

The Distributional Effects of ECOWAS Common External Tariffs in a Rich Country with Poor People

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Abstract

Trade policies often have a different impact on economic agents due to the transmission mechanism through which they operate. In this context, this paper uses Nigeria's micro- and macro-economic data to investigate the distributional effects of Common External Tariff (CET) of the Economic Community of West African States (ECOWAS). The distributional effects were evaluated from the perspective of households as producers and consumers. The empirical strategy proceeds with two steps: first, by determining the extent of the tariff pass-through to domestic prices; and lastly, evaluating the impact of the price change on household welfare. The findings indicate that domestic prices declined due to the higher tariff pass-through. This decline was higher in states closer to ports and borders, which face lower trade costs. The ECOWAS CET had net positive effects on the welfare of households, largely due to the gains from the expenditure basket. The expenditure gains from the adoption of the trade policy through lower prices outweigh losses incurred in their purchasing power through lower income. Further, it was discovered that richer households experienced less welfare gains than the poorer ones, while the income of urban households was better than that of their rural counterparts. Therefore, this study provides evidence that the price transmission mechanism, household characteristics and geographical location are important determinants in assessing trade policy effects in Nigeria. The paper recommends inclusive domestic policies and social safety net measures, particularly for vulnerable subsistence agricultural households in rural areas, in order to mitigate the effects of the ECOWAS CET on their income.

Keywords: Trade Policy, Distribution Effects, Micro and Macro data, Nigeria

JEL Classification: C01, C23, F13

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1.0 Introduction

International trade serves as a veritable tool with which any country, especially developing country like Nigeria, could integrate with the rest of the world. Its importance in globalization cannot be overemphasized such that it offers developing countries the opportunity and potential for rapid growth and reduction in poverty. These embedded opportunities in global trade among others are the reasons behind Nigeria and other developing countries' continuous participation in global market. Nigeria is endowed with abundant natural resources, especially crude oil, from which it derives over 90% of its foreign earnings. The country had recorded an average growth rate of around 7% during the last 5 years. However, this growth has not translated into improved welfare of the people which reinforce the paradox of Nigeria as a rich country with many poor people (World Bank, 1996). Aside this, there has been an increase in the unemployment rate and has reached 24% in 2011 (NBS, 2013), while the share of population living below the poverty line has increased from 43% in 1985 to 55% in 2004 (World Bank, 2013). To explain this situation requires a critical analysis of the government policies and their effects. Specifically, this study sheds light in particular to the trade dimension and analyzes the impact on households' welfare of the adoption of Economic Community of West African States' Common External Tariffs (ECOWAS-CET).

In order to further integrate the economy into global market, particularly in the ECOWAS sub-region, Nigeria in 2005 committed itself into adopting ECOWAS-CET, which reduces tariff rates from 0% - 150% to 0% - 50% during the transition period of 2006-2007. These tariffs stand as ECOWAS MFN rates to non-member countries and are part of the trade liberalization scheme (TLS) aimed at enhancing the sub-regional trade integration. ECOWAS-CET establishes four tariff bands, namely 0% for social and necessities, 5% for raw materials, 10% for intermediate goods and 20% for finished goods that are not produced locally. Nigeria was granted a fifth band of 35% for finished goods manufactured locally.

The distributional effects of the adoption of ECOWAS-CET will depend on whether the households are net consumer or producer of commodities. The transmission mechanism and poverty impact of this trade policy are usually uncertain in the literature. The different pass-through mechanisms upon which the trade policies operate are usually responsible for variation of their impact. Usually, trade policies are reflected in local price changes and returns to factors, which in turn have effects on the consumption and production decisions of the households (Nicita, 2004, 2009; Marchand, 2012; Topalova, 2005, 2010; Porto, 2006; Castiliho et al., 2012). In this context, this paper asks the following questions: To what extent as the ECOWAS-CET affected domestic prices? and what have been the effects of price changes on household welfare? It is from this that this study draws its objective, which is to empirically investigate the poverty and inequality effects of the ECOWAS-CET in Nigeria.

A perusal of the literature shows that there is wide range of analyses in the literature on the distributional impact of globalization or trade liberalization; however, only very few studies are available evaluating the trade policy impact of the ECOWAS-CET in Nigeria. Balogun and Dauda (2012), Urama *et al.* (2012), Odu (2012), Oyejide (2012), and Nwafor (2006) look only at the macroeconomic impact of the CET on Nigeria. The potential distributional impact has been examined exclusively through ex-ante studies: Nwafor *et al.* (2005) use a Computable General Equilibrium (CGE) model to examine the potential impact of adoption of the CET on rural and

urban poverty, Marchat and Rajhi (2004) and Soludo and Oji (2003) conduct ex-ante analyses at the sectoral and household levels. There are few if any ex-post studies that examine the poverty and inequality effects of the ECOWAS-CET on Nigerian households or the level of tariff pass-through into the country's domestic prices. Thus, this paper fills this gap by analysing the impact of the ECOWAS-CET on Nigeria's households through an ex-post econometric analysis using both macro and household survey data.

2.0 Background

The trade policy to a large extent determines the volume of trade flows in different countries. Nigeria's trade policy has been protective over the years, but efforts have been made recently to liberalize trade along with other sub-regional partners in order to reap the mutual benefits related to increase trade. An effort towards the liberalization of trade, especially within and outside West Africa sub-region is the country's acceptance of the Common External Tariffs (CET) as introduced by ECOWAS. Prior to consenting to CET, Nigeria's had a tariff peak of 150% that later reduced to 50% during the transition period, indicating that the country has liberalized its trade during the period by about 67% from pre-ECOWAS CET. Imports responded geometrically with about 967% increase in 2011 from the 1990 figure.

Nigeria accounts for more than half of the sub-region's imports. Its total imports increased from \$6billion in 1990 to \$64billion in 2011, while ECOWAS' total imports rose from \$14billion in 1990 to \$111billion in 2011 (UNCTAD, 2013). In terms of imports composition, Nigeria accounted for 40% of ECOWAS' agricultural import in 2009 and 79% in 2011, while it had 79% and 65% of industrial import in 2009 and 2011, respectively. These statistics show the huge trade impact of Nigeria in the sub-region and clarify its late and reluctant acceptance of the trade liberalization scheme of ECOWAS. In fact, due to adoption of CET, Nigeria's tariff on agricultural imports dropped from about 32% in 2000 to 15% in 2010, while that of industrial goods fell from 25% in 2000 to 11% in 2010 (WITS, 2013).

Table 1: Nigeria's imports and tariffs, 2000–2010

Sector	Year	Total imports (millions of USD)*	Weighted average tariffs (percent)
Agriculture	2000	963	30.2
	2002	1,506	32.9
	2005	2,054	22.4
	2008	3,845	9.8
	2010	3,436	8.8

Source: World Bank (2013a)

*Note that the imports are in nominal terms.

Table 1 shows that the agricultural sector experienced high liberalization, with the average weighted tariffs declining from about 33% in 2002 to 9% in 2010. This means that agricultural

trade has been liberalized by about 73% within the period¹. Correspondingly, the imports of agricultural commodities rise from \$1.5 billion in 2002 to \$3.4 billion in 2010, which is an increase of more than 100%. Although, as noted earlier, imports dropped in 2010, this was due to the pronounced restiveness by the militants in the oil rich Niger-Delta region had led to a considerable drop in crude oil earnings, which affected the foreign exchange availability and in turn negatively impacted on these sectors of the economy, especially their propensity to import during the period.

Nigeria's global interaction and integration have been boosted by this liberalization, which was accompanied by substantial adjustments in agricultural product's prices. An analysis of the observed prices for the period between 2006 and 2011² shows that there is a slight consistency in price movement across the states and years, which shows relative price adjustment stability in the agricultural products (see table 2). Some oscillations are observed in the variance of the log price across the states and years, suggesting that there are considerable price differential across and within the states over these years due to individual preferences, varying input costs, state endowment differentials and market regulations.

Table 2: Domestic prices³ by year and state, 2006–2011 (log)

State	Agriculture			
	2006	2007	2009	2011
Abia	5.386 (1.201)	5.418 (1.160)	5.580 (1.145)	5.738 (1.270)
Adamawa	5.205 (1.256)	5.143 (1.373)	5.413 (1.150)	5.559 (1.266)
Akwalbom	5.419 (1.182)	5.445 (1.165)	5.615 (1.125)	5.861 (1.258)
Anambra	5.274 (1.105)	5.380 (1.166)	5.616 (1.232)	5.712 (1.251)
Bauchi	5.118 (1.373)	5.082 (1.332)	5.352 (1.190)	5.90 (1.336)
Bayelsa	5.708 (1.226)	5.473 (1.038)	5.612 (1.063)	5.871 (1.393)
Benue	5.151 (1.276)	5.178 (1.423)	5.427 (1.229)	5.722 (1.393)
Borno	5.187 (1.394)	5.169 (1.396)	5.337 (1.230)	5.516 (1.189)
Cross River	5.405 (1.173)	5.362 (1.129)	5.522 (1.124)	5.847 (1.184)
Delta	5.289 (1.070)	5.432 (1.110)	5.587 (1.039)	5.812 (1.196)

¹There was an increase in tariffs in 2002 going by what we have in 2000 as shown in table 1. However, imports did not respond to tariff increment because of the tariff increase in 2002.

²The commodities' prices were reported as obtained from the National Bureau of Statistic (NBS). The prices are averages for all states and at the national level.

³ Note that the prices are nominal terms.

Ebonyi	5.241 (1.070)	5.320 (1.155)	5.594 (1.120)	5.761 (1.127)
Edo	5.417 (1.078)	5.461 (1.112)	5.568 (1.150)	5.821 (1.223)
Ekiti	5.245 (1.170)	5.312 (1.296)	5.657 (1.357)	5.698 (1.253)
Enugu	5.252 (1.194)	5.390 (1.263)	5.612 (1.171)	5.635 (1.246)
Gombe	5.016 (1.284)	5.120 (1.396)	5.345 (1.226)	5.546 (1.298)
Imo	5.356 (1.067)	5.374 (1.157)	5.534 (1.186)	5.901 (1.321)
Jigawa	4.840 (0.965)	4.952 (1.246)	5.298 (1.189)	5.486 (1.184)
Kaduna	4.898 (1.099)	5.067 (1.377)	5.423 (1.289)	5.635 (1.353)
Kano	5.025 (1.291)	4.984 (1.338)	5.432 (1.396)	5.537 (1.270)
Katsina	5.0233 (1.231)	5.052 (1.309)	5.384 (1.304)	5.591 (1.371)
Kebbi	5.143 (1.216)	5.084 (1.288)	5.397 (1.185)	5.598 (1.285)
Kogi	5.098 (1.100)	5.132 (1.180)	5.632 (1.261)	5.777 (1.293)
Kwara	5.127 (1.302)	5.141 (1.376)	5.481 (1.254)	5.699 (1.344)
Lagos	5.269 (1.108)	5.361 (1.184)	5.658 (1.233)	5.780 (1.237)
Nasarawa	5.212 (1.393)	5.158 (1.445)	5.472 (1.284)	5.701 (1.460)
Niger	5.104 (1.266)	5.131 (1.332)	5.385 (1.180)	5.618 (1.318)
Ogun	5.128 (1.130)	5.245 (1.246)	5.583 (1.180)	5.730 (1.201)
Ondo	5.219 (1.234)	5.278 (1.282)	5.514 (1.197)	5.721 (1.238)
Osun	5.218 (1.301)	5.216 (1.408)	5.465 (1.256)	5.648 (1.301)
Oyo	5.169 (1.285)	5.175 (1.326)	5.480 (1.231)	5.668 (1.318)
Plateau	5.177 (1.311)	5.143 (1.411)	5.577 (1.338)	5.669 (1.345)
Rivers	5.438 (1.186)	5.422 (1.179)	5.633 (1.155)	5.841 (1.242)
Sokoto	5.371 (1.461)	5.068 (1.119)	5.454 (1.155)	5.652 (1.307)
Taraba	4.822	5.172	5.336	5.609

	(1.225)	(1.375)	(1.136)	(1.281)
Yobe	5.023 (1.138)	5.105 (1.238)	5.420 (1.242)	5.711 (1.400)
Zamfara	5.101 (1.292)	4.993 (1.273)	5.354 (1.200)	5.604 (1.343)
Federal Capital Territory/Abuja	5.133 (1.265)	5.252 (1.368)	5.585 (1.317)	5.769 (1.443)
National	5.195 (1.171)	5.222 (1.219)	5.496 (1.155)	5.585 (1.161)

Source: Author's estimates.

Notes: Nominal domestic prices are the unit values that were sourced from NBS commodity prices and averaged across the states. Rice, maize, sorghum, chicken, soya beans, meat, fish, groundnut, orange and shrimps were used for agricultural commodities, while manufactured products consist of processed items.

3.0 Data Description

This study uses different households' survey conducted by the National Bureau of Statistics (NBS), they are the Harmonized National Living Survey (HNLSS), General Households' Survey – Panel (Post Planting) and General Households' Survey – Panel (Post – Harvest)⁴. The following round of these surveys provided information on expenditure, income, characteristics of households, industrial affiliation, education and gender.

The World Integrated Trade Solution (WITS) database provided the tariff data, while the world prices were sourced from the World Bank commodity price datasheet at the nominal US dollar, which was converted to domestic currency at the prevailing exchange rates. The domestic consumer prices were also sourced from the National Bureau of Statistics⁵. All Nigerian states including the Federal Capital Territory (FCT) were considered. Efforts were also made to categorize the states along their geopolitical zones in order to reflect policy direction and stimulate national strategical planning and programmes in this respect. There are six geopolitical zones in Nigeria, they are; Southwest, Southeast, South-south, Northwest, Northeast and North – central.

Time dummy variable was included in the pass-through model. The differentials of tariff pass – through across time are capture by these fixed effect. The distance of each state to the nearest seaport was calculated using the Globe feed Distance Calculator. Nigeria has 21 seaports that could be used for importation of goods to the country (Jaja, 2011). The major seaports are; Tin Can Island, Apapa, Kirikiri (Lagos), Warri (Delta), Port Harcourt (Rivers State) and Calabar (Cross River). Most seaports activities take place in Lagos and Rivers states⁶.

⁴ MHRS was dropped due to non – availability of variables of interest, especially households' wage income, sales among others.

⁵ This data is not available in any of their publication or online, but we requested for it through our contact at their Headquarters and we were given the data.

⁶ All these seaports are located in the Southern part of the country.

4.0 The Methodology

This study shall build on the methodological approaches of Porto (2006), Nicita (2009), and Marchand (2012) to measure the effects of ECOWAS' CET on households' welfare through domestic price changes. First, we study the impact of ECOWAS-CET on domestic prices; then analyzed the effect of price changes on households' impoverishment.

Tariffs-prices nexus Model

This sub-section of the empirical strategy makes some specific assumptions for the model. It is assumed that consumer goods are not differentiated by origin, and that their prices are at average levels of imported and domestic producer prices. Also, an assumption is made that trade costs only affect imported goods. Thus, the retail price that households face by consuming a good g at time t in state s , P_{gts} , will depend on the domestic producer prices of the good (PP_{gts}^α), the international price in domestic currency (P^*), tariffs (τ_{gt}) and trade costs (TC_{gts}), which is written as:

$$P_{gts} = PP_{gts}^\alpha (P^* (1 + \tau_{gt}) TC_{gts})^{1-\alpha}, \quad (1)$$

Where α measures the extent to which the local varieties dominate the imported ones is, $1 - \alpha$ is the pass-through, which indicates the extent to which international prices, tariffs, and trade costs affect domestic prices. If $\alpha = 0$, then there is a complete pass-through and the full extent of the border price changes is reflected in the consumer prices, which is likely to occur when no local production exists. If $\alpha = 1$, then the pass-through is nil, indicating that there is no effect of border price changes on the price of goods paid by consumers, which corresponds to a situation of relative autarky where domestic markets are dominated by local producers. Equation (2) presents the linearized form of equation (1).

$$\ln P_{gts} = \alpha \ln PP_{gts} + (1 - \alpha) \ln P^* + (1 - \alpha) \ln (1 + \tau_{gt}) + (1 - \alpha) \ln TC_{gts}. \quad (2)$$

Following Nicita (2009) and Campa and Goldberg (2002), an unrestricted form of Equation (2) is assumed, which gives the following specification:

$$\ln P_{gts} = \beta_0 + \beta_1 \ln PP_{gts} + \beta_2 \ln P^* + \beta_3 \ln TC_{gts} + \gamma \ln (1 + \tau_{gt}) + \varepsilon_{gts}. \quad (3)$$

In equation (3), distance is used as a proxy for trade costs. The shortest distance to the nearest main port of entry is used. Thus, in line with this paper's objective of distilling the effect of trade policy on domestic prices at the state level, the empirical strategy includes an interaction term

between distance and the tariff rate in the final equation specified. This is to isolate the domestic impact of tariff changes in the pass-through. Thus, in line with Nicita (2009) and Marchand (2012), the following econometric specification is adopted to estimate the tariff pass-through effect in the case of Nigeria:

$$\ln P_{gts} = \beta_0 + \beta_1 \ln PP_{gts} + \beta_2 \ln P^* + \beta_3 \ln TC_{gts} + \beta_4 \ln (1 + \tau_{gt}) + \beta_5 \ln (1 + \tau_{gt}) TC_{gts} + \beta_6 (\ln (1 + \tau_{gt}) TC_{gts})^2 + \pi_t + \varepsilon_{gts}, \quad (4)$$

where P_{gts} represents the domestic price of good g in states at time t , PP_{gts} is the producer price of the good, P^*_{gt} is the world price, TC_{gst} is the trade cost, τ_{gt} is the tariff, μ_s stands for state fixed effects to control for regional price differences, π_t are time fixed effects, and ε_{gst} is the error term. The study assumes that the error term does not include factors that affect tariffs and prices simultaneously controlling for time.

Most reduced-form models often assume a perfect pass-through, that is, changes in tariffs perfectly transmitted to domestic prices, and thus to households. There are plenty of market imperfections and transaction costs, however, that may affect this transmission chain and explain the absence of clear empirical results in line with the theoretical predictions. This is especially the case in developing countries such as Nigeria, where geographical locations and domestic markets are highly segmented.

The nominal consumer prices have been used for seven agricultural products, which were sourced from the National Bureau of Statistics of Nigeria. This same source also provided the producer prices, while the world prices were converted to local prices at the prevailing exchange rates and the data were sourced from World Bank Commodity Prices database. The nominal domestic consumer prices for each product were collected across the 36 states and federal capital territory. Distance from each state's capital to the nearest seaport was used from GLOBEFEEED distance calculator. The World Bank World Integrated Trade Solution database provided the tariffs, which were applied to the product lines at HS 2-digit level for the period from 2006 to 2011. All these data were used in a panel data for 37 observations across 6 years.

Poverty/Welfare impact Model

The empirical analysis in this sub-section examines the impact of the ECOWAS-CET on Nigerian households by focusing on the price changes of the traded goods. The specific results regarding the welfare effects of trade liberalization in geopolitical zones and states are presented in Table 3.

In Nigeria, many of the households are usually consumers and producers of goods, thus, it is important to recognized these roles of the household when analysing any policy impact on

household's welfare⁷. Generally, the income from sales constitute the larger proportion of household income because sales of agricultural and manufacturing goods constitute the larger proportion of household income. In the rural areas, agricultural sales often constitute the bulk of the income to the household. However, in the urban areas, income from the manufacturing sales constituted the most important component of household income. Expenditure on agriculture, especially food items often form bulk of the household expenses.

The welfare model is specified to estimate the effects of trade policy on household welfare. This specification modifies the models of Porto (2006), Nicita (2009), and Marchand (2012), which indicate that changes in utility dU_{hs} of household h in states depend on the changes in domestic prices, agricultural production, and consumption.

$$dU_{hs} = \sum_g \theta_{hg}^x dP_{gs} - \sum_g \theta_{hg}^c dP_{gs}, \quad (6)$$

where θ_{hg}^c is the income share spent on good g by household h , θ_{hg}^x is the income share obtained from selling goods produced at price P , and dP_{gs} is change in prices. Aggregate welfare, which is taken to be the sum of poverty and inequality in the household, is therefore given by the sum of the welfare of all households. Thus, households' exposure to change in price will depend on their expenditure allocation. The calculation for each household was done with consideration to expenditure and income, the different type of labour supplied (skilled and unskilled) and given the fact that the price effects estimation was differentiated by states. Aggregating the results across household, the study finds that the effects of ECOWAS-CET on households in Nigeria vary both across income groups and states. This implies that there are differences in economic behaviours, endowments and the impact of this trade policy on the state economies. This analysis only considers the effects of price changes on welfare.

5.0 Research Findings

Table 3 shows the estimates of tariff pass-through for prices of both agricultural and manufactured goods⁸. The table presents the estimated results for four different specifications of equation (4): estimation without tariffs-distance interaction in column 1⁹, estimation without tariffs-distance interaction, but with time fixed effects in column 2, estimation with tariffs-distance interaction in column 3 and estimation with tariffs-distance interaction and time fixed effects in column 4. Table 3 is based on national data in which the estimations were performed using the feasible generalized least square (FGLS) cross-sectional time series, which corrected for any heteroskedasticity in standard errors.¹⁰ The table shows evidence of significant pass-

⁷ See Singh et al.(1986) for the farm household model, a standard model, which is often used to measure change in households' welfare.

^{8 8} The producer prices are the domestic substitute prices, which are significant in all estimates.

⁹ It is from this specification that the study got the state pass-through through the interaction of tariff and state variables (see Marchand, 2012).

¹⁰ The Hausman-Taylor estimation reveals that the instrument variables are not required.

through in the estimates of prices of all agricultural goods and the tariff pass through tends to increase substantially with the inclusion of time fixed effects. This indicates that the pass-through in agricultural sector is time –specific. The tariff-distance interaction, which is another variable of interest, is statistically significant with the expected sign in the agricultural estimates.

For agricultural goods, the tariff pass-through coefficient is estimated to be between 73 and 99 percent. The results show that any exclusion of time fixed effects reduces the estimated pass-through effect for agricultural goods, indicating that the pass-through depends on time, that is, that agricultural prices tend to change with time, which confirms the findings of Marchand (2012).

The results also indicate that the consumers of agriculture goods benefited from the tariff reduction through the ECOWAS-CET given the magnitude of the pass-through. . Thus, when the distance is interacted with the tariffs, pass-through is found to significantly decline with distance from the seaports. All the coefficients of interest (tariffs and tariff-distance) have the expected signs and significant in agricultural goods estimates. All standard errors are mitigated against heteroscedasticity in the FGLS estimation.

Table 3: Tariff pass-through to domestic prices

Agriculture	Dependent Variable – Log Prices			
	1	2	3	4
Constant	-1.4507*** (0.1682)	-1.0552*** (0.1702)	-1.4960*** (0.1674)	-1.0983*** (0.1694)
Tariffs	0.7377*** (0.1120)	0.9910*** (0.1152)	0.3694** (0.1534)	0.6570*** (0.1533)
World Price	0.3133*** (0.0141)	0.2652*** (0.0149)	0.3168*** (0.0140)	0.2687*** (0.0148)
Domestic substitute price	0.7565*** (0.0107)	0.7319*** (0.0109)	0.7751*** (0.0113)	0.7503*** (0.0114)
Tariff*Distance			-0.0011*** (0.0004)	-0.0011*** (0.0004)
Tariff*Distance Squared			5.08e-06*** (1.12e-06)	5.24e-06*** (1.12e-06)
Wald Chi-square	5925.85 (0.0000)	6194.61 (0.0000)	6086.70 (0.0000)	6351.66 (0.0000)

Observation	1273	1273	1273	1273
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Source: Author's estimates.

Note: All variables are in log. The heteroskedasticity in the standard errors has been corrected and is shown in the parentheses. The significant variables are denoted by the*, ** and *** at 10, 5, and 1 per cent significance levels, respectively. The tariff-distance interaction isolated empirically the local effects of tariff transmission (see Nicita, 2009). The interaction of log of tariff and state is used in specification (1) to get the pass through across the states (see Marchand, 2012).

Pass-through estimates

Using specification (1)¹¹ in table 3, the pass-through in the country is estimated at 74 percent for agricultural goods¹². These pass-through estimates for agricultural goods, are in a relatively high range in line with the 33 percent for agriculture and 27 percent for manufacturing in Nicita (2009). Campa and Goldberg (2002) found a 40 percent pass-through for manufacturing in the United States and 70 percent in Germany. Frankel *et al.* (2005) obtained a 50 percent pass-through to imported prices in a group of developing countries, while Marchand (2012) reported between 33 and 49 percent for rural areas and 64 and 68 percent for urban areas. The world price pass-through has significant positive effects in all the estimations. In addition, the elasticities of world prices range between 27 and 31 percent.

The results also present the elasticities of the interaction of tariffs and distance, which show the extent to which trade costs through distance affected tariff pass-through. The estimates of tariff-distance interaction show that there are relative regional differences in prices of agricultural goods. This is a different result from Nicita (2009), who found regional differences in manufactured goods but no difference across states in agricultural goods. The tariff pass-through across domestic markets in agricultural goods prices is statistically significant, indicating that the impact of the tariff reduction is significantly transmitted to consumers in domestic markets across states. In other words, the consumers of agricultural goods benefited from the ECOWAS CET. States closer to ports are found to be more exposed to the impact of changes in agricultural tariffs. Considering the state/regional differences, the tariff pass-through at the border is 66 percent for agricultural sector, which declined to 0.1 percent at 100 kilometers from the port or border of entry¹³. The decline in the tariff pass-through as one gets farther away from ports of entry or borders is due to the associated trade costs, corruption, inadequate trade facilitation and most importantly the very poor state of infrastructure, which reduce household consumption gains from the tariff reduction and income loss for producers.

The transmission of tariffs on domestic prices varies marginally across states. Table 4 presents state-specific tariff elasticities that were obtained from the specification (4) of table 3.¹⁴ The results are very similar to Marchand (2012) where many of the coastal states have relatively significant and positive pass-through elasticities. This indicates that households that are close to ports of entry benefit significantly from the tariff reduction. The relatively increased pass-through in the Lagos and Rivers states in agriculture is due to the location of functional ports of entry there. In fact, Lagos ports recorded more than 70 percent of port activities in Nigeria (Jaja, 2011). In addition, smuggling activities at the ports and borders in these states have a significant effect on these elasticities.¹⁵ Smuggled goods, especially agricultural goods, avoid tariffs and are

¹¹ This estimation was done without the interaction of distance with tariffs and time fixed effects.

¹² These estimates are from specification (1) in table 2 (see Nicita, 2009).

¹³ Tariff pass-through at the border is the coefficient of tariffs in specification (4) in Table 2, while the estimate of tariff-distance interaction gave the change in tariff pass-through for every kilometer distance from the port or border.

¹⁴ The state specific pass through elasticities was obtained by finding the derivatives of equation (4) with respect to tariff and then inserted the value of the coefficients from specification (4) in table 2 before estimating it for each state.

¹⁵ There are 1,497 illegal and 84 legal routes (borders) to Nigeria (Premium Times, 2013).

cheaper than tariffed goods.¹⁶These smuggling activities are the result of Nigeria's porous borders (Adeola and Fayomi, 2012; Ohai, 2013).¹⁷Adamawa and Borno states have exceptional high pass-through due to the porous borders in both states¹⁸.

Earlier results indicated that tariff liberalization led to price reductions. Some selected details about the impact of the ECOWAS CET are presented in Table 4. It could be seen that the CET has resulted in an increase of overall household welfare of 6.9 per cent at the national level. The gains originate from the expenditure basket (8.9per cent), which compensated the losses incurred from sales of agricultural (1.9per cent) for households. The losses of profit from goods sold due to price reductions of agricultural goods are small, on average (1.9per cent). Disaggregating the effects indicates that there are differences across geopolitical zones and states as well as between rural and urban areas.

In terms of the geographical distribution of welfare gains due to the CET, the analysis found that households in the Northern states benefited more than the Southern states due to higher expenditure gains from the porous borders with neighbouring countries. Further, the overall change in real income due to the CET in the agricultural sector indicates that the producers in this sector were adversely affected due to the level of pass-through, which is generally high. Although, CET negatively affected agricultural products' producers; however, consumers in the sector were better-off due to the availability of varieties and cheaper goods.

¹⁶ Smuggled goods totally evade tariffs, thereby gaining access to the country without tariff payment, which reduces their prices in the market compared to taxed goods. Also, domestic producers of these goods are negatively affected, as there is a loss of profit due to the competition from the cheap goods. Nigeria's rice millers and producers, in particular, often complain about this problem.

¹⁷ This is the reason for the recent directive by the federal government through the Nigerian Custom Service that all rice importation must go through the seaports.

¹⁸ The Boko Haram militants used these states as their operation based because of the easy access to neighbouring countries due to the porous and illegal borders.

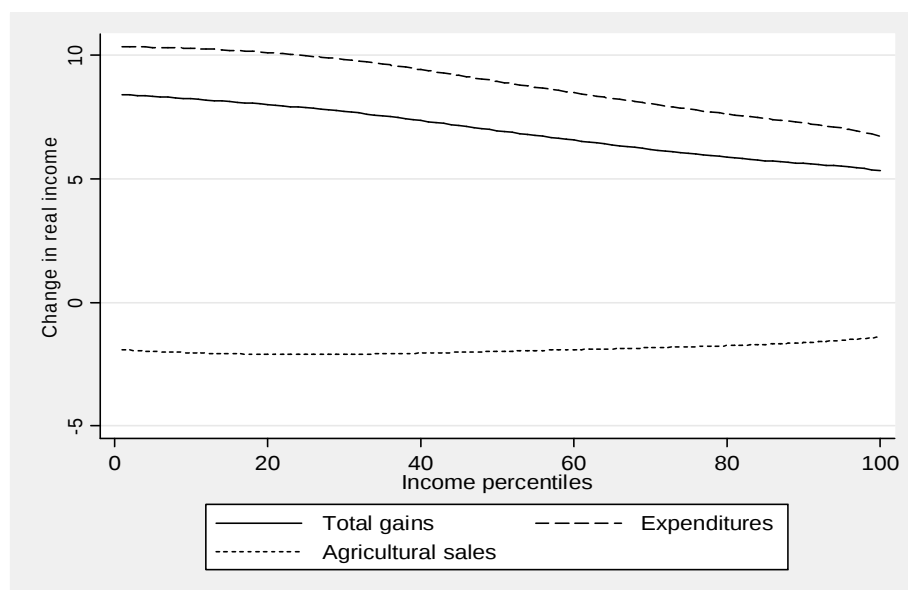
Table 4: Overview of results, 2006–2011 (per cent)

	Pass-through	Income share		Expenditure share		Changes in real income due to:		Overall changes in real income due to the Common External Tariff:
	Agriculture	Agriculture	Manufacturing	Agriculture	Manufacturing	Agriculture sales	Expenses	Total
North-Central	-	7.3	72.5	62.8	36.4	-1.8	11.5	9.7
Benue	44.07	23.03	69.82	60.87	38.19	-7.99	21.11	13.12
Kogi	43.98	4.43	81.79	67.86	31.67	-1.48	22.72	21.23
Kwara	46.40	13.09	83.12	66.68	32.56	0.10	-0.51	-0.41
Nasarawa	44.30	0.04	45.57	69.66	29.79	0.00	8.39	8.38
Niger	45.45	0.02	90.22	66.06	33.55	0.00	2.56	2.56
Plateau	50.22	2.20	56.42	59.07	39.69	-0.70	18.73	18.03
Federal Capital Territory	47.10	3.48	55.42	46.05	52.62	-0.26	3.40	3.14
North-East	-	17.1	73.7	66.9	31.8	-4.4	15.5	11.1
Adamawa	51.99	27.13	72.86	64.72	34.63	-8.80	20.98	12.19
Bauchi	56.08	2.72	74.80	64.20	32.87	-0.36	8.49	8.13
Borno	141.49	20.11	76.31	74.23	24.87	-4.39	16.20	11.81
Gombe	88.40	27.70	55.60	63.75	35.88	-5.75	13.25	7.49
Taraba	53.97	25.58	58.35	79.89	18.70	-7.23	22.58	15.35
Yobe	86.38	7.26	92.72	53.66	45.89	-1.7	13.90	12.02
North-West	-	9.3	75.5	71.0	28.5	-0.4	11.9	10.2
Jigawa	77.25	7.33	79.20	66.76	33.11	-0.70	6.39	5.69
Kaduna	52.19	14.49	66.33	66.10	33.10	-3.42	15.58	12.16
Kano	71.16	6.17	73.94	78.12	21.47	-1.03	13.02	11.99
Katsina	74.59	0.02	86.86	59.58	40.16	0.00	11.66	11.65
Kebbi	54.80	14.88	85.07	76.59	22.49	-1.00	5.14	4.14
Sokoto	62.72	21.88	70.53	67.18	32.67	-6.93	21.29	14.35
Zamfara	59.78	11.40	60.87	87.34	11.81	1.40	10.76	9.36
South-East	-	15.4	65.6	58.1	40.6	-0.9	2.9	2.0

Abia	56.17	1.98	66.78	52.22	46.03	-0.07	1.95	1.88
Anambra	13.13	24.36	66.90	62.68	36.49	-0.67	1.73	1.06
Ebonyi	48.69	0.01	79.10	36.58	63.01	0.00	0.35	0.35
Enugu	44.49	12.82	56.65	54.96	42.14	-0.28	1.21	0.93
Imo	58.06	24.85	58.92	72.18	26.41	-2.52	7.32	4.80
South-South	-	12.6	61.7	59.8	39.0	-3.3	11.8	8.4
Akwalbom	55.44	10.89	32.41	59.21	38.90	-1.98	10.75	8.78
Bayelsa	57.53	49.10	44.38	64.28	33.83	-24.81	33.16	8.35
Cross River	52.54	15.43	84.59	61.39	36.61	-2.19	8.70	6.51
Delta	51.86	17.97	82.01	61.06	37.92	-3.29	11.19	7.90
Edo	46.82	1.61	81.54	63.81	35.52	-0.28	11.14	10.86
Rivers	65.37	4.18	53.76	55.34	44.17	-0.70	9.22	8.53
South-West	-	8.6	81.1	56.7	42.1	0.1	1.4	1.6
Ekiti	47.18	13.13	75.98	56.55	41.98	-0.36	1.54	1.18
Lagos	65.26	0.27	89.10	51.37	47.61	-0.04	7.27	7.23
Ogun	57.97	0.03	81.72	53.30	44.16	0.00	2.61	2.61
Ondo	48.14	20.21	78.36	65.00	34.09	-0.54	1.73	1.19
Osun	49.380	14.36	77.43	58.80	39.45	1.04	-4.24	-3.21
Oyo	54.50	8.06	79.02	56.07	42.60	0.03	-0.23	-0.20
National	59.9	11.7	71.6	62.2	36.7	-1.9	8.9	6.9
Rural	-	24.9	59.0	79.5	19.1	-7.00	22.0	15.0
Urban	-	11.7	71.9	61.6	37.1	-1.8	8.6	6.8

This paper also finds that the effects of this trade liberalization vary along the income distribution. The mean expenditure gains¹⁹ across income percentiles are shown in Figure 1²⁰. On average, all household income groups had expenditure gains, but to varying degree.

Figure 1: Change in real income



Source: Author's estimates.

Also, figure 1 shows the average total gains. All income groups benefitted from the trade liberalization, and households at lower income levels experienced higher welfare gains. In terms of change in real income due to sales and prices in the sector across income percentiles, it could be seen from the figure that all households benefitted from lower expenditure basket due to lower prices, with those at the 80th and 100th percentile gaining less and those in the lowest income percentile gaining the most. Household real income changed due to the fact that agricultural sales were negative for households relying mostly on sales of these products. The poorest households in Nigeria on the average benefitted more from the CET than the richest households due to more composition of agricultural goods in their basket of commodities expenditure. Although, these households were negatively affected from the tariff pass-through due to loss of income from products sales. High-income households experienced less welfare gains due to the little composition of agricultural commodities in their expenditure bundles, despite the fact that they are less affected from income loss from sales of agricultural products.

¹⁹ This examines the consumption channels of households, in terms of their access to product varieties at cheaper prices.

²⁰ The figure shows change in real income due to expenditure, agricultural and manufacturing sales changes.

6.0 Conclusion

This paper has examined the extent to which households are affected by the Common External Tariff of the Economic Community of West African States. The empirical analysis considered the poverty and inequality effects of the CET from the perspective of households as producers, consumers, and as its transmission to domestic prices. The results show that the ECOWAS-CET reduced domestic prices of agricultural goods. In fact, the findings indicate that the CET has so far had a net positive effect on households in Nigeria, largely due to the gains from expenditure. The expenditure gains from the CET did outweigh the loss incurred in their purchasing power. Thus, household's welfare relatively was improved from the trade policy, particularly for the poor households in the rural areas, however, neither did high-income households made net loss from it. Some groups of households whose income depend largely on activities in the sector, specifically product sales, have seen a depletion of their purchasing power.

Despite the net positive effects, the paper found differences in the distribution of these welfare gains across states, geopolitical zones, and income groups. Richer households experienced less welfare gains than poorer households. The welfare of rural households was better than that of urban households and for male than female. Rural households' producers in states with ports of entry and near borders had their purchasing power more eroded than did households in the urban areas. Consumers in states with ports of entry were more exposed to goods available at relatively lower prices due to the CET than were other states. Thus, the paper provides evidence that domestic price transmission, household characteristics, and sector of economic activity are significant in assessing the welfare effects of trade policies in Nigeria.

In order to reduce the income loss to households due to the CET, especially households in the rural areas, the government needs to introduce a policy of zero tolerance for smuggling and close illegal routes and borders. Smuggling exposes domestic producers to external producers against which they do not have the capacity to compete, and thereby leads to the depletion of profits from sales of goods. Further, the capacity of producers should be enhanced through an informed, integrated, and inclusive domestic policy that stimulates productivity and value addition. The government should boost investment in vital sectors of the economy by improving infrastructure, access to finance, producers' capacity, level of education, science and technology, land acquisition, etc.

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