from requirements to enter these markets but ability to sustain any relationship after exporting Besedes and Blyde

[2010]. Almost similar results are exhibited for middle income group, where almost 57% of exports die after the first year and more than 90% after the fifth year. As far as the lower income countries group concern the rate is lower and more unstable over years. Spells die rapidly after initiation. Only less than 10% of them survive after the third year of exercise. One reason could be the nature of products exported and the weigh of those importers in the international trade scheme. From the remaining country group, results almost follow the average trends.
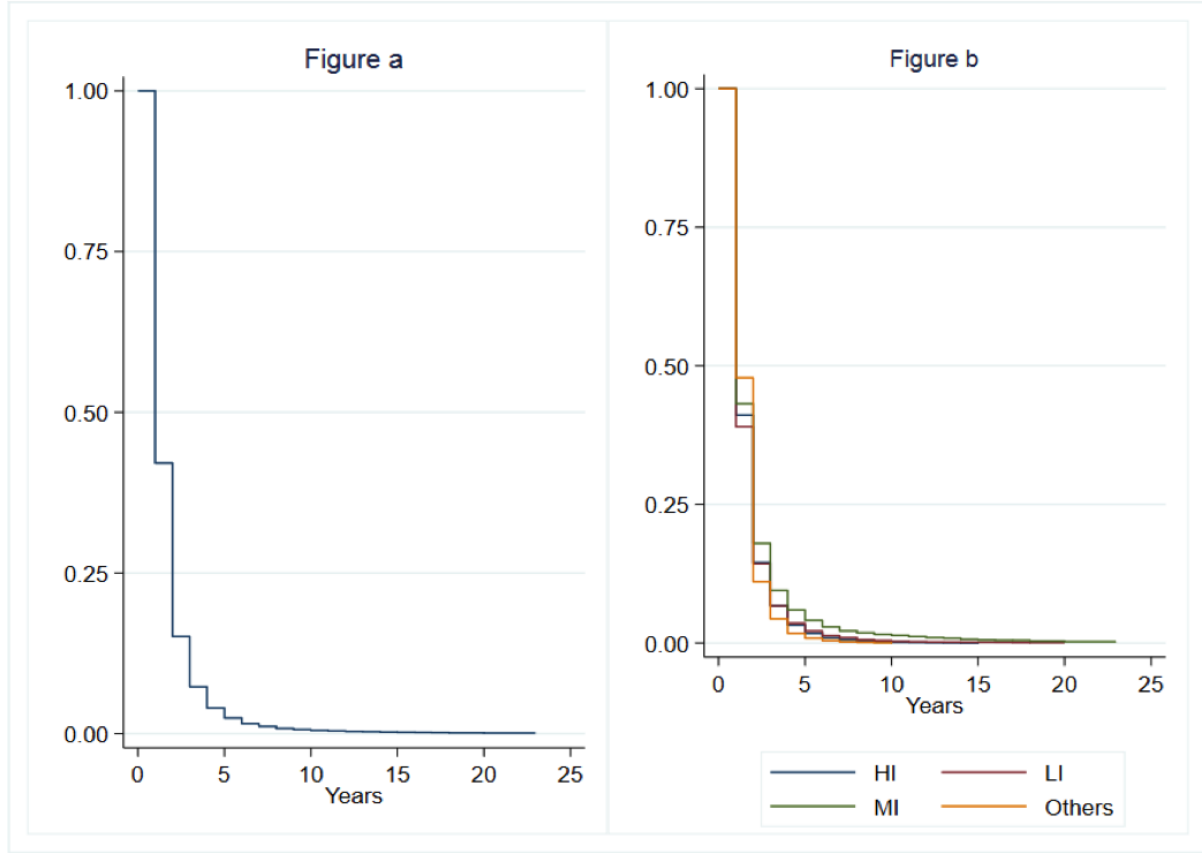
Figure 2: Survival function within income level and general
Note: HI - High Income, MI - Middle Income, LI - Low Income

To explore export duration under different categories, we consider exports from their different origins and by export values. *Figure 2a* show results from the first category. On average, all countries exports survival rate within the first-year wanders around 42%, but the volatility of that rate differs considerably after the year of establishment. For exports from Nigeria, only 10% of them reach the third year while, for that same amount of time only 6% survive from Senegal. The Ecowas countries are not fully integrated to the global value chains compared to East-Asian countries but they are playing a considerable role in terms of exports survival among African countries. For Ghana, 43% of their export survive the first year while less than 1% reach the eighth year. It is important to note that the different graph show results

for the first fifteen years after the trade relationship is established. For the last country of origin in our dataset, less than 5% survive after the fifth year. Generally, these results explain that under different considerations, export survival is still short-lived.

Exports duration literature establishes difference between export volumes involved in a trade relationship as a key determinant Nitsch [2009]. *Figure 2b* provides Kaplan-Meier estimate graph when export value threshold is set to ten million of US dollars. Results show that below the threshold the survival rate is very volatile. With this modification, 42% of spells survive the first years and only 2% of them attain the fifth year. This explain that for less volume there is many entry and exit, especially since trade barriers are reducing and specific treatment are granted to African countries to penetrate big economies. However, exports of huge volume are more stable, with more than 22% and 15% of spell survive bet the second and the fourth year, respectively. There are many determinants of export survival recorded in the literature that is explored in the next section.
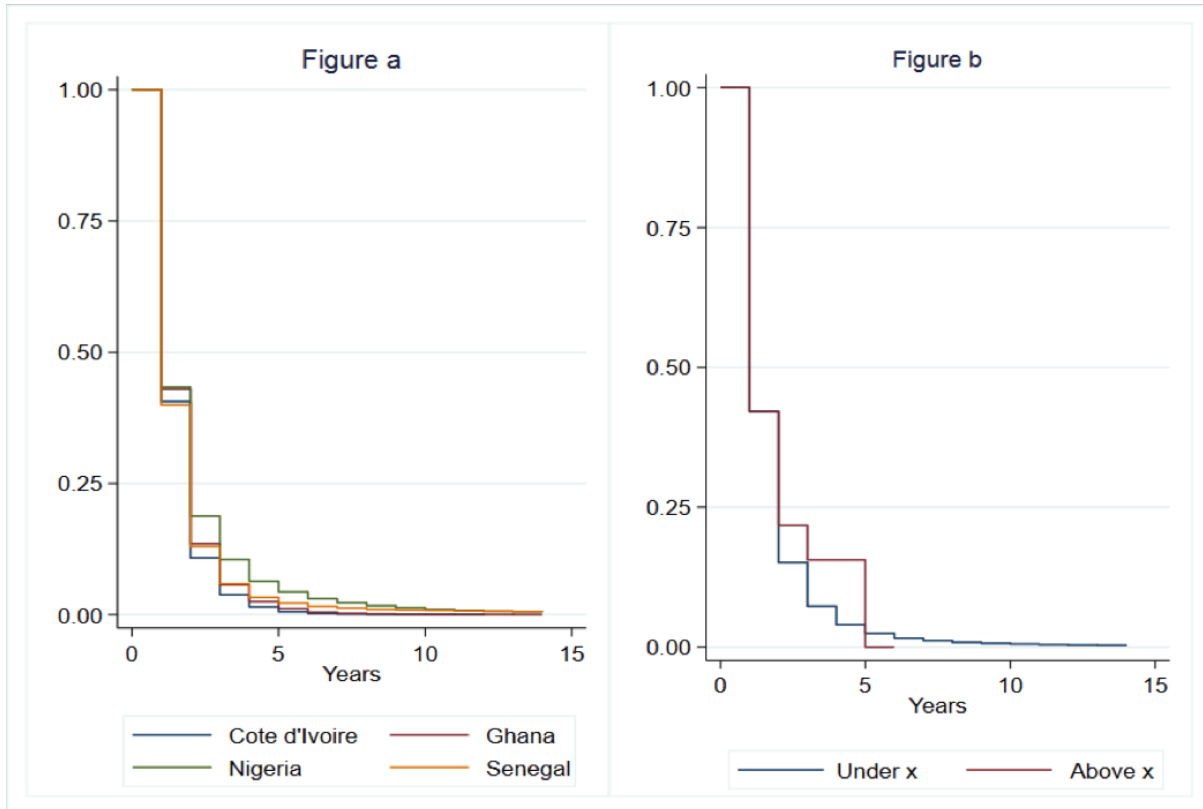

Figure 3: Survival function within exporters countries and export value

4.2 Empirical results

We examine the effect of trade facilitation on the export survival, especially for part and component products used as proxy to global value chain participation. To do so, discrete time hazard model are preferred over continuous time models. Table 2 collects results with different specifications. Complementary log-log model is used in column 1 while the panel logit is applied in the remained columns. In the first model trade facilitation is not significant but the preferred and general model is presented in column 2. In addition, time, countries and multi-spell fixed effects are added to reduce heterogeneity. Tariffs-based trade facilitation indicator increases the probability to continue exporting, on average. As expected GDP per capita and financial development help improving spell duration. Also, inflation rate does not improve the survival rate, on average. It may be due to the poor integration in the international real business cycle.

Moreover, sharing the same currency does not improve as well as distance. Here distance has population weight by kilometres. Exporting to a country that shares the same language with the origin tend to increase the survival of such relationship. This result is important for developing countries as sharing the same language helps countries to integrate easily in the global value chains. The foreign direct investment variable has positive and significant coefficient, meaning that investments are neither made to improve the quality of trade nor improve directing toward trade related infrastructure. In terms of policy recommendations, targeting trade facilitation infrastructure by redirecting foreign investment in those sectors could not only reduce risks for governments but also boost trade diversification. For that purpose, one may ask whether African institutions are not considerable hurdles these economies face in the international market.

Before studying keenly these effects we considered exports toward sub-Saharan African countries as well as exports to Europe and Central Asia. Africans are still trading slowly among themselves as the number of trade relationship is half of what it is for European imports. Tariff-based trade facilitation measure does not sustain exports duration while it is the contrary when one considers exporting to developed countries (column 5). This result is reverse when we consider the non-tariffs-based trade facilitation proxy.

Further, we extend the analysis by examining the effect of institutions along the way with trade facilitation measures. Institutions are likely to boost trade facilitation reforms and improve the quality of infrastructures. With poor institutions, all reforms are not likely to help a country to fully integrate into international markets. Using two sources of data, we insert institutional variables by considering the following equation:

$$Y_{it} = \beta_0 + \beta_1 FACI_{it} + \beta_2 INST_{it} + \beta_3 X_{it} + C_i + \epsilon_{it}$$

Where $INST_{it}$ represents variables of institution used. That is among others rule of law, corruption and government quality. The remainder variables are identical as in the previous specification. Table 2 records the findings under different specifications.

In table 2 we add institutions variables in the analysis. Column 1 shows results when institution variables stem from the International Country Risk Guide (ICRG). We use corruption,

Table 1: Estimates of survival analysis

Variables	(1)	(2)	(3)	(4)	(5)
FACI-T	0.01	0.01**	0.01*	0.01***	-0.01***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
FACI-NT	-0.002*	-0.01	-0.01	-0.02***	0.01***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
contig	-0.11***	-0.25***	-0.27***	-0.31***	-
	(0.016)	(0.031)	(0.034)	(0.037)	
comlang_off	-0.01	-0.28***	-0.31***	-0.57***	-0.12**
	(0.011)	(0.028)	(0.031)	(0.049)	(0.047)
Com_cur	-	0.54***	0.57***	0.88***	-
		(0.044)	(0.049)	(0.066)	
Distance	0.001***	0.001***	0.001**	-0.001	0.001***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Inflation	0.00***	0.01***	0.01***	0.05***	0.01
	(0.000)	(0.001)	(0.001)	(0.002)	(0.000)
Exrate	0.02	-0.01***	-0.01**	-0.02*	-0.02
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
Fin_dev	0.001	-0.001***	-0.001***	-0.001***	-0.001**
	(0.001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
FDI	0.001***	0.001***	0.001***	0.010	0.001
	(0.0001)	(0.0001)	(0.0001)	(0.001)	(0.001)
GDP_cur	0.04***	0.02	-0.01	-0.03*	0.05
	(0.006)	(0.011)	(0.013)	(0.017)	(0.038)
GDP_cons	-0.02***	-0.12***	-0.11***	-0.11***	-0.29*
	(0.006)	(0.014)	(0.019)	(0.020)	(0.172)
Constant	-0.25***	2.06***	-0.05*	0.68**	0.07**
	(0.052)	(0.252)	(0.299)	(0.335)	(1.773)
Observations	92.382	92.356	69.109	40.375	22.245
Number of pcid	21.475	21.473	12.941	7.793	3.650
Log-likelihood	-60749.25	-57850.08	-45171.03	-26284.61	-14502.64

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.10

government stability and the quality of bureaucracy as indicators. Results show that government stability, on average improves duration of trade in P&C in ECOWAS. That is, political stability and good governance is key to improve business in general, and trade facilitation in particular. The results for bureaucracy are the same as government stability, with a negative and significant coefficient. Corruption indicator is not significant.

In this specification trade facilitation indicators improve duration and almost all other coefficient show the same results as in the previous section. Exchange rate does improve survival rate, meaning that the foreign exchange market volatility has not harmed excessively trade involved in the global value chain. When the initial value of trade is considered, spell continue to grow under a higher volume and present more stability, as shown in the Kaplan-Meier

Table 2: Estimates of survival function with institutions covariate

Variables	(1)	(2)	(3)	(4)
FACI-T	-0.01	-0.01*	0.01	-0.01*
	(0.001)	(0.001)	(0.001)	(0.001)
contig	-0.07***	-0.12***	-0.03	-0.25***
	(0.027)	(0.025)	(0.027)	(0.039)
comlang_off	-0.10***	-0.11***	-0.16***	-0.52***
	(0.020)	(0.020)	(0.028)	(0.048)
Distance	0.01***	0.01***	0.01***	0.01
	(0.001)	(0.002)	(0.001)	(0.001)
Com_cur	0.33***	0.39***	0.49***	0.90***
	(0.035)	(0.033)	(0.037)	(0.066)
Inflation	0.001***	0.001***	0.001***	0.001***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Exrate	-0.001**	-0.02	-0.01***	-0.00
	(0.001)	(0.001)	(0.001)	(0.000)
FDI	0.01	0.01**	0.01***	-0.001
	(0.001)	(0.011)	(0.001)	(0.001)
GDP_cur	0.05***	0.06***	0.01	0.04**
	(0.011)	(0.009)	(0.010)	(0.017)
Initial	-0.01***	-0.01***	-0.03***	-0.00
	(0.004)	(0.003)	(0.004)	(0.006)
Lag_duration	-0.24***	-0.24***		-0.30***
	(0.018)	(0.018)		(0.028)
Area	-0.00***	-	-	-
	(0.000)			
R_Corru	0.01	-	-	-
	(0.013)			
R_Govstab	-0.04***	-	-	-
	(0.006)			
R_Bur	-0.08***	-	-	-
	(0.016)			
W_Corru	-	0.001**	0.01***	-
		(0.001)	(0.001)	
W_Ruleoflaw	-	-0.001***	-0.01	-
		(0.001)	(0.001)	
W_Govern	0.001	0.01***	-	
		(0.001)	(0.010)	
ECOWAS	-	-	-	-0.26*
				(0.156)
WAEMU	-	-	-	-0.58***
				(0.166)
Constant	0.22**	-0.26***	0.13*	-0.12
	(0.100)	(0.072)	(0.079)	(0.216)
Observations	66.862	69.313	55.426	26.678
Number of pcid	11.829	13.032	12.594	5.092
Log-likelihood	-45350.70	-46984.94	-36754.64	17974.07

Note: *Standard errors in parentheses, R_x designs data from ICRG dataset and W_x relates to data from the WGI;* *** p<0.01, ** p<0.05, * p<0.10

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graph.

Further, we consider data from the World Governance Indicator (WGI), especially the rule of law, corruption and governance quality. Corruption's state in importing countries does not reduce the survival rate and the coefficient is significant. However, the law enforcement has a positive impact meaning that it is an important factor for trade flow as noted by Obashi [2010]. Initial trade value has a positive impact as well as lag of duration (column 2).

Moreover, the previous estimation is made only for trade involved sub-Saharan African countries. Corruption and governance indicators are positive and significant, while rule of law is non-significant. In the last column, intra-trade was checked. Being an ECOWAS member improve the trade relationship by 26 percent and for WAEMU countries it increases by 32 percent. Integration in the global value chain could be benefited for African countries if trade facilitation initiatives are more robust and implemented keenly to fulfill all promises, both in term of welfare and poverty reduction. For robustness checks, *table 3* registers results only when another discrete time proportional hazard model is applied, the probit model.

In this specification we consider only the general case and exports to Sub-Saharan countries. As previously stated, contiguity and having a common official language tends to improve the export duration. Other variables are following the same path, but when we consider lag of duration, only exports to African countries tend to consider past spells as valuable. Even in Africa, financial development helps conserving trade relationship by pushing forward trade facilitation agenda and may appear also as soft infrastructure.

Table 3: Estimates of survival function using probit model

VARIABLES	(1)	(2)
FACI-T	0.001	0.001***
	(0.000)	(0.001)
FACI-NT	-0.001	-0.001***
	(0.001)	(0.001)
contig	-0.16***	-0.19***
	(0.021)	(0.023)
comlang_off	-0.19***	-0.34***
	(0.019)	(0.030)
Distance	0.01**	-0.01
	(0.001)	(0.001)
Com_cur	0.34***	0.54***
	(0.030)	(0.040)
Inflation	0.02***	0.01***
	(0.001)	(0.001)
Exrate	-0.001**	-0.001*
	(0.001)	(0.001)
Fin_dev	-0.01***	-0.02***
	(0.002)	(0.001)
FDI	0.02***	0.01
	(0.001)	(0.001)
GDP_cur	-0.01	-0.02*
	(0.008)	(0.010)
GDP_cons	-0.07***	-0.07***
	(0.011)	(0.012)
Initial	-0.01***	-0.01***
	(0.003)	(0.003)
Lag_duration	-0.01	-0.07***
	(0.013)	(0.016)
Constant	-0.03	0.41**
	(0.182)	(0.204)
Observations	69,109	40,375
Number of pcid	12,941	7,793
Log-likelihood	-45175.07	-26287.03

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.10

5   Conclusion

International trade pattern at the intermediate product level is a vibrant strand of the literature. This study sought to establish the link between trade facilitation and global value chain participation by studying export duration from selected ECOWAS countries. Product-country-year data have been used, covering the 1995 - 2019 period. After applying a discrete time model, we conclude that many trade transactions are short-lived. We explore several determinants of trade duration and stressed on trade facilitation variable. These ones showed mixed results depending to the specification. On average, about 40 percent of trade relationship involving P&C survive after the first year of trade. Trade facilitation have the potential to boost trade by speed up the clearance and procedure needed. Non-tariff-based trade facilitation exhibits positive and high magnitude on export duration in ECOWAS.

This study also shows the focus on other variables that indirectly impact GVC's participation. Both nominal and real variables are important to allow these countries to benefit more to multilateral free trade agreement. For policy makers, reforms should target more non-tariff trade barriers and relying on international coordination. One way should be to reinforce reforms at the regional level as well as enforcing reforms that are already into force. The new African Continental Free Trade Agreement (ACFTA) is likely to provide a better framework for these countries to benefit a larger market but should also enhance trade facilitation.

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