

The Effects of the Economic Partnership Agreements on the ACR Countries' Foreign Trade

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Abstract *The aim of this paper is to measure the impact of the 2008 Economic Partnership Agreements between the European Union and the countries of Africa, the Caribbean and the Pacific on the bilateral creation of trade. To achieve this goal, the gravity model seems to be the most suitable. It has been associated with this model the econometric tool that is the panel data estimation technique. The databases used are from secondary sources and come from the United Nations Conference on Trade and Development (UNCTAD) and the Center for Prospective Studies and International Information (CEPII). The analysis period is from 2000 to 2016. The results show that the Economic Partnership Agreement has a positive and significant effect on trade between the two economic blocks even after controlling the variable of interest by other variables.*

Keywords: Economic Partnership, Agreements, Countries' Foreign Trade

JEL Classification: F13, F 15

1. Introduction

Free trade agreements play a very important role in the development of international trade (Smith, 1776; Ricardo, 1817). In effect, any country needs to exchange with the rest of the world given their factorial and material differential. However, this exchange is often confronted with barriers erected between states within the context of protectionism, which limits the volume of exchanges between economies. On the contrary, the intensification of commercial fluxes comes with an economic integration between regions

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and states., an integration that supposes the abolition of some customs due to products and services exchanged. The point in this economic literature is to reveal the concept of free movement of goods and services, people, etc. From this perspective, the trade gets its justification from the need for exchanging and moves beyond this need by providing the major actors with mutually advantageous money saving.

The Economic partnership agreements signed between the countries of Africa, the Caribbean and the Pacific (ACP), and the European Union (EU) are numerous and of various sorts. The aim of this paper is not to do a review of literature on those agreements but, rather, its ambitions to assess the impact of the last agreements—the 2008 economic partnership—signed by the countries of ACP and EU on the bilateral creation of trade between the two blocks of the region. The continuation of this work is structured as follows: Section 2 will focus upon the debate concerning the foundations of the creation of international trade. Section 3 will describe the functioning model, define the variables used in the empirical analysis and announce the sources of data. The results of estimations are reported in section 4. The last section is a conclusion to this paper.

2. Review of literature

The economic partnership agreement in force since 2008 marks a new era in the commercial relationships between the European Union and the countries of Africa, the Caribbean, and the Pacific. Those agreements which enable the reinforcement of regional integration through the creation of a free trade zone present a real interest, from theoretical as well as empirical perspectives (Trotignon, 2007).

From a theoretical viewpoint, the review of literature on the Economic Partnership Agreements shows two opposed main points of view. The first one supports the Economic Partnership Agreements and is based on the hypotheses of growth. The second viewpoint maintains that the EPA has no positive effects on African countries' foreign trade. This last viewpoint rests on the theory of the world system and that of dependence.

As for the optimistic viewpoint, its analysis rests on the different hypotheses of growth (Ahlfeld et al., 2005) to justify the EPA. The first among the hypotheses one can consider is the one that holds that the EPA favors a trade opening which has a positive incidence on economic growth. In effect, the trade opening is important for economic growth in that it helps develop the home competition, attract investments, facilitate technologies diffusion, and favor the learning process and economies of scale as well.

Two other hypotheses are equally to be mentioned to justify the EPAs. It is about institutions and regional integration which will be reinforced thanks to the EPA while impacting positively the economic growth. In effect, an open trade system has a positive incidence on the institutional development of the ACP countries, henceforth the quality improvement of institutions is considered a precondition for benefiting

from the EPA (Borrmann and Busse, 2006). The EPAs mean a reform policy ensuring the putting in place of best regulation in the fields of trade, investments, which will contribute to the quality improvement of institutions.

The EPAs reinforce regional integration and consequently the economic growth in the ACP countries. The regional integration enables a fall in the costs of transactions and improves the attractiveness of their markets thanks to the economies of scale they generate, for example, or to the participation in large infrastructures projects. The consolidation of the regional integration in the ACP countries should favor the EPAs with European Union and promote intra- and extra- regional trade.

As for the second viewpoint, the theory of the world system stipulates that countries from the south cannot be transformed because of the unbalanced relationships at the level of the exchanges (Wallerstein, 1975). International trade induced by the division of labor gives rise to an international structure of nation-states, with unbalanced relationships, which ensures an accelerated accumulation process in the countries from the center. Those unbalanced economic relationships reinforce the backwardness cycle in peripheral countries. This argument highlights the reason why African economies are equally capitalist because the world system is capitalist. The economic and political concerns of the countries from the south are perceived as resulting from structural contradictions of the capitalist economy.

Following the same logic, the theory of dependence suggests that the socio-economic foundations of society are indispensable in the understanding of its process of development. The argument maintained here is that most of the participation of the societies in the Third-World in the worldwide economy is manifested in the disintegration of their economies by increasing the gap between the rich and the poor within the international system because of structural differences. Through international trade, foreign direct investments, external debt, and aid, the industrialized societies get in contact with the Third-World societies. This collaboration will lead, not only to an economic dependence vis-à-vis industrialized countries but also to a transfer of resources (both human and material). The consequence of this is the appearance of distortions in the process of development (Akpotor, 2000; Odion, Agbebaku and Kadiri, 2013).

From an empirical perspective, though a great deal of works about the effects of creation and traffic perversion date back to Aitken (1973), it is only during the 2000s decade that interest is manifested within the context of EPAs. Two approaches are commonly used to quantify the effects of EPAs on trade fluxes, notably the gravity model and the General and Partial Calculable balance models. Wilson et al. (2003; 2005) resorted to the first approach and to the Ordinary Lesser Double Square (OLDS) estimator to assess the effects of four trade facilitation indicators. They consider that in all regressions, the four indicators are significant. Soloaga et al., too, resorted to the gravity model and the same type of data as Wilson et al. to assess the effects of the EPAs. Rather than using the OLDS, those authors employ a negative binomial regression. To the four variables, they added four customs efficiency indicators. The results prove a positive and significant effect of customs efficiency for the exporting countries. Conversely, this effect is importantly negative for the importing countries.

Resorting to the gravity model, Djankov et al. hold that a one-day deadline extension in an exporting country reduces by 1% the volume of exportations. From Heckman's selection process, Nordas et al. (2006) sought to discover through which mechanisms, deadlines, in terms of time-limit, affect trade fluxes and trade occurrence probability between two economies as well. Analyzing exportations from 192 countries to Australia, Japan, and the United Kingdom, the authors discover that the time required for exportations in most cases impacts negatively the probability of exporting and the volume to be exported. Person (2008) discovers through the gravity model that a one-day deadline reduction in an exporting country raises exportations by 1% while the same reduction in an importing country raises importations by 0.5%.

OECD (2003), Francois et al. (2005), Devereux and Fontagné (2006), Hertel and Keeney and Denis (2006) alongside, who resorted to the General Calculable Balance (GCB) model discover importantly significant effects of trade facilities on trade flux. Moreover, beneficial effects are important for developing countries. From the Partially Calculable Balance Model, Fontagné, Labode, and Mitaritonna (2008) conclude a trade increase of 10% because of the EPAs while Lwafyo Thindwa (2010) succeeds in showing an importantly significant effect in trade creation in the case of Malawi.

The reviewing of theoretical and empirical literature suggests a few comments. There is a lack of uniformity of viewpoints, from theoretical as well as empirical perspectives, since some focus on possible positive effects inherent in the implementation of EPAs, while others get the means to establish an unbalanced relationship or a dependent relationship between countries in the north and those in the south. The different empirical analyses cannot allow settling the theoretical debate insofar as EPAs are not linear. They depend on several factors among which the poorly varied nature (or not) of the economic basis, the Direct Foreign Investments' attractiveness, the governance quality, etc. Henceforth, the central question is to find out if the EPAs contribute to the creation of trade.

This issue is important to be examined among the ACP signatory countries that mostly have poorly varied economies and are very dependent on primary resources. Furthermore, those countries have difficulties in reforming their institutions and have a governance quality that ranks them among the lowest ones (cf Kaufman et al., 2012).

3. Foreign trade methodology

Prior to the presentation of data analysis, we present a sample of the method chosen for estimation.

3.1. International trade creation modeling

Despite the poor quality of the theoretical foundations which marred the gravity model during the 1970s, this model has been largely used, above all, to quantify the effects of trade agreements like in the case we are here interested in, in the determination of the effects of trade creation and traffic diversion. However,

authors such as Anderson (1979), Bergstrand (195; 1989), Helpman and Krugman (1985) and Deardoff (1998) supplied sound theoretical foundations in order to give the model a large range.

This present endeavour is based on works by Anderson and Van Wincoop (2003) who diverted a gravity equation under some hypotheses and introduced to the model a variable associated with the terms of multilateral resistance. It is newly introduced in the EPAs variable model to see the effects of the ACP-EU bilateral trade. The formalization of this relationship is presented as follows:

$$Importation_{ij} = a_0 + a_1 APE + e^{\pi X + \varepsilon_{ij}} \quad (1)$$

This equation can be rewritten as follows;

$$M_{ij} = e^{\alpha_0} (APE)^{\alpha_1} e^{\pi X} e^{\varepsilon_{ij}} \quad (2)$$

Where M_{ij} stands for importations (exportations respectively) of the country i (in this case, the ACP countries) from the country j (EU countries);

APE , for the interest variable which takes the value 1 in case the country has signed the agreement and zero if not;

X , for the overall of variables, generally used in the literature of the gravity model

α_0 , α_1 and π , for respectively, the constant, the interest variable parameter and the matrix of the control variables parameters;

ε_{ij} , for errors terms, that is, the other variables that can explain the creation of bilateral trade and that are not taken into consideration in the model.

The logarithmic form of this equation enables the interpretation of the coefficients of each explanatory variable in terms of elasticity;

$$\log(M_{ij}) = \alpha_0 + \alpha_1 APE + \pi \log(X) + \varepsilon_{ij}$$

The effects of expected agreements vary depending on whether the country in question is from the European Union or Africa. Anderson and Van Wincoop (2003), in their search to control the importance of multilateral resistance, introduced specific effects to the importing countries and the exporting ones as well. However, available data on the costs of transportation, specific to each country and varying differently, according to partners, is not relevant to include, in the context of this paper, specific effects for each country. In addition, there is a cause for considering specific effects for each region. In order to enable us to estimate the specific effects caused by transaction costs in each EPA group and in UE, an extension of the model is done by variables interactions. In this order, the variables which capture the transaction costs both at exportation and importation are multiplied by silent specific variables of exporters and importers.

3.2. Data and variables

This paper is based on the premise that the signature of the 2008 economic partnership agreement by some ACP countries affects positively the flux of International trade of these very countries. Put differently, the Economic Partnership Agreement defined as the abolition of customs due to some categories of products is positively correlated with the development of international trade between ACP-EU countries. The United Nations Conference on Trade and Development (UNCTAD) supplies a database that gives information about the fluxes of International trade, that is, importations and exportations of the countries of Africa, the Caribbean and the Pacific (ACP). Data relating to the EPAs signature by some ACP countries are collected thanks to the different reports consecrated to the EPAs. The Centre for the Prospective Studies and International Information (CPSII) supplies data relating to the surface area of the APC countries, the distance between capital cities of these countries and finally, their respective populations. The sample consists of 42 ACP countries that signed the EPAs at different moments. The main reason presiding over the choice of these 42 countries is that most countries signed them before 2016. For instance, the fifteen (15) countries from the Caribbean signed the full agreement in 2009, the two (2) from the Pacific, in 2014. The countries from Africa, although consisting of several blocks, only a few among them were part of the signatories. Most of the Western African countries, except Nigeria, the Gambia, and Mauritania signed the Agreement in 2014. In Central Africa, only Cameroon signed the agreement in 2014. Such Eastern and Southern countries as Madagascar, Mauritius, Seychelles and Zimbabwe signed the temporary agreement in 2007, the full agreement being signed later but its application was made possible only in 2012. The other countries are not included in the model either because the agreement was signed later on and that their taking into consideration within the model could not give more information, or they are not considered for the simple fact that those countries did not sign the EU-ACP economic partnership agreement. The study period is from 2000 to 2016. The choice of this period can be justified by the simple need of symmetrizing the date of the first signatories of the EPAs which took place in 2008.

The variables used to consist of endogen and exogenous variables. The endogen variables are the international trade fluxes between ACP-EU countries, that is, the exportations of the ACP countries and thus, the importations of EU countries, the importations from ACP countries being considered as the exportations of the EU countries. The exogenous variables consist of the interest variable, that is, an indicator of the EPA and control variables. The control variable is the area surface of each country taken into consideration, the distance between capital cities and the populations of those countries. They enable us to control the effect of the EPA-interest variable.

4. Empirical analysis of results

The results are presented following two steps. The preliminary results are based on statistical tests in order to detect possible biases which can be prejudicial to the analysis (4.1), and, subsequently, the

examination of the relation of cause and effect as well as the firmness tests of this relation are reported in table 4.2.

4.1. Reliability of analysis tests

In tables (2) and (3) below, different tests allow us to specify the model and detect possible problems likely to bias the analysis.

The Breush-Pagan's test realized in table (2) shows that the required econometric estimation technique is the model with unpredictable effect. However, the implementation of other tests (heterosedasticity, autocorrelation, coefficients stability tests), it revealed that the model comprises an autocorrelation and heterosedasticity bias (statistics in the second, third, fourth and fifth columns of table (2), respectively). Such problems, when they are not solved, can dissimulate the reliability of sought effect.

Table 2: Specification, stability, heterosedasticity and autocorrelation test

Variables	Breusch-Pagan's heterosedaticity test	Wooldrig's Errors correlation test	Baltagi-Wu and Durbin Watson's errors correlation		Show's test for coefficient stability
			Durbin Watson	Baltagi-Wu LBI	
LExport(sqrt(var))	3320.99	72.208	0.50028179 ^(a)	0.7833766 ^(a)	
E(sqrt(var))	(0.0000)	(0.0000)			
	1.706243				
	0.2717617				
	0.6906456				

(a) These two statistics are to be compared with their tabulated value

(Source: Author, from UNCTAD databases and CPSII and STRATA 13 software)

Other tests of unit root realized in table (3) indicate that the data analyzed are not statuary and are subjected to a fallacious regression. Tests upon the variable population (p-value corresponding to the population is 0.3734 for the increased Dickey-Fuller test and Phillips-Peron test, respectively) show that the variable is not stationary in terms of level but on these delayed values.

Table 3: Unit root test on the panel databases

Variables		test de Im, Pesaran et Shin (IPS)	test de ADF- Fisher Chi- Square	test de PP- Fisher Chi- Square
LnExportation	Niveau		117.4535	117.4535
			(0.0094)	(0.0094)
	Valeurs retardées	-4.2895	121.5821	121.5821
		(0.0000)	(0.0046)	(0.0046)
LnImportation			136.5082	136.5082
			(0.0003)	(0.0003)
	Valeurs retardées	-5.0546	136.1271	136.1271
		(0.0000)	(0.0003)	(0.0003)
LnPopulation	Niveau		87.5681	87.5681
			(0.3734)	(0.3734)
	Valeurs retardées	-7.7520	131.7021	131.7021
		(0.0006)	(0.0007)	(0.0007)

Source : Author, from UNCTAD databases and CPSII and STRATA 13 software.

The Im, Pesaran and Shin (IPS) test confirms this non-stationarity in terms of level and concludes that the General Lesser Square Estimator applied to the delayed values is reliable and enables us to get parameters that are free from all bias.

4.2. Results Interpretation

Column (1) of table (3) exposes a regression of the EPA and the fluxes of exportations of ACP countries. It sets up a positive and significant relationship between the EPAs and the exportations, which means that the signature by some APC countries has a significant and positive effect on the exportation of these signatory countries *ceteris paribus*.

Table 3: Relation between ACP countries' exportations, the Economic Partnership agreement and some control variables

Variables	(1)	(2)	(3)	(4)
APE	0.4949549 *** (0.0633537)	0.4978719 *** (0.0625873)	0.5002487 *** (0.0625153)	0.1882121 ** (0.0828395)
LnDistance		0.1602598 *** (0.0555871)	0.1315386 ** (0.0628068)	0.2354942 ** (0.1194247)
LnSurface area			0.4058635 *** (0.0680571)	-1.399389 *** (0.3828048)
LnPopulation				2.745401 *** (0.4844825)
Constant	13.13608 ***	11.95025 ***	8.037688 ***	5.120986 ***

	(0.2778489)	(0.5534566)	(0.8157982)	(1.165719)
Observation	558	558	558	558
R ² -ajusted				
Within	0.1885	0.1901	0.1901	0.6228
Between	0.0407	0.0006	0.4358	0.3058
Overall	0.0035	0.0117	0.4108	0.3033

Note: The figures between brackets show the classical corrected gaps of the heterosedasticity, errors autocorrelation and the unit root as well. ***significant by 1% ; **significant by 5%.

(Source: Author, from UNCTAD data and CPSII and Stata 13 software)

Column (1) of table (4) exposes the regression of this very economic agreement and the flux of the ACP countries' importations. It establishes that the signing of the EPA has a positive and significant effect on exportations in the ACP countries. The signing of the EPA by some CP countries has a significant and positive effect on the exportation of these signatory countries *ceteris paribus*.

Table 4: Relationship between ACP countries' importations, Economic Partnership Agreement and some control variables

Variables	(1)	(2)	(3)	(4)
APE	0.5259187 *** (0.050079)	0.5249025*** (0.046422)	0.5272842 *** (0.050155)	0.2548471*** (0.0747485)
LnDistance		-0.059249 (0.063857)	-0.0660773 (0.062029)	0.0344613 (0.1579295)
LnSurface area			0.2153747 *** (0.0493515)	-1.367381*** (0.3213361)
LnPopulation				2.406662*** (0.4013177)
Constant	13.94319 *** (0.1858753)	14.38158*** (0.5139978)	12.2428*** (0.5828629)	9.618543*** (1.211051)
Observation	558	558	558	558
R ² -ajusted				
Within	0.2405	0.2413	0.2413	0.6890
Between	0.0113	0.0120	0.2500	0.3322
Overall	0.0229	0.0193	0.2458	0.3227

Note: The figures between brackets show the classical corrected gaps of the heterosedasticity, errors autocorrelation and the unit root as well. ***significant by1%.

(Source : Author, à partir des données UNCTAD and CPSII and Stata 13 software)

From an analytical perspective, the signature of the EPAs leads to the abolition of customs due on some goods and favours the creation of international trade. This hypothesis proves sound by the fact that the EPAs have a positive and significant effect both on exportations and importations. When we successively consider such control variables as the distance between capital cities (column (3)), the surface area of those countries (column (4)) and their respective populations (column (5)), we get to discover that the Economic partnership agreement remains. This confirms, thus, that our hypothesis according to which the signature of the EPAs between the countries of Africa, the Caribbean and the Pacific (ACP) and the European Union has a positive and significant effect on the creation of trade in the ACP and EU areas.

In effect, the abolition of some customs due to some goods and services at importation and exportation between ACP countries and EU spurs the movements of exchanges between these blocks of the region.

5. Conclusion

This article uses the gravity model in association with the econometric tool that is the panel data estimation technique in order to determine the influence of the 2008 economic partnership agreement on the creation of bilateral trade. It is based on the premise according to which the bilateral liberalization of markets on some goods and services between ACP countries and the European Union supports the creation of trade between the two blocks. From a practical perspective, it is manifested in the fact that the economic partnership agreement permits the signatory countries to abolish customs due to some goods and services subjected to exchange. The results show that the signature of the 2008 EPAs stimulates the development of bilateral trade. This signature influences importations from ACP countries up to 0.5259187 and exportations up to 0.4949549.

6. References

- [1] Ahlfeld, S., Hemmer, H. R., Lorenz, A. (2005) «The EconomicGrowthDebate – Geography versus Institutions. Is There AnythingReally New? » Discussion Papers in DevelopmentEconomics 34 University of Gießen
- [2] Akpotor A. S. (2000), *TheoreticalFoundations of International Relations*, (2000), Benin City:CigodsonInt'lPress.
- [3] Anderson, James E. (1979), “A TheoreticalFoundation for the GravityEquation”, *AmericanEconomicReview*, Vol. 69, No. 1, pp. 106-116.
- [4] Anderson, James E. and Eric van Wincoop (2003), “GravitywithGravitas: A Solution to the Border Puzzle”, *American EconomicReview*, Vol. 93, No. 1, pp. 170-192.
- [5] Bergstrand, Jeffrey H (1985), “The GravityEquation in International Trade:SomeMicroeconomicFoundations and EmpiricalEvidence”, *Review of Economics and Statistics*, Vol. 67, No. 3, pp. 474-481.
- [6] Bergstrand, Jeffrey H. (1989), “The GeneralizedGravityEquation, MonopolisticCompetition, and the Factor-Proportions Theory in International Trade”, *Review of Economics and Statistics*, Vol. 71, No. 1, pp. 143-153.
- [7] Borrmann, A., Busse, M., (2006) ‘The institutional challenge of the ACP/EU EconomicPartnershipAgreements’ HWWI Research Paper. Available at: http://www.hwwi.org/uploads/tx_wilpubdb/HWWI_Research_Paper_2-3.pdf
- [8] Deardorff, Alan V. (1998), “Determinants of BilateralTrade:DoesGravityWork in a Neoclassical World”, in J. A. Frankel (ed.), *The Regionalization of the World Economy*. Chicago:University of Chicago Press, pp. 7-22.
- [9] Decreux, Yvan and Lionel Fontagné (2006), “A Quantitative Assessment of the Outcome of the Doha Development Agenda”, *CEPII Working Paper* No. 2006-10.

- [10] Dennis, Allen (2006), "The Impact of Regional Trade Agreements and Trade Facilitation in the Middle East North Africa Region", *World Bank Policy Research Working Paper* No. 3837
- [11] Djankov, S., Freund, C. and Cong S. Pham (2006) "Trading on Time", *World Bank Policy Research Working Paper* 3909
- [12] Francois, Joseph, Hans van Meijl and Frank van Tongeren (2005), "Trade Liberalization in the Doha Development Round", *Economic Policy*, Vol. 20, No. 42, pp. 349-391.
- [13] Helpman, Elhanan and Paul R. Krugman (1985), *Market Structure and Foreign Trade*, Cambridge, Mass.: MIT Press.
- [14] Hertel, Thomas W. and Roman Keeney (2006), "What is at Stake: The Relative Importance of Import Barriers, Export Subsidies, and Domestic Support", in Kym Anderson and Will Martin (eds.), *Agricultural Trade Reform & the Doha Development Agenda*, Washington D.C.: The World Bank and Hampshire and New York: Palgrave Macmillan, pp. 37-62.
- [15] Kaufmann, D., Kraay A. and Mastruzzi M. (2005). "Governance Matters IV: Governance Indicators for 1996-2004" *World Bank Policy Research Working Paper Series* No. 3630.
- [16] Lwafyo Thindwa, (2010), 'The EU-ACP Economic Partnership Agreements (EPA) for Malawi Trade Effects and Fiscal Impacts for Alternative Policy Options, University of Florida
- [17] Nordås H., Pinali E and Geloso Grosso M. (2006) 'Logistics and time as a trade barrier'. *OECD Trade Policy Working Paper* No. 35
- [18] OECD (2003), "Quantitative Assessment of the Benefits of Trade Facilitation", TD/TC/WP(2003)31/FINAL
- [19] Persson, Maria and Fredrik Wilhelmsson (2007), "Assessing the Effects of EU Trade Preferences for Developing Countries", in Yves Bourdet, Joakim Gullstrand and Karin Olofsdotter (eds.): *The European Union and Developing Countries: Trade, Aid and Growth in an Integrating World*. Cheltenham and Northampton: Edward Elgar, pp. 29-48.
- [20] Soloaga, Isidro, John S. Wilson and Alejandro Mejía (2006), "Moving Forward Faster: Trade Facilitation Reform and Mexican Competitiveness", *World Bank Policy Research Working Paper* No. 3953.
- [21] Wallerstein, Immanuel, (1975), "The Present State of the Debate on World Inequality," in his *World Inequality: Origins and Perspectives on the World System*, Montreal: Black Rose Books
- [22] Wilson, John S., Catherine L. Mann and Tsunehiro Otsuki (2003), "Trade Facilitation and Economic Development: A New Approach to Quantifying the Impact", *World Bank Economic Review*, Vol. 17, No. 3, pp. 367-389.
- [23] Wilson, John S., Catherine L. Mann and Tsunehiro Otsuki (2005), "Assessing the Benefits of Trade Facilitation: A Global Perspective", *World Economy*, Vol. 28, No. 6, pp. 841-71.

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