ECOWAS Economic Partnership Agreement with the EU and Nigerian Trade and Development

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Executive Summary

The impact of an Economic Partnership Agreement (EPA) on Nigeria is analyzed against a baseline scenario where Nigeria has already fully aligned itself to the ECOWAS Common External Tariff. Compared to previous studies, the methodology applied in this paper adds value by combining a simple and partial equilibrium approach with household and firm level data, thus minimizing assumptions but deriving intuitive and policy relevant results. Working at the detailed product and firm level, the analytical framework adds precision to the assessment of the potential short term effects of the EPA. A simple dynamic extension of the model illustrates potential adjustment effects across firms.

At its final stage, implementing the EPA would lead to a moderate reduction in overall tariff protection from 11.3 to 9.2 percent and thus a limited increase in imports between 0.8 and 1.8 percent. This moderate reaction is explained by the EU's relatively low share in imports (23 percent) and protection being maintained on an important number of sensitive tariff lines. However, some trade diversion is likely to occur in favor of the EU at the expense of other trading partners. Fiscal losses, as far as they could be assessed in the absence of actual tax collection information, could be expected in the magnitude of 0.8 percent of total fiscal revenue, equivalent to 3.3 percent of non-oil revenue, once the EPA is fully implemented.

Households can expect to benefit from a small reduction in the price of the average consumption bundle in the magnitude of up to 0.3 percent. The net effect is slightly progressive, favoring higher income households more than low income ones.

A simple assessment of the potential impact of the EPA on competitiveness suggests that two thirds of manufacturing firms (and workers) are likely to experience a net increase in profitability due to the EPA, mainly due to lower input prices. The remaining one third of firms may lose some profit because of increased competition from imports, but only very few (0.5 percent) become unprofitable as losses are small compared to actual profit levels. Losses are concentrated in four sectors (Wood products, Non-metallic mineral products, Basic Metals, and Metal products other than machinery), but most firms in these sectors currently have above average profitability and will continue to do so with the EPA.

The estimated effects of the EPA on firms are small compared to the potential impact of an accompanying competitiveness agenda that would boost productivity growth, for example by reducing the number of power outages or the cost of transportation. Such measures could help firms negatively affected cope with the EPA, but would have the added benefit of strengthening all Nigerian firms.

Though not a long term solution, EPA Trade Defense Measures can be effective in temporarily mitigating negative impacts on a limited number of domestic industries if needed. However, unlike an accompanying competitiveness agenda, this policy option would not promote productivity growth of affected firms, and would impose a burden on consumers through higher prices.

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Contents

1. Introduction

This paper offers a simple way to assess the impact on the economy of Nigeria of an Economic Partnership Agreement (EPA) between the ECOWAS countries and the European Union, based on the market access offer contained in the negotiation proposals in early 2014 with the following key elements:

- Liberalization, to the benefit of the European Union (EU), of West African market access for 75 percent of tariff lines over a period of 20 years.
- Three categories of products subject to gradual liberalization, in four stages of five years each, starting on December 31, 2019 for the first category being liberalized and finishing in 2035 for the third category. The fourth category of products, representing one quarter of all tariff lines, is not subject to liberalization.
- Possibility of recourse to trade defense measures, including bilateral safeguard measures (Article 22) and an infant industry clause (Article 23).

The main findings of this paper were first presented at an ECOWAS Adhoc Committee meeting on April 28-29 2014. The purpose of this meeting was to review the concerns over the EPA raised by some member States during the 44th ECOWAS Heads of State summit, in particular with respect to the prospect of possible fiscal losses and the possibility of a negative impact of the EPA on competitiveness and jobs in domestic industries. While the EPA negotiations have now been concluded, the purpose of this paper is to bring these results and the underlying analytical methodology into the public domain.

The analysis presented in this paper is based on a new methodology that combines the advantages of a partial equilibrium modeling framework with the wealth of firm level information contained in a World Bank Enterprise Survey for Nigeria. The intention is to add value to the policy debate around the EPA by generating results that are intuitive and transparent to a non-technical audience, and that rely on a limited number of simple assumptions, while adding precision and detail to the expected impact on the domestic economy. After a literature review in section 2, this methodology, which was first developed in von Uexkull and Shui (2014), is explained in section 3.

Section 4 presents the results on the impact of an EPA. Rather than starting from the status quo in 2014, the baseline scenario is a situation where the ECOWAS CET (agreed upon in October 2013 and to be implemented by 2015) is already in place. This makes it possible to identify and isolate the net impact of the gradual implementation of the EPA (Section 4.1). Effects on imports and fiscal revenue are then presented (Section 4.2). The discussion that follows focuses on effects on the prices of household consumer goods, using data from the 2010/11 and 2012/13 General Household Surveys (Section 4.3). Finally, effects on the domestic industry and firms, by sector and size, are derived using Nigeria Enterprise Survey data. Section 5 presents a discussion around the potential for various accompanying policies to promote a competitiveness agenda (Section 5.1) and the potential mitigation effects of the safeguards that would be built into the EPA (Section 5.2). Section 6 concludes.

2. Literature Review

Two categories of models are typically used in the literature to assess the effect of a trade shock such as the EPA agreement: Partial Equilibrium models have the advantage of relying on relatively simple assumptions and transparent modeling frameworks, and are often preferable in scarce data environments where key information on the domestic production structure is not available. Because they do not rely on domestic production data which is often only available at high levels of aggregation, they can make full use of the high level of detail in trade data at the most disaggregate level available, typically Harmonized System (HS) product codes at the 6 or even 10 digit level with several thousand product groups. On the other hand, such models are, by definition, mute with respect to the general equilibrium effects of a trade reform. They ignore the economy wide dynamic adjustment effects of a trade shock, and thus often fall short of delivering answers to the key questions policy makers are most concerned about, in particular with respect to an impact on domestic industry and competitiveness. They are typically able to deliver fairly precise results on changes in protection, domestic prices and tariff revenue. However, as with the more advanced general equilibrium models discussed below, results on changes in trade flows typically depend much more strongly on elasticities that are not readily available and often based on assumptions. Previous studies using partial equilibrium methodologies to assess the effect of an EPA on Nigeria include Busse and Grossmann (2004) and Andriamananjara et al (2009).

The second common methodological family of trade policy impact assessments is based on Computable General Equilibrium (CGE) models. Such models are typically built around a Social Accounting Matrix (SAM) that represents the various sectors of the economy and their interlinkages through a set of assumptions and elasticities that are much more demanding in terms of technical understanding and computing ability. The strength of CGE model studies is that they are capable of analyzing not just the immediate impact of a trade shock in terms of higher imports, reduction in tariff revenue, etc., but the economy wide adjustment to it in terms of growth, investment, and sometimes employment in the longer run. While such results are much more relevant from a policymaker's perspective, they tend to be quite sensitive to the assumptions underlying the model and can thus be more controversial in a policy debate. They are also less precise in their assessment of the initial direct effect of the trade shock because they tend to work at a much more aggregate level of the SAM (typically between 20 and 50 sectors and activities). A recent CGE based assessment of the effect of an EPA on Nigeria is presented in Consortium (2011). Other CGE based studies analyze the effect of the EPA at the regional level, for instance Fontagné et al. (2009). CGE based results have also been derived as part of an EU financed project to support local modeling capacity for an impact assessment of the EPA in Nigeria. These results had not been published by the time this report was written, however, some figures that were being discussed in the public debate were rather alarming, including a strong decline in economic growth, investment and consumption and a significant increase in unemployment. The negative effects appear to be driven primarily by a decline in public expenditure due to the reduction in tariff revenue as well as increased competition for Nigerian industries from imports.

One common characteristic of both partial and general equilibrium models is their reliance on sectoral aggregates in determining the impact of a trade shock. However, recent trade literature has emphasized that adjustment to trade reforms often has more noticeable effects at the firm level, with capital and labor moving from less productive firms to more productive firms within a given sector (Melitz 2003). Thus, taking into account firm specific characteristics within a given sector will be an important factor in understanding the implications of a trade shock.

A direct comparison of results from the various studies mentioned above is not straightforward due to significant differences not just in methodology, but also in terms of the data used, the time at which the analysis was carried out, and the scenario that is assumed for the EPA. For the trade data that is being used, a key factor is obviously the share of imports from the EU in total imports, which can vary over time and depending on the data source.

Most published studies take the status quo at the time the study was conducted as the starting point. However, depending on the policy question at hand, this may not be the most appropriate counterfactual given that liberalization with the EU would start on the heels of a major regional trade reform, the implementation of the ECOWAS common external tariff. Studies also differ in terms of whether and how they take into account import bans and special levies that are still frequently used by Nigeria. The approach to all these questions taken for the purpose of this study is discussed in the following section.

Finally, many earlier studies had to rely on assumptions with respect to the exact trade reform to be implemented under the EPA given that the specific market access offer underlying this analysis was not yet available at the time they were written. They typically either assume complete trade liberalization with the EU, or define their own exclusion lists based on various criteria and targets for the share of imports to be liberalized.

Methodological differences aside, the results of this study are generally more positive with respect to the impact of the EPA than the findings of some of the previous work on the topic. And while this study's results are based on a short-term, static methodology, they do not give reason to believe that longer term dynamic effects would turn negative as some of the above cited works suggest. The disadvantage of the current methodology is that these long term effects are not formally modeled. However, its advantages, as discussed in the next section, give reason to hope that it provides a more accurate anatomy of the initial trade shock caused by the EPA, which along with other characteristics of the Nigerian economy is an important determinant for understanding the nature and magnitude of the resulting dynamic changes.

3. Methodology

3.1. Advantages and shortcomings

The methodology used for this report, which is explained in detail in this chapter, starts off with a partial equilibrium simulation of the EPA using the World Bank's Tariff Reform Impact Simulation Tool (TRIST). It then focuses on the price changes calculated in TRIST in order to analyze the direct impact on households and firms. The firm level analysis operates at the micro level, applying the trade shock to each individual firm in the sample rather than sectoral aggregates, to take into account their respective levels of profitability, cost structure, etc. The wealth of information contained in the firm level data also makes it possible to directly compare the impact of the trade shock with other factors, such as changes in productivity or policy measures to enhance competitiveness, which is done in section 5. The result is an approach that has the advantage of using a simple and intuitive analytical framework to derive results that are less dependent on assumptions and more 'data-driven' than more sophisticated CGE modeling exercises, but more policy relevant and detailed than typical partial equilibrium results.

The key metric of firm level results is the expected change in in firms' profit levels when the EPA is implemented, assuming a constant output level and combination of inputs. These are short term, static effects in nature that are likely to trigger subsequent dynamic adjustment effects at the firm level, including adjustment in output level and production technology as well and entry and exit of firms, and may also have macroeconomic repercussions. These are not covered by the model, but discussed qualitatively in section 4.4. While a more formal treatment of these effects would clearly be desirable, this would necessarily come at the expense of a more complex modeling framework with more and stronger assumptions.

3.2. The Tariff Reform Impact Simulation Tool (TRIST)

The impact of the EPA scenario on imports, protection levels, and percentage changes in revenue presented in section 4.1 were calculated using the World Bank's Tariff Reform Impact Simulation Tool (TRIST). TRIST was also used to generate the price changes that underlie calculations of the impact of the EPA on household consumption prices (section 4.2.) and domestic firms and jobs (section 4.3).

TRIST was designed with the specific task of providing policy makers with detailed insights by product and tax instrument into the short-term effects of trade reform. By its comparative static nature, TRIST allows the comparison of two states - one in which the base values of policy instruments (such as tariffs) are unchanged and another in which these base values are exogenously changed. TRIST is an Excel based tool that does not require expert knowledge in modelling or specialized software and is designed to handle very disaggregated information.

An integral part of TRIST is the trade model that underlies the quantification of the effects of trade reform. It is based on five core assumptions:

First, the model is derived from standard consumer demand theory and utilizes elasticities to determine the magnitude of the demand response to the price changes that result from a tariff reform.

Second, the calculations are based on the standard Armington (1969) assumption of imperfect substitution between imports from different trading partners since consumers distinguish products by the place of production. This intuitive assumption is standard in empirical international trade work and implies that a fall in the price of imports from country A relative to country B will only lead to a partial and not complete substitution of imports from country B with imports from country A.

Third, the model does not allow for direct substitution between different products. In other words, each product is modeled as a separate market and in isolation from other markets. This is perhaps the strongest assumption used in the model. However, a relaxation would not only complicate computations but would also generate a need for a range of additional ad-hoc assumptions regarding the precise design of the additional substitution effect and its parameterization.

Fourth, it is assumed that all changes in tariffs are fully passed on and that the world price remains unchanged. That is to say an infinite supply elasticity is assumed of imports so that changes in demand in the importing country are small enough relative to the world so that they have no effect on the world price of the product.

Fifth, the trade model in TRIST is a partial equilibrium model that treats demand for each product in isolation from the rest of the economy. Hence, it does not take into account inter- and intra-sectoral linkages or the economy wide impacts of tariff changes. But this is not the primary objective of TRIST, which is designed so as to avoid the degree of aggregation of the data that would be necessary in order to implement economy wide computable equilibrium models and to remain simple and transparent in its assumptions, with the flexibility to adjust the key parameters. A detailed discussion of the trade model in TRIST can be found in Brenton et al. (2009).

As most partial and general equilibrium trade models, TRIST uses elasticities as the parameters of the model that determine how trade flows react to a given change in prices. Elasticities are notoriously difficult to estimate and so detailed and robust estimates of the required elasticities for import demand and substitutions between imports from difference trading partners are not readily available in the literature.

TRIST includes sensible default values for each of these three parameters that are common across products and import suppliers. The sensitivity of the results can be easily assessed by changing the values of the elasticities. Generally, elasticities will have a significant effect on the magnitude of the import response calculated in TRIST, but will only marginally affect the results on changes in revenue, protection, and prices which the key results in this study are based upon. These are primarily determined by the structure of the trade data and the reform scenario chosen, and only depend on the elasticities to the extent that a strong trade response will affect the import weights given to individual products and trading partners.

In the absence of empirically estimated elasticities for Nigeria, the model is calibrated with different scenarios of standard elasticities for substitution between trading partners ('exporter substitution') and the overall effect on import demand ('demand elasticity'). Standard elasticities, shown in TRIST result

tables as "low ε", are set at 1.5 for exporter substitution and 0.5 for demand substitution, whereas "high ε" are set at 5 for exporter substitution and 1 for demand substitution.

In order to build a TRIST for a given country, ideally detailed and complete data on import transactions for the most recent year is collected (data averaged across a number of years can also be used). For each import transaction, the data must identify the type of product (tariff line level, typically HS8 or HS10 digit), the country of origin of the trade flow, the customs procedure code (CPC) defining the customs regime under which the good enters the country, the import value of the transaction, the statutory tariff, the tariff actually applied (to calculate tariff exemptions) as well as the value of VAT, excise and other import taxes.

In the case of Nigeria, this detailed customs data, which would be the preferred source of information, was sought but could not be obtained by the authors. Simulations instead rely on a combination of import data from COMTRADE for 2010/11 at the HS 6 digit level of detail and statutory rates for tariffs and other taxes from the Nigerian customs authorities. The import data is for the years 2010/11 as reported by Nigeria in HS2007 classification. The tariff data (current tariffs, CET, and market access offer) are in HS2012 at 10 digit level. To match the two data sets, the tariff data was first aggregated to six digit level using simple averages. It was then matched with the 2007 trade data through the official UNSTATS concordance table. Products with no official match (~100 tariff lines) were matched manually based on their descriptions.

Because statutory tariff rates are used, the implicit assumption is that all tariffs are fully collected at the border with no exemptions. This is a shortcoming of this analysis which could have been remedied with access to transaction level customs data. As on the whole tariffs are never fully collected in practice, the results derived from these simulations should be seen as an *upper bound* of the potential impact of the EPA. In reality, a number of import transactions may remain unaffected by a trade policy reform because they already enter the country under a tariff exemption. While this upward bias may have a significant effect on any estimation of absolute revenue losses and levels of protection by overestimating the current level of tariff and other tax revenue, relative changes (including percentage changes in revenue and prices) used for key results in this study are much less sensitive to this bias, in particular if the assumption holds that the tariff reform will not affect the overall ratio of exemptions granted on a given product. While this may well happen in the future, a change in exemption policies or practices would constitute a separate policy reform which would affect Nigerian firms and consumers with or without the EPA.

COMTRADE data reveals a significant discrepancy in the trade share of the EU in Nigeria's total imports when comparing imports reported by Nigeria (where the EU has a 23 percent market share) with exports to Nigeria reported by the rest of the world (where the EU would have a 34 percent market share in Nigeria). The import data reported by Nigeria is used for a number of reasons:

i) Import data is generally deemed to be more reliable than export data as it tends to be more tightly controlled by customs authorities for revenue collection purposes. While EU export data

generally tends to be of satisfactory quality, this may not be case for export data of other important trading partners, thus creating a systematic bias of trade shares.

ii) In the case of mirror data, non-reporting by some trading partners would be counted as zero trade and thus create a systematic upward bias for the trade share of any trading partner that does report data as, in this case, the EU.

iii) Part of the discrepancy may also be explained by informal trade and smuggling of goods that are declared correctly when they are exported but then brought into Nigeria undeclared. As such trade does not carry any tariffs and is thus not affected by a trade policy change, including it in the above explained calculations would overestimate the real magnitude of the trade shock.

iv) Tariffs and other taxes at the border are computed over the cif (cost, insurance, freight) inclusive value of an import transaction. However, export data that could be used as mirror statistics is reported fob (free on board), not including these charges.

An added complication in the case of Nigeria is the fact that the country maintains a list of products banned from importation, though in practice these bans do not appear to be fully enforced. The Nigeria TRIST therefore includes estimates of ad valorem equivalent (AVE) tariff rates for the banned products. These are taken from de Melo and Ugarte (2013) who based their results on observable price differences between Nigeria and comparable countries.

3.3. Methodology for revenue results

As explained above, absolute figures for changes in tariff and other tax revenues in Nigeria TRIST are likely to be biased upward due to the assumption of full collection (no exemptions) in the absence of the more detailed customs data typically needed for TRIST. In practice, Nigeria is applying a number of exemptions that reduce the share of tariff revenue collected in practice. Nevertheless, percentage changes in revenue remain valid, assuming that the share of exemptions remains the same before and after the reform.

It is also important to consider the evolution of revenues over time bearing in mind that the EPA will be phased in over a substantial time period.

The calculations underlying the revenue results therefore combine the trade related relative changes in revenue calculated in TRIST with a simple assumption of 3 percent annual growth in all revenue sources, using fiscal data from the 2012 IMF Art IV report as a base. The percentage changes in trade related revenue are derived directly from TRIST results shown in section 4.1. Annex 1 shows these calculations.

3.4. Methodology for household price results

Results for the change in consumption prices for average Nigerian households are calculated by matching price changes from TRIST with the expenditure items listed in the Nigeria General Household Survey of 2010/11 and 2012/13. Aggregation is done by taking weighted average prices of all product categories that match a given expenditure item. Only products purchased in the market are subjected to

the price shock while consumption from own production remains unaffected. The change in the cost of consumption is calculated at the item level and then aggregated to assess the price change of the entire consumption basket. Annex 2 shows the price changes at the GHS category level.

3.5. Methodology for firm level results[1]

In the short run, firms are affected by a trade policy reform primarily through three price channels: Changes in the domestic price on the output they produce, the inputs they use, and the capital goods they purchase. Typically, a lower tariff on a given good would reduce its domestic price, and thus diminish the profitability of firms producing this product. On the other hand, lower tariffs on their intermediate inputs and capital goods would increase the profitability of firms.

Ultimately, a firm's response to these changes will also depend on its pre-reform level of profitability. Firms operating in highly protected sectors often have considerable profit margins, and may well continue or even grow their operations even if their profit margin is slightly reduced due to a tariff reform. In fact, recent trade literature has emphasized that adjustment to trade reforms often has more noticeable effects at the firm level, with capital and labor moving from less productive firms to more productive firms within a sector, than it does in terms of movement across sectors (Melitz 2003).

In order to account for all these factors, the results from TRIST on changes in prices are matched with World Bank Enterprise data on Nigerian firms. The sample comprises 2,427 manufacturing firms across the entire country. Summary statistics on the key variables from this dataset are presented in Annex 3, and the data sources for each of the calculation steps shown below along with a simple example and the criteria for categorizing firms according to the impact of the trade reform are in Annex 4. Price changes by output categories (ISIC classification), input categories (GTAP classification), and capital goods (BEC classification) are presented in Annex 5.

The expected change in profitability for each firm i in the sample is calculated as follows:

Equation 1

$$\Delta\pi_i = \pi_i^{EPA} - \pi_i^0$$

with

$$\pi_i^0 = \frac{Y_i \quad * p(Y)^0 - (I_i * p(I)^0 + L_i * \bar{p}(L) + C_i * p(C)^0 + T_i * \bar{p}(T) + O_i * \bar{p}(O))}{(I_i * p(I)^0 + L_i * \bar{p}(L) + C_i * p(C)^0 + T_i * \bar{p}(T) + O_i * \bar{p}(O))}$$

and

$$\pi_i^{EPA} = \frac{Y_i \quad * p(Y)^{EPA} - (I_i * p(I)^{EPA} + L_i * \bar{p}(L) + C_i * p(C)^{EPA} + T_i * \bar{p}(T) + O_i * \bar{p}(O))}{(I_i * p(I)^{EPA} + L_i * \bar{p}(L) + C_i * p(C)^{EPA} + T_i * \bar{p}(T) + O_i * \bar{p}(O))}$$

where:

Y is the firms output

[1] This section is based on von Uexkull and Shui (2014).

I are the inputs used by the firm

L is labor used by the firm

C is the depreciation of capital used by the firm

T are transport services used by the firm

O are all other cost items (rent, water, electricity, telecommunication)

p(X) is the price of item X

subscript i refers to firm specific variables

superscripts 0 and EPA refer to the baseline and post EPA scenario respectively

$\bar{p}$ refers to prices that do not change as a result of the trade shock

For the employment weighted graphs, each firm is weighed by its survey weight, which corrects for regional, size and industry sampling bias in the Enterprise Survey, as well as its number of full time employees before results are aggregated.

For the policy scenario with 0.1 percent exogenous productivity growth, Yi is multiplied under the reform scenario with $1.03^{(t-2014)}$ where t is the end year of the respective EPA scenario (2024, 2029, 2034, 2035).

For the policy scenario with a 50 percent reduction in losses due to electricity outages, Yi is divided in the reform scenario by (1-EL*0.5), where EL refers to a variable in the Enterprise Survey that asks firms to report the loss in total output due to electricity outages.

For the policy scenario with a 50 percent reduction in transport cost, p(T) is divided by 2 in the reform scenario.

For the policy scenario with trade defense measures against selected products, the three products with the strongest predicted increase in EU imports are identified for each of the four most affected industries (Wood products, Non-metallic mineral products, Basic metals, Metal products other than machinery) and these products are excluded from liberalization in the TRIST simulations, leading to an updated price changes scenario (see last column exclusion2 in Annex 5).

3.6. Baseline Scenario and Reform Stages

Before the EPA trade reform starts in 2020, Nigeria is obligated to align its trade policy with the regional Common External Tariff (CET) that was agreed upon in 2013. While the current tariff structure is already similar to the CET, Nigeria still maintains a number of additional trade policy instruments – namely import bans and special levies on certain products – that would have to be dismantled in order to fully harmonize its trade policy to the region.

In order to focus the analysis on the impact of the EPA at the time of its implementation, this study therefore uses as a baseline a hypothetical scenario where Nigeria has already fully aligned its trade policy to the region as encapsulated in the CET. This scenario is defined, and its impact is analyzed in details in von Uexkull and Shui (2013), which uses the same methodology as the current study. Key findings of this study are summarized in Annex 6.

The effect of the EPA is modelled sequentially, following the liberalization stages agreed upon between ECOWAS and the EU, which classifies tariff lines into four groups as summarized below (Table 1).

Table 1

EPA Implementation stages

	2020-2024	**2025-2029**	**2030-2034**	**2035**
Group A	All tariffs to 0	0	0	0
Group B	No change	All tariffs cut 50%	All tariffs to 0	0
Group C	No change	All tariffs cut 50%	All tariffs cut another 50%	All tariffs to 0
Group D	No change	No change	No change	No change

Source: ECOWAS secretariat

4. Impact of EPA Implementation

4.1. Impact on Tariff Protection, Trade and Revenue

The weighted average tariff rate under the above described baseline scenario is 11.3 percent and, according to TRIST results, would decline to 9.1-9.2 percent (depending on the elasticities used to calibrate the model) once the EPA has been fully implemented. This moderate reduction in protection is explained by the EU's relatively low share in Nigeria's imports (23 percent) as well as the exclusion of a number 25 percent of tariff lines from EPA liberalization. With the notable exception of a strong reduction of the tariff on tobacco products, the impact is relatively balanced across sectors (Figure 1).

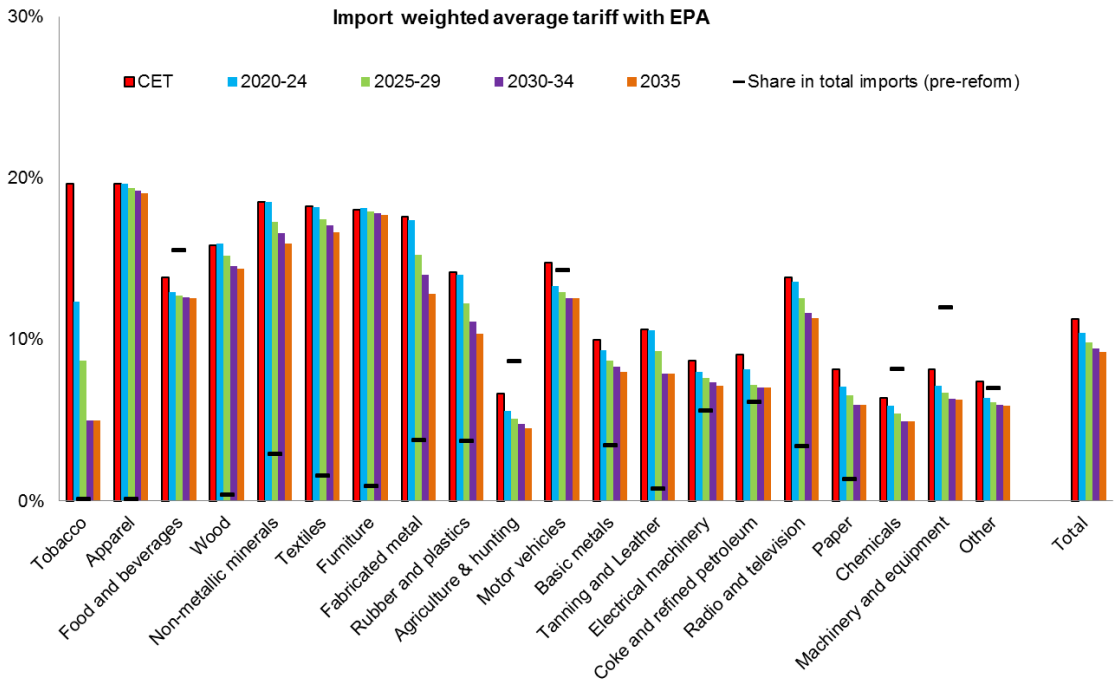
It is notable that the import response is much more sensitive to changes in the underlying elasticities than the results for protection shown above. Nevertheless, the total import response is likely to be limited (0.8 – 1.8 percent increase in total imports), though some trade diversion is likely to occur with imports from the EU increasing between 6.9 and 20 percent at the expense of imports from the rest of the world and, to a lesser extent, ECOWAS (Table 2).

Table 2

TRIST Projected Import and Revenue Changes										
	Baseline CET (in mln USD)	Reforms	2020-24		2025-29		2030-24		2035	
			Low ε	High ε	Low ε	High ε	Low ε	High ε	Low ε	High ε
Total imports	**55,495**	% change in total imports	0.4%	0.7%	0.6%	1.3%	0.8%	1.6%	0.8%	1.8%
EU	12,793	EU	3.0%	8.8%	5.2%	15.2%	6.5%	18.9%	6.9%	20.0%
ECOWAS	479	ECOWAS	-0.4%	-1.7%	-0.6%	-2.5%	-0.7%	-2.7%	-0.7%	-2.7%
Rest of the Wo	42,223	Rest of the World	-0.4%	-1.7%	-0.8%	-2.8%	-0.9%	-3.5%	-1.0%	-3.6%
		% Change in tariff revenue	-7.2%	-7.5%	-12.3%	-12.9%	-15.8%	-16.9%	-17.3%	-18.7%
		Old collected tariff rate	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%	11.3%
		New collected tariff rate	10.4%	10.4%	9.8%	9.8%	9.4%	9.3%	9.2%	9.1%

Source: Authors' calculation based on TRIST results

Figure 1

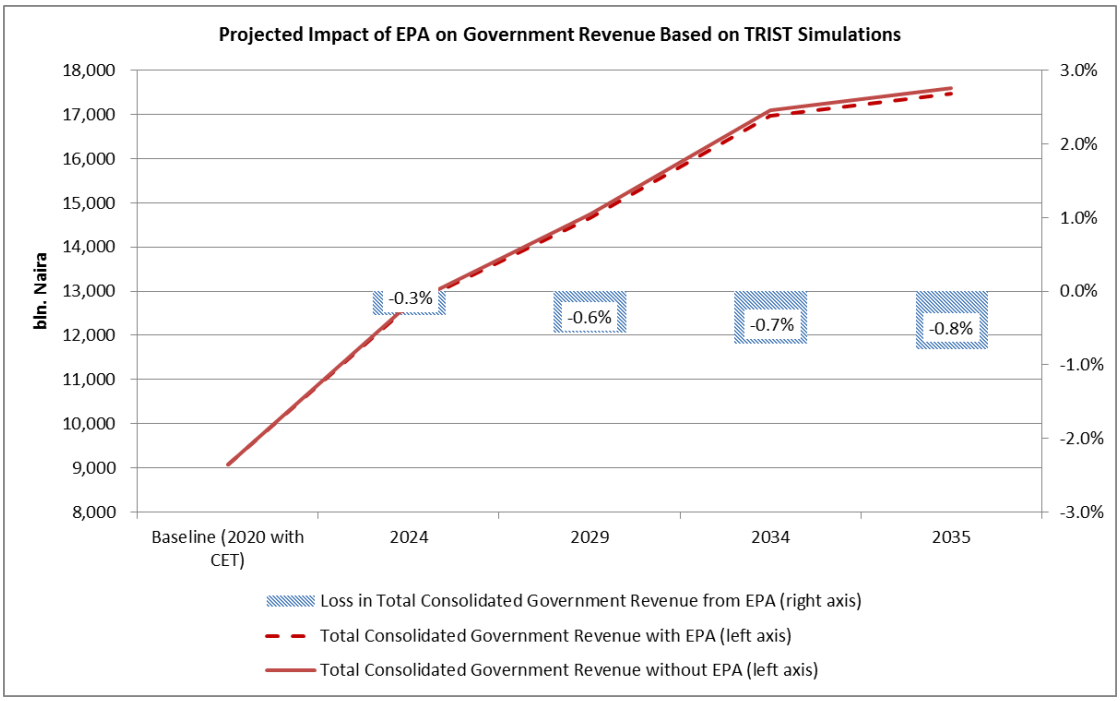


Source: Authors' calculations based on TRIST results

The TRIST results predict a loss in the magnitude of 17.3 – 18.7 percent of total tariff revenue. To put this figure in context, Figure 2 presents a simple projection of fiscal revenue sources assuming a 3 percent annual growth rate for all sources of revenue between the baseline and the full implementation of the EPA in 2035. At this point, according to the above described projection, the loss in tariff revenue would reach approximately 140 bn Naira per year, equivalent to 0.8 percent of total fiscal revenue or 3.3

percent of non-oil revenue.[2] This would be equivalent to around 12 percent of collected value added tax or 10 percent of business tax projected in 2035.

Figure 2



Source: Calculated by the authors.

One possibility for Nigeria to make up for such revenue losses could be to try and recover some of the substantial amounts of tariff revenue which is currently lost due to widespread smuggling (see box 1). This option, however, would also have a major impact on Benin and other neighboring countries. Other possibilities to make up for the shortfall in tariff revenue include revisiting exemption regimes or domestic tax regimes. In either case, it would be important to carefully study the impact on domestic prices and competitiveness of such reforms.

Box 1: Revenue losses from informal trade

High and complex trade barriers present a strong incentive for smuggling across Nigeria's borders, in particular with Benin. Raballand and Mjekiqi (2010) and World Bank (2014) estimate an order of magnitude of this smuggling by comparing imports reported by Benin with exports to Benin reported by third countries, observing that a large part of the high discrepancy between these figures is likely smuggled onwards to Nigeria. These calculations are replicated in Figure 3. They suggest that indeed import bans and prohibitively high duties do not stop goods from entering Nigeria. On the contrary, smuggling appears to be highest in the most restricted categories of goods subject to import bans and levies. The total amount of potential smuggling from Benin is estimated at close to US$5 bn, nearly 10 percent of Nigeria's official imports. If the current tariff rates and levies had been applied to these goods, this would have led to an estimated gain of US$1.2 bn in government revenue. Additional channels for informal trade and smuggling

[2] Projection is based on total government revenue figures from IMF (2012).

are likely to exist via other neighboring countries as well as through non- or under-reporting in Nigerian ports.

Figure 3

Source: Text and Figure are excerpts from von Uexkull and Shui (2014).

4.2. Impact on Household Consumption

The most direct effect of implementing the EPA on the life of Nigerians can be expected to materialize through changes in the prices of their daily consumption goods. In order to evaluate the magnitude and direction of these effects, price changes calculated at the detailed product level in the TRIST tool is matched with information on the consumption patterns of Nigerian households. It is assumed that tariff changes are fully passed through to consumers, which would require a competitive market situation.

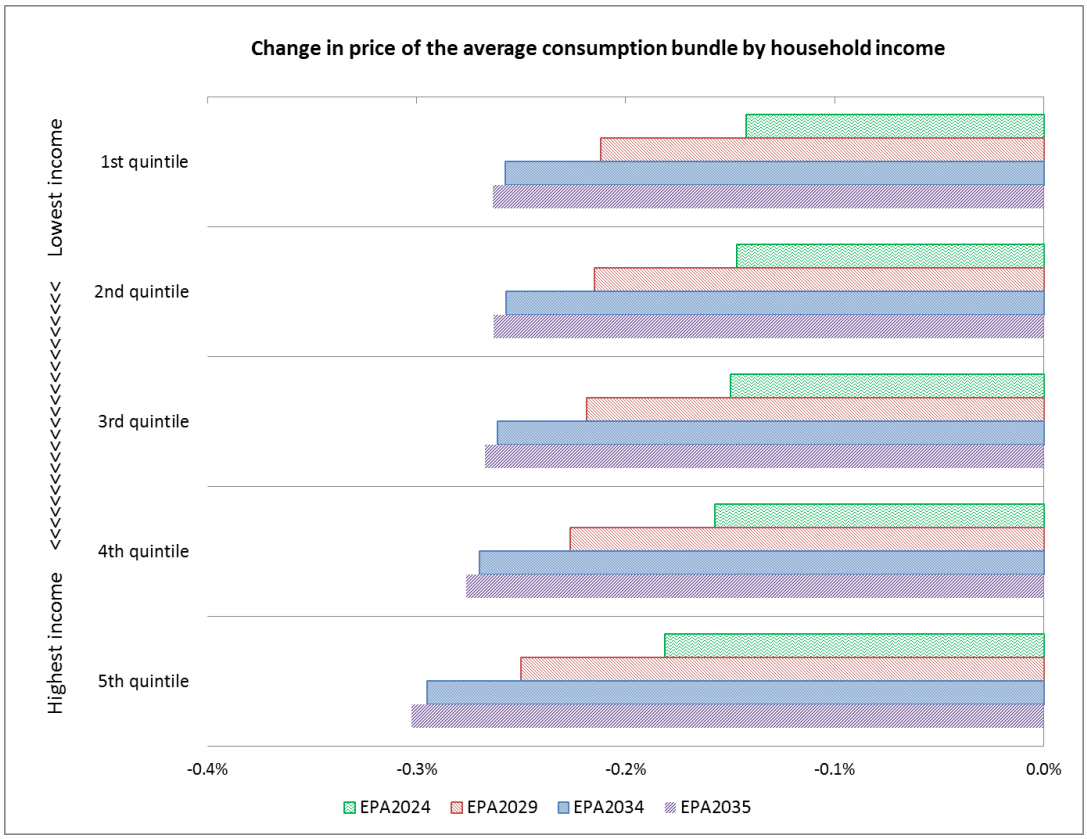
The results (presented for five levels of incomes from the poorest to the richest in Figure 4) show that, once the EPA has been fully implemented, households from all income categories could see the price of their average consumption bundle decline by approximately 0.26 and 0.3 percent. The impact is slightly regressive with the richest households benefitting the most given that products imported from the EU that benefit from the EPA feature more prominently in their consumption bundles.

Main drivers of the price reduction are products in the categories 'Vegetables other than beans and peas', which experiences a strong decline in prices of imports from the EU namely for processed

vegetable products such as canned tomatoes, 'Dairy products', 'Fish and Seafood', 'Chocolate and confectionary' as well as 'Kerosene'.

For a more complete appreciation of household level effects of the EPA, it would have been desirable to also match the price change data with detailed product level information on household income, in particular from agriculture. Unfortunately, such data was not available at the time the report was written. Income losses from the EPA would depend on the degree to which agricultural producers compete with products imported from the EU. Anecdotal evidence suggests that this is not the case for many of the key agricultural products grown in Nigeria, but a more thorough analysis of this level of impact of the EPA with detailed household income data would be desirable.

Figure 4



Source: Authors' calculation based on TRIST results and data from the Nigeria General Household Survey of 2010/11 and 2012/13.

4.3. Impact on Firms and Jobs

A tariff reform affects firms through a number of channels. In the long run, dynamic effects from lower tariff protection materialize as capital and jobs are reallocated towards more efficient sectors and firms, and integration with global value chains provides opportunities to access new knowledge, technology, and market opportunities. However, analyzing the short to medium term effects of a trade policy reform is important to understand the forces of structural change that it is likely to trigger, and prepare appropriate policy responses where it may be required.

It is important to note that the calculations presented here represent a short term scenario in the sense that firms do not adjust their behavior to the price shock, for instance by changing the composition of the inputs they purchase or the capital – labor ratio. In reality, firms could be expected to adjust quickly, thus maximizing the benefits and reducing the costs associated with the tariff reform.

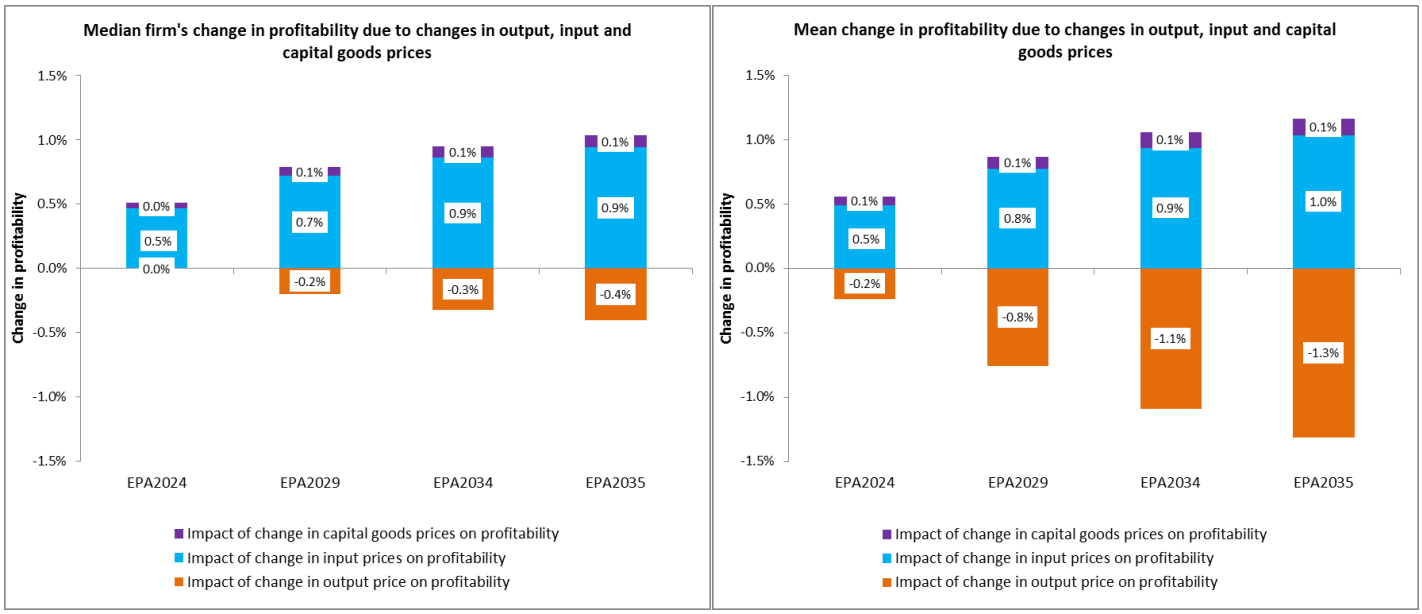
For all stages of EPA implementation, the net effect on the median firm's profitability is positive (Figure 5a), indicating that the majority of firms stand to benefit. However, Figure 5b reveals that the mean net effect is slightly negative suggesting that while they are fewer, the magnitude of losses for negatively affected firms outweighs that of positively affected ones.

Negative effects occur through the reduction in firms' output prices. For the median firm, these effects begin to materialize with the second stage of EPA liberalization (2025-29), but through all stages their magnitude is less than half of the above described gains. However, the mean losses due to lower output prices are actually more substantial, suggesting that a few firms at the margin of the distribution may experience a more sizeable negative effect.

The positive effects mainly result from the reduction in input prices, which due to the gradual and asymmetric nature of tariff reductions starts as soon as the first stage of the EPA (2020-24) and increases with each subsequent phase. This gradual impact could also be a factor in helping firms adjust to the reform. The distribution of this effect appears to be relatively balanced across the distribution of firms, with the median effect similar to the mean effect. These finding may have interesting political economy implications, suggesting that while the gains from lower input prices are relatively evenly distributed across the universe of firms, losses from lower output prices are more concentrated on a few firms that stand to lose significant levels of protection. These firms may have a stronger incentive to oppose the EPA, and as a small and well defined group articulate their more clearly, than the majority of firms that stand to benefit.

The positive effect of lower prices on capital goods is less significant in the short run at both the median and mean.

Figure 5 (a+b)

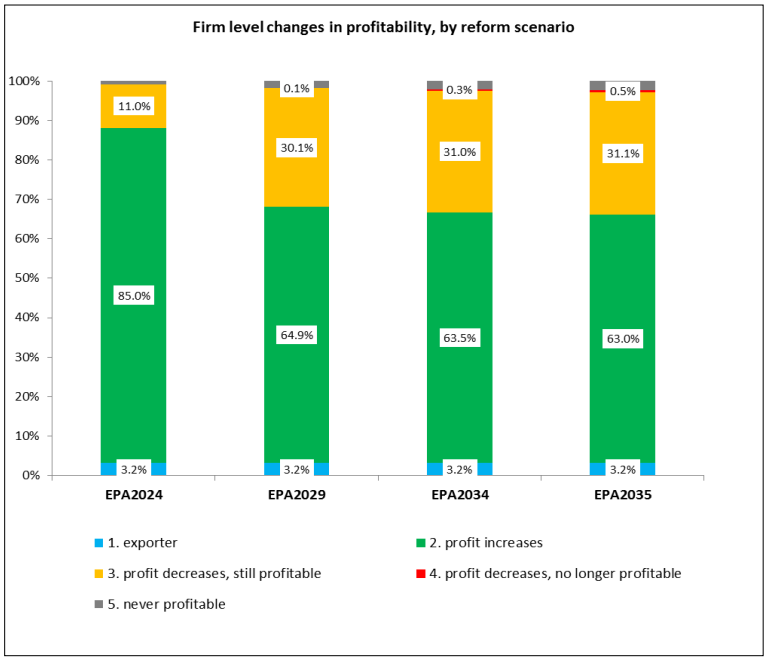


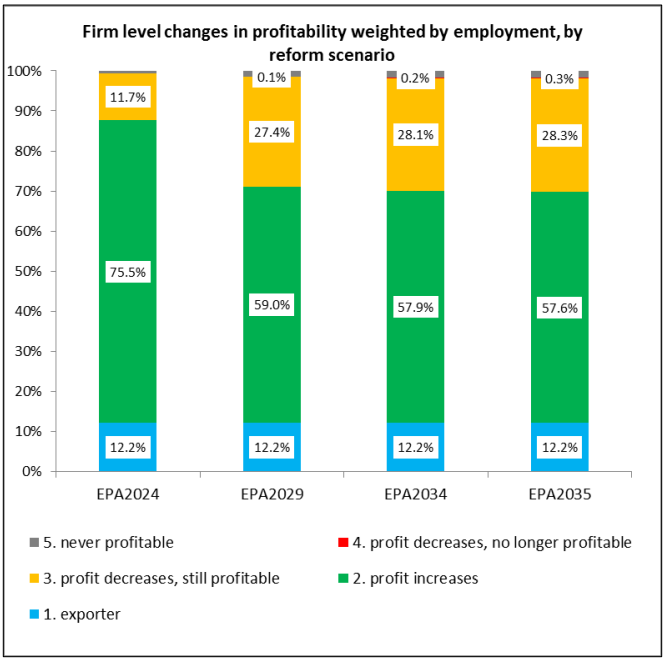
Source: Authors' calculations based on World Bank Enterprise Survey data.

Despite this overall positive effect, the EPA, like any trade reform, is likely to generate winners and losers among Nigerian firms. Figure 6 (a+b) illustrates this by categorizing all firms in the sample based on their baseline profitability level and the projected impact of the EPA. The left panel (a) offers a simple average while the right panel (b) provides a weighted average by each firm's level of employment; in other words, panel (a) is a breakdown of firms while panel (b) shows a breakdown of the jobs they offer.

In the full EPA scenario, 63.0 percent of firms in the sample (representing 57.6 percent of jobs) would experience a direct increase in their profitability. 31.6 percent of firms (representing 28.6 percent of workers) would experience a reduction in profitability, but only 0.5 percent (representing 0.3 percent of jobs) would become unprofitable as a result.

Figure 6 (a+b)



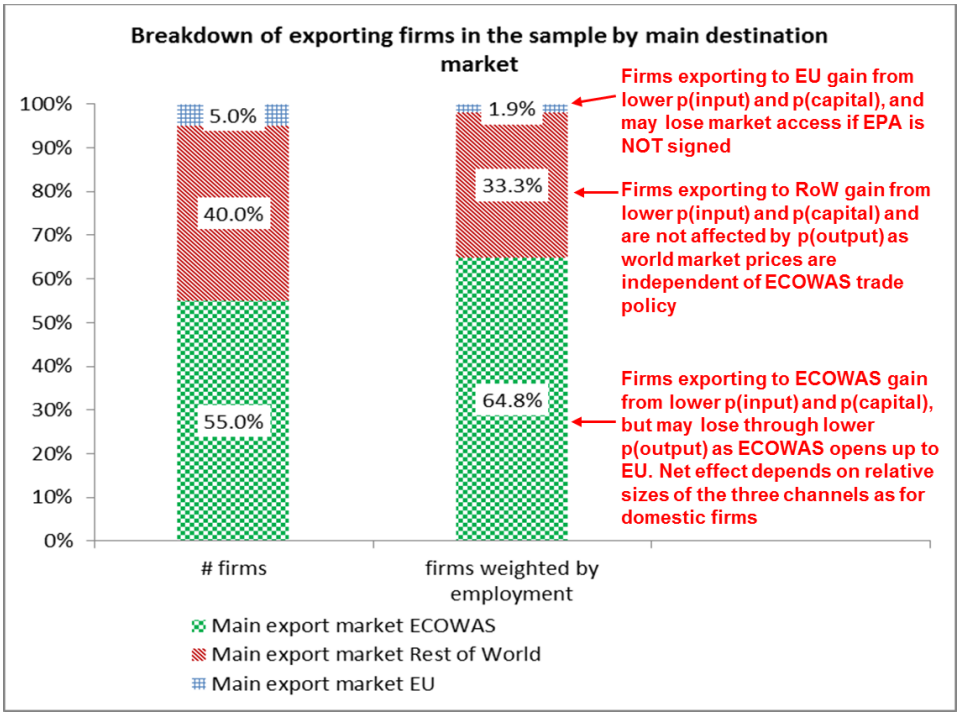


Source: Authors' calculations based on World Bank Enterprise Survey data.

The remainder of firms (3.2 percent, but representing 12.3 percent of jobs) export at least a part of their output outside of the Nigerian market. These firms are shown separately because the effect of the EPA reform is more complex to assess. While they are equally affected through price changes on inputs and capital equipment, their output prices depend on tariff changes in their destination markets. As these price changes are not available, they are assumed to be zero in the simulation results. Nevertheless, a few basic qualitative observations can be made regarding the expected direction of the output price change for these firms. For this purpose, Figure 7 shows a breakdown of exporting firms by their main overseas market.

Firms exporting to the EU (5.0 percent of exporting firms in the sample) would benefit from lower input and capital prices, and might actually lose market access if the EPA is not signed (Box 2), so they unambiguously gain from the EPA. Firms exporting to other destinations outside ECOWAS (40.0 percent of exporting firms in the sample) also unambiguously benefit from the EPA because they enjoy lower input and capital equipment prices while their output prices are not affected by ECOWAS or EU trade policy. For the remaining firms whose main export market is ECOWAS (55 percent of exporters in the sample) the effect is ambiguous as it is for domestic firms in Nigeria: They enjoy lower input and capital prices, but may also suffer from lower output prices as EU firms gain better market access in ECOWAS, thus eroding some of the preferential margin that Nigerian firms are currently enjoying in the regional market. The swift implementation of ECOWAS free trade commitments and regional trade facilitation measures could help enhance the competitiveness of Nigerian firms in the region and improve their standing before market opening with the EU is phased in.

Figure 7

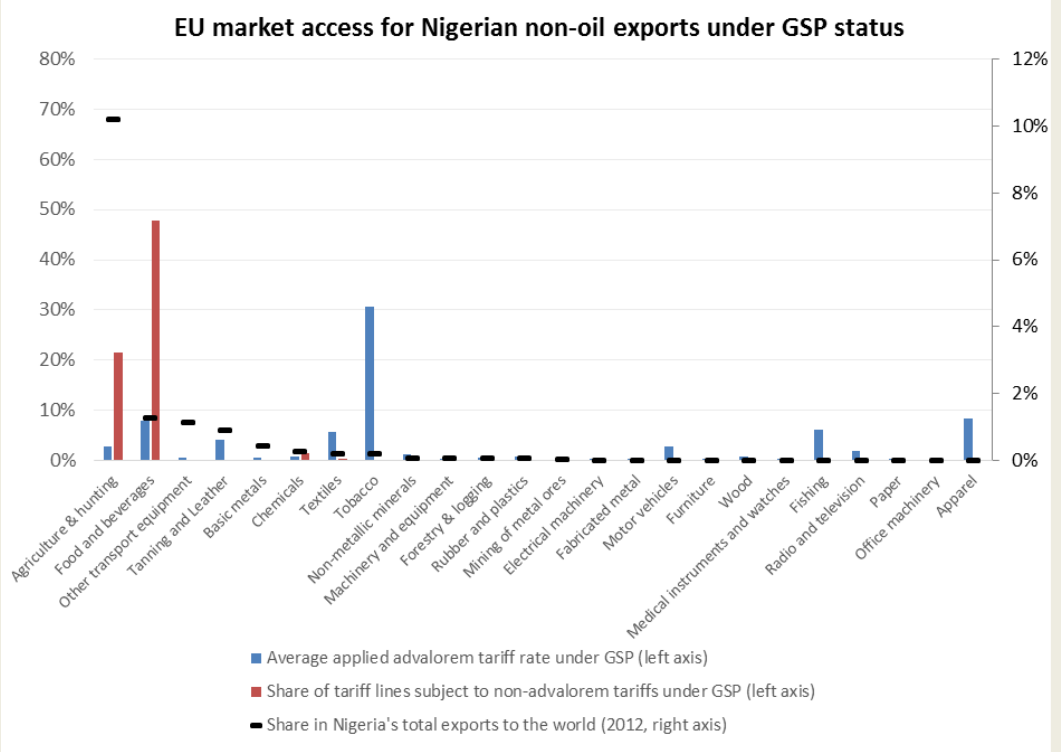


Source: Authors' calculations based on World Bank Enterprise Survey data.

Box 2: EU market access implications of the EPA

The EPA would grant Nigerian firms full tariff and quota free access to the EU market. Without the EPA, on the other hand, market access for Nigeria firms would be determined by the EU's General System of Preferences (GSP), which maintains tariff protection for a number of product groups. While it is often correctly pointed out that Nigeria's exports to the EU are currently dominated by oil products that enjoy duty free market access under the GSP, Figure 8 shows that for a number of non-oil products in industries where Nigeria is already exporting, substantial tariff barriers remain under the GSP. This is the case for instance for Agricultural products, Food and Beverages, Leather Products, Textiles, and Tobacco. Other industries such as Fishing and Apparel, which currently are not exporting in significant quantities, could also be negatively affected in terms of their ability to access new markets in the future.

Figure 8

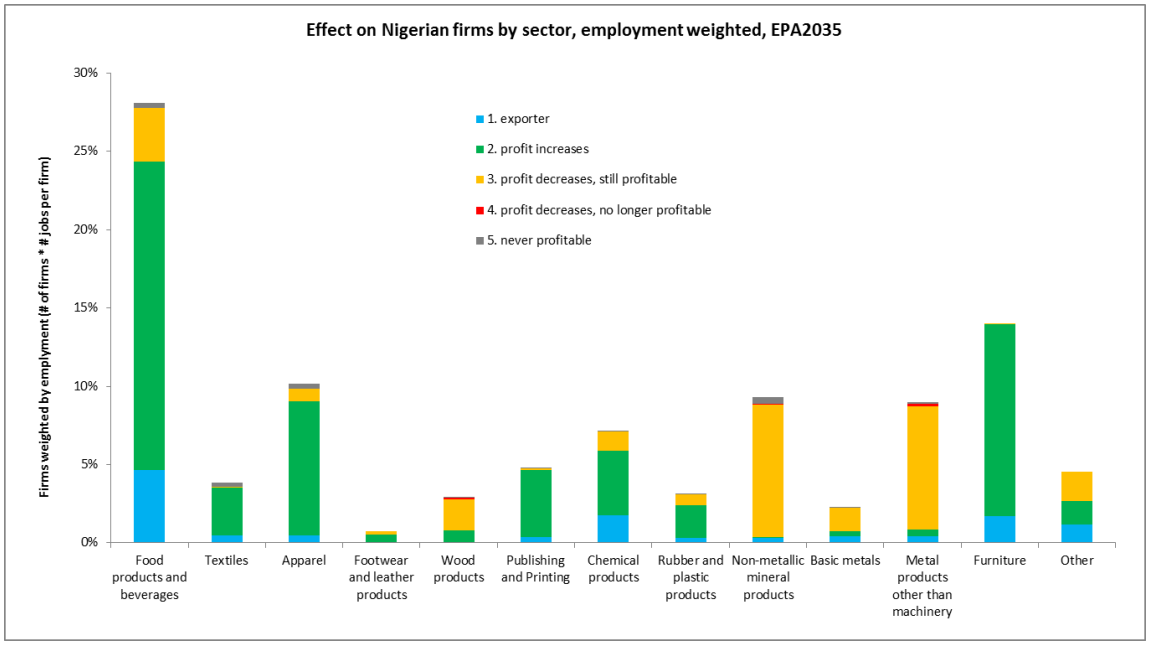


Source: Data from EU and COMTRADE.

A breakdown of the data by economic sector (Figure 9) reveals that most of the employment in firms for which adverse effects may result from the EPA is concentrated in four sectors:

- Wood products (Mainly sawmilling firms making basic products such as planks and plywood)
- Non-metallic mineral products (Mainly basic cement and concrete products)
- Basic metals (Mainly construction and furniture parts made of metal)
- Metal products other than machinery (Mainly doors, window frames, and other parts used in construction)

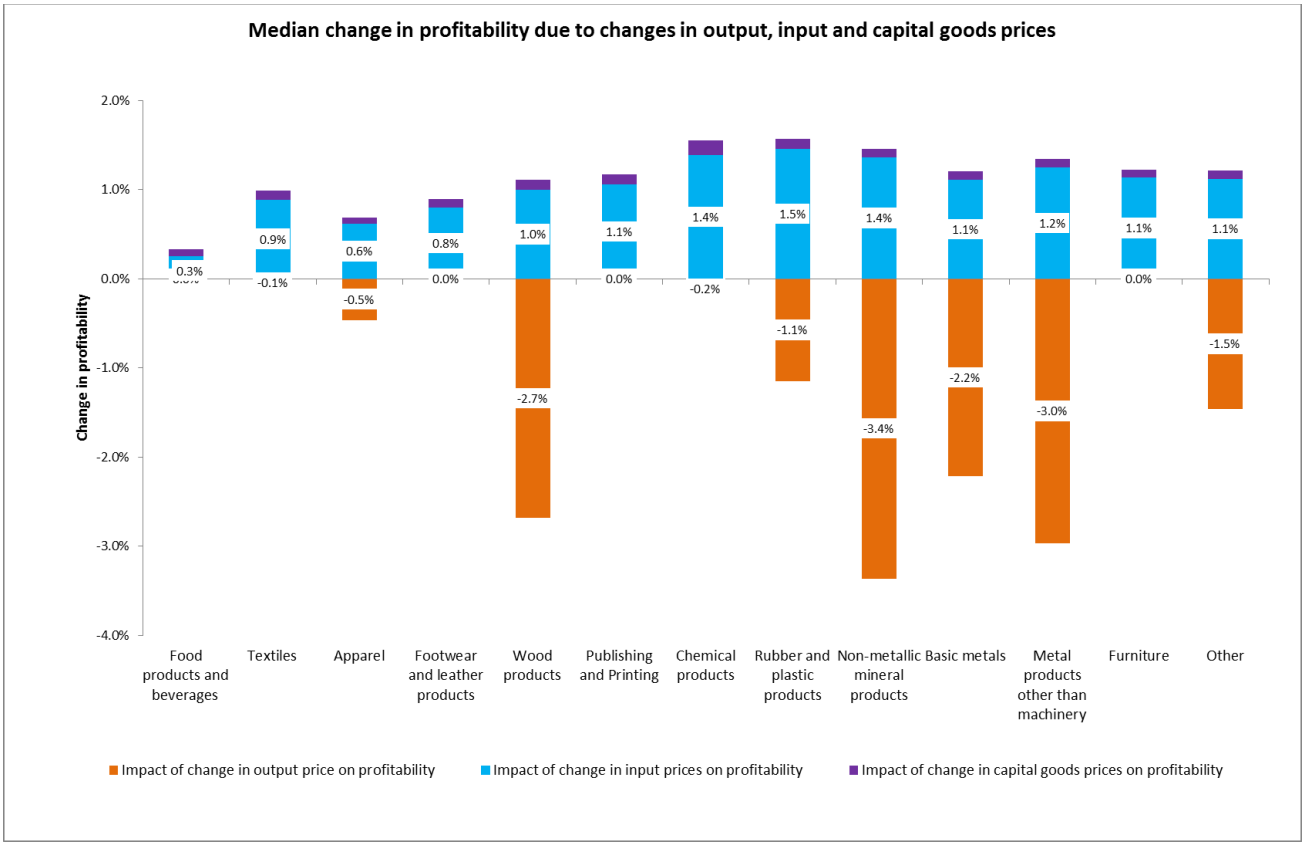
Figure 9



Source: Authors' calculations based on World Bank Enterprise Survey data.

Figure 10 shows the breakdown of the three price channels (output, inputs, capital goods) by sector. While the positive effect through lower input and capital good prices is relatively balanced across sectors, the breakdown confirms that cross-sectoral differences are mainly driven by changes in the output prices. The four above mentioned sectors with negative net effects are characterized by relatively strong changes in the domestic price of outputs due to a loss in tariff protection under the EPA, which are only partially compensated by the lower input and capital prices. For other sectors, there is no or little loss in protectionism, and thus the positive effects from lower input and capital prices dominate the total effect of the EPA.

Figure 10



Source: Authors' calculations based on World Bank Enterprise Survey data.

However, as shown in Table 3, firms in the negatively affected sectors, with the exception of Wood products, tend to be more profitable than the median manufacturing firms, and the changes in profitability are small enough for them to remain so even after the EPA. Thus, even after losing some of their currently high levels of protection, it is unlikely that these firms would be compelled to reduce or even terminate their operations.

Table 3

Characteristics of firms in sectors most negatively affected by EPA

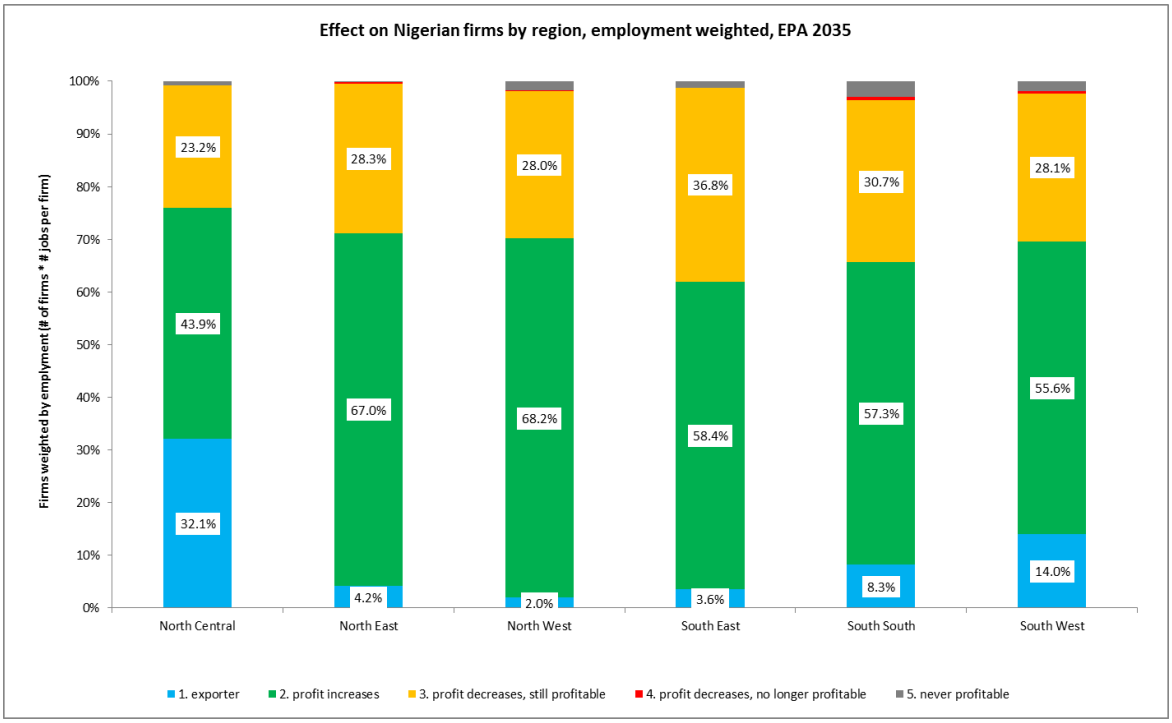
Sector Description	ISIC	Median firm # employees	Median firm pre-reform profitability	Median firm change in profitability with EPA2035
Wood products	20	13	18.3%	-1.5%
Non-metallic mineral products	26	12	26.8%	-1.9%
Basic metals	27	11	24.2%	-1.0%

Metal products other than machinery	28	9	25.9%	-1.7%
All sectors		11	21.1%	0.3%

Source: Authors' calculations based on World Bank Enterprise Survey data.

Given Nigeria's vast territory and federal structure, the geographic dimension of the reform's impact is also relevant. To the extent that gains and losses are distributed very unevenly, they could contribute to inequality across states. This could impose rigidity in terms of the ability of the labor market to adjust to the shock and create pressure for internal migration with potentially adverse social consequences. Figure 11 therefore breaks down the firm level results by the region in which a firm is located. The results are reassuring in the sense that there do not appear to be strong regional discrepancies in terms of the expected impact of the EPA, with the (employment weighted) majority of firms benefiting in all regions. The main differences are shown to be in the share of exporting firms, with the North Central and, to a lesser extent, South West region home to much more export related employment than other parts of the country.

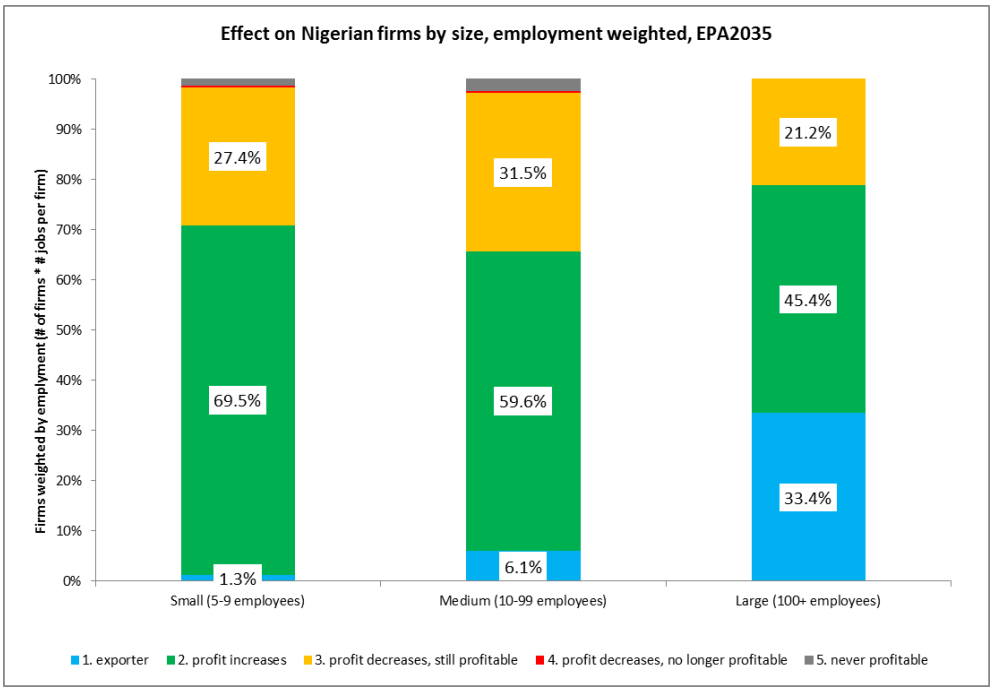
Figure 11



Source: Authors' calculations based on World Bank Enterprise Survey data.

Finally, due to their importance for income and job generation in particular for low income households, it is also important to assess separately the effect of the trade shock on small and medium sized enterprises (Figure 12). While their share among negatively affected firms is slightly higher than for large firms, this finding is mainly explained by the higher prevalence of exporters among larger firms. Overall, the expected impact of the EPA is positive for most jobs in small and medium sized enterprises.

Figure 12



Source: Authors' calculations based on World Bank Enterprise Survey data.

4.4. Dynamic adjustment of firms to the EPA

All firm results presented in the previous sections are static effects where the impact of a price shock on firms at their current level of output and use of inputs, capital, labor, etc. is analyzed. The key metric of all these discussions is thus the expected change in firms' profit levels when the EPA is implemented. The advantage of these results is that they can be derived through simple and transparent means, and do not strongly depend on underlying assumptions. And while they are short term, static effects in nature, they do give a relevant indication of the direct effects of the trade shock that are not just relevant in their own right, but would also be the trigger for any dynamic or second order effects.

However, the exact nature of such dynamic effects depends not just on the triggering trade shock, but also on a number of other factors that firms take into account when adjusting their production technology and output level to new prices, or even entering or leaving the market. Modeling such effects is challenging, and would require a much more complex modelling effort and stronger assumptions that would be at odds with the key intention of this report to derive results that are not driven by underlying assumptions, but primarily by the data. However, this section discusses in qualitative terms the likely nature and direction of dynamic effects.

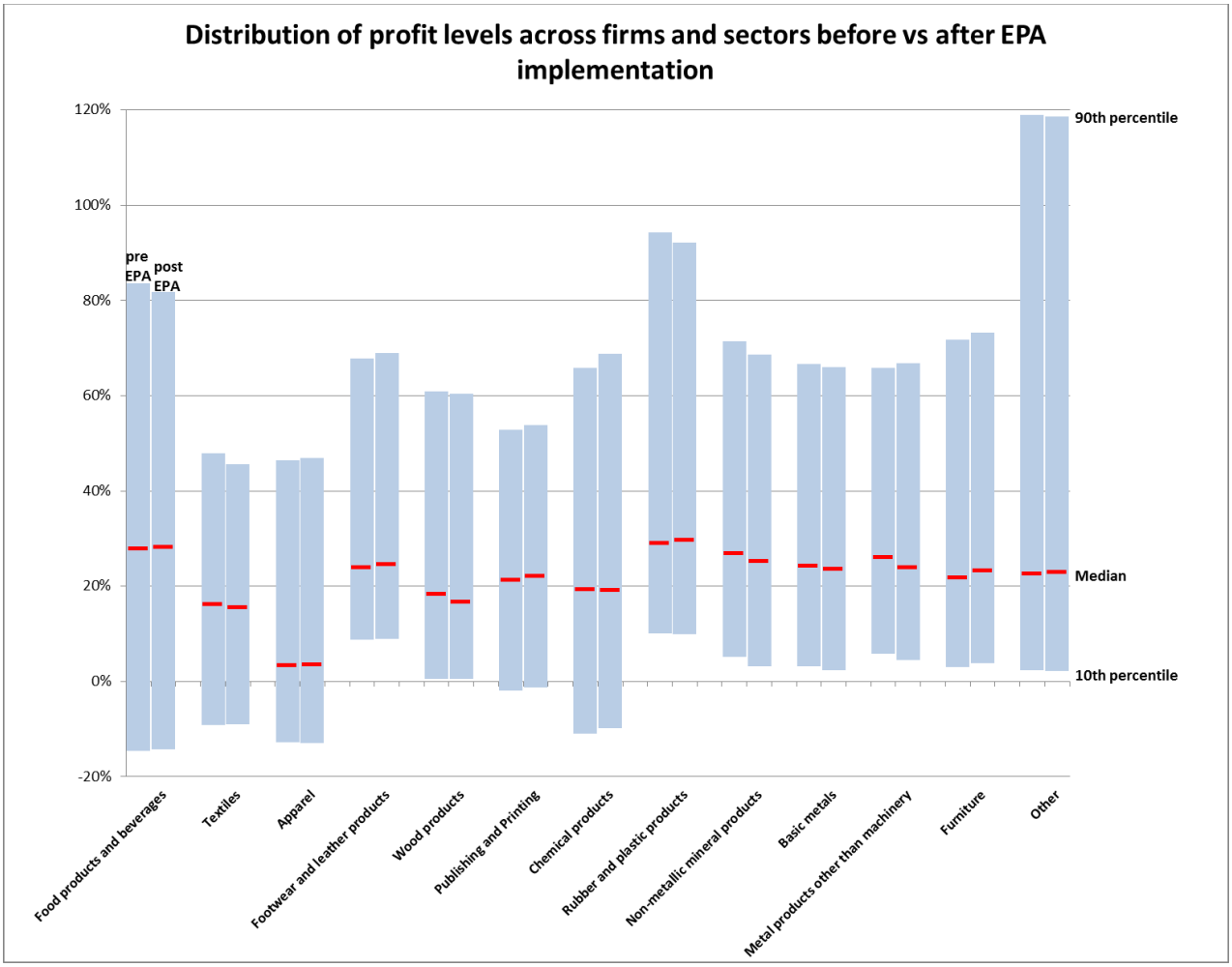
One might distinguish four different types of dynamic effects: First, firm level adjustment of production technology to changes in the prices of inputs and capital goods. Second, the reallocation of productive resources across sectors following a trade induced change in relative prices, whether through entry and exit of firms or the adjustment of production levels by existing firms. Third, the reallocation of resources across firms within a given sector following a market opening that leads to increased competition. And fourth, macroeconomic repercussions of the trade shock, in particular through the exchange rate channel.

The first type of dynamic effects, adjustment of production technology in response to price changes on inputs and capital goods, is likely to be unambiguously positive at the firm level. A firm that adjusts its production technology in a profit maximizing way will be able to extract additional benefits from lower prices on capital goods and inputs by using them more intensively in the production process. More importantly, there is solid empirical evidence that easier access to a greater variety of imported inputs and capital goods over time helps firms to increase their productivity. For instance, Amiti and Konings (2007) show that tariff reductions on inputs lead to productivity increases at the plant level through learning, variety and quality effects. (Eaton and Kortum 2001) find that 25 percent of cross-country differences in productivity can be attributed to price differences for capital goods, and that about half of these price differences are caused by trade barriers. In the same vein, Estevadeordal and Taylor (2008) find that lower tariffs on capital equipment intemediate inputs lead to higher economic growth.

The strength of the second effect, the reallocation of resources across sectors, is likely to depend on the relative magnitude of the trade shock. As shown in Figure 13, the changes in profit levels caused by the EPA even for the most affected sectors is relatively small compared to overall profit levels as well as the pre-existing differences across sectors. These figures suggest that it is not likely that the EPA by itself will trigger significant reallocation of resources from one sector to another.

Figure 13 also shows that within sectors, there are very large differences in the profit levels of individual firms. This observation is consistent with heterogeneous firm models of international trade, such as the one proposed by Melitz (2003). Trade liberalization can lead to a lowering of the minimum productivity level below which firms are no longer able to profitably compete in the market, prompting the least profitable firms to exit the market while the most profitable ones tend to expand. The substantial degree of firm heterogeneity shown in Figure 13 suggests that there would be ample room for such across-firm reallocation. Despite the fact that the trade effect is small, a more open and competitive market might therefore give rise to such reallocation, which has ambiguous effects on individual firms, but unambiguously raises average productivity by moving resources from less to more productive firms.

Figure 13



Source: Authors' calculation based on World Bank

Fourth, the potential macroeconomic repercussions of the EPA are less clear cut. Perhaps the most relevant channels of impact are through fiscal revenues and the real exchange rate. The direct effect of the EPA on fiscal revenue is discussed in section 4.1., but macroeconomic repercussions on investment, growth and fiscal sustainability will strongly depend on whether the government is able to compensate revenue losses from other sources, or mitigate them by increasing the efficiency of public spending. The real exchange rate channel may partially mute both positive and negative effects of the EPA in the sense that the increase in imports might lead to a devaluation of the Nigerian currency, thus making imports more expensive, while on the other hand supporting export competitiveness.

5. Potential for Accompanying Policies

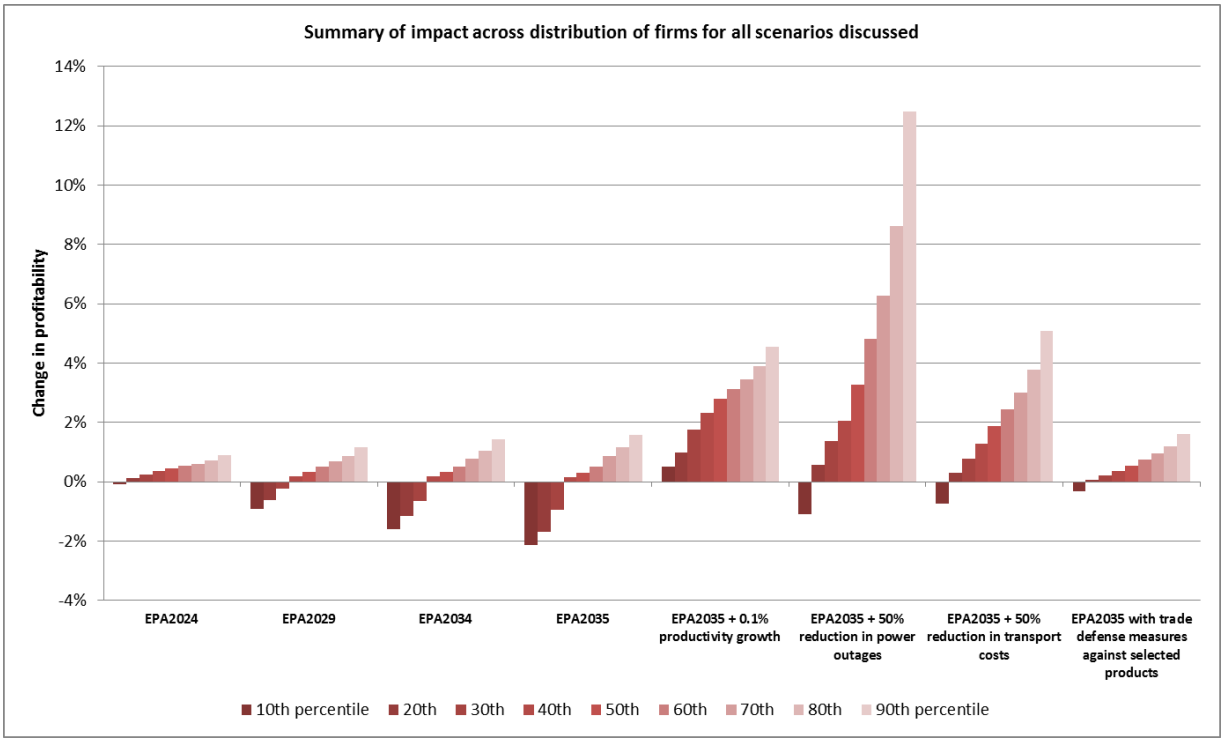
5.1. A Competitiveness Agenda

A key argument often made in favor of maintaining the current level of tariff protection for Nigerian firms is the desire to protect firms from the international market until they reach a sufficient level of competitiveness. As we saw above this concerns only a portion of the private sector. Other firms will make competitive gains from access to cheaper inputs under EPA. This section analyzes the potential for accompanying policy options that could be part of an overall agenda to boost competitiveness of Nigerian firms during the 20 year implementation period of the EPA. The section also compares the relative size of the competitiveness policy scenarios' impact to the trade shock resulting from the EPA. The purpose is not to recommend a specific policy option, nor should the policy scenarios discussed here be seen as consequences of the EPA, but rather as separate though possibly complementary policy options. The idea is simply to add a more complete perspective to the policy debate by analyzing the EPA in the context of potential accompanying policy measures.

Three basic scenarios are explored: i) an exogenous acceleration of annual productivity growth by 0.1 percentage points; ii) a 50 percent reduction in the amount of sales that enterprises lose due to power outages and iii) a 50 reduction in direct transport costs. These scenarios are examples from the wide spectrum of potential policy measure to enhance competitiveness that are chosen to reflect some important considerations in any discussion over liberalization and competitiveness. The first scenario simply demonstrates the relative importance of productivity growth vs. trade protection with no specific assumption as to what might be causing this additional productivity growth. Scenarios 2 and 3 were chosen because they represent areas of current significant constraints in the country, and also priority sectors for reform in many emerging economies.

Figure 14 summarizes the results. The first four sets of bars show the distribution of impact for the four stages of EPA implementation with no accompanying policies. As discussed in the previous section, the net impact is positive for two thirds of the firms in the sample.

Figure 14



Source: Authors' calculations.

Adding 0.1 percentage points of productivity growth per year does not only more than offset any negative effects from the EPA, but also leads to substantial gains across the distribution of firms, with two thirds of firms now gaining over two percent in profitability. In the static perspective of our firm level model, we do not assume any baseline for productivity growth, and the final outcome for Nigerian firms would also depend on the relative pace of productivity growth compared to their competitors. The point of this simulation simply to illustrate that the impact of the trade shock is relatively small compared to any measures that could have a positive effect on productivity growth.

Two examples for such measures could be reductions in power outages and reductions in transport costs. The effect of reducing power outages by 50 percent is even dramatically positive, though more dispersed across the universe of firms than the scenario with accelerated productivity growth. While approximately one tenth of firms still experience a net loss if the EPA trade shock is combined with a 50 percent reduction in power outages, the positive effect on the top end of the distribution of firms is much more pronounced than under then exogenous productivity growth scenario. The effect of reducing transport costs by 50 percent is similar in magnitude to the exogenous productivity growth scenario, though in this case approximately one tenth of firms still experience a net loss. The final set of bars in Figure 14 will be discussed in the next section.

The simulation of policy scenarios suggests that the trade shock from the EPA, to be phased in over a period of 20 year, is relatively small compared to the potential impact of measures that could help to boost productivity growth in Nigeria. Defining and implementing such a competitiveness agenda,

possibly with some funding from the EPA Development Program (EPADP), could be a key factor in ensuring that more Nigerian firms and workers benefit from the EPA.

5.2. Trade Defense Measures

The current EPA offer also gives ECOWAS countries the possibility to apply a number of Trade Defense Measures to avoid harm to domestic industries from excessive increases in imports, including mechanisms to temporarily suspend liberalization for products with strong increases in imports (bilateral safeguards) and a clause that allows the protection of infant industries. To analyze the potential effectiveness of such measures, the last set of bars in Figure 14 shows a scenario where the top three products for import growth from the EU in each of the four most affected sectors have been excluded from liberalization. This would be equivalent to 14 tariff lines or 1.6 percent of total imports from the EU. The idea behind this assumption is not to offer an exact modeling of how trade defense measures would be applied, but to provide a sense of impact that defense measures that exempt a limited number of items from the toils of liberalization would have. Typically trade defense concerns are limited and targeted on a small number of sectors.

The results show that applying trade protection measures for this relatively small share of import products, if chosen well, could be quite effective in temporarily offsetting negative effects of the EPA. Compared to the pure EPA scenario with full implementation (EPA 2035) where one third of companies experience a negative net effect, only around one tenth of companies would still be affected negatively in this scenario, and the effect would be significantly less pronounced. However, unlike the scenarios for an accompanying competitiveness agenda presented in the previous section, the implementation of such measures would simply prolong the protection currently granted to these industries, thus imposing a burden on consumers through higher prices and not providing an incentive for the affected industries to become more competitive. In addition, such policies would only benefit the firms directly affected by such protective measures, while the positive effects of the previously discussed competitiveness enhancing measures would benefit all firms in the sample.

6. Conclusions

This study has reviewed the potential impact of an Economic Partnership Agreement with the EU on Nigeria in a simple and intuitive framework based on a partial equilibrium modeling exercise combined with household and firm level data. It adds another perspective to the debate which so far has been dominated the results of more sophisticated and complex CGE models. While such models have important advantages in terms of their ability to analyze repercussions of a trade shock on the economy as a whole, including through longer term adjustment, they often have to rely on strong assumptions and relatively high levels of data aggregation that bear the risk of missing out important nuances at the sectoral level. While being mute with regard to the process of economic adjustment in the longer term, the insights from the current study may help to add value by shedding light on a number of important questions that are less well observed in a CGE framework.

By reducing assumptions to the extent possible and simplifying them to a degree that is more easily accessible to policy makers, the results are primarily driven by the underlying data, leaving less room for debate with respect to the appropriateness of assumptions and thus hopefully facilitating a discussion that is focused on policy conclusions.

By working at the firm level for a sample of close to 2,500 individual firms rather than sectoral aggregates, the methodology adds detail to the nature of the trade shock from the EPA which would be lost in sectoral aggregates used by most standard trade models. The firm level approach makes it possible to assess a shock throughout the entire universe of firms, an important extension given that trade shocks can often generate both winners and losers within a given sector.

The firm level dataset used for the above mentioned simulations also represents a unique set of micro founded information on a variety of variables that describe the overall business climate and constraints faced by firms, which makes it possible to quantify such factors relative to the magnitude of the trade shock.

The quantitative results suggest a moderate impact of the EPA in terms of protection, imports, and revenue losses, primarily because the EU only accounts for ~23 percent of Nigeria's imports and liberalization is limited to 75 percent of tariff lines. However, some trade diversion is likely to occur towards the EU at the expense of other world regions and, to a lesser extent, ECOWAS partners. Fiscal losses are expected to amount to 0.8 percent of total government revenue or 3.3 percent of non-oil revenue by 2035. Households benefit modestly from a reduction in consumer prices by approximately 0.4 percent.

At the firm level, two thirds of firms (representing two thirds of jobs) can be expected to experience a net benefit, mainly due to lower input prices. The remaining one third would lose some profit if the EPA is implemented without any accompanying policy measures, but only very few (0.5 percent) become unprofitable as losses are small compared to profit levels. Most losses are in fact concentrated in four industries (Wood products, Non-metallic mineral products, Basic metals, Metal products other than machinery) where most firms have above average profitability and will continue to do so once the EPA is in place. Dynamic effects are not formally included in the model but might occur in particular through positive effects on productivity growth from better access to inputs and capital equipment and reallocation from less productive to more productive firms that would result in some adjustments at the firm level but an overall positive effect on productivity.

Overall, the impact of the EPA on firms and jobs is relatively small compared to even a minor acceleration in productivity growth. The simulations show that a 0.1 percentage point acceleration in productivity growth would offset the impact of the EPA on firms that are affected negatively and substantially add to the benefits for firms for which effect is already positive. Two examples of policy measures that could help boost productivity are reductions in electricity outages and transport costs, and simulation results show that both measures could offset or at least mitigate the impact of the EPA on negatively affected firms while giving a sizeable boost to firms for which the impact is already positive as well.

Finally, even with the EPA, Nigeria would preserve some policy space for protection of domestic industries through EPA Trade Defense Measures, and simulation results suggest that these can be used effectively in the short run to mitigate some of the negative impacts on a limited number of domestic industries where needed. However this policy option does not compare favorably to the potential of complementary competitiveness measures to boost the Nigerian private sector as this policy option would not promote productivity growth of affected firms, and would impose a burden on consumers through higher prices

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Annex 1: Calculation Steps for Projected Loss in Fiscal Revenue from EPA

				2020 with CET (baseline scenario)		2024			2029			2034			2035		
	2010	2011	avg. 2010/11 from IMF 2012 Art IV report	change due to CET* (from TRIST)	with CET	change due to EPA* (from TRIST)	without EPA	with EPA	change due to EPA* (from TRIST)	without EPA	with EPA	change due to EPA* (from TRIST)	without EPA	with EPA	change due to EPA* (from TRIST)	without EPA	with EPA
Total revenue	6,883	11,285	9,084		11,300		12,719	12,677		14,744	14,663		17,093	16,971		17,606	17,468
Oil revenue	4,809	8,834	6,822		8,641		9,726	9,726		11,275	11,275		13,071	13,071		13,463	13,463
Non-oil revenue	2,074	2,451	2,263		2,659		2,993	2,951		3,470	3,388		4,022	3,900		4,143	4,005
Import and excise duties	309	422	366	+10.3%**	511	-7.2%	575	533	-12.3%	666	584	-15.8%	772	650	-17.3%	796	658
Companies' income tax	657	717	687		870		979	979		1,136	1,136		1,316	1,316		1,356	1,356
Value-added tax	563	649	606		768		864	864		1,002	1,002		1,161	1,161		1,196	1,196
Special levies	166	236	201	abolished	-		-	-		-	-		-	-		-	-
Other	379	427	403		511		575	575		666	666		772	772		795	795
estimated annual fiscal loss due to EPA (bln. Naira) relative to baseline scenario (2020 with CET)								-41			-82			-122			-138
cumulative fiscal loss								-41			-289			-1,566			-7,970
estimated annual fiscal loss due to EPA (% total non-oil revenue)								-1.4%			-2.4%			-3.0%			-3.3%
estimated annual fiscal loss due to EPA (% total revenue)								-0.3%			-0.6%			-0.7%			-0.8%
* 3% exogenous annual growth is assumed for all fiscal aggregates																	
** CET leads to an increase in tariff revenue primarily because non revenue generating import bans																	

Source: 2010 / 11 revenue data from IMF (2012), other calculations by authors.

Annex 2: Price Changes at Household Consumption Category Level

		dP EPA2024	dP EPA2029	dP EPA2034	dP EPA2035
Rice in all forms purchased	**fdriceby**	0.0%	0.0%	0.0%	0.0%
Maize grain and flours purchased	**fdmaizby**	0.0%	-0.2%	-0.4%	-0.4%
Other cereals purchased	**fdcereby**	-0.2%	-0.2%	-0.2%	-0.2%
Bread and the like purchased	**fdbrdby**	0.0%	0.0%	0.0%	0.0%
Bananas & tubers purchased	**fdtubby**	0.0%	0.0%	0.0%	0.0%
Poultry purchased	**fdpoulby**	-0.9%	-1.4%	-1.9%	-1.9%
Meats purchased	**fdmeatby**	0.0%	0.0%	0.0%	0.0%
Fish & seafood purchased	**fdfishby**	-0.5%	-1.0%	-1.1%	-1.1%
Milk, cheese & eggs purchased	**fddairby**	-3.4%	-3.8%	-3.9%	-4.1%
Oils, fats & oil-rich nuts purchased	**fdfatsby**	-0.1%	-0.3%	-0.4%	-0.4%
Fruits purchased	**fdfrutby**	0.0%	-0.1%	-0.1%	-0.2%
Vegetables excludes pulses (beans & peas) purchased	**fdvegby**	-2.1%	-2.3%	-2.4%	-2.4%
Pulses (beans & peas) purchased	**fdbeanby**	0.0%	0.0%	0.0%	0.0%
Sugar, jam, honey, chocolate & confectionary purchased	**fdswtby**	-1.0%	-1.0%	-1.1%	-1.1%
Non-alcoholic purchased	**fdbevby**	-0.5%	-0.7%	-1.0%	-1.0%
Alcoholic beverages purchased	**fdalcby**	0.0%	-0.1%	-0.3%	-0.3%
Food items not mentioned above purchased	**fdothby**	-0.2%	-0.4%	-0.4%	-0.5%
Text books and school supplies	**edbooks**	0.0%	0.0%	0.0%	0.0%
School uniforms	**edunifms**	0.0%	0.0%	0.0%	0.0%
Tobacco and narcotics	**nfdtbac**	-2.1%	-3.1%	-4.2%	-4.2%
Kerosene	**nfdkero**	-0.6%	-1.6%	-2.6%	-2.6%
Other liquid fuels	**nfdliqd**	-4.7%	-4.7%	-4.7%	-4.7%
Clothing and footwear	**nfdcloth**	0.0%	-0.7%	-1.4%	-1.4%
Furnishings and routine household maintenance	**nfdfmtn**	-0.1%	-0.3%	-0.4%	-0.4%
Petrol	**nfdpetro**	0.0%	0.0%	0.0%	0.0%
Diesel	**nfddiesl**	0.0%	0.0%	0.0%	0.0%
Lubricants	**nfdlubri**	-0.4%	-0.5%	-0.7%	-0.7%

Source: Authors' calculations based on TRIST results. Non-traded household expenditure categories with no price change are omitted.

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Annex 3: Summary Statistics on Manufacturing Firms in World Bank Enterprise Survey

Variable	Obs	Mean	Std. Dev.	Min	Max
Total number of employees	2,535	25	105	1	3,500
Total sales (1000 NGN)	2,535	97,300	1,010,000	106	32,000,000
Cost of inputs (1000 NGN)	2,535	51,100	635,000	24	20,000,000
Cost of labor (wages and benefits) (1000 NGN)	2,535	8,888	71,700	18	2,290,000
Annual depreciation of capital (1000 NGN)	2,453	2,731	26,400	0	1,000,000
Rent of land, buildings, equipment (1000 NGN)	2,535	773	10,500	0	500,000
Cost of Electricity (1000 NGN)	2,502	288	1,008	2	17,000
Cost of Fuel (1000 NGN)	2,453	2,802	29,800	0	836,000
Cost of Water (1000 NGN)	1,461	338	4,577	0	173,000
Cost of Transportation services (1000 NGN)	2,454	1,109	7,346	0	190,000
Cost of Communication services (1000 NGN)	2,454	171	469	0	10,000
Share of total sales sold domestically (%)	2,535	99.1	5.7	30.0	100.0
Loss in sales due to power outages (%)	1,889	7.2	9.1	0.0	45.0
The Enterprise Survey was conducted in two phases in 2007 and 2009. Data are thus for business years 2006 and 2008 respectively.					

Annex 4: Data Sources for Firm Level Calculations

	Firm characteristics before the tariff reform				Price Changes			Firm characteristics after the reform				Change in profitability			
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
	Sales	Cost of intermediate inputs	Cost of capital (depreciation)	Other costs	On output	On inputs	On capital goods	Sales	Cost of intermediate inputs	Cost of capital (depreciation)	Other costs	Profitability before reform	Profitability after reform	Classification	Employment weight
Example	1000	400	100	300	-10%	-5%	-20%	900	380	80	300	25%	18%	profit decreases, still profitable	
Calculation method and data sources	2009 / 2007 Enterprise Survey for Nigeria (variable l1b)	2009 / 2007 Enterprise Survey for Nigeria (variable l2a)	2009 / 2007 Enterprise Survey for Nigeria (variable l2c)	2009 / 2007 Enterprise Survey for Nigeria (variables l2b+l2d+l3a+l3b+l3d+l3e)	TRIST simulation results as discussed in section 3.1. aggregated at ISIC 4 digit level and merged through the industry code (variable c3a2 in 2009/ 2007 Enterprise Survey) for firms producing products with no bans. Firms producing products under import bans are identified manually based on the detailed product description (variable c3a1). For these firms, advalorem equivalents (AVEs) of the import ban from de Melo and Ugarte (2012) by category of banned products and the new weighted average of the new CET tariff are used to calculate the change. Where the AVE of the ban is smaller than the average CET tariff, no price change is assumed.	TRIST simulation results are matched with the 2006 GTAP Social Accounting Matrix for Nigeria to calculate, for each GTAP sector, the weighted average price change for inputs used by firms in this sector. These results are then merged with the firm data at GTAP sector level.	TRIST simulation results are aggregated to the Broad Economic Categories (BEC) level in order to identify a generic price index for capital goods which is applied to all firms in the sample.	A * (1+E)	B * (1+F)	C * (1+G)	D	(A-(B+C+D)) / (B+C+D)	(H-(I+J+K)) / (I+J+K)	"Exporter" if the firm exports directly. Exporters are classified separately because the price they face for their output does not depend on domestic tariffs. "profit increases" if M > L "profit decreases, still profitable" if L > M and M > 0 "profit decreases, no longer profitable" if L > M, L > 0 and M < 0 "Never profitable" if L>M and L<0	2009 / 2007 Enterprise Survey for Nigeria, product of the firm's weight in the survey (variable weight_est) and its number of full time employees (variabel j2a)

Source: von Uexkull and Shui (2014)

Annex 5: TRIST predicted price changes by ISIC, GTAP and BEC categories

ISIC	Description	Poutput_ CET	Poutput_ EPA2024	Poutput_ EPA2029	Poutput_ EPA2034	Poutput_ EPA2035	Poutput_ exclusion 1	Poutput_ exclusion 2
111	Growing of cereals and other crops n.e.c.	-0.0867	-0.0947	-0.0947	-0.0947	-0.0947	-0.0947	-0.0947
112	Growing of vegetables, horticultural specialties and nursery products	0	0	-0.0431	-0.0655	-0.0884	-0.0884	-0.0884
113	Growing of fruit, nuts, beverage and spice crops	0	-0.021	-0.0238	-0.0256	-0.0269	-0.0269	-0.0269
121	Farming of cattle, sheep, goats, horses, asses, mules and hinnies; dairy farming	-0.0397	-0.04	-0.0457	-0.0514	-0.0514	-0.0514	-0.0514
122	Other animal farming; production of animal products n.e.c.	-0.1145	-0.1176	-0.1263	-0.1312	-0.1354	-0.1354	-0.1354
200	Forestry, logging and related service activities	0	-0.0273	-0.0273	-0.0273	-0.0273	-0.0273	-0.0273
500	Fishing, operation of fish hatcheries and fish farms; service activities incidental to fishing	0	-0.0002	-0.0005	-0.0005	-0.0005	-0.0005	-0.0005
1010	Mining and agglomeration of hard coal	0	-0.0042	-0.0042	-0.0042	-0.0042	-0.0042	-0.0042
1020	Mining and agglomeration of lignite	0	0	0	0	0	0	0
1030	Extraction and agglomeration of peat	0	-0.0096	-0.0096	-0.0096	-0.0096	-0.0096	-0.0096
1110	Extraction of crude petroleum and natural gas	-0.0048	-0.047	-0.047	-0.047	-0.047	-0.047	-0.047
1200	Mining of uranium and thorium ores	0	0	0	0	0	0	0
1310	Mining of iron ores	0	-0.0046	-0.0046	-0.0046	-0.0046	-0.0046	-0.0046
1320	Mining of non-ferrous metal ores, except uranium and thorium ores	0	-0.0089	-0.0089	-0.0089	-0.0089	-0.0089	-0.0089
1410	Quarrying of stone, sand and clay	-0.0611	-0.0758	-0.0758	-0.0758	-0.0758	-0.0758	-0.0758
1421	Mining of chemical and fertilizer minerals	0	-0.0247	-0.0247	-0.0247	-0.0247	-0.0247	-0.0247
1422	Extraction of salt	-0.0115	-0.0119	-0.0123	-0.0128	-0.0128	-0.0128	-0.0128
1429	Other mining and quarrying n.e.c.	0	-0.011	-0.011	-0.011	-0.011	-0.011	-0.011
1511	Production, processing and preserving of meat and meat products	0.0247	0.0209	0.0168	0.0167	0.0167	0.0167	0.0167
1512	Processing and preserving of fish and fish products	0.004	-0.0007	-0.0064	-0.0072	-0.0072	-0.0072	-0.0072
1513	Processing and preserving of fruit and vegetables	0.0324	0.0195	0.0185	0.0175	0.0174	0.0174	0.0174
1514	Manufacture of vegetable and animal oils and fats	-0.0387	-0.0389	-0.0407	-0.0426	-0.0426	-0.0426	-0.0426
1520	Manufacture of dairy products	0.0194	-0.0011	-0.0016	-0.0021	-0.0021	-0.0021	-0.0021
1531	Manufacture of grain mill products	-0.4725	-0.4725	-0.4726	-0.4726	-0.4726	-0.4726	-0.4726
1532	Manufacture of starches and starch products	-0.0531	-0.0616	-0.0627	-0.0638	-0.0638	-0.0638	-0.0638
1533	Manufacture of prepared animal feeds	-0.005	-0.0099	-0.0218	-0.0306	-0.0343	-0.0343	-0.0343
1541	Manufacture of bakery products	0.0842	0.0842	0.0842	0.0842	0.0842	0.0842	0.0842
1542	Manufacture of sugar	-0.3363	-0.3363	-0.3363	-0.3363	-0.3363	-0.3363	-0.3363
1543	Manufacture of cocoa, chocolate and sugar confectionery	-0.1744	-0.1744	-0.1811	-0.188	-0.188	-0.188	-0.188
1544	Manufacture of macaroni, noodles, couscous and similar farinaceous products	-0.2506	-0.2506	-0.2506	-0.2506	-0.2506	-0.2506	-0.2506
1549	Manufacture of other food products n.e.c.	0.0568	0.0102	0.0033	-0.0005	-0.0038	-0.0038	-0.0038
1551	Distilling, rectifying and blending of spirits; ethyl alcohol production from fermented materials	-0.0332	-0.0334	-0.0354	-0.0374	-0.0374	-0.0374	-0.0374
1552	Manufacture of wines	-0.2308	-0.2308	-0.2311	-0.2313	-0.2315	-0.2315	-0.2315
1553	Manufacture of malt liquors and malt	-0.0051	-0.0491	-0.0491	-0.0491	-0.0491	-0.0491	-0.0491
1554	Manufacture of soft drinks; production of mineral waters	-0.0164	-0.0164	-0.0164	-0.0164	-0.0164	-0.0164	-0.0164
1600	Manufacture of tobacco products	-0.4436	-0.4795	-0.4976	-0.5157	-0.5157	-0.5157	-0.5157
1711	Preparation and spinning of textile fibres; weaving of textiles	-0.0919	-0.092	-0.1167	-0.1293	-0.1421	-0.1421	-0.1421
1721	Manufacture of made-up textile articles, except apparel	-0.1335	-0.1342	-0.1345	-0.1348	-0.1348	-0.1348	-0.1348
1722	Manufacture of carpets and rugs	-0.1681	-0.1681	-0.1681	-0.1681	-0.1681	-0.1681	-0.1681
1723	Manufacture of cordage, rope, twine and netting	-0.0486	-0.0486	-0.0486	-0.0486	-0.0486	-0.0486	-0.0486
1729	Manufacture of other textiles n.e.c.	0.025	0.025	0.0247	0.0244	0.0244	0.0244	0.0244
1730	Manufacture of knitted and crocheted fabrics and articles	-0.1213	-0.1213	-0.1272	-0.1303	-0.1334	-0.1334	-0.1334
1810	Manufacture of wearing apparel, except fur apparel	-0.1366	-0.1366	-0.1385	-0.1397	-0.1405	-0.1405	-0.1405
1820	Dressing and dyeing of fur; manufacture of articles of fur	0.1429	0.1429	0.1429	0.1429	0.1429	0.1429	0.1429
1911	Tanning and dressing of leather	0	0	-0.0156	-0.0315	-0.0315	-0.0315	-0.0315
1912	Manufacture of luggage, handbags and the like, saddlery and harness	-0.0438	-0.0439	-0.0444	-0.0447	-0.045	-0.045	-0.045
1920	Manufacture of footwear	-0.0299	-0.0311	-0.0373	-0.0435	-0.0435	-0.0435	-0.0435
2010	Sawmilling and planing of wood	-0.0075	-0.0082	-0.02	-0.0322	-0.0322	-0.0199	-0.0119
2021	Manufacture of veneer sheets; manufacture of plywood, laminboard, particle board and other panels an	-0.1139	-0.1139	-0.119	-0.1226	-0.1244	-0.1244	-0.1244
2022	Manufacture of builders' carpentry and joinery	0	0	0	0	0	0	0
2023	Manufacture of wooden containers	-0.1667	-0.1667	-0.1968	-0.2271	-0.2271	-0.2271	-0.2271
2029	Manufacture of other products of wood; manufacture of articles of cork, straw and plaiting materials	-0.0651	-0.0652	-0.0656	-0.0661	-0.0661	-0.0661	-0.0661
2101	Manufacture of pulp, paper and paperboard	0.0017	-0.0089	-0.0139	-0.0189	-0.019	-0.019	-0.019
2102	Manufacture of corrugated paper and paperboard and of containers of paper and paperboard	-0.0097	-0.0113	-0.0123	-0.0132	-0.0132	-0.0132	-0.0132
2109	Manufacture of other articles of paper and paperboard	0.0124	0.0099	0.0048	-0.0005	-0.0005	-0.0005	-0.0005
2211	Publishing of books, brochures, musical books and other publications	0	0	0	0	0	0	0
2212	Publishing of newspapers, journals and periodicals	0	0	0	0	0	0	0
2213	Publishing of recorded media	0.1378	0.1378	0.1345	0.1327	0.1308	0.1308	0.1308
2219	Other publishing	-0.0041	-0.0041	-0.0042	-0.0044	-0.0044	-0.0044	-0.0044
2221	Printing	-0.0383	-0.0383	-0.0383	-0.0383	-0.0383	-0.0383	-0.0383
2222	Service activities related to printing	0	-0.0103	-0.0103	-0.0103	-0.0103	-0.0103	-0.0103
2310	Manufacture of coke oven products	0	-0.0023	-0.0023	-0.0023	-0.0023	-0.0023	-0.0023
2320	Manufacture of refined petroleum products	0	-0.0086	-0.0165	-0.018	-0.018	-0.018	-0.018
2330	Processing of nuclear fuel	0	-0.0068	-0.0068	-0.0068	-0.0068	-0.0068	-0.0068
2411	Manufacture of basic chemicals, except fertilizers and nitrogen compounds	0.0016	-0.012	-0.0126	-0.0132	-0.0132	-0.0132	-0.0132
2412	Manufacture of fertilizers and nitrogen compounds	0.0259	0.0184	0.0184	0.0184	0.0184	0.0184	0.0184
2413	Manufacture of plastics in primary forms and of synthetic rubber	-0.0131	-0.0152	-0.0188	-0.0188	-0.0188	-0.0188	-0.0188
2421	Manufacture of pesticides and other agro-chemical products	-0.1012	-0.1032	-0.1041	-0.1046	-0.1051	-0.1051	-0.1051
2422	Manufacture of paints, varnishes and similar coatings, printing ink and mastics	-0.0023	-0.0033	-0.0082	-0.0133	-0.0133	-0.0133	-0.0133
2423	Manufacture of pharmaceuticals, medicinal chemicals and botanical products	-0.2311	-0.2321	-0.2323	-0.2325	-0.2325	-0.2325	-0.2325
2424	Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet prepara	-0.0493	-0.0502	-0.0506	-0.051	-0.051	-0.051	-0.051
2429	Manufacture of other chemical products n.e.c.	0.0168	0.0162	-0.0014	-0.0194	-0.0195	-0.0195	-0.0195
2430	Manufacture of man-made fibres	0.0032	0.002	-0.0007	-0.0036	-0.0036	-0.0036	-0.0036
2511	Manufacture of rubber tyres and tubes; retreading and rebuilding of rubber tyres	-0.0091	-0.0091	-0.0122	-0.0151	-0.0156	-0.0156	-0.0156
2519	Manufacture of other rubber products	0	0	-0.0328	-0.0519	-0.0666	-0.0666	-0.0666
2520	Manufacture of plastics products	0.0014	-0.0026	-0.0053	-0.008	-0.0081	-0.0081	-0.0081
2610	Manufacture of glass and glass products	0.0483	0.0481	0.015	-0.0023	-0.0198	-0.0198	-0.0198
2691	Manufacture of non-structural non-refractory ceramic ware	-0.069	-0.069	-0.0821	-0.0889	-0.0959	-0.0959	-0.0959
2692	Manufacture of refractory ceramic products	0	0	-0.0127	-0.0205	-0.0265	-0.0265	-0.0265

2693	Manufacture of structural non-refractory clay and ceramic products	-0.1643	-0.1643	-0.1645	-0.1646	-0.1647	-0.1647	-0.1647
2694	Manufacture of cement, lime and plaster	-0.2831	-0.2831	-0.2843	-0.2854	-0.2855	-0.2855	-0.2855
2695	Manufacture of articles of concrete, cement and plaster	0	-0.0002	-0.0128	-0.0201	-0.0265	-0.0203	-0.0118
2696	Cutting, shaping and finishing of stone	0.0002	0.0002	-0.0096	-0.0147	-0.0201	-0.0201	-0.0201
2699	Manufacture of other non-metallic mineral products n.e.c.	0.0244	0.0215	0.0145	0.0083	0.0069	0.0069	0.0069
2710	Manufacture of basic iron and steel	-0.0244	-0.0303	-0.0367	-0.0401	-0.043	-0.0379	-0.0337
2720	Manufacture of basic precious and non-ferrous metals	0.0171	0.0124	0.0095	0.0073	0.0063	0.0063	0.0063
2811	Manufacture of structural metal products	-0.0052	-0.0103	-0.0194	-0.0243	-0.0293	-0.0165	-0.007
2812	Manufacture of tanks, reservoirs and containers of metal	0.0347	0.0347	0.0157	0	-0.0045	-0.0045	-0.0045
2813	Manufacture of steam generators, except central heating hot water boilers	0	-0.0144	-0.0144	-0.0144	-0.0144	-0.0144	-0.0144
2893	Manufacture of cutlery, hand tools and general hardware	0.0142	0.0142	0.011	0.0084	0.0077	0.0077	0.0077
2899	Manufacture of other fabricated metal products n.e.c.	0.002	0.0007	-0.0243	-0.038	-0.0507	-0.0507	-0.0507
2911	Manufacture of engines and turbines, except aircraft, vehicle and cycle engines	0.0226	0.0106	0.0075	0.0042	0.0042	0.0042	0.0042
2912	Manufacture of pumps, compressors, taps and valves	-0.0085	-0.0185	-0.0255	-0.0324	-0.0327	-0.0327	-0.0327
2913	Manufacture of bearings, gears, gearing and driving elements	0.019	0.019	0.0115	0.0038	0.0036	0.0036	0.0036
2914	Manufacture of ovens, furnaces and furnace burners	0	-0.0089	-0.0089	-0.0089	-0.0089	-0.0089	-0.0089
2915	Manufacture of lifting and handling equipment	0.0003	-0.0111	-0.0113	-0.0115	-0.0115	-0.0115	-0.0115
2919	Manufacture of other general purpose machinery	-0.0547	-0.0613	-0.0664	-0.0717	-0.0717	-0.0717	-0.0717
2921	Manufacture of agricultural and forestry machinery	0.0265	0.0201	0.0194	0.019	0.019	0.019	0.019
2922	Manufacture of machine-tools	0	-0.0093	-0.0093	-0.0093	-0.0093	-0.0093	-0.0093
2923	Manufacture of machinery for metallurgy	0	-0.0004	-0.0004	-0.0004	-0.0004	-0.0004	-0.0004
2924	Manufacture of machinery for mining, quarrying and construction	0.0085	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
2925	Manufacture of machinery for food, beverage and tobacco processing	0.0216	0.0059	0.0057	0.0056	0.0056	0.0056	0.0056
2926	Manufacture of machinery for textile, apparel and leather production	0	-0.0077	-0.0077	-0.0077	-0.0077	-0.0077	-0.0077
2927	Manufacture of weapons and ammunition	0.001	0.001	-0.02	-0.0308	-0.0417	-0.0417	-0.0417
2929	Manufacture of other special purpose machinery	0.001	-0.01	-0.0102	-0.0104	-0.0104	-0.0104	-0.0104
2930	Manufacture of domestic appliances n.e.c.	-0.094	-0.0968	-0.1065	-0.1117	-0.1168	-0.1168	-0.1168
3000	Manufacture of office, accounting and computing machinery	0.027	0.0135	0.0092	0.0056	0.0047	0.0047	0.0047
3110	Manufacture of electric motors, generators and transformers	-0.0238	-0.0312	-0.0312	-0.0312	-0.0312	-0.0312	-0.0312
3120	Manufacture of electricity distribution and control apparatus	-0.0245	-0.0372	-0.0523	-0.0609	-0.0684	-0.0684	-0.0684
3130	Manufacture of insulated wire and cable	0.0223	0.0191	0.0107	0.0049	0.0018	0.0018	0.0018
3140	Manufacture of accumulators, primary cells and primary batteries	0.0058	0.0058	0.0054	0.0051	0.0051	0.0051	0.0051
3150	Manufacture of electric lamps and lighting equipment	0.0017	0.0017	-0.0008	-0.0022	-0.0035	-0.0035	-0.0035
3190	Manufacture of other electrical equipment n.e.c.	0.0218	0.0202	0.0149	0.0096	0.0093	0.0093	0.0093
3210	Manufacture of electronic valves and tubes and other electronic components	0.068	0.0677	0.0639	0.0617	0.0596	0.0596	0.0596
3220	Manufacture of television and radio transmitters and apparatus for line telephony and line telegraph	0.0509	0.0503	0.0335	0.0159	0.0159	0.0159	0.0159
3230	Manufacture of television and radio receivers, sound or video recording or reproducing apparatus, an	0.031	0.026	0.0181	0.0138	0.0096	0.0096	0.0096
3311	Manufacture of medical and surgical equipment and orthopaedic appliances	-0.0115	-0.0173	-0.0173	-0.0173	-0.0173	-0.0173	-0.0173
3312	Manufacture of instruments and appliances for measuring, checking, testing, navigating and other pur	0.0134	-0.0053	-0.009	-0.0129	-0.0129	-0.0129	-0.0129
3313	Manufacture of industrial process control equipment	0.0462	0.046	0.041	0.0357	0.0357	0.0357	0.0357
3320	Manufacture of optical instruments and photographic equipment	0.02	0.0195	0.018	0.0168	0.0163	0.0163	0.0163
3330	Manufacture of watches and clocks	0	0	-0.0104	-0.0158	-0.0213	-0.0213	-0.0213
3410	Manufacture of motor vehicles	-0.1368	-0.1486	-0.1516	-0.1547	-0.1547	-0.1547	-0.1547
3420	Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers	-0.0036	-0.0211	-0.0216	-0.0222	-0.0222	-0.0222	-0.0222
3430	Manufacture of parts and accessories for motor vehicles and their engines	0.0115	0.0115	0.0064	0.001	0.001	0.001	0.001
3511	Building and repairing of ships	0.0076	-0.0002	-0.0023	-0.0045	-0.0045	-0.0045	-0.0045
3512	Building and repairing of pleasure and sporting boats	0	0	-0.0056	-0.0086	-0.0118	-0.0118	-0.0118
3520	Manufacture of railway and tramway locomotives and rolling stock	0	-0.022	-0.022	-0.022	-0.022	-0.022	-0.022
3530	Manufacture of aircraft and spacecraft	0.011	-0.0057	-0.0077	-0.0099	-0.0099	-0.0099	-0.0099
3591	Manufacture of motorcycles	0.0099	0.0091	0.0079	0.0076	0.0074	0.0074	0.0074
3592	Manufacture of bicycles and invalid carriages	0.0162	0.0154	0.015	0.0147	0.0146	0.0146	0.0146
3599	Manufacture of other transport equipment n.e.c.	0.0108	0.0108	-0.0142	-0.0296	-0.0401	-0.0401	-0.0401
3610	Manufacture of furniture	-0.0079	-0.0079	-0.0089	-0.0096	-0.0099	-0.0099	-0.0099
3691	Manufacture of jewellery and related articles	0.0009	-0.0099	-0.0142	-0.0165	-0.0188	-0.0188	-0.0188
3692	Manufacture of musical instruments	0.0476	0.0476	0.0428	0.0377	0.0377	0.0377	0.0377
3693	Manufacture of sports goods	0	0	-0.008	-0.0123	-0.0168	-0.0168	-0.0168
3694	Manufacture of games and toys	-0.0035	-0.0035	-0.0073	-0.0093	-0.0115	-0.0115	-0.0115
3699	Other manufacturing n.e.c.	0.0013	0.0013	-0.0001	-0.0009	-0.0018	-0.0018	-0.0018
4010	Production, collection and distribution of electricity	0	0	0	0	0	0	0
4020	Manufacture of gas; distribution of gaseous fuels through mains	0	-0.0467	-0.0467	-0.0467	-0.0467	-0.0467	-0.0467
7421	Architectural and engineering activities and related technical consultancy	0	0	0	0	0	0	0
7494	Photographic activities	0	0	-0.0593	-0.0896	-0.1203	-0.1203	-0.1203
9211	Motion picture and video production and distribution	0	0	-0.0067	-0.0101	-0.0136	-0.0136	-0.0136
9214	Dramatic arts, music and other arts activities	0	0	-0.0114	-0.0172	-0.0232	-0.0232	-0.0232
9302	Hairdressing and other beauty treatment	0	0	0	0	0	0	0
9999	Goods not elsewhere classified	-0.0366	-0.047	-0.049	-0.051	-0.051	-0.051	-0.051

com		Pinput_ CET	Pinput_ EPA2024	Pinput_ EPA2029	Pinput_ EPA2034	Pinput_ EPA2035	Pinput_ exclusio n1	Pinput_ exclusio n2
1_pdr	Rice	-0.4989	-0.4989	-0.4989	-0.4989	-0.4989	-0.4989	-0.4989
2_wht	Wheat	-0.1304	-0.1314	-0.1314	-0.1314	-0.1314	-0.1314	-0.1314
3_gro	Cereal grains nec	0	-0.0019	-0.0019	-0.0019	-0.0019	-0.0019	-0.0019
4_v_f	Vegetables, fruits and nuts	0.00056	0.00034	-0.0024	-0.0038	-0.0053	-0.0053	-0.0053
5_osd	Oil seeds	-0.003	-0.0031	-0.0031	-0.0031	-0.0031	-0.0031	-0.0031
6_c_b_sgr	Sugar cane, beet, and sugar	-0.3362	-0.3363	-0.3363	-0.3363	-0.3363	-0.3363	-0.3363
7_pfb	Plant-based fibers	0	-0.0151	-0.0151	-0.0151	-0.0151	-0.0151	-0.0151
8_ocr	Crops nec	0	-0.0144	-0.0291	-0.0371	-0.0448	-0.0448	-0.0448
9_ctl	Cattle, sheep, goats, horses	-0.0397	-0.04	-0.0457	-0.0515	-0.0515	-0.0514	-0.0515
10_oap_rr	Wool, meat, meat and other animal products	0.01694	0.01317	0.00881	0.00848	0.00823	0.00823	0.00823
11_rmk_m	Raw Milk, Dairy products	0.01939	-0.0011	-0.0016	-0.0021	-0.0021	-0.0021	-0.0021
13_frs	Forestry	0	-0.0295	-0.0295	-0.0295	-0.0295	-0.0295	-0.0295
14_fsh	Fishing	0	-0.0065	-0.0134	-0.0134	-0.0134	-0.0134	-0.0134
15_coa	Coal	0	-0.0041	-0.0041	-0.0041	-0.0041	-0.0041	-0.0041
16_oil_gas	Oil, Gas	-0.0048	-0.047	-0.047	-0.047	-0.047	-0.047	-0.047
17_omin	Minerals nec	-0.0258	-0.0341	-0.0343	-0.0344	-0.0344	-0.0344	-0.0344
20_vol_pc	Food products nec	-0.1854	-0.1929	-0.1949	-0.196	-0.1965	-0.1965	-0.1965
21_b_t	Beverages, Tobacco	-0.1504	-0.1678	-0.1728	-0.1779	-0.1779	-0.1779	-0.1779
23_lum	Wood products	-0.0946	-0.0947	-0.1002	-0.1048	-0.1061	-0.1057	-0.1055
24_omfc_t	other Manufactures, Fertilizer	-0.0369	-0.0442	-0.05	-0.0542	-0.0558	-0.0554	-0.0551
25_p_c	Petroluem, coal products	-2E-05	-0.0086	-0.0165	-0.0179	-0.0179	-0.0179	-0.0179
26_otn	Transport equipment nec	0.00931	0.00498	0.0034	0.00235	0.00216	0.00216	0.00216
27_ely	Electricity	0	0	0	0	0	0	0
27_tex	Textiles, Apparel, Leather	-0.0195	-0.0198	-0.0263	-0.0315	-0.0331	-0.0331	-0.0331
29_gdt	Gas manufacture distribution	0	-0.0467	-0.0467	-0.0467	-0.0467	-0.0467	-0.0467

	Pcapital_ CET	Pcapital_ EPA2024	Pcapital_ EPA2029	Pcapital_ EPA2034	Pcapital_ EPA2035	Pcapital_ exclusion 1	Pcapital_ exclusion 2
BEC 4: Capital Goods	0.00407	-0.00564	-0.01060	-0.01521	-0.01577	-0.01577	-0.01577

Annex 6: Key findings of von Uexkull and Shui (2014) on the Effect of Implementing the ECOWAS Common External Tariff on Nigeria[3]

The Policy Note 'Implementing the ECOWAS Common External Tariff: Challenges and Opportunities for Nigeria' was prepared at the request of the Nigerian President's Economic Advisor to inform the Government on the impact of implementing the new ECOWAS Common External Tariff (CET). The CET has been discussed and negotiated among ECOWAS members and is expected to come into force by January 1, 2014. The report's findings are expected to be inputs for the government's decisions towards the adoption of the new ECOWAS CET.

The note uses the World Bank's Tariff Reform Impact Simulation Tool (TRIST) to assess the potential effects three scenarios: i) keeping in place current import bans and levies which are charged in addition to tariffs, while implementing the CET tariff rate on non-banned products ii) removing the import bans and implementing the CET rate on all products, but keeping the additional import levies in place and iii) fully implementing the CET on all products and completely removing import bans and levies. The note finds that implementing the CET would have significant and largely positive effects on Nigerian consumers and producers, but only under the third scenario which includes the removal of import bans and special import levies. In this case, imports could be expected to increase between 3 and 5 percent.

Tariff revenue would increase if import bans are replaced with ad valorem tariffs, but once import levies are also removed the net effect is likely to be negative, though a precise estimation is difficult given data limitations. A significant share of this loss could be offset by expected revenue gained from increased formalization of imports that are currently smuggled as the CET reduces the incentives for such activities. Overall, tariff and other trade taxes account for just 3.7 percent of total government revenue, so the overall fiscal effect would be small.

The full CET scenario, including the removal of import bans and levies, would also significantly benefit Nigerian consumers, who could expect to see the price of their average consumption bundle decline by around 2.4 percent. The main channel of impact would be the removal of the levy on rice. On the contrary, if the bans and levies are kept in place under scenario i), implementing the CET on non-banned products would lead to an increase in the price of the average consumption basket that would disproportionately affect the poor.

Overall, CET implementation under all three scenarios would benefit the majority of manufacturing firms in Nigeria (between 60 and 75 percent), accounting for the majority of manufacturing jobs. Their profit is expected to be higher after the reform due to lower prices on intermediate inputs, and in some cases higher protection for these firms' outputs. Firms that are already exporting can also be expected to gain through cheaper access to intermediate inputs, more preferential market access in the region, and in particular trade facilitation effects associated with a simplified customs regime if bans and levies are removed.

[3] This section is an excerpt from von Uexkull and Shui (2014)

The remaining domestic firms in the manufacturing sector could experience declines in their profitability as the domestic price of their main outputs would be lower after the CET is in force and levies and bans are removed. In most cases, they would nevertheless remain profitable. The most negative effects are likely to be concentrated on the textile and apparel sectors, where adjustment assistance might be required. Geographical disparities could also arise, suggesting a possible rationale for adjustment assistance targeted to states with a disproportionate amount of negatively affected firms. While negative effects are likely to be concentrated on relatively few firms, benefits in terms of lower input prices are distributed rather evenly and could give a significant boost in competitiveness to the manufacturing sector as a whole.

Firm level data suggest that exporting to the regional market can be an important first step beyond the home market for Nigerian firms that may not yet be competitive in the global market. Implementation of the CET will open new opportunities for Nigerian firms in the regional market. On average, the preferential margin over competitors from the rest of the world in ECOWAS markets is bound to increase for Nigerian firms as partner countries implement the new CET, though there are disparities across industries and partner countries. In particular, sizeable new opportunities can be expected in the food and beverage industry, and in the market of Ghana, which is large in economic terms and likely to undergo substantial increases in the preferential margin for Nigerian firms under the CET. In addition, implementation of the CET and removal of the import bans and levies would contribute to trade facilitation at both Nigerian and regional borders by reducing complexity, diminishing the incentives for informal trade and smuggling, and promoting trade facilitation. In the future, moving towards a full Customs Union where tariffs are collected at the border of entry rather than in the country of consumption could render even greater trade facilitation benefits by removing the need for rules of origin and transit regulations.