

Intra-WAEMU Trade: The Treaty of Friendship and Cooperation and the Dynamics of Bilateral Trade between Cote d'Ivoire and Burkina Faso

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Abstract: *This paper studies from a gravitational model, the determinants of trade and the impact of regional integration on the dynamics of bilateral trade between Côte d'Ivoire and Burkina Faso. The results show that: the friendship and cooperation treaty as a catalyst is a strategic tool for regional integration that has enabled the resumption and facilitation of bilateral trade between Côte d'Ivoire and Burkina Faso; The volume of trade between Côte d'Ivoire and Burkina Faso is increasing, but trade flows remain largely directed towards Western partners; geographical and structural factors influence intra-WAEMU trade.*

Keywords: Intra-WAEMU trade, friendship and cooperation treaty, Gravity model, Côte d'Ivoire, Burkina Faso

1. Introduction

The vast movement of economic integration of African States has resulted in the signing of several economic cooperation agreements and economic partnership agreements. Unfortunately, despite the proliferation of these Regional Economic Communities and the multiplicity of agreements, Africa is unable to create a vast continental market in order to be competitive in world trade. Africa's share in world trade is still marginal (less than 10%) and remains oriented towards Europe to the detriment of Africa itself. However, some African States through border proximity or through various links are developing economic relations through the cooperation mechanism in order to boost their economies. This is the case of Côte d'Ivoire and Burkina Faso, two border states of the West African Economic and Monetary Union (WAEMU), linked by centuries-old relations, have maintained cooperative relations for several years. The dynamics relations dynamics and management have intensified since the signing of the Treaty of Friendship and Cooperation (TFC) between the two States on July 29, 2008. The aim is to consolidate their cooperation in community building and well-being of populations, while stimulating sub-regional economic integration. This Treaty of Friendship and Cooperation between Côte d'Ivoire and Burkina Faso brings together alternately the Heads of State, Governments and experts of the two countries in Burkina Faso and Côte d'Ivoire. Since the implementation of this strategic cooperation tool, Ivorian-Burkinabè trade has experienced a significant improvement, rising from 432 million USD in 2013 to 591 million USD in 2018. This corresponds to an increase of approximately 25% over a period of 5 years. Therefore, to understand the level of trade between Côte d'Ivoire and Burkina Faso, it is necessary to take into account, in addition to all the determinants of international trade, the impact of regional integration and/or of cooperation which constitute catalysts for the development of trade. International cooperation is an effective means of bringing countries

together politically, economically, socially and culturally. It is also a means of strengthening regional integration. Thus, economic cooperation allows economies belonging to an integration grouping to apply, according to their good faith, the agreements for the reduction and/or elimination of tariff and non-tariff barriers. This removal of trade barriers facilitates the strengthening of trade between member countries [1]. This is why the success of trade integration depends on a reasonable degree of elasticity of traded goods or the removal of barriers. Also, [2], [3], [4] have shown that regional integration generates benefits for member states of economic communities. In addition to the creation of a free trade area, the customs union and the common market, the monetary union is also a very important step for the achievement of regional integration [5]. Côte d'Ivoire and Burkina Faso being members of WAEMU, this paper aims to analyze the determinants of intra-African trade of the two countries while evaluating the role of the FCT and the impact of the regional integration.

2. Materials and methods

2.1 The choice of the study area

This concerns two countries belonging to the WAEMU space, namely Côte d'Ivoire and Burkina Faso, two border countries with historical and economic ties.

2.2 Data processing and analysis

Qualitative information was processed and analyzed qualitatively. It concerns information relating to the structure of exchanges. Quantitative information has been statistically processed. The advantage of this processing is to establish arithmetic means, distribution frequencies to measuring observed trends, etc. the results obtained from Microsoft Excel and XLSTAT software are presented in tables or graphs (histogram, evolution curve). The econometric treatment is based on the gravity model with panel data. The

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tests and estimations are made the STATA.15 software. Finally, the computer medium used for the results entry operation is the Word software.

2.2.1. Presentation of the sample

The sample is made up of 52 countries, including 31 exporters and 21 importers. These are the African countries, the European Union, the BRICS countries and the United States. The study is carried out over the period from 2004 to 2020 depending on the availability of data.

2.2.2. Data source

Bilateral trade data comes from IMF statistics (DOTS, 2018) expressed in millions of US dollars. Data for variables related to Gross Domestic Product at current prices come from the World Development Indicators database (WDI 2020). Finally, data relating to the distance between the capitals of the partner countries, the sharing of a border, the common language and the isolation were collected from the CEPII¹ site of the World Trade Organization (WTO).

3. Results

We present in the third section (results and discussion) the foundations of the FCT, the structure of the foreign trade of Côte d'Ivoire and Burkina Faso and finally the result of the estimates of the gravity model.

3.1 The foundation of the Ivoirian-Burkinabe friendship and cooperation treaty

The objective of the Treaty is to guarantee stability, prosperity and promote the economic integration and development of the two States. It presents historical and political foundations.

3.1.1. The historical foundation of the FCT

Côte d'Ivoire and Burkina Faso are two countries with centuries-old relationships that once formed a single space that was later split up in favor of colonization [6]. From the end of the 19th century, proposals for opening up were made in Burkina Faso in the sense of its integration into the Ivory Coast or Dahomey² in order to facilitate its access to the sea. Unfortunately, these proposals did not have any immediately favorable for purely political reasons³. In addition, the regionalization adopted under the name of FWA (French West Africa)⁴ gave each of the colonies a particular

economic role, the Voltaic colony being the supplier of labor to Côte d'Ivoire and Senegal⁵. Indeed, the era of colonization was the period of bilateral relationship between Voltaic and Ivorian spaces, strongly linked by an asymmetrical relationship profitable to the latter. Finally, the railway construction project was carried out in a modest way so as to open up the landlocked interior countries and connect them to the coastal countries⁶. Today, bilateral Ivorian-Burkinabe relations are characterized by interdependence between the two economies.

3.1.2. The political foundation of FCT: The Ouagadougou peace agreement (OPA).

The deterioration of Ivorian-Burkinabe relations has prompted some observers to speak of an identity conflict in Côte d'Ivoire [7]. The violence that began following the 1999 coup has reached the climax in the 2002-armed rebellion. This dual-purpose rebellion aimed to restore justice in Côte d'Ivoire and restore the centuries-old ties between Côte d'Ivoire and Burkina Faso. Thus, several political meetings will be organized including the Ouagadougou Peace Agreement in 2007.

In order to define a new framework for an Ivorian republic that is inclusive and open to the dynamics of pan-African integration, the APO highlights the following:

The general identification of populations: the crux of the Ivorian identity crisis. Recognizing identity as the cause of the Ivorian conflict, the agreement states: "The signatory Parties to this agreement have recognized that the identification of Ivorian and foreign populations living in Côte d'Ivoire is a major concern. The lack of clear and consistent identification, as well as the absence of unique administrative documents attesting to the identity and nationality of individuals constitutes a source of conflict" (Page 3 of the Agreement). The electoral process: issue of political inclusion or exclusion. Recognizing political exclusion and the lack of transparency as the consequence of identity conflict, the agreement states: "Anxious to achieve, as soon as possible, lasting peace and political and institutional normalization in Côte d'Ivoire, the Parties to the Direct Dialogue reaffirm their commitment to prepare, following the identification operation, open, democratic and transparent presidential elections, in accordance with the Linas-Marcoussis, Accra and Pretoria Agreements" (Page 6 of the Agreement). Thus, the FCT is therefore a strategic tool with historical, legal and political foundations. The FCT has restored bilateral and diplomatic relations between Côte

¹geo_cepil (1).dta

http://www.cepil.fr/%5C/distance/geo_cepil.dta , accessed 11 August 2022

²Dahomey is the current Republic of Benin independent since August 1, 1960. The capital is Cotonou.

³The creation of a colony around Ouagadougou responds to the desire of the colonial administration to take advantage of the Mossi monarchical structures in order to better govern the Upper Volta area at a lower cost.

⁴AOF, Afrique Occidentale Française, created in 1895 by decree, one year after the Ministry of the colonies had been established in order to centralize the management of the French colonies on the African continent. It brought together within the same federation eight French colonies in West Africa between 1895 and 1958 (Senegal, Mauritania, Guinea, French Sudan, Niger, Upper Volta, Ivory Coast and Dahomey).

⁵The Voltaic labor rush was directed towards the Ivory Coast in an authoritarian manner by the colonial power. Spontaneous migration tends more towards the Gold Coast, where working conditions are better. The Voltaic/Burkinabe people, however, formed a large diaspora in Ivory Coast and participated to a large extent in its economic take-off from the 1920.

⁶The "Thies-Kayes" and "Abidjan-Niger" railways were built from the beginning of the 20th century. However, the financial resources made available by the metropolis did not allow the constitution of a real network. It was not until 1934 that Bobo-Dioulasso was connected by rail to the Ivory Coast. Ouagadougou is connected to it 20 years later. As for the "Thies-Kayes", it is not stretched further than Bamako; and it will never connect Niger via Upper Volta as the initial plan envisaged.

d'Ivoire and Burkina Faso. Which now allows both states to be linked by road, rail, sky and energy (Figure 1).



Figure 1: Link between Côte d'Ivoire and Burkina Faso
Source: Photo: JA / Between Burkina and Côte d'Ivoire, an umbilical cord at all levels⁷

3.2 The dynamics of Ivoiro-Burkinabe exchanges

Articles 3, 4, 5, 6 and 7 of Title II of the FCT specify the areas of Ivorian-Burkinabe cooperation: the politico-diplomatic domain, regional integration, economic cooperation, scientific and cultural cooperation, judicial cooperation. In this paper, we will focus on economic cooperation and more specifically on the dynamics of trade.

3.2.1. Ivoiro-Burkinabe foreign trade trend

Foreign trade in goods and services from Côte d'Ivoire and Burkina Faso increased between 2010 and 2018. Specifically, Côte d'Ivoire's trade remains more dynamic than that of Burkina Faso. Ivory Coast's exports increased from USD 9, 321, 895, 748 in 2006 to USD 12, 814, 810, 582 in 2018. And imports increased from USD 761, 360, 209 in 2006 to USD 12, 578, 295, 474, a rate growth of about 6.41% in 2018. As for exports from Burkina Faso, they recorded a growth of 16.22%, going from 673, 239, 521 USD in 2006 to 4, 349, 247, 966 USD in 2018. And imports are increased from 1, 476, 327, 435 USD in 2006 to 5, 259, 902, 823 USD in 2018, representing a growth rate of 17.78% in 2018 (Figure 2).

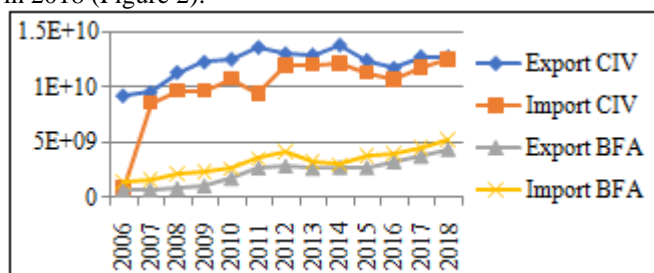


Figure 2: Foreign trade of Côte d'Ivoire and Burkina Faso (current USD)

Source: World Perspective, World Bank, constructed by the author

3.2.2 The main products exchanged by Côte d'Ivoire and Burkina Faso

Goods from Côte d'Ivoire and Burkina Faso are relatively diverse. In 2015, exports from Côte d'Ivoire consisted of 68% agricultural products; 18.099% petroleum and mining products; 11.722% manufactured goods and 1.241% other goods. Imports were composed of 19.588% agricultural products; 22.42% mining products; 53.520 manufactured goods and 4.472% other goods (World Perspective, accessed 2021). In 2018, the main products traded by Côte d'Ivoire consisted of: 27.5% cocoa beans and broken beans, raw; Coconut, Brazil nut and cashew (9.9%); Oil from petroleum or bituminous minerals (8.0%); Gold, including platinum gold, in unwrought form (6.8%); Natural rubber, balata, gutta-percha, guayule (6.4%); Crude oils from petroleum or bituminous minerals (6.0%), cocoa mass, whether or not defatted (4.8%); Butter, fat and cocoa oil (3.3%). As for imports, they consist of petroleum oils or bituminous minerals (14.1%); Rice (6.3); Oil from petroleum or bituminous minerals (5.6%); Fish, edible, frozen (4.8%); Drugs (3.0%); Passenger cars and other vehicles (2.8%); Petroleum gas and other gaseous hydrocarbons (1.9%); Lightships, fireboats, dredgers (1.7%); Insecticides, anti-rodents, fungicides, herbicides (1.7%) and wheat (wheat) and meslin (1.6%). In 2015, Burkina Faso's exports were composed of 31.215% agricultural products; 2.766% petroleum and mining products; 5.079% manufactured goods and 60.940% other goods. Imports were composed of 16.222% agricultural products; 29.598% mining products; 54.099% manufactured goods and 0.081% other goods (World Perspective, accessed 2021). In 2018, the main products exported by Burkina Faso are as follows: Gold, including platinum, in raw form (65.6%); Cotton, not carded or combed (9.7%); Coconut, Brazil nut and cashew nut (6.5%); zinc in raw form (5.7%); Oil seeds and oleaginous fruits, whether or not crushed (5.2%). Products imported by Burkina Faso consist of petroleum oil or bituminous minerals (23.2%); Medicines (4.3%); Rice (3.4%); Hydraulic cements (2.9%); Passenger cars and other vehicles (2.4%); Electrical energy (2.1%); Motor vehicles for transport (1.9%); Recognizable part (1.8%); Petroleum gas and gaseous hydrocarbons (1.7%) and flat rolled products, iron or steel (1.5%).

3.2.3. Geographical orientation of trade in Côte d'Ivoire and Burkina Faso

Côte d'Ivoire and Burkina Faso have changed the structure of their trading partners in recent years. Burkina Faso remains Côte d'Ivoire's sixth largest customer with 5.2% of exports. And Côte d'Ivoire is Burkina Faso's 4th largest customer in the world with 6.3% of exports and the 2nd largest supplier with 11.5% of imports. It was the leading supplier in 2008 with 14.53% of imports. The opening of the Ivorian economy is an opportunity for Burkina Faso, a neighboring landlocked country. Thus, on a global scale, Côte d'Ivoire represents Burkina Faso's privileged partner in the sub-region. Table 1 presents the ten (10) main trading partners in 2018.

⁷<https://www.lebabi.net/actualite/entre-le-burkina-et-la-cote-d-ivoire-un-cordon-ombilical-59898lebabi.net/actualite/entre-le-burkina-et-la-cot>

Table 1: Geographical structure of trade from Côte d'Ivoire and Burkina Faso in 2018

Côte d'Ivoire					Burkina Faso			
Rank	Principal clients	% exports	Main suppliers	% Imports	Principal clients	% exports	Main suppliers	% Imports
1 ^{er}	Netherlands	11,4	China	15,0	Swiss	52,7	China	12,6
2 ^{ème}	USA	9,1	Nigeria	12,3	India	15,4	Ivory coast	11,5
3 ^{ème}	Vietnam	6,8	France	10,3	Singapore	7,7	France	7,2
4 ^{ème}	Germany	6,4	India	4,5	Ivory Coast	6,3	USA	5,7
5 ^{ème}	France	5,4	Netherlands	3,6	France	4,2	Russia	5,5
6 ^{ème}	Burkina Faso	5,2	USA	3,4	Ghana	3,1	India	5,5
7 ^{ème}	Mali	4,8	Spain	3,0	Togo	1,9	Ghana	4,6
8 ^{ème}	India	4,4	Germany	3,0	Vietnam	1,3	South Korea	4,3
9 ^{ème}	Malaysia	3,9	South Korea	2,7	England	1,0	Germany	3,4
10 ^{ème}	Belgium	3,7	Colombia	2,4	Netherlands	0,9	Netherlands	3,2

Source: Comtrade, 2018

3.2.4. Trade flows from Cote d'Ivoire with Burkina Faso

Trade between Côte d'Ivoire and Burkina Faso has experienced significant upward momentum since the signing of the FCT, especially in terms of exports. These exports increased from 155 billion AFC in 2006 to 210.25 billion AFC in 2010, then to 359.20 billion AFC in 2014. This increase in the value of exports will be maintained but will experience a slight decrease in 2017 (312.98 AFC). This increase in exports is partly dependent on agricultural products. But the vast majority of exported products (coffee, cocoa, cotton, gold, etc.) are destined for European markets. Côte d'Ivoire sells more than it buys with Burkina Faso. As for Burkina Faso, it buys more than it sells to Côte d'Ivoire and its products pass through the port of Abidjan. In addition, Côte d'Ivoire exports electricity to Burkina Faso, the national production of which is in deficit. It also supplies hydrocarbons for electricity and transport in Burkina Faso. However, import values remained low relative to exports throughout the period (Figure 3).

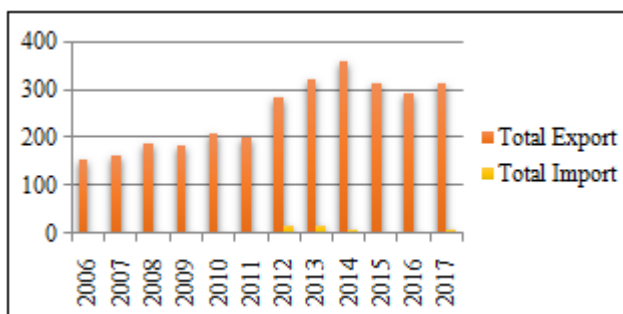


Figure 3: Trade flows of Côte d'Ivoire with Burkina Faso (million USD)

Source: World Bank, 2019, constructed by the author

3.2.5. Growth rate of the gross domestic product of Cote d'Ivoire and Burkina Faso

Until 2011, Burkina Faso had a higher GDP than that of Côte d'Ivoire. This situation is explained by the military-political crisis experienced by Côte d'Ivoire and which has weakened its economy. From 2012, Côte d'Ivoire emerged from the post-electoral crisis to impose its leadership until 2018. Côte d'Ivoire's real GDP then reached 7.43 in 2018 against 7.7 in 2017. Indeed, this good performance is supported by external demand for agricultural and oil products and by strong domestic demand for major investment projects and household consumption. For its part, Burkina Faso recorded an annual average GDP of 5.64 over the period 2006-2018. The highest value (7.29) is recorded in 2008, and in 2009 the lowest value (2.96) (Figure 4).

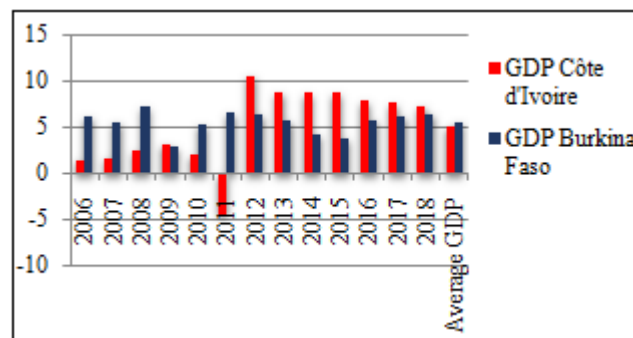


Figure 4: Evolution of the growth rate in Côte d'Ivoire and Burkina Faso (%GDP)

Source: World Bank, World Perspective, constructed by the author

3.2.6. Evolution of inflation in Cote d'Ivoire and Burkina Faso

In Côte d'Ivoire, inflation averaged 4.3 over the entire 2006-2018 period and 1.87 in Burkina Faso. The highest value in Ivory Coast is recorded in 2008 (6.31) and the lowest value in 2018 (0.42). Inflation is down from 2016 (0.72) to 2018 (0.42). In Burkina Faso, the highest value is recorded in 2008 (10.66) and the lowest value is recorded in 2010 (-0.76). In general, the inflation rate is down until 2018 in both countries. But it remains significant in Côte d'Ivoire (0.42) in 2018 (Figure 5).

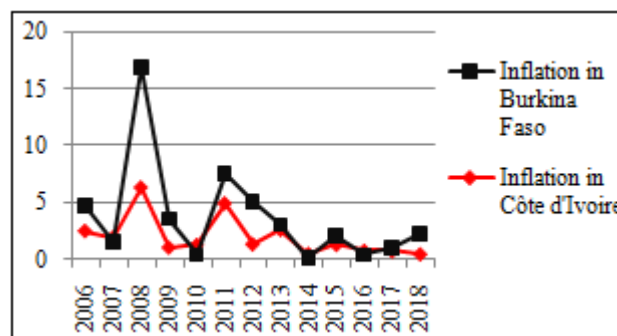


Figure 5: Evolution of inflation in Côte d'Ivoire and Burkina Faso

Source: World Bank, World Perspective, constructed by the author

3.3. Econometric analysis

3.3.1. Model presentation

This study favors the gravity model, which remains a simple and effective tool that often achieves good results in the

context of the prediction of bilateral trade volumes⁸. Although it had enjoyed great empirical success since the 1960s [8], the gravity model suffered for many years, from an economic point of view, from a lack of theoretical foundations. This situation would explain the succession of multiple forms of models in the literature ([9]; [10]; [11]; [12]). More recent work has allowed the gravity model to move from an absence of foundations to an insufficiency of theoretical origin [13]. Despite the persistence of debates, it is now recognized that the theoretical foundations of the gravity model are justified by microeconomic considerations ([14]; [15]; [16]), international trade theories ([17]; [18]; [19]) and finally the new economic geography ([20]; [21]). For example [22] had derived gravitational equations for differentiated products based implicitly on structural Ricardian, Heckscher-Ohlin and increasing returns to scale models. In order to understand the determinants of intra-African trade, [23] used the traditional gravity model, trying to include some African regional groupings in its sample. He then insists on the impact of monetary unions on regional trade flows. The present model that we evoke in this study is in line with the work of [24]. It consists of gradually integrating the binary variables that can influence trade flows between countries (the common language, the colonial link, membership of a free trade zone, the common currency, contiguity, etc.). The work will present three blocks of variables, namely the block of traditional variables (GDP, Dist), the block of dummy control variables (Langcom, Enclav, Frontcom) and the dummy variable of regional integration (UEMOA) which constitutes our variable of interest. Multilateral resistance variables were not introduced given the fact that African economies are generally poorly integrated and the vast majority of trade is with Western partners. Finally, the price indices of West African economies, which represent multilateral resistance indicators, depend more on their economic situation than on the degree of openness. Moreover, exports from countries south of the Sahara are based on raw materials with little diversification. The products are intended for European companies. The above elements could therefore explain the variation in prices between economies.

3.3.2. Model specification

The authors used the gravity model to determine trade flows between two countries. And the authors came to the fact that the determinants of bilateral trade are distance, income levels and country size [25]. Therefore, for any pair of countries (i; j), the simplest and most used expression of the gravity equation is written as follows:

$$com_{ij} = A * dist_{ij}^{\beta_1} (y_i * y_j)^{\beta_2} \text{ where:}$$

- Com_{ij} represents the value of bilateral trade between country i and country j;
- Y_i and Y_j represent respectively the Gross Domestic Products (GDP) of countries i and j;
- $Dist_{ij}$ measures the distance between country i and country j.

⁸Among others, we have the monitoring of macroeconomic indicators such as growth and inflation (Winters, 1993) and trade flows and revealed comparative advantages (RCA) (Yeats, 1997; Frankel, 1997), etc.

- A , β_1 and β_2 are coefficients; β_1 is assumed to be negative while β_2 is assumed to be positive.

3.3.3. Econometric form of model

We focused on trade in goods because of the unavailability of data on trade in services for all pairs of countries. Trade is mainly carried out with Western partners. The presence of too many explanatory variables in a model can be sources of multi-collinearity. However, the presence of collinearity in a model can generate very high estimated regression coefficients or even weak signs of the coefficients, which could make our results erroneous. At least two (2) methods can allow us to identify the presence of collinearity in the model. One is based on two indicators: the global conditioning index (ICG) and the variable breakdown table. The other concerns the VIF (Variance Inflation Factors) criterion. The first method, the ICG, makes it possible to detect the presence of collinearity through its values. When the ICG value exceeds the threshold of 100, collinearity is very strong, and when it is between 30 and 100, collinearity is moderate. We can then assume an absence of collinearity below the threshold of 30. Since these thresholds are indicative, the variance decomposition table makes it possible to precisely detect the source variables of the problem of collinearity. Concerning the VIF criterion, it consists in regressing each of the explanatory variables, on the other variables. Then, the calculation of $\left[\frac{1}{1-R^2} \right]$ makes it possible to obtain the VIF statistic for each of the variables. There is collinearity for a VIF index greater than 10 or if the average of the indices is greater than 2. Taking these criteria and indices into account makes it possible to produce estimators that are robust to heteroscedasticity.

The VIF criterion (1.19) associated with the mean of the explanatory variables of our model is less than 2. Consequently, the model does not present collinearity. The gravity equation is:

$$(1) \ln(\text{Export}_{ij}) = \beta_0 + \beta_1 \ln GDP_i + \beta_2 \ln GDP_j + \beta_5 \ln Dist_{ij} + \beta_6 \text{Combord}_{ij} + \beta_8 \text{Landlock}_{ij} + \beta_{10} \text{ComLang}_{ij} + \beta_{11} \text{WAEMU}_{ij} + \varepsilon_{ij}$$

$\ln(\text{Export}_{ij})$ indicates the total exports of country i to country j;

- GDP_i and GDP_j are respectively the gross domestic product (GDP) of countries i and j;

- $Dist_{ij}$ is the relative distance between the capitals of the partner countries;

- $Combord_{ij}$ is the common border dummy variable which takes the value 1 if the partners have a common border and 0 otherwise;

- $Landlock_{ij}$ designates the landlocked variable which is worth 1 if one of the two partners do not have a seafont;

- $ComLang_{ij}$ represents the common colonizer dummy variable, which is 1 if the partners have the same colonizer and 0 otherwise;

- $WAEMU_{ij}$ designates the dummy variable, which is worth 1 if the partners belong to WAEMU and 0 otherwise;

- ε_{ij} is the error term.

3.3.4. Model variables and expected signs of the coefficients

The use of the gravity model in international trade reveals that the volume of trade depends on the potentialities of each country to trade and the mutual attraction to trade. It is therefore assumed that the potentialities are functions of the level of wealth of each country, measured by the GDP. This shows that a country that has significant wealth is willing to trade. And the coefficient associated with this variable should therefore be significant and positive. In addition to GDP, population significantly increases bilateral trade. Distance is a proxy for transaction costs. It reduces trade because the volume of trade moves negatively with transaction costs. The coefficient associated with this variable should be significantly negative. Having a common border would be an advantage for trade between partner countries. And the coefficient associated with the boundary variable should be significant and positive. Landlocked conditions do not promote trade. This variable has a negative influence on trade and maritime openness increases trade. The coefficient associated with the sea opening variable should be significant and positive. Sharing a common language promotes bilateral exchanges. The common language variable should therefore have a positive effect on bilateral trade. We introduced the dichotomous variable WAEMU in the model in order to capture the discriminatory effect of belonging to an integration zone with the impact of a trade policy such as the reduction of customs tariffs between member countries. If there is trade creation, the coefficient associated with this variable will then be positive and significant.

3.3.5. Gravity model estimation strategy

Empirical work on the gravity model uses three estimators ([26]; [27]). These include the ordinary least squares (OLS) estimator, the Tobit estimator, and the Poisson (Poisson) Pseudo-Maximum Likelihood estimator. The choice of estimation methods to estimate the determinants of bilateral trade and the impact of economic integration in Africa is based on the methodological review of the works listed in the literature and the need to resolve certain econometric difficulties. For example, panel or instantaneous Least Ordinary Squares (OLS) techniques are inappropriate in the presence of a large number of zero bilateral trade. To circumvent this difficulty, the literature consulted proposes an increase in the values of exports or imports of a relatively low value ([28]; [29]; [30]). We can also do a Tobit regression to control the censoring of the transformed variable ([31] and [32]). But this workaround can be inefficient if the distribution of zero trade in bilateral trade is not random [33]. In order to correct the bias linked to the presence of zero trade, [34] propose a two-step approach to the Heckman method. Some authors like [35] find Heckman's method more appropriate for cross-sectional data. For them, its use in panel requires more research. This is why [36] propose the use of the Poisson Pseudo Maximum Likelihood Estimator (PPML). This estimation method is robust to heteroscedasticity and is appropriate in cases where the proportion of zero trade is high. The method we favor is the random effects Tobit estimator. To achieve this, we choose to estimate the panel-augmented gravity model after adding to each bilateral trade value the arbitrary value 10 so that the trade value considered is: $\ln(\text{Com} + 10)$. Then, we apply a robustness test of the results with the pseudo maximum likelihood estimators of Poisson (PPML), "between" (Random Effects) and the Ordinary Least Squares (OLS) in homogeneous panel (Pooled). We discarded the fixed-effect estimator because of the invariability of several variables over time.

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3.3.6. Econometric estimate

The gravity equation looks like this:

$$(2) \ln(\text{Export}_{ij}) = -13,721 + 0,652 \ln \text{GDP}_i + 0,557 \ln \text{GDP}_j - 0,762 \ln \text{Dist}_{ij} + 0,208 \text{WAEMU}_{ij} + 0,180 \text{ComLang}_{ij} + 1,817 \text{Combord}_{ij} - 0,741 \text{Landlock}_{ij}$$

The gravity model is globally significant and acceptable. The Fisher statistic is significant at the 1% level and the adjustment is also acceptable for estimation in a panel model. Using the Tobit method with random effects, the estimation confirms the presence of two-sided effects. Our dependent variable is represented in the model by the exports of African countries. The estimation of the model makes it possible to identify three (3) blocks of variables: the block of traditional variables (GDP, Dist), the block of control dummy variables (Landlock, Combord, Comlang) and finally, the block of the variable dummy of integration (WAEMU), the variable WAEMU being our variable of interest. The coefficients of the traditional variables present the expected signs according to the existing literature. The GDP of the exporting country contributes positively and significantly to 1% of its bilateral trade. GDP growth of 1% leads to an increase of 0.65 units of trade in the exporting country. This growth then leads to additional purchasing power. The additional purchasing power favors imports, increases the means of production and with a multiplier effect on production and the volume of exports. Consequently, the total trade of the country increases. This analysis is same for the importing country.

Distance reduces the volume of bilateral trade. This result implies that all other things being equal, increasing the distance of one unit between two countries reduces their bilateral trade by 0.76 units. These results mirror those obtained in previous studies ([37]; [38]; [39]; [40]).

As for the dummy control variables, we have coefficients with expected and significant signs. Partners who have a common language trade 0.18 times more with each other than with others. And partner countries that share a common border trade 1.81 times more with each other than with others. On the other hand, the isolation of an economy does not promote trade. It reduces trade by 0.74 units. The results of the model show that membership of a trade agreement and a single currency area exerts a determining influence on trade between member economies. Finally, the coefficient associated with the qualitative variable representing intra-WAEMU trade has a positive sign and is not statistically significant over the study period. This shows that membership of WAEMU actually promotes the Union's intra-African trade. These results therefore confirm the idea that "the harmonization of trade policies increases trade in WAEMU" (Table 2).

Table 2: Econometric results (Tobit random effects model)

Variables indépendantes	2004-2020	
	Coefficients	T-student
Constante	-13, 721	-14, 71*
Ln (GDP _i)	0, 652	22, 11*
Ln (GDP _j)	0, 557	15, 54*
Ln (Dist _{ij})	- 0, 762	-5, 67*
WAEMU _{ij}	0, 208	1, 02
Combord _{ij}	0, 817	3, 62*
Landlock _{ij}	- 0, 741	-3, 43*
ComLang _{ij}	0, 180	2, 26
Numbers of years	17	
Numbers of country pairs	1650	
Numbers of observations	28019	
Prob > chi2	0, 0000	

Source: Constructed by the authors from Stata 2015

Note: * significant coefficients at the 1% level We present the results obtained from the Tobit technique with random effects, using exports as the explained variable.

4. Discussion

These results show that the variable WAEMU, regional integration, positively affects intra-sub-regional trade. However, its effect remains weak and not statistically significant. This means that the economies within the WAEMU trade less with each other than with other countries, namely the European Union. This fact is therefore in line with the results obtained by [41] which do not observe any significant impact on trade between member economies. The intuitive logic would be that the variable WAEMU positively and significantly influences trade between its member countries. Indeed, WAEMU, besides being a monetary union, is governed by trade agreements between member countries. Contrary to [42], [43] and [44] showed a positive and significant effect of WAEMU. Carrere has shown that the countries of the Union trade three times with each other than with other countries. [45] found a multiplier of around 2.5. These mixed results therefore raise the question of the analysis of the effects of monetary integration. However, this question is linked to the problem of the effects of creating or diverting trade.

5. Conclusion

This article has shown that the FCT has historical, legal and political foundations. It is a strategic, effective and innovative tool for cooperation⁹ that acts as a catalyst for bilateral Ivorian-Burkinabe relations and helps to develop trade between Côte d'Ivoire and Burkina Faso. Because the FCT made it possible to restore the conflicting relations which had slowed down the dynamics of commercial exchanges between the two States. The stylized facts show that the exchanges of the countries of the Union are accelerating with the main partners of the European Union.

⁹An element of the speech delivered on July 29, 2019, by Mr. Amadou Gon Coulibaly during the 8th meeting of Heads of State, Government and experts within the framework of the TAC (Amadou Gon Coulibaly, born February 10, 1959 in Abidjan and died on July 8, 2020, is an Ivorian statesman. He was Prime Minister from January 10, 2017 until his death).

The result of the estimates of the gravity model according to the "Tobit random effects" technique shows, in agreement with economic theory and the literature, that the different coefficients associated with the traditional variables and the dummy control variables are globally significant and have the expected signs. This is therefore an important indicator of the positive effect of economic reforms on intra-African trade in the Union on the one hand, and of the FCT on Ivorian-Burkinabe trade on the other. In addition, these results could constitute economic factors that could motivate the commitment of the States in the effective application of the reform policies adopted within the framework of the WAEMU and the FCT. This study adds that the membership of the States in the WAEMU space, the sharing of a single currency and the existence of community measures cannot remain the only explanatory factors of the dynamics of bilateral trade between Côte d'Ivoire and the Burkina Faso. The results therefore confirm the initial hypothesis that regional integration impacts the dynamics of bilateral trade. Hence the importance of removing tariff, non-tariff and conflicting barriers within community spaces.

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