

Effects Of Trade Policies on External Trade Performances of Ecowas Countries (1996-2017)

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Effects of Trade Policies on External Trade Performances of ECOWAS Countries (1996-2017)

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Abstract

The Economic Community of West African States (ECOWAS), a regional economic community supported by the African Union, has adopted a common trade policy through the implementation of the Trade Liberalization Scheme (TLS) instituted in 1979. One of the essential steps of this TLS is the entry into force of the ECOWAS common external tariff on January 1, 2015, a necessary step for the integration of the countries of this Community into the African Continental Free Trade Area. The objective of the paper is to analyze the effects of trade policies on foreign trade performance of ECOWAS countries between 1996-2017. Unlike most studies on the subject, the paper uses a new continuous trade policy index captured by the implementation of the TLS to analyze the direct and indirect effects of trade policies on manufacturing exports and imports. Controlling for the endogeneity of the variables of interest, the findings indicate that the TLS implementation significantly contributes to the growth of imports but much more exports. These findings are robust to different estimation techniques. Furthermore, the analysis of the multiplicative interaction model reveals that the effects of TLS on manufacturing trade performance increase with financial development and the rate of cellular mobile subscriptions. These findings have implications for economic policies.

JEL code: C23, F1, L6

Keywords: Trade Policies, Trade Liberalization Scheme, Manufacturing Exports, Manufacturing Imports, ECOWAS, Panel

1 Introduction

Researchers (Campi and Dueñas, 2019; Yeo and Deng, 2019; He et al., 2020; Soon and Thompson, 2020; Sun et al., 2020), international organizations (Economic Commission for Africa, ECA; International Monetary Fund, IMF; World Bank, WB; World Trade Organization, WTO) and policy-makers have looked at the effects of trade policies on performances of foreign trade. In the field of international trade, trade policies are of two types: restrictive trade policy or protectionism and liberal trade policy or liberalization (Yeo and Deng, 2019). According to a recent definition, trade liberalization refers to the reduction and/or removal of tariff barriers (TBs) including customs duties (Liu et al., 2017; Sundaram, 2019) and non-tariff barriers (NTBs) including rules of origin, quota, license (Sachs and Warner, 1995; Rodriguez and Rodrik, 1999; Yanikkaya, 2003; Li, 2004) for free trade.

The theoretical literature argues that restrictive trade policy decreases export growth below potential (Santos-Paulino and Thirwall, 2004). Import controls reduce efficiency while they protect the balance of payments. Conversely, it is recognized that trade liberalization policies increase imports and exports and therefore the economic growth of an economy (Su et al., 2019; He et al., 2020). Empirically, the effects of trade liberalization policy on trade performance are ambiguous. Some studies have shown the positive effect of trade liberalization policies on exports (Santos-Paulino, 2002a; Ju et al., 2010) while others find no significant relationship (Agosin, 1991; Greenaway and Sapsford, 1994; Shafaedin, 1994; Jenkins, 1996). The third category of studies finds a positive effect of liberal trade policies on imports (Santos-Paulino, 2002b; Ju et al., 2010). Finally, previous empirical studies also find that trade liberalization increases imports faster than exports (Santos-Paulino and Thirwall, 2004; Zakaria, 2014).

In particular, for developing countries or least developed countries (LDCs) free trade agreements are relevant liberal trade policies that affect trade performance (Grossman and Helpman, 1995; Baier et al., 2018; Yeo and Deng, 2019). West African countries, members of the WTO, have the opportunity to negotiate in parallel free trade agreements such as Regional Trade Agreements (RTAs), Economic Partnership Agreement (EPA), and African Continental Free Trade Area (AfCFTA). Thus, while respecting the requirements of the WTO, ECOWAS has adopted a trade policy through a Trade Liberalization Scheme (TLS) adopted on May 30, 1983, and entered into force on January 1, 1990. The goal of the TLS was to promote trade through the consolidation of the existing free trade area since January 1, 2004, and the transition to the next stage of the Customs Union (ECOWAS, 2016). The ECOWAS Common External Tariff (CET) which entered into force on January 1, 2015, replaces that of the West African Economic and Monetary Union (WAEMU) of March 2000.

The ECOWAS TLS removed TBs and aimed to progressively remove TBs and taxes and gradually remove TBs and NTBs to completely liberalize trade (African Development Bank-AfDB, 2019). Indeed, the ECOWAS TLS removes import and export duties on goods originating within ECOWAS, simplifies customs procedures. Also the TLS removes trade barriers by phasing out tariffs over time (expansion from traditional goods to industrial products in 1990), gradually expanding product coverage or eligible, systematically reducing NTBs through a simplification of customs procedures, and harmonizing trade policies step by step. The number of TLS protocols and conventions ratified since 1978 at a given date continues to grow, but the share of ratified protocols and conventions in the total of the number of signed protocols and conventions fluctuates. For instance, this share, which was 82.35% in 2000, increased from 66.43% in 2006 to 76.54% in 2016 (our calculations based on the annual reports of the ECOWAS Commission). In 1992, ECOWAS attempted to address the constraints encountered in implementing the TLS, including rules of origin, national participation in the equity capital of production firms and the categorization of priority and non-priority industrial goods. ECOWAS launched in 2010 the West African Common Industrial Policy (WACIP). While, the manufacturing industry constitutes the dynamic sector for structural transformation and therefore economic development (Mamba et al., 2020),

it remains the main challenge for the ECOWAS region. Moreover, manufacturing imports far exceed manufacturing exports (Figures 4-5).

The interest in this work is the analysis of the effects of liberal trade policy on manufacturing exports and imports of ECOWAS countries. The contribution of this paper is threefold. First, we introduce into the economic literature a new indicator of trade liberalization policy captured by the implementation of TLS protocols and conventions. It is measured by the ratio between the number of TLS protocols and conventions ratified (PCRs) and the number of protocols and conventions signed (PCSs) since 1978 at a given date. It is a continuous index (which takes into account not only TBs but also NTBs), unlike existing indices which are often measured by a dummy variable (dummy of belonging to an RTA, binary index of Sacks and Warner, 1995 or Wacziarg and Welch, 2003), or by a simple measurement of TBs or NTBs. The economic literature criticizes the use of binary variables as proxies for liberal trade policy for at least two reasons. First, the coefficients of binary variables can capture the effect of unobserved differences in trade performance between countries that are not included in the equation (Mátyás, 1997; Studnicka et al., 2019). Second, the binary variables do not reflect differences in the completeness of the policy or trade agreement (Baldwin and Seghezza, 2010; Studnicka et al., 2019). In addition, the trade policy instruments (TBs or NTBs) that are often used do not capture the full effect of trade policy.

Second, the literature indicates that exports and imports react differently to trade policies. There are empirical studies in West Africa, but they do not concomitantly deal with exports and imports. Most of these studies focus on the effects of RTA membership on trade performance measured either by total imports (Egwaikhide, 1999; Agbodji, 2008; Deme and Ndrianasy, 2016) or by total exports (Ogun, 1998; Babatunde, 2009). In this study, we focus on manufacturing exports and imports. Finally, previous empirical studies (Santos-Paulino and Thirwall, 2004; Zakaria, 2014) that have looked at the examination of transmission channels have focused on the exchange rate and income. In this paper, we are interested in examining the role of financial development and the rate of mobile cellular subscriptions (communication infrastructure) in trade policies-manufacturing trade performances nexus. These factors reduce transaction costs and facilitate liberalization and trade.

The general objective of this study is to analyze the effects of liberal trade policy on manufacturing exports and imports of ECOWAS countries. Specifically, it is, first to examine the effects of liberal trade policy on manufacturing exports and manufacturing imports. Next, to compare the effects of this policy on manufacturing exports to those on manufacturing imports. Finally, to analyze whether the effects of liberal trade policy on manufacturing exports and imports depend on financial development and the rate of mobile cellular subscriptions. Three hypotheses derive from these specific objectives: first, liberal trade policy favors manufacturing exports and manufacturing imports. Second, liberal trade policy increases manufacturing imports more than manufacturing exports. Finally, the effects of this policy on manufacturing trade performances depend on the rate of mobile cellular subscriptions and financial development.

The rest of the paper is structured around five points. Section 2 presents the theoretical and empirical literature review while section 3 describes the stylized facts. Section 4 details the methodology, and findings and discussion are examined in section 5. Section 6 is devoted to the conclusion and implications of economic policies.

2 Brief literature review

2.1 Theoretical literature

The theoretical relationship between trade policies and trade performances can be highlighted through three leading theories of demand for exports or imports (Oliveira Martins, 1990; Capet and Gudin de

Vallerin, 1993; Babatunde, 2009; Harvey and Sedegah, 2010). These are the theory of comparative advantage (neoclassic trade theory based on perfect substitute model-PSM), the Keynesian approach of international trade, and the imperfect substitute model-ISM (new trade theory). The first theory suggests that foreign trade is influenced by the level of relative prices. This theory ignores the effects of changes in income on trade as the level of employment is assumed to be fixed and production is supposed to be on a given production frontier. The basic assumption is that traded goods are perfect substitutes.

In the Keynesian approach and the new theory of trade, foreign trade is determined by relative prices and income. These trade theories suppose that traded goods are imperfect substitutes. The Keynesian approach supposes that relative prices are fixed while employment is variable (Oliveira Martins, 1990). Conversely, in the new trade theory, trade is determined by changes in relative prices as well as changes in income. The ISM remounts from Armington (1969) and then Goldstein and Khan (1985). These theories suppose that trade performances can be entirely determined by income and relative prices. However, some authors (Santos-Paulino and Thirwall, 2004; Zakaria, 2014) have made a specific extension taking into account trade policies that can, directly and indirectly, affect trade performances (Figure 1).

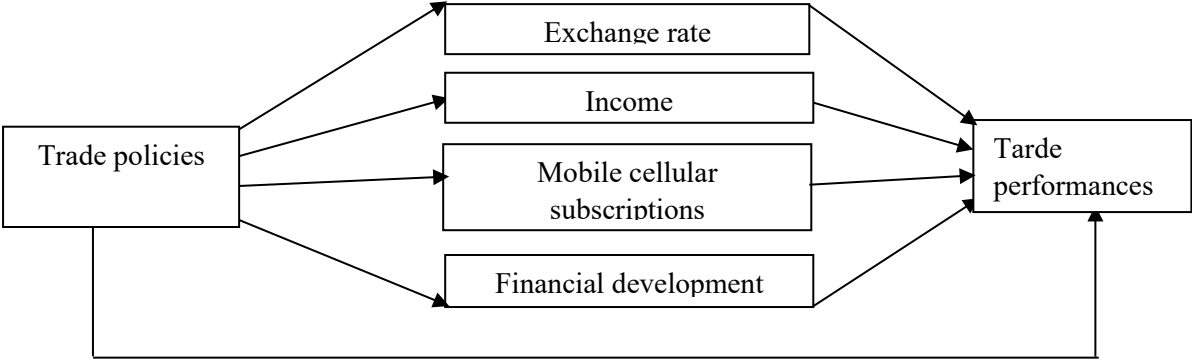


Figure 1 Main determinants of trade performance

To simplify the analysis, Figure 1 ignores the possible reciprocal causal relationships between the different variables. The theoretical literature argues that liberal trade policy favors imports and exports in contrast to protectionist trade policies (Jenkins, 1996; Morrison, 1976). For instance, if imported inputs are available at a low cost, trade liberalization could contribute to strengthening the export competitiveness of domestic firms. Thus, trade liberalization policy stimulates trade performances through diverse channels including lower cost of inputs, reallocation of resources towards more efficient enterprises, technology diffusion, large market for domestic firms, competitiveness, capital accumulation, higher productivity and economic growth (Gnangnon, 2018; Grossman and Helpman, 1991; Mamba, 2021).

However, the effect of liberal trade policy on trade performances may depend on the exchange rate, income, financial development and the rate of mobile cellular subscriptions. We are focusing on the role of financial development and mobile cellular subscriptions in trade policies-manufacturing trade performances nexus. Brooks and DAVIS (2019), Manova (2008, 2013) highlights the existence of the interaction between trade policy and financial development. Manova (2008, 2013) reveal that a weak financial system constrains growth, general activities, efficient allocation, investment opportunities, all productions and therefore trade performances. Reciprocally, restrictive trade liberalization leads to a misallocation of financial resources, reduces production and trade.

A high rate of mobile cellular subscriptions stimulates trade liberalization and therefore trade performances. Mobile cellular, as a component of information communication and technology (ICT), reduces information frictions, helps to find potential consumers or producers, increases domestic productivity and market share (Lenoir et al., 2019). Thus, mobile cellular usage increases resource allocation among exporters, trade performances by reducing search and information frictions which are main barriers to international trade.

2.2 Empirical review

From the empirical perspective, only PSM and ISM are commonly employed (Babatunde, 2009; Harvey and Sedegah, 2010). However, the ISM is more used in the empirical literature than the PSM. The reason is that, in reality, traded goods are not perfect substitutes (Harvey and Sedegah, 2010). Thus, the majority of studies using a continuous variable of trade policy, use the demand function for exports and imports (in particular, other studies that use binary variables and bilateral trade often apply the gravity equation, Yeo and Deng, 2019). Santos-Paulino and Thirwall (2004) use two measures of trade liberalization policies, such as duties applied to exports and imports, and a dummy variable. Using ordinary least square (OLS) and generalized method of moments (GMM) on a panel of 22 DCs over the period 1970-1997, the findings reveal that trade liberalization stimulates the growth of exports of goods and services but raised the growth of imports of goods and services by more.

Babatunde (2009) investigates the case of sub-Saharan Africa countries during the period 1980-2005. He uses fixed effect, random effect and two-stage least square (2SLS) estimation techniques to analyze the effect of trade liberalization (tariff reduction) on merchandise exports. He finds that reducing tariffs leads to an increase in trade performance. However, the sub-sample analysis shows that an increase in tariff rate positively and significantly affects merchandise exports in West Africa, East Africa, but tariffs negatively act on merchandise exports in Central Africa. Ju et al (2010) analyze the impacts of trade liberalization measured by dummy variables from Li (2004) and Wacziarg and Welch (2003) on trade performances (export growth, import growth, and trade balance). Using the OLS and GMM methods on a panel data of 77 LDCs over the period 1970-2004, the findings show that trade liberalization significantly and positively influences trade performances.

Ratnaike (2012) uses two trade policy measures, including applied weighted average tariff rate by all products (of the country on one side, and the rest of the world on the other) and the freedom to trade internationally from Economic of Freedom of the World-EFW index (of the country and the rest of the world) to analyze their effects on export performance (export share in GDP) for OECD countries between 1980-2010. The results obtained from GMM show that trade policies do not affect exports. Zakaria (2014) uses quarterly data of the period 1981/82 to 2007/08 to examine the direct and indirect effects of trade liberalization (exports and imports customs duties, and the index of Wacziarg and Welch, 2003) on imports, exports of Pakistan. He confirms the results obtained by Santos-Paulino and Thirwall (2004).

Recently, Gnanon (2018) uses three trade policy indicators, including the freedom to trade international index from Freedom Economic developed by Freedom House (for a country), multilateral liberalization policy index (for the rest of world), and stock index of trade policy by following the Adstock approach. The impacts of these indicators on total exports of goods and services in percentage of GDP are examined for 168 developing and developed countries over the period 1998-2014 by using the fixed effects specification. The findings obtained are mixed, the effect is significant and positive in developed countries, so the evidence is unproven in the LDCs. Memanova and Mylonidis (2019) examining the link between the banking market and total exports in the world over the period 1997-

2010, they use trade freedom index as a proxy of trade policy. The findings obtained from the instrumental variables approach show that trade policy has no effect on exports.

Yeo and Deng (2019) study the effect of trade policy on international trade for the case of Pakistan. The trade policy variables are the free trade agreement, entry costs, NTBs. The findings show that the free trade agreement has no effect on exports while it significantly increases total imports. NTBs enhance total exports and reduce total imports. The entry costs of the country of origin do not affect international trade. However, the entry costs of the destination country significantly reduce exports and significantly increase imports. Studnicka et al. (2019) analyze the impacts of RTAs on European exports. Using the fixed effects estimation method, the authors find a neutral effect of trade policy on total exports.

Besides, some of the aforementioned works (Santos-Paulino and Thirwall, 2004; Zakaria, 2014) have also looked at the impact of trade policy on the price and income elasticities of demand for total exports and imports. In this study, we analyze the role of financial development and mobile cellular subscriptions in trade policies-manufacturing trade performances nexus. These variables are recently exploited to analyze the direct effect (Lemi, 2017; Memanova and Mylonidis, 2019; Rehman et al., 2020). We analyse the direct and indirect effects of a new trade policy index on manufacturing performance. The few studies that have analysed manufacturing performance neglect trade policies (Bournakis, 2012; Gil-Pareja et al., 2014).

3 Stylized facts

3.1 Statement of the implementation of the ECOWAS Trade Liberalization Scheme

ECOWAS, created on May 28, 1975, adopted a trade liberalization program through its Trade Liberalization Scheme (TLS) which was instituted in 1979. Adopted in May 1983 by the Member States of the Community following the Decision of the Authority of Heads of State and Government A/DEC. 1/5/1983 of May 30, 1983, the TLS only entered into force on January 1, 1990. The objective of the TLS is the creation of a free trade area (FTA) then a Customs Union, 4 and 15 years, respectively, after its start. The envisaged TLS covered three groups of products, namely unprocessed products, handicrafts and industrial products. During 2016, the ECOWAS Commission focused its efforts on the effective implementation of Customs Union through the application of the CET and the formulation of a strategy for enhanced implementation of the protocols and regulations of TLS. Until June 2018, all countries, except Cabo Verde, applied the ECOWAS CET (African Union, 2019). The establishment in 2016 of a new mechanism, the Task Force on the TLS helps a better application of community texts by the member States (ECOWAS, 2016).

The TLS protocols and conventions concern not only TBs but also NTBs. The TLS protocols and conventions include, among others, Protocol A/P1/5/79 on the free movement of persons, the right of residence and establishment, signed in Dakar on May 29, 1979; Additional Protocol amending the French text of the Protocol relating to the definition of the notion products originating in member states (Article 2) signed in Dakar on May 29, 1979; Convention A/P5/5/82 on mutual Assistance Administrative in customs matters; Protocol relating to the conditions of application of the Community levy A/P7/96 signed in Abuja on July 27, 1996; Protocol A/P2/7/96 establishing the institution of the Value Added Tax in ECOWAS member states. From 1978 to 2012, the number of protocols and conventions signed (PCSs) by the ECOWAS countries was 53. From 2013, this number increases to 54. The PCS represents “de jure” liberalization (JL). But, the protocols and conventions ratified (PCRs) of the TLS by each of the ECOWAS countries indicate “de facto” liberalization (FL). Table 1 shows the evolution of the implementation of the ECOWAS TLS by highlighting the JL and FL.

Table 1 Episodes of de jure liberalization (JL) and de facto (FL) of the TLS in ECOWAS between 1996-2017

Periods	1996-2000	2001-2005	2006-2010	2011-2015	2016-2017
Benin	20.4	26.2	37.4	38.0	38.0
Burkina Faso	32.6	36.6	39.8	47.0	52.0
Cabo-Verde	19.0	20.2	23.4	24.0	26.0
Cote d'Ivoire	26.4	28.2	29.0	31.0	31.0
FL (PCR) Gambia	30.6	32.6	38.0	41.8	44.0
Ghana	33.2	38.8	43.0	43.0	44.0
Guinea	33.2	37.0	40.0	40.0	40.0
Guinea-Bissau	24.0	24.0	24.0	24.0	34.0
Liberia	24.0	24.0	24.8	25.0	52.0
Mali	32.8	38.6	41.8	42.0	43.0
Niger	23.6	29.0	37.8	43.0	48.0
Nigeria	30.0	37.6	39.6	40.0	41.0
Senegal	31.2	35.8	41.8	42.0	43.0
Sierra Leone	27.6	36.4	41.6	42.0	42.0
Togo	28.4	35.2	40.4	43.0	43.0
JL PCS ECOWAS	34.6	44.2	53.0	53.6	54.0

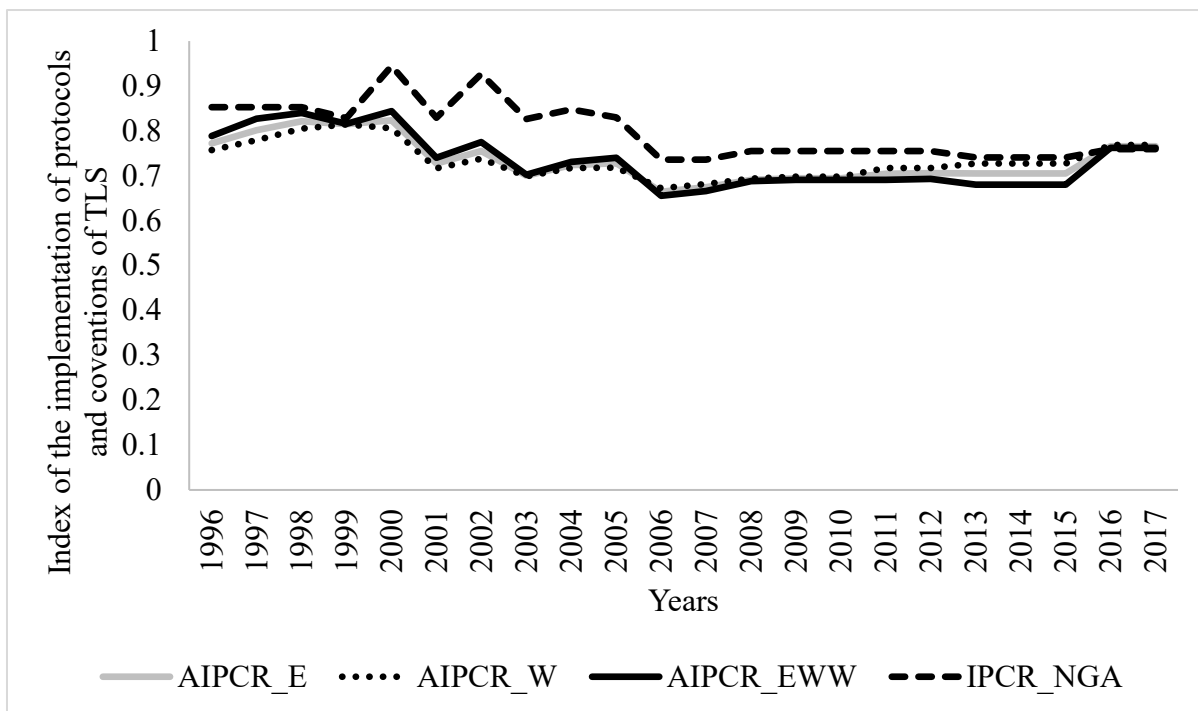
Notes: PCS and PCR denote the number of the protocols and conventions signed (de jure liberalization) and the number of the protocols and conventions ratified (de facto liberalization), respectively.

Source: Authors, based on data from ECOWAS (2020).

Table 1 reveals that between 1996-2000 Ghana and Guinea are the countries which applied more TLS protocols and conventions (on average about 33 PCRs). Ghana still keeps the first position between 2001-2010 (on average 43 PCRs between 2006-2010) while over the period 2011-2015 it is Burkina Faso which occupies the first place (on average 52 PCRs). Between 2015-2017, Burkina Faso and Liberia are the countries that ratify more protocols and conventions (on average 52 PCRs). Over the considered period, Nigeria occupies in 7th position between 1996-2000 while it occupies 10th place between 2016-2017 in terms of ratification of TLS protocols and conventions. Globally, the number of PCS evolved from 34.6 between 1996-2000 to 54 between 2016-2017.

On the basis of Table 1 (but considering the annual data), we construct an indicator for the implementation of the TLS considered as a proxy for trade liberalization policy. This indicator is measured by the ratio between the number of PCRs and the number of PCSs since 1978 at a given date. Figure 2 highlights the evolution of the TLS implementation index.

Overall, Figure 2 reveals a downward trend in the proportion of PCRs in the total of PCSs from 1978 at a given date considering the period 1996-2017. However, it indicates the heterogeneous evolution of the share of PCRs in the total of PCSs in the different zones of ECOWAS. Until 2006, the implementation of protocols and conventions seems to be weak in the WAEMU countries compared to other ECOWAS countries without WAEMU. But, from 2006, the WAEMU countries ratify more protocols and conventions than those of the ECOWAS without WAEMU. Compared to the averages of the ECOWAS regions, Nigeria seems to ratify more protocols and conventions until 2015. However, the previous analysis by country (Table 1) shows that this country is not among the top five countries that ratify more TLS protocols and conventions.



AIPCR=Average index of protocols and conventions ratified in the total of protocols and conventions signed. E=ECOWAS, W=WAEMU, EWW=ECOWAS without WAEMU, NGA=Nigeria

Source: Authors, based on reports of the ECOWAS Commission.

Figure 2 Comparative average change in the index of TLS implementation in ECOWAS between 1996-2017

3.2 Consolidation of national trade policy instruments and the march towards the African Continental Free Trade Area

In accordance with the Article 54 of the Revised Treaty of ECOWAS, each country has a maximum of 4 years from the start of the TLS (except in exceptional cases) to gradually relax and completely remove all restrictions or prohibitions of a quota, quantitative and assimilated which apply to the import into this country of goods originating in other member countries and does not impose in the future other restrictions or prohibitions: it is the creation of the FTA within ECOWAS. However, given the delay in the effective application of the TLS, it is on January 1, 2004, that the ECOWAS FTA entered into force replaced that of the WAEMU put in place on July 1, 1996.

The ECOWAS member countries undertake to create within 10 years from the start of the TLS a Customs Union and then to establish within 5 years, after the creation of the customs Union, an Economic and Monetary Union (“de jure” liberalization). Within the Customs Union, customs duties and other taxes of equivalent effect on imports of products originating in the Community are eliminated. In addition, quantitative restrictions or similar and quota-based prohibitions, as well as administrative barriers to trade between the Member States, are removed. But, it is up to January 1, 2015, that the ECOWAS CET entered into force and replaced that of the WAEMU which had entered into force since March 2000. The new ECOWAS CET differs slightly from the WAEMU CET by the introduction of the fifth band at the rate of 35% which includes specific goods for development. Table 2 gives the structure of the ECOWAS TEC according to the products appearing in the Tariff and Statistical Nomenclature.

Table 2 Structure of ECOWAS CET

Categories	Types of products	Customs duties	Tariff lines
Category 0	Essential social goods: crude and semi-refined petroleum, drugs and medical products, books, newspapers, newsprint	0%	85
Category 1	Basic necessity goods, basic raw materials, equipment goods, specific inputs	5%	2146
Category 2	Other inputs and intermediate products	10%	1373
Category 3	Final consumption goods and other goods	20%	2165
Category 4	Specific goods for development	35%	130

Source: Annual report of ECOWAS Commission (2016)

The first 4 tariff bands are common to the WAEMU and ECOWAS CETs. The definition of the ECOWAS CET 15 years after the implementation of the WAEMU TEC is considered as an opportunity for ECOWAS countries to return to the level of protection of certain strategic sectors of local development in articulation with sectorial policies such as the West African Common Industrial Policy (WACIP) launched in 2010 and ECOWAS Agricultural Policy (ECOWAP). The recent tariff trends within ECOWAS indicate that on average there have been efforts to reduce TBs in this region. Table 3 shows a downward trend in TBs within ECOWAS and in almost all countries taken individually.

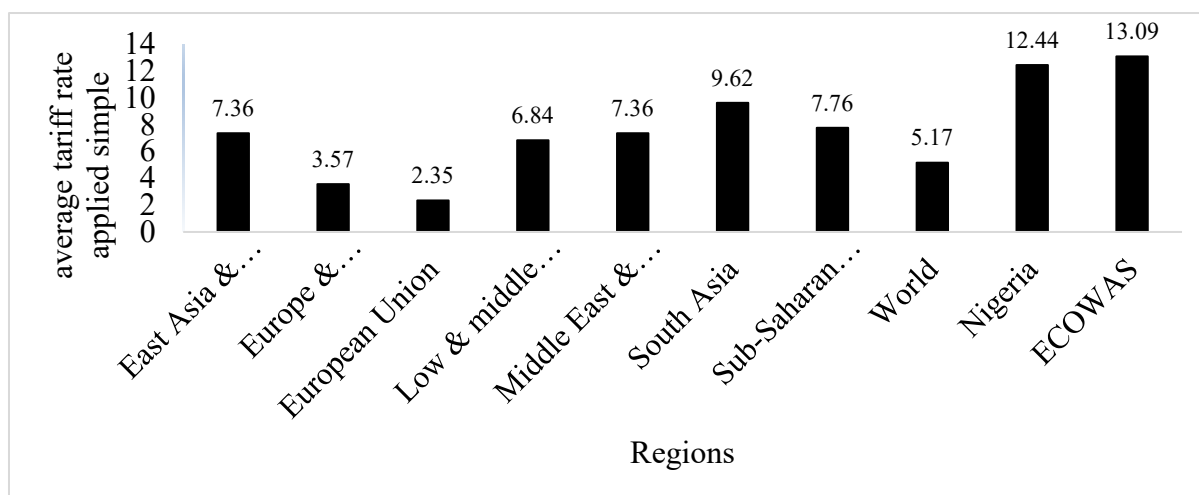
Table 3 International comparison of the average level of tariff protection

Countries	Average tariff rate applied simple, all products (%)					Consolidated tariff	
	1996-2000	2001-2005	2006-2010	2011-2015	2016-2017	2013	2018
Benin	ND	14.40	12.97	12.63	12.11	28.30	29.40
Burkina Faso	ND	13.46	12.39	11.93	11.65	42.00	44.10
Cabo Verde	ND	15.42	15.23	14.94	ND	15.80	16.00
Cote d'Ivoire	4.81	13.57	13.21	12.83	12.52	11.10	11.20
Gambia	ND	13.82	17.95	15.59	ND	102.80	103.50
Ghana	14.26	12.52	12.96	12.49	12.32	92.50	92.50
Guinea	6.24	10.17	13.45	13.52	13.26	20.10	20.80
Guinea-Bissau	ND	14.58	13.39	13.46	14.44	48.70	48.50
Liberia	ND	ND	ND	9.76	ND	ND	26.70
Mali	14.15	13.56	12.66	12.25	12.26	28.40	29.50
Niger	ND	14.23	12.74	12.69	12.06	44.70	45.20
Nigeria	23.66	21.14	10.60	11.39	11.48	118.30	120.90
Senegal	ND	13.90	13.43	13.14	13.07	30.00	30.00
Sierra Leone	ND	14.93	13.75	12.89	ND	47.40	47.30
Togo	15.15	14.44	13.84	12.88	12.69	80.00	80.00
ECOWAS	16.29	14.37	13.44	12.79	12.45	50.72	47.74

Note: ND signifies unavailable

Source: Authors, based on the data from WTO and WDI (2020)

In particular, the data in Table 3 show that between 1996 and 2005 Nigeria was the most protective country while it became less protective over the period 2016-2017. However, the application of rates higher than those bound in Cote d'Ivoire poses a problem of the legal status of compatibility with the WTO. In addition, ECOWAS countries appear to be on average weakly open compared to other regions of the world (Figure 3). Indeed, the level of customs duties observed in ECOWAS remains higher than those observed in other regions of the world. This behaviour of ECOWAS can be explained by its low competitiveness or by the search for customs revenue.



Source: Authors, based on the World Bank data (2020).

Figure 3 Comparative evolution of the average tariff rate applied simple in 2017

A panoply of measures accompanies the implementation of the ECOWAS CET. Thus, the implementation of the ECOWAS CET is accompanied by other duties and charges levied exclusively on imports, measures complementary to the CET, customs valuation, internal taxes, rules of origin, anti-dumping, compensatory or safeguard measures, norms, technical regulations and accreditation procedures, competition. In particular, the other duties and charges levied exclusively on imports include statistical fee, ECOWAS community levy, Import Adjustment Tax (IAT), Complementary Protection Tax (CPT), Conjunctural Import Tax (CIT). The 1% statistical fee is applicable to all products, even those imported under the customs duty exemption regime. The ECOWAS community levy of 0.5% (except the Niger which practices the rate of 1% which prevailed for the community solidarity levy of the WAEMU) is levied on all imports from the third countries of ECOWAS.

It is important to note that Nigeria's trade policy is marked by its unpredictability. Thus, in addition to the tariff regime, Nigeria regularly enacts a list of prohibited imports (including from ECOWAS countries) to protect industries. Between 1999-2001 several prohibitions were replaced by the application of high duties (WTO, 2005). In November 2009, without any official explanation, Nigerian customs officials refused for one week the entry and exit of trucks transporting goods at the Niger-Nigeria borders, only allowing the movement of people. Another frequently encountered case is Nigeria's ban on imports of cars over the age of 10 from Benin due to safety concerns and doubts about the community origin of the cars. Doubts about the origin of the products are one of the main reasons put forward by the Nigerian authorities to justify their import ban. In 2008, Nigeria refused imports of tomato puree from Ghana on the pretext that the exported volumes exceeded Ghana's production capacity. Nigeria's quality standards are sometimes more stringent than those of other ECOWAS Member States. Failure to comply with Nigerian norms is one of the reasons for refusing to import certain products from the region. Conversely, for many countries in the zone, it is the poor quality of Nigerian products that worries them. The case of adulterated drugs in February 2009 is an example.

The march towards the African Continental Free Trade Area (AfCFTA)

The consolidation of national trade policy instruments is an important step of continental integration. Adopted on 3 June 1991, and entered into force on 12 May 1994, the Abuja Treaty has the general objective of ensuring the integration of the African continent. To achieve this objective, the Abuja Treaty was subdivided into six main stages which are: (i) creation and strengthening of Regional Economic Communities (RECs), (ii) elimination of TBs and NTBs, (iii) FTA and Customs Union inter-RECs, (iv) Continental Customs Union, (v) African Common Market, (vi) Pan-African Monetary and Economic

Union. This gradual approach is justified by the fact that integration should first be consolidated at the regional level, through the creation and strengthening of the RECs, which would ultimately merge to form the African Economic Community. Since ECOWAS regulations are fully compatible with the principles of the AfCFTA, all ECOWAS countries have signed this AfCFTA. But, currently, 5 countries in this region have not ratified the AfCFTA yet. These are Benin, Cabo Verde, Guinea-Bissau, Liberia and Nigeria (African Union, 2020).

3.3 Trade policy through other trade agreements

ECOWAS trade negotiations are also aiming for the signing of the EPA with the EU. Currently, Nigeria is the only West African country that has not yet signed the EU-West Africa EPA for several reasons (European parliament, 2020). These are the threat to the weak economy of Nigeria which mainly depends on the export of oil compared to the EU economy, the equilibrium of the trade balance, the loss of income and especially the protection of the embryonic local industry.

Nigeria's protective behavior has been highlighted by the analysts of episodes of trade liberalization policies (Table 4). Thus, some authors have been interested in the analysis of trade liberalization episodes by highlighting the dates of “de jure” liberalization and “de facto” liberalization of economies. Sachs and Warner (1995), by examining the trade policy followed by each of the countries of the world since the years 1950-1960, they find that the typical LDC evolved as a closed and open economy afterwards. However, these authors identify 13 developing countries which experienced an initial episode of temporary trade liberalization, while eight others remained open, like developed countries. At the same time, 35 developing countries remain closed until 1994.

Specifically, no country in West Africa has experienced an initial episode of temporary trade liberalization, in other words, economies classified as “open countries” have only had one uninterrupted year of opening started (Sachs and Warner, 1995). According to their classification, 7 West African countries including Burkina Faso, Cote d'Ivoire, Niger, Nigeria, Senegal and Togo remain closed until 1994. Sachs and Warner (1995) did not classify Cabo Verde and Liberia due to the lack of data on trade policies in these countries. The classification of countries as "closed countries" means that these countries have not undertaken major reforms. Among the countries classified as open by Sachs and Warner (1995) and Wacziarg and Welch (2003) except Benin, the date of "de jure" liberalization coincides with that of “de facto” liberalization. Thus Benin began its liberalization reforms in 1989 while the year 1990 corresponds to the year of effective implementation of liberalization.

Wacziarg and Welch (2003) by updating data from Sachs and Warner (1995), they find that only 4 countries including Liberia, Nigeria, Senegal and Togo remain closed until 2001. Nevertheless, the liberalization dates identified by Sachs and Warner (1995) are similar to those identified by Wacziarg and Welch (2003) in the case of ECOWAS countries. Li (2004) identifies liberalization episodes for only 6 ECOWAS countries (Table 4). The dates of the liberalization episodes differ from those identified by Sachs and Warner (1995) or Wacziarg and Welch (2003).

Table 4 Trade liberalization episodes in ECOWAS countries

Country	Sachs and Warner (1995) Year interrupted openness began	Wacziarg and Welch (2003) Year interrupted openness began	Li (2004) Liberalization years
Benin	1990	1990	1992-1993
Burkina Faso	Closed	1998	n.a.
Cabo-Verde	n.a.	1991	n.a.
Cote d'Ivoire	Closed	1994	n.a.
Gambia	1985	1985	1986
Ghana	1985	1985	1988-1992
Guinea	1986	1986	n.a.
Guinea-Bissau	1987	1987	1987
Libéria	n.a.	Closed	n.a.
Mali	1988	1988	1988-1991
Niger	Closed	1994	n.a.
Nigéria	Closed	Closed	1986-1987
Senegal	Closed	Closed	n.a.
Sierra Leone	Closed	2001	n.a.
Togo	Closed	Closed	n.a.

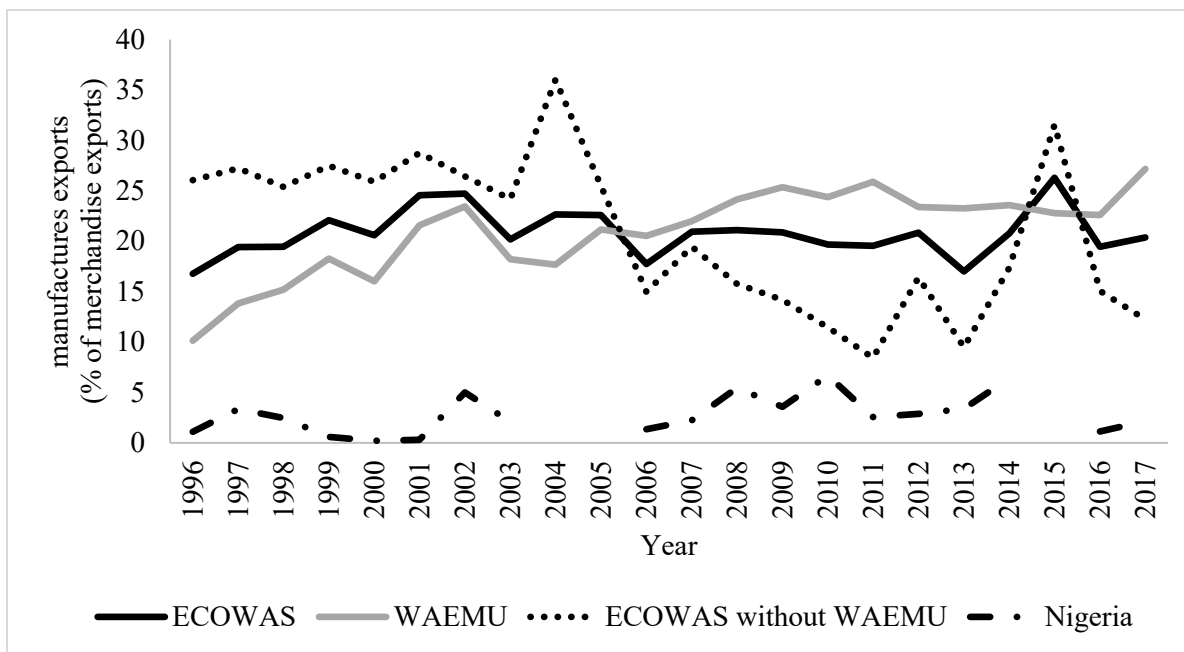
Note: n.a. indicates that the country is not classified

Source: Sachs and Warner (1995), Li (2004), Wacziarg et Welch (2003), Wacziarg and Welch (2008)

3.4 Manufacturing trade performance

Unlike the majority of works that use aggregate exports and imports, foreign trade performances are appreciated in his paper through manufacturing exports and imports. Figures 4-5 show the evolution of the average of manufacturing exports (as a percentage of merchandise exports) and manufacturing imports (as a percentage of merchandise imports) over the period 1996-2017 within ECOWAS.

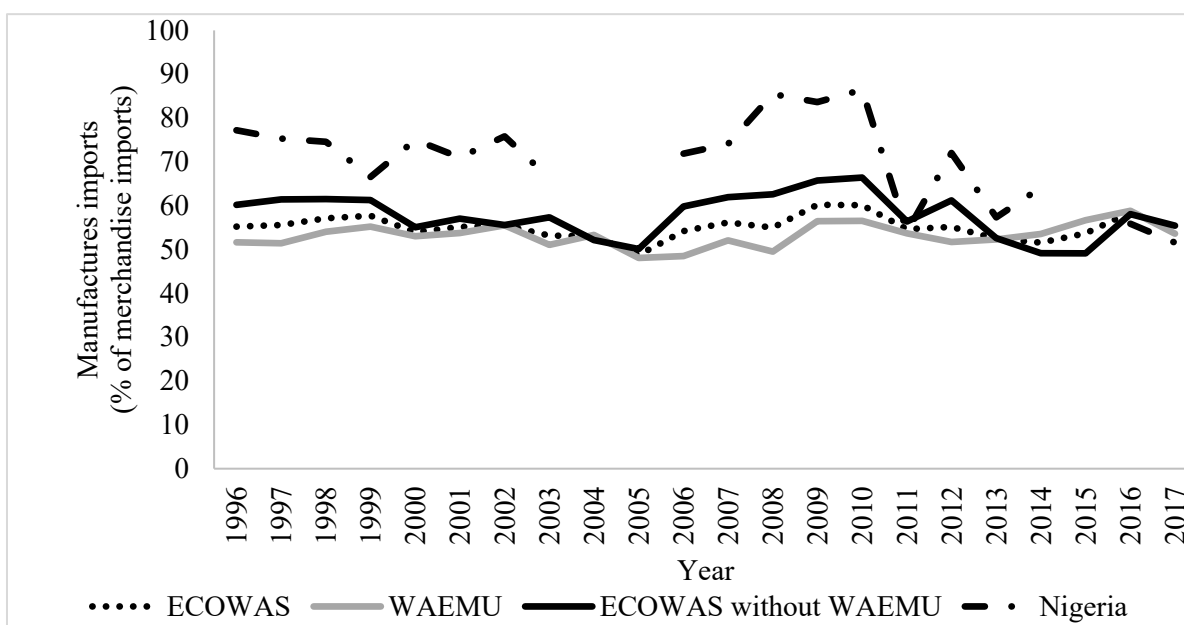
Figure 4 shows a saw tooth trend in average ECOWAS manufacturing exports but with no significant improvement in these exports over time. This could be explained by the low competitiveness of the ECOWAS economies unable to fully exploit the TLS to develop their industry. We also note the unpredictable behavior of Nigeria vis-à-vis the other Community countries. Added to this is the mismatch between the production capacity of African states and rigorous rules of origin applied under WTO regulations, which is cited as one of the major challenges limiting the use of manufacturing trade performances. Besides, many programs offering trade preferences apply rules of origin imposing minimum rates of local production that the majority of African countries cannot meet (ECA, 2015). But, if this lack of progress can be observed in the ECOWAS sub-regions, exports within ECOWAS without WAEMU are characterized by strong fluctuations and seem to decline over time. Nigeria's manufacturing exports are significantly lower than those observed in other regions. This is explained by the fact that Nigeria's exports are predominantly dominated by natural resources as is the case with most African countries.



Source: Authors, based on World Bank data.

Figure 4 Comparative average evolution of manufacturing exports (% of merchandise exports) within ECOWAS between 1996-2017

The analysis in Figure 5 shows a change over time in the average of manufacturing imports similar to that observed for exports. However, it is noted that manufacturing imports far exceed exports in ECOWAS, which reflects a strong imbalance in manufacturing trade. Contrary to the previous analysis (Figure 4) Nigeria's imports are above the ECOWAS averages (the same for the sub-regions).



Source: Authors, based on World Bank data.

Figure 5 Comparative average evolution of manufacturing imports (% of merchandise imports) within ECOWAS between 1996-2017

4 Methodology

4.1 Specification of the models

Exports equation

Following the previous works such as Santos-Paulino and Thirwall (2004), and Zakaria (2014) we analyze the effects of liberal trade policies on exports using the imperfect substitute model. Traditionally, the standard export demand function is assumed to depend primarily on price competitiveness or the prices of export products P_x , and the prices of goods produced by trading partners P^* or simply the exchange rate of relative prices and foreign demand (Y^*). This model assumes constant price and income elasticities (Santos-Paulino and Thirwall, 2004). The absence of monetary illusion among economic agents which implies the homogeneity of the demand functions makes it possible to write:

$$P_x \cdot X = F(Y, P_x, P^*) \quad (1)$$

For Armington (1969), and Goldstein and Khan (1985) there is a multiplicative link. The degree 1 homogeneity assumption of the export demand function makes it possible to write:

$$X_{it} = A \cdot (Y_{it}^*)^{\alpha_1} \cdot (RER_{it})^{\alpha_2} \quad (2)$$

where X are manufacturing exports (noted $ManuX$) of the domestic country, A constant, Y^* the real per capita income noted in the subsequent work GDP^* , RER the real exchange rate, $\alpha_1 > 0$, $\alpha_2 < 0$. GDP^* is measured by the gap between the world GDP and the domestic country GDP (Santos-Paulino and Thirwall, 2004; Ratnaik, 2012). By introducing the natural logarithm we get:

$$\ln ManuX_{it} = \alpha_0 + \alpha_1 \cdot \ln GDP_{it}^* + \alpha_2 \cdot \ln RER_{it} + \varepsilon_{it} \quad (3)$$

Based on the empirical literature the augmented model can be written as:

$$\ln ManuX_{it} = \alpha_0 + \alpha_1 \cdot \ln GDP_{it}^* + \alpha_2 \cdot \ln RER_{it} + \alpha_3 \cdot IPCR_{it} + \alpha_4 \cdot \ln MOB_{it} + \alpha_5 \cdot \ln DCPS_{it} + \alpha_6 \cdot FDI_{it} + \alpha_7 \cdot PSI_{it} + \alpha_8 \cdot \ln EMPI_{it} + \varepsilon_{it} \quad (4)$$

where $IPCR$ is the liberal trade policy variable captured by the continuous index of the implementation of TLS protocols and conventions. It is the variable of interest. MOB stands for mobile cellular subscriptions that capture the effect of the development of communication infrastructure. Theoretically, the development of communication infrastructure facilitates trade. Lemi (2017) and Rehman et al. (2020) used this variable, but in the equation for total exports. $DCPS$ is domestic credit granted to the private sector by banks. This variable captures the effect of financial development on manufacturing performance. Indeed, a weak financial system blocks trade, contrary to developing financial system. The positive sign is expected. Yakubu et al. (2018), Iacovone et al. (2019), Memanova and Mylonidis (2019) used this variable.

FDI is the net foreign direct investment. Theoretically, the effect of FDI on exports is ambiguous. Thus, FDI can discourage manufacturing exports if they are specialized in the exploitation of natural resources or if they are intended to crowd out domestic investment. Moreover, if the motive of FDI is to capture the domestic market, it may not contribute to export growth (Majeed and Ahmed, 2006). Following the works of Gnanon (2018), Memanova and Mylonidis (2019), we introduce FDI flows. PSI , the political stability index is used to capture the effect of the quality of governance on trade. Theoretically, an

environment characterized by a stable policy stimulates investments and therefore commercial activities. Following Gnanon (2018), this index is used in this paper.

Finally, industrial employment (EMPI) is introduced. Considered as a factor of production, the level of manufacturing exports increases with the level of employment. ε_{it} , the error term. In addition, to analyze the indirect effects of liberal trade policy, we introduce the terms of the interaction between trade policy and communication infrastructure and between trade policy and financial development.

$$\ln ManuX_{it} = \alpha_0 + \alpha_1 \cdot \ln GDP_{it}^* + \alpha_2 \cdot \ln RER_{it} + \alpha_3 \cdot IPCR_{it} + \ln MOB_{it} + \alpha_5 \cdot \ln DCPS_{it} + \alpha_6 \cdot [IPCR \cdot (\ln MOB \text{ or } \ln DCPS)]_{it} + \alpha_7 \cdot FDI_{it} + \alpha_8 \cdot PSI_{it} + \alpha_9 \cdot \ln EMPI_{it} + \varepsilon_{it} \quad (5)$$

Imports equation

Similarly, the imports equation can depend on the national income (Y), the import price (P_M), and the general price level of the domestic country (P).

$$P_M \cdot M = G(Y, P_M, P) \quad (6)$$

The multiplicative link can be expressed as follows:

$$M_{it} = B \cdot (Y_{it})^{\beta_1} \cdot (RER_{it})^{\beta_2} \quad (7)$$

where M represents manufacturing imports (noted ManuM) of the domestic country, B constant, Y the real income of the domestic country noted in the following work GDP, RER the real exchange rate, $\beta_1 > 0$; $\beta_2 > 0$. By introducing the natural logarithm we obtain:

$$\ln ManuM_{it} = \beta_0 + \beta_1 \cdot \ln GDP_{it} + \beta_2 \cdot \ln RER_{it} + \varepsilon_{it} \quad (8)$$

The augmented model can be written as:

$$\ln ManuM_{it} = \beta_0 + \beta_1 \cdot \ln GDP_{it} + \beta_2 \cdot \ln RER_{it} + \beta_3 \cdot IPCR_{it} + \beta_4 \cdot \ln MOB_{it} + \beta_5 \cdot DCPS_{it} + \beta_6 \cdot FDI_{it} + \beta_7 \cdot PSI_{it} + \beta_8 \cdot \ln EMPI_{it} + \varepsilon_{it} \quad (9)$$

and,

$$\ln ManuM_{it} = \beta_0 + \beta_1 \cdot \ln GDP_{it} + \beta_2 \cdot \ln RER_{it} + \beta_3 \cdot IPCR_{it} + \beta_4 \cdot \ln MOB_{it} + \beta_5 \cdot DCPS_{it} + \beta_6 \cdot [IPCR \cdot (\ln MOB \text{ or } \ln DCPS)]_{it} + \beta_7 \cdot FDI_{it} + \beta_8 \cdot PSI_{it} + \beta_9 \cdot \ln EMPI_{it} + \varepsilon_{it} \quad (10)$$

4.2 Data sources, and estimation technique

Three data sources are used. Data on the political stability index are taken from the World Bank's "World Governance Indicators, WGI" database. The real effective exchange rate comes from the UNCTAD database. The rest of the data comes from the World Bank's database "World Development Indicators, WDI". Beyond these sources, we build a continuous indicator of TLS implementation using ECOWAS Commission annual reports. The sample covers nine ECOWAS countries which have data for the period under consideration: Burkina Faso, Cabo Verde, Cote d'Ivoire, Gambia, Ghana, Mali, Niger, Nigeria, Senegal. The study period covers annual data from 1996 to 2017. The choice of this period is also explained by the availability of data. The unbalanced panel data are processed under the Stata software. Table 5 summarizes the study variables.

Table 5 Summary of the variables used in manufacturing exports (% of merchandise exports) and manufacturing imports (% of merchandise imports) equations

Variables	Acronym	Theoretical sign	
		ManuX	ManuM
Real gross domestic product (constant 2010 US\$)	GDP		+
Real gross domestic product in a foreign country	GDP*	+	
Real effective exchange rate	RER	-	+
Index of Protocols and Conventions ratified of TLS (Author)	IPCR	+	+
Mobile cellular subscriptions (per 100 people).	MOB	+	+
Domestic credit to private sector by banks (% of GDP)	DCPS	+	+
Foreign direct investment net inflows (% of GDP)	FDI	+	+
Political stability index (ranged from -2.5 to +2.5)	PSI	+	+
Employment in industry (% of total employment)	EMPI	+	-

IPCR=number of protocols and conventions ratified/of protocols and conventions signed since 1978 at a given date.

Source: Author (2020)

Regarding estimation techniques, usually, for a static panel, the Hausman test is used to discriminate the fixed effects model (FE) and the random-effects model (RE). However, these traditional techniques do not take into account the endogeneity problem of the variables of interest. In this logic, while using diverse estimation techniques we favor the IV method (FE+IV). In addition, the IV (*xtivreg2*) approach also controls the correlation between individuals and the autocorrelation of errors. Finally, for the validity of the findings, unit root, correlation, multicollinearity, autocorrelation and omission of variables of Ramsey RESET tests are conducted.

5 Empirical analysis

5.1 Descriptive statistics and preliminary tests

Table 6 below presents descriptive statistics for the variables included in models for the case of ECOWAS countries during 1996-2017.

Table 6 Descriptive statistics of variables used in models (1996-2017)

	Obs	Mean	Std-Dev	Min	Max
ManuX	184	19.99	20.52	0.21	95.68
ManuM	186	56.72	11.03	26.72	86.45
GDP*	198	6.08e+13	1.09e+13	4.35e+13	8.01e+13
GDP	198	4.26e+10	9.76e+10	5.36e+08	4.64e+11
RER	180	106.58	15.89	70.10	208.90
IPCR	198	0.76	0.13	0.44	1.00
MOB	198	38.04	41.95	0.00	139.23
DCPS	198	18.29	12.82	0.00	65.28
FDI	196	3.57	3.19	-0.32	16.63
PSI	171	-0.43	0.88	-2.26	1.22
EMPI	198	11.59	5.57	3.42	32.02

Source: Authors' computation based on the data from WDI, WGI, and UNCTAD (2020)

Over the study period, it emerges that the manufacturing exports from ECOWAS countries only represent an average of 19.99% of exported goods, unlike manufacturing imports which are around 56.72% of imported goods, this reveals a deficit in the manufacturing trade balance of 36.72%. This reflects a strong imbalance between manufacturing exports and manufacturing imports. The correlation and multicollinearity tests of the export and import equations are presented in Table 7.

Table 7 Correlation and multicollinearity tests

	lnGDP*	lnGDP	lnRER	IPCR	lnMOB	lnDCPS	FDI	PSI	lnEMPI
lnGDP*	1.000								
lnGDP	0.173	1.000							
lnRER	0.259	0.110	1.000						
IPCR	-0.170	0.290	-0.067	1.000					
lnMOB	0.871	0.098	0.304	-0.309	1.000				
lnDCPS	0.414	-0.113	0.009	-0.394	0.499	1.000			
FDI	0.239	-0.321	0.056	-0.239	-0.314	0.266	1.000		
PSI	-0.207	-0.718	-0.202	-0.165	-0.148	0.276	0.269	1.000	
lnEMPI	0.163	0.061	0.044	0.535	0.208	0.069	0.029	0.142	1.000
VIF.ManuX	4.62		1.13	2.76	6.62	1.71	1.23	1.56	2.43
VIF.ManuM		2.69	1.14	2.77	2.38	1.89	1.33	2.98	2.36
Mean VIF (manufactures exports equation) = 2,76									
Mean VIF (manufactures import equation) = 2,19									

Source: Authors' computation based on the data from WDI, WGI, and UNCTAD (2020)

Correlation tests reveal a presumption of multicollinearity between certain variables, particularly, between mobile cellular subscriptions and foreign GDP, political stability index and domestic GDP (Table 7). Thus, the correlations between these variables are greater than 50%. To remove the doubt, we conducted the multicollinearity test, which indicates an average of VIFs inferior to 5 (Table 7). Therefore, the literature indicates the possibility of the introduction of all variables without the risk of strong correlation and multicollinearity (Mamba et al., 2020). Table 8 presents the results of the unit root test of Maddala and Wu (1999) which is applicable on unbalanced panel data.

Table 8 Stationarity test

Variables	Chi2	Prob	Decision
lnManuX	92.193	0.000	I(0)
lnManuM	69.684	0.000	I(0)
lnGDP*	29.092	0.047	I(0)
lnGDP	31.119	0.0280	I(0)
lnRER	87.452	0.000	I(0)
IPCR	48.926	0.000	I(0)
lnMOB	208.269	0.000	I(0)
lnDCPS	49.281	0.000	I(0)
FDI	73.861	0.000	I(0)
PSI	70.806	0.000	I(0)
lnEMPI	46.955	0.000	I(0)

Source: Authors' computation based on the data from WDI, WGI, and UNCTAD (2020)

The unit root test reveals that all variables in the model are stationary in level. Thus variables in level are used in the regressions. Finally, Tables 9 shows the Ramsey RESET and the Wooldridge tests.

Table 9 Ramsey RESET and Wooldridge tests

	Manufacturing exports	Manufacturing imports
Ramsey RESET test		
F	0.27	0.12
Prob > F	0.8462	0.9477
Wooldridge autocorrelation test		
F(1, 8)	25.914	0.369
Prob > F	0.0009	0.5603

Source: Authors' computation based on the data from WDI, WGI, and UNCTAD (2020)

These results indicate a good specification of the manufacturing export and import equations (Ramsey RESET test). The test of Wooldridge reveals the presence of an auto-correlation of order 1 of the error for the export equation while it indicates an absence of this auto-correlation in the import equation. So the IV method takes into account the autocorrelation only in the estimation of the export equation.

5.2 Results and discussion

5.2.1 Analysis of direct effects of liberal trade policy

Table 10 below shows the findings of the equations of manufacturing exports and manufacturing imports with as the variable of interest the index of the implementation of TLS denoted IPCR. The Hausman specification test favors the FE model in the manufacturing export demand equation (Columns 1-2) while it favors the RE model in the manufacturing import demand equation (Columns 4-5). Nevertheless, the findings indicate that regardless of the estimation technique the implementation of the ECOWAS TLS is positively and significantly correlated with manufacturing exports and manufacturing imports. This means that manufacturing performances increase with the level of the implementation of ECOWAS TLS protocols and conventions. This is consistent with the theoretical prediction. However, we find that the coefficient associated with the TLS implementation index increases when moving from the traditional estimation technique to the IV approach. This observation is made by Frankel and Romer (1999) in their analysis of the trade-growth link. Finally, unlike previous studies (Santos-Paulino and Thirwall, 2004; Zakaria, 2014) our findings show that the implementation of the TLS increases manufacturing exports more than manufacturing imports. This difference could be explained by the measurement of trade policy.

Regarding the control variables, the findings indicate that foreign GDP is not a determinant of the growth of manufacturing exports while the effect of domestic GDP on manufacturing imports is mixed according to estimation techniques. Thus, the neutral effect of foreign income on manufacturing export demand could be explained by the weak competitiveness of local industries which pushes the foreign economy to prefer its product. Findings based on traditional estimation techniques show that domestic GDP positively influences manufacturing imports. The opposite finding is obtained when controlling for the endogeneity. The negative effect of domestic income on manufacturing import demand could be explained by the preference for local manufacturing products. The reduction in the exchange rate has no effect on the manufacturing export demand while the manufacturing import demand increases with the level of the exchange rate. Thus, the increase in the exchange rate reduces the competitiveness of the local industry which shrinks and therefore local consumption is then oriented outward.

Overall, the development of communication infrastructure is boosting demand for manufacturing exports and imports. Thus, an easily accessible, reliable and less expensive communication infrastructure reduces transaction costs, facilitates the imports of inputs necessary for manufacturing production and encourages exports of locally produced products. At the same time, a developed communication infrastructure also stimulates imports of manufactured goods by domestic companies and domestic purchases by consumers. This will make it possible to maintain an equilibrium in the trade balance for this type of product. But, financial development seems to have a neutral effect on manufacturing performance. Specifically, regardless of the estimation technique, domestic credit is negatively, but not significantly, correlated with manufacturing exports. This finding is due to the weakness of the financial system (the average for the sample considered is only 18.29 per cent of GDP) observed in developing countries. This blocks economic transactions.

Table 10 Results of the regressions: Directs effects of liberal trade policy

Dependent variable	Manufacturing exports			Manufacturing imports		
	FE (1)	FE (2)	IV (3)	RE (4)	RE (5)	IV (6)
lnGDP*	-1.525 (2.224)	-0.099 (5.832)	-1.852 (1.699)			
lnGDP				0.101*** (0.012)	0.114*** (0.012)	-0.121* (0.073)
lnRER	0.014 (0.703)	0.036 (0.661)	0.351 (0.978)	0.295*** (0.097)	0.306*** (0.095)	0.300*** (0.083)
IPCR	3.051** (1.513)	3.161* (1.714)	7.493* (3.917)	0.760*** (0.114)	0.684*** (0.169)	0.918*** (0.298)
lnMOB	0.274*** (0.091)	0.272*** (0.094)	0.452** (0.209)	-0.004 (0.012)	-0.009 (0.013)	0.025* (0.015)
lnDCPS	-0.675 (0.632)	-0.662 (0.604)	-1.179 (0.751)	0.065** (0.029)	0.051* (0.026)	0.057 (0.049)
FDI	-0.049** (0.024)	-0.052* (0.027)	-0.066* (0.039)	0.024*** (0.005)	0.027*** (0.004)	0.019*** (0.004)
PSI	-0.146 (0.176)	-0.148 (0.183)	-0.024 (0.199)	0.113*** (0.022)	0.105*** (0.021)	0.084*** (0.023)
lnEMPI	-0.249 (0.186)	-0.259 (0.206)	-0.470* (0.277)	-0.187*** (0.054)	-0.129** (0.056)	-0.093** (0.031)
Cons	50.464 (67.416)	8.721 (8.001)	—	-0.024 (0.384)	0.323 (0.545)	
Trend	No	Yes	No	No	Yes	No
Obs	143	143	135	145	145	145
Countries	9	9	9	9	9	9
F	277.34***	—	2.49**			9.39***
Wald Chi2 (8)				5279.27***	—	
Hausman test	26.77***	20.99**		-2218.08	-84.03	
R ²	0.1630	0.1641	0.0591	0.9008	0.9334	0.3753
HJS			0.894			0.229
ET			6.292**			5.219**
1 st stage of regression						
F			10.51***			27.08***

Notes: HJS=Hansen J Statistic; ET=Endogeneity test; IV=Instrument variables: xtivreg2.

Population density (people per sq. km of land area) and 3-year lagged value of the implementation index of TLS are used as valid excluded instruments for the findings in column (3); the 2-year lagged value of the implementation index of TLS are used as valid excluded instruments for the findings in column (6). The temporal trend is arbitrarily included because the Ramsey RESET (without trend) indicates the good specification of the model. ET confirms the endogeneity of the variable of interest.

*, **, and *** denote statistical significance at 10%, 5%, and 1% level, respectively.

Robust standard errors in parentheses.

The findings show that the growth in foreign direct investment flows is accompanied by a reduction in manufacturing exports while it is accompanied by an increase in manufacturing imports. These findings could be explained by the fact that inward FDI flows are directed towards non-productive activities such as the exploitation of natural resources and the activities of importing manufactured products. The findings show that the level of governance has no effect on exports as it stimulates manufacturing import demand. This finding is not surprising given the low average (-0.43) in the level of political stability which reflects poor governance. This bad governance creates an unfavorable environment for productive

investments. Finally, the findings indicate that increasing industrial employment reduces manufacturing performances. This finding could be explained by the low level of qualification of employees or by the low average of employment recorded in the industry (11.49% of total employment) or by the fact that the industrial employment is directed towards the non-manufacturing industry.

5.2.2 Analysis of indirect effects of liberal trade policy

In this section, we analyze the indirect effects of trade policies using the multiplicative interaction model. Table 11 shows the findings of the interaction model estimates in which the TLS implementation interacts with the communications infrastructure.

Except the findings in column 3 obtained without controlling for the endogeneity of the variables of interest, Table 11 shows a positive and significant coefficient of the interaction between the implementation of the TLS and the development of the infrastructure of communication (mobile cellular subscriptions). This reflects a complementarity relationship between the implementation of the TLS and mobile cellular subscriptions. In other words, the marginal effect of the implementation of the TLS on manufacturing exports and imports increases with the level of development of the communication infrastructure. Based on the IV estimation technique, the marginal effects are materialized by the following equations:

$$\frac{\partial \ln ManuX}{\partial IPCR} = \alpha_3 + \alpha_6 \cdot \ln MOB = 3.431 + 1.124 \cdot \ln MOB \quad (11)$$

$$\frac{\partial \ln ManuM}{\partial IPCR} = \beta_3 + \beta_6 \cdot \ln MOB = -0.227 + 0.240 \cdot \ln MOB \quad (12)$$

Table 11 TLS (IPCR), mobile cellular subscriptions, manufacturing trade performances

Dependent variable	Manufacturing exports		Manufacturing imports	
	FE (1)	IV (2)	FE (3)	IV (4)
lnGDP*	-0.422 (1.991)	-1.136 (1.324)		
lnGDP			-0.106 (0.118)	0.069 (0.138)
lnRER	-0.022 (0.745)	-0.220 (0.865)	0.299*** (0.068)	0.251** (0.120)
IPCR	1.455 (1.478)	3.431 (3.039)	0.423 (0.374)	-0.227 (0.569)
lnMOB	-0.438 (0.340)	-0.567 (0.484)	0.003 (0.049)	-0.223** (0.101)
IPCR•lnMOB	0.778** (0.387)	1.124** (0.510)	0.005 (0.046)	0.240** (0.098)
lnDCPS	-0.525 (0.563)	-0.728 (0.505)	0.111* (0.065)	0.211** (0.085)
FDI	-0.038* (0.023)	-0.043 (0.036)	0.019*** (0.003)	0.023*** (0.004)
PSI	-0.148 (0.167)	0.006 (0.162)	0.065** (0.028)	0.046 (0.038)
lnEMPI	-0.528*** (0.151)	-0.810*** (0.277)	-0.068** (0.033)	-0.151*** (0.050)
Cons	17.407 (67.416)		4.537* (2.519)	
Obs	143	143	145	145
Countries	9	9	9	9
F		3.70***		5.60***
Hausman test	24.78***		130.64***	
R ²	0.2296	0.1702	0.4100	0.1607
HJS		0.557		0.902
ET		8.069**		9.105**
1 st stage of regression				
F_IPCR		15.83***		21.65***
F_lnMOB		27.77***		28.93
F_Interactions		21.10***		29.00***

Notes: HJS=Hansen J Statistic; ET=Endogeneity test; IV=Instrument variables: xtivreg2.

Population density (people per sq. km of land area), dummy variable of the financial crisis in 2008, and 2-year lagged values of the implementation index of TLS and mobiles are used as valid excluded instruments for the findings in column (2); population rate, dummy variable of the financial crisis in 2008, and 2-year lagged values of the implementation index of TLS and mobiles are used as valid excluded instruments for the findings in column (4). ET confirms the endogeneity of the variables of interest.

*, **, and *** denote statistical significance at 10%, 5%, and 1% level, respectively.

Robust standard errors in parentheses.

When assessed at the average level of mobile cellular subscriptions, the marginal effects of TLS implementation on manufacturing exports and imports are approximately 7.52 and 0.65, respectively. The findings in Table 12 show the effect of the interaction between TLS implementation and financial development on manufacturing trade performances.

Table 12 TLS (IPCR), domestic credit, manufacturing trade performances

Dependent variables	Manufacturing exports		Manufacturing imports	
	RE	IV	RE	IV
	(1)	(2)	(3)	(4)
lnGDP*	-2.557 (2.269)	-0.139 (1.802)		
lnGDP			0.101*** (0.012)	-0.006 (0.101)
lnRER	0.355 (0.626)	0.478 (0.792)	0.287*** (0.094)	0.278*** (0.108)
IPCR	-11.709* (6.934)	-16.243 (10.563)	0.989 (1.184)	-0.942 (1.238)
lnMOB	0.205 (0.166)	0.289* (0.166)	-0.003 (0.013)	0.028 (0.019)
lnDCPS	-2.111 (1.633)	-0.035 (0.049)	0.115 (0.220)	-0.628** (0.315)
IPCR•lnDCPS	4.148* (2.261)	8.443** (3.345)	-0.079 (0.384)	0.773* (0.433)
FDI	-0.061 (0.047)	-0.035 (0.049)	0.024*** (0.004)	0.024*** (0.005)
PSI	0.541 (0.359)	0.123 (0.206)	0.109*** (0.026)	0.103*** (0.031)
lnEMPI	-0.549 (0.456)	-1.191*** (0.346)	-0.181*** (0.036)	-0.165*** (0.050)
Cons	89.326 (73.083)		-0.135 (0.714)	
Obs	143	143	145	145
Countries	9	9	9	9
F		2.52**		6.71***
Wald Chi2 (8)				
Hausman test	5.97		-7599.88	
R ²	0.6150	0.1432	0.9032	0.2594
HJS		1.828		2.083
TE		7.988**		9.262**
1 st stage of regression				
F_IPCR		11.28***		17.83***
F_lnDCPS		11.35***		14.88***
F_Interactions		20.85***		29.05***

Notes: HJS=Hansen J Statistic; ET=Endogeneity test; IV=Instrument variables: xtivreg2.

Population rate, dummy variable of the financial crisis in 2008, and 2-year lagged values of the implementation index of TLS and financial development are used as valid excluded instruments for the findings in column (2); population rate, dummy variable of the financial crisis in 2008, and 2-year lagged values of the implementation index of TLS and its interaction with financial development are used as valid excluded instruments for the findings in column (4). ET confirms the endogeneity of the variables of interest.

The findings in Table 12 also reveal a positive and significant coefficient of the interaction between TLS implementation and financial development. This implies a relationship of complementarity between the two variables. Therefore, the effect of TLS on trade performances increases with the level of financial development. From the findings based on the IV approach, the marginal effects of the TLS implementation are represented by equations 13 and 14 for manufacturing exports and imports, respectively.

$$\frac{\partial \ln ManuX}{\partial IPCR} = \alpha_3 + \alpha_6 \cdot \ln DCPS = -16.243 + 8.443 \cdot \ln DCPS \quad (13)$$

$$\frac{\partial \ln ManuM}{\partial IPCR} = \beta_3 + \beta_6 \cdot \ln DCPS = -0.942 + 0.773 \cdot \ln DCPS \quad (14)$$

When assessed at the average level of financial development, the marginal effects of TLS implementation on manufacturing exports and imports are approximately 8.29 and 1.30, respectively.

6 Conclusion and recommendations of economic policies

This paper analyses the effects of trade policies on foreign trade performances of the countries of the Economic Community of West African States (ECOWAS) during the period 1996-2017. Specifically, it is first to examine the effects of trade policies on manufacturing exports and manufacturing imports. Then, to compare the effect of these policies on exports to those on imports. Finally, to identify new channels of transmission (exchange rate and income being the channels traditionally analyzed). The ECOWAS Trade Liberalization Scheme (TLS), instituted in 1979, is the indicated program to appreciate liberal trade policy. It is grace to this policy and the support of the African Union (Abuja Treaty) that the ECOWAS Common External Tariff (CET) entered into force on January 1, 2015. A new index relating to the implementation of the TLS is used as a proxy for liberal trade policy. The study includes a rich set of control variables including real exchange rate, communication infrastructure development, financial development, foreign direct investment, governance and industrial employment. Due to data availability, the sample covers 9 ECOWAS countries.

Linear and non-linear models of trade performances are studied to determine direct and indirect effects of liberal trade policy on manufacturing trade performances. We used the instrumental variable-IV method (*xtivreg2*) as the main estimation technique and the findings are compared with those obtained from traditional estimation techniques (fixed effects or random effects according to the Hausman specification test). The IV method estimates indicate that the implementation of the TLS significantly contributes to the growth of manufacturing performances. These findings are robust to different estimation techniques. However, contrary to the existing literature on the subject, these findings indicate that liberal trade policy stimulates imports, but more exports. The findings of the non-linear model show that the effect of liberal trade policy on manufacturing exports and imports depend on the level of financial development or the level of the communication infrastructure.

Based on these findings, ECOWAS policy-makers should continue to implement the TLS by ensuring compliance and harmonization of trade practices and mitigating the impact of any vulnerability to manufacturing exports and imports markets. In particular, policy-makers should continue to apply the ECOWAS TLS by prioritizing the upgrading of the manufacturing capacity of the countries of the community to fully reduce the deficit of the manufacturing trade balance. Thus, now that ECOWAS has reached the levels of integration set by the Abuja Treaty, policy-makers must encourage all the countries of the said zone to ratify the AfCFTA in order to achieve this goal. Finally, policy-makers need to combine trade policies with other economic reforms including the development of communication infrastructure and the development of the financial system. Significant reforms in these sectors would reduce transaction costs and facilitate trade and trade liberalization.

Other avenues of research are possible. Subsequent studies could analyze the effect of TLS implementation on other sectors, global value chains, economic growth. Subsequent studies could also explore other channels such as governance, human resource development, access to electricity. Finally,

it would be interesting to enlarge the sample to all the African countries which are also engaged in the process of continental integration.

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