



DEVELOPMENT OF THE EFFECTIVE RATE OF PROTECTION MODEL FOR GHANA

**TRADE AND INVESTMENT PROGRAM FOR A COMPETITIVE
EXPORT ECONOMY
ENABLING ENVIRONMENT TECHNICAL REPORT**

November 2008

This report was produced for review by the Ministry of Trade and Industry & Private Sector Development. It was prepared by USAID's Trade and Investment Program for a Competitive Export Economy (TIPCEE) and the Ministry of Trade and Industry & Private Sector Development.

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This report was a collaborative effort between TIPCEE and MOTIPSD/PSI: Dr. Fritz Gockel, Dr. Susan Hester, George Fynn, and Eric Kwame Mante-Bediako with support from the Import Export Division and the Regional Officers of MOTIPSD/PSI. The views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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Tariff Study in Support of the Effective Rate of Protection Model

1. Introduction: Background to the Study

GPRS II, Ghana's blue print for development emphasizes an export-led growth strategy and domestic industrialization for wealth creation. The Ghana Trade Policy is set within the context of the country's long term strategic vision of achieving middle income status by 2015 and becoming a leading agro-industrial country in Africa. To implement these policy prescriptions, the Ministry developed a five-year Trade Sector Support Programme (TSSP), which spans 2006–2010 based on in-depth analysis of the current support interventions in the trade sector across various ministries, departments and agencies (MDAs) and the private sector. The TSSP covers 10 thematic components, comprising a total of 27 projects, which aim to increase Ghana's competitiveness in international and domestic markets and improve the legal and regulatory environment for business and consumers.

The Import-Export Regime is one component of the TSSP. Its goal is to encourage investment and raise competitiveness in both exports and imports and provide lower prices to consumers. This will require that markets for traded commodities are improved, and relative prices are competitive, and as far as practicable, trade policies do not introduce distortions in international trade. However, as is generally the practice, policy makers employ a number of measures, such as income and commodity taxes, import tariffs and subsidies, quantitative restrictions, import prohibitions, price controls, and entry barriers, that are intended to increase or decrease the domestic prices of both traded and non-traded goods and as a result create a divergence from their respective economically efficient prices (*i.e.*, the prices that would prevail in the absence of intervention).

In particular, the structure of tariffs affects producers, consumers, and government. High tariffs may protect local industries from competition and may increase government revenues. High tariffs also increase the price of goods in the domestic market through high import costs to consumers and inputs to production. The TSSP, which is the implementation document of Ghana's Trade Policy, seeks to ensure that resources are allocated efficiently, and competitive sectors are promoted in order to stimulate growth in domestic manufacturing over the longer term. This is against the background that hitherto, tariff issues were largely treated as revenue instruments. Seldom are tariff measures regarded as trade facilitation instruments. Even if tariff measures are to be targeted at trade facilitation and industrial growth, there appears to be no clear evidential basis for such framework. The experiences of Ghana's immediate past with the Special Import Tax have shown that if care is not taken and other support mechanisms devised to rid the industries of other over-riding supply constraints, some of these industries will become perpetual or adult infants that will require more and heavier doses of tariff support to be able to break even. Indeed, the example of such a non-evidence based policy measure is the tariff adjustment on poultry and rice products introduced in the 2005 budget. By this, government announced an additional 20% tariff on imported poultry and rice products without any analytical basis. Although these tariff adjustments

were paved with good intentions, there was no informed basis for the choice of the rates, or what the various interactive effects might be. Thus, when challenged as to the basis, government was forced to abolish the tariff. It is against this background that before any such tariff regime is put in place, a critical analysis have to be done to simulate an impact assessment, and indeed find out the over all level of protection which is being provided. Replacing such arbitrary approaches to tariff setting with informed policy choices is the goal of the USAID/TIPCEE–MOTIPSD/PSI collaboration on the design of this effective rate of protection (ERP) template and the pioneering calculation of ERPs that will be the basis for evidenced-based tariff programs.

Consequently, the project addressed in this study is included under tariff and non-tariff measures whose purpose is to ensure a level playing field for all economic operators through effective and systematic application of a transparent tariff regime. The goal of this project was to establish an effective rate of protection methodology because there is currently no systematic approach for determining effective rates of protection to facilitate informed policy decisions. To ensure transparency, a template was developed based on international best practices to guide analysts in determining the impact of various tariff options on the domestic industries. The template is also intended to serve as guidance to industry when making submissions for changes in the tariff regime. It is anticipated that the model will be used to identify and remove and inconsistencies in the current tariff regime.

The project was designed as a public-private sector partnership between the Ministry of Trade, Industry, Private Sector Development and President's Special Initiatives (MOTIPSD/PSI), USAID's Trade and Investment Program for a Competitive Export Economy (TIPCEE), and the private sector stakeholders who participated in the study.

2. Critical Issues in Tariff Administration for Protection of Local Industries

Tariff regimes are put in place for three main reasons: revenue generation, protection of local industries by raising the profitability of local import-competing producers, and/or outright ban of some specified imports. A tariff regime cannot accomplish all objectives simultaneously in an optimal way. The particular objective of the tariff regime will determine the level of the tariff. For our purposes in this study, it is assumed that the tariff regime is directed at protecting infant or local industries with growth potentials by raising their profitability. The tariff regime presumes that Ghana has industries with latent competitive advantage so that once these industries are given some tariff protection they would become competitive in the medium to longer term. Typically, a tariff will tend to raise prices, lower the amounts imported and consumed, and raise domestic production. Hence, given a breathing space, these local industries could be expected to develop and internalise economies of mass production and the technological efficiency distinctive of many modern production processes.

Although protection may initially raise the prices to the consumers because of short term comparative inefficiencies, once the industry grows up with all the trappings of modern production process, firms may become so efficient that cost and prices will fall, output increase, and employment levels rise. Consequently, some policy analysts advocate the need for a tariff to insulate identifiable domestic industries from liberalised trade practices.

Ghana's experience shows that although the stated objectives of import tariffs and commodity taxation may be to raise revenues, they are also often applied in ways aimed at raising the profitability of domestic industries through the differential incentives they create. By this, resources are reallocated by both consumers and producers in favour of import competing/import substitution activities. These incentives operate by creating a wedge or differential between the prices that would exist without intervention (world prices) and domestic prices that reflect the interventionist policies (price distortions). World prices represent the terms on which an economy can participate in world trade. Analytically, trade policies work through their effects on domestic prices of tradeable goods and services, which are typically referred to as internationally traded commodities (ITCs), by creating a wedge between domestic and world market prices. The opportunity costs of ITCs are given by the world market prices, CIF for imports and fob for exports of the commodities concerned. In an economy with protection from the world market, domestic and world prices will not be equal. Policies that regulate the quantities of imports (or exports) affect domestic prices indirectly. This may arise as a result of several trade policy measures, with the principal ones as follows.

2.1. Import Tariffs and Import Quotas

If import tariffs are imposed, once an import reaches its port of entry, its price will be raised immediately by the tariff. Quotas will also work to raise domestic prices of imports above world levels even if no tariffs are involved, since supply of the import is restricted. By limiting the amount of a good that can be imported, an import quota creates an artificial scarcity in the local market and hence raises its domestic price. The price of such a commodity in the domestic economy will rise until demand is equal to the limited supply available under the quota. The excess of the domestic selling price above the import price is termed the scarcity premium arising from the imposition of a quota. The ratio of the scarcity premium to the world price is referred to as the tariff equivalent premium, since a tariff of this rate would create the same domestic price as the quota. Import quotas are typically used as instruments for short term balance of payments considerations to restrict demand for the limited amount of foreign exchange. They are also used for protection even after a foreign exchange crisis has passed. Whilst theoretically quota restrictions and import tariffs can be shown to have identical effects on resource use, this argument rests on the assumption of competitive production conditions in the domestic market.

2.2. Export Tax and Export Subsidies

An export tax on a commodity which can be sold both domestically and abroad will create a domestic price equal to the export price minus the export tax. This follows since, all things being equal; producers will only sell abroad if they can obtain a net price, after tax payments, equal to that in the domestic market. Export subsidies have the opposite effect, however, since the domestic price must now equal the export price plus the subsidy. Indeed, export subsidies are a means of raising the profitability of exporting, often as a counter to the level of official exchange rate which may provide an unattractive rate of return for exporters.

3. Calculation of the Measures of Trade Protection

The introduction of various tariffs and other differential incentives for industrial activities has often been viewed in terms of providing protection for domestic producers from potential competition from foreign producers. This, however, puts these issues in too narrow a context. The relationship between the financial costs of domestic production and the costs of imports is only one of the elements of competition for the limited resources available for industrial production. Granting relatively high “protection” for one activity also provides it with advantages relative to other existing and potential activities that are receiving less assistance. Because price distortions draw resources towards favoured activities, they increase costs for all other activities. In developing proposals for efficient industrial policies, it is important that these broader implications be explicitly recognized as prices do matter. Prices are of direct interest to consumers and users of domestic goods. As demonstrated by the May 2008 removal of import duties on selected commodities by the government, rice and bread producers’ costs are directly affected by changes in the domestic price of rice and wheat arising from tariff abolition on rice and wheat imports. Final consumers experience the impacts of import duties through lower or higher prices on final goods. These effects on domestic prices are referred to as the nominal protection arising from trade policies.

The real incomes of the users of protected goods are reduced by nominal protection because the protected goods cost them more. However, the impact of trade policies on producers is slightly more complex. For a garment producer, for instance, taxes or other restrictions on clothing imports raise domestic clothing prices and are beneficial to domestic producers selling in the local market. On the other hand, a tariff-induced increase in the domestic price of fabric raises garment producers’ costs and so is harmful to them. The net impact of trade policies on the producers of rice and/or bread, or more generally on producers of any good, depends on their effects on prices of both outputs and inputs.

In addition, the domestic prices of some goods are influenced by subsidies, in particular through public enterprise pricing policies. The border prices of tradable goods reflect world market conditions. The domestic prices of non-traded goods (and exports) are also indirectly affected by the price distortions on tradable goods. High rates of effective

protection cause economic waste by inducing producers to supply goods domestically even when their domestic costs are higher than the opportunity cost of obtaining those same goods through trade. At the same time, producers of goods with low or even negative effective protection are forced to refrain from producing goods domestically despite the fact that this could be done at a lower cost than in international markets. The central task in estimating economic incentives to determine the international competitiveness of Ghana's products is by assessing the differentials between the domestic and world prices of goods produced and used by industrial activities

How can the net impact of these effects of tariffs and other policies on the prices of producers' inputs and outputs be measured? The effective rate of protection is a commonly used measure of the net effect of trade policies on the incentives facing domestic producers. The measurement of effective protection is a two-stage process – first determining the nominal protection of the policies in question, and second, analyzing the implications for effective protection of different firms, sectors or activities.

3.1. Nominal Rate of Protection (NRP)

The nominal rate of protection refers to the total proportional difference between domestic and international prices, taking into account both import tariffs and other distortions such as quantitative restrictions (licensing and prohibitions) and price distortions such as price controls. In principle, such a measure would look at the relationship between the prevailing domestic price of a good and the price of the same good that would be observed under free trade (*i.e.*, an undistorted market). The NRP is an estimation of the equivalent tariff that would lead to the total disparity between domestic and international prices, over and beyond the known price-raising effect of the import tariff. In practice therefore, the measure is derived from the difference between the domestic price of a good and the observable world price of a comparable good.

For example, if the world price of a good is ₵200 and the import tariff is 15%, abstracting from delivery costs and other distortions, the domestic price of both imported and locally competing goods should be ₵230. If however, the local price for the good is ₵250, this suggests that there are other distortions at play, such as an absence of competition, or quantitative restrictions on supply, so that the NRP is 25%: the difference between the local price and the world price, indexed to the world price.

The analysis of NRP aims to estimate the total price raising effects of tariffs and of the imposition of other restrictions to free trade. Economic theory holds that any limitation on the supply of a good is likely to raise its price. Thus, the nominal rate of protection measures the proportion by which domestic prices exceed world prices.

NRPs are calculated either *ex ante* or *ex post*, to indicate the difference between stated policy and the actual outcome, based on revenues collected. NRPs are estimated by identifying all price distortions affecting imports. The *ex ante* NRP is defined as the sum of the tariff and all other price distortions which include listed tariff surcharges, other duties and quantitative restrictions. NRPs are estimated by identifying all price distortions

affecting imports. The relationship between the domestic price and the world price, and the derivation of NRP from this, are expressed algebraically as:

$$P_d = P_w (1 + t + d + e) \quad [1]$$

$$NRP = \frac{P_d - P_w}{P_w} \times 100 \quad [2]$$

where **P_d** and **P_w** are the domestic and world price, respectively, **t** and **d** are tariffs and duties, and **e** is the net tariff equivalent of other trade restrictions (**e** equals zero where there are no restrictions other than tariffs and duties).

3.2. The Effective Rate of Protection (ERP)

The nominal rate of protection refers to the total proportional difference between domestic and international prices, taking into account both import tariffs and all other distortions. However, the full effect of the protective system can only be estimated by comparing the tariff or tariff equivalents on the output of a producer, with those on the inputs he must purchase. The reason for this is that if a producer's input prices are raised above international levels, by more than his output prices, he is being penalised rather than encouraged by the protective system, even though his output may have a positive tariff. A comparison of the output tariff of a producer with a weighted average of the tariffs on his inputs, with the weights determined by share of inputs in the value of the output gives the **ERP**. Thus the effective rate of protection incorporates the combined effect of price distortions (*i.e.*, NRP) on both outputs and inputs, on the value added of manufacturing activities. It reflects the amount by which an activity's value added at domestic prices would differ from that which would be realized if the prices of its products and inputs were not distorted through policy intervention. The ERP measures the extent to which a value-added of a producer, or the aggregate of all producers in a sector, at domestic protected prices, exceeds what it would be in a free-traded situation where world and domestic prices for traded goods are assumed equal. Algebraically, the ERP for activity *i* can be given in two alternative but equivalent definitions:

$$ERP_i = \frac{VADP_i - VAWP_i}{VAWP_i} \quad (3)$$

Where $VADP_i$ is value added at domestic prices (VADP) in *i* and $VAWP_i$ is value-added at world prices (VAWP) in *i*, under free trade. Alternatively expressed, this gives us:

$$ERP = \frac{t_i}{1 - \sum a_{ji} t_j} \quad (4)$$

Where t_i and t_j are the tariffs, or tariff equivalents, for output *i* and input *j* respectively, and a_{ji} is the number of units of *j* required per unit of *i* under free trade.

There are two important issues that have to be dealt with in the operational framework of the formula. These are the treatment of non-traded goods and the exchange rate.

3.2.1. Non-Traded Goods

The approach described above cannot be used in assessing price distortions for non-traded goods, as the effects of policies on prices are indirect. While non-traded goods are involved in most manufacturing activities, by their nature they do not have direct international trading prices. However, they employ traded and non-traded goods in their own production processes. Price distortions of traded goods therefore affect the prices of non-traded goods. When non-traded goods constitute a significant proportion of the value of materials used in a production process, the assessment of the impact of intervention on the prices becomes essential in the measurement of ERPs. There are three main approaches to estimating the price distortions of non-traded goods, generally referred to as the Balassa method, the Scott method, and the Corden method:

- The Balassa method assumes that the price of non-traded goods will not change if the system of protection is removed, which implicitly means their nominal rate of protection is zero and they are supplied at constant costs.
- The Scott method assumes that the tariff on non-traded goods is equal to the average of that for traded goods.
- The Corden method assumes that non-traded goods are part of the value added of the manufacturing activity employing them. Their values thus become domestic value added and traded inputs.

A derivative of the Corden method has been adopted in this study. It is in many ways the preferred approach as it is likely to yield more precise measures. The decomposition of the costs of non-traded inputs, directly and indirectly used in the production process, to identify the foreign exchange cost of traded inputs, actually measures “total protection”, that is the direct and indirect impact on the value added of manufacturing activities emanating from the prevailing structure of protection.

3.2.2. The Exchange Rate

In assessing the structure of incentives, it is generally also important to consider the impact of intervention on the exchange rate and the differential impact that it has across activities. The imposition of tariffs or restrictions on imports affects the equilibrium exchange rate relative to a free trade regime: the equilibrium price of foreign exchange falls (*i.e.*, fewer local currency units per US dollar). A lower exchange rate will reduce the price of imports, measured in domestic currency, and hence reduce the protection accorded by a given tariff to domestic competing products. The exchange rate that maintains exchange rate equilibrium will decline further as the average level of protection increases. A lower exchange rate also penalizes the export sector as it earns fewer local currency units per US dollar than would be the case under a free trade situation. Thus protective measures and the exchange rate are interdependent; they can be combined in various ways to ensure balance of payments equilibrium.

Many countries operate a variety of import controls covering a broad range of goods. The objectives of these controls include balance of payments management, revenue generation, essential goods supply and the protection of local industries. Usually, the macroeconomic rationale for foreign exchange controls is that they are prompt, direct and predictable in controlling import demand, compared with other policies such as demand deflation. To the extent that quantitative restrictions on use of foreign exchange result in an overvalued currency, the main implications for the economy are as follows:

- Imported raw materials are effectively cheaper at an overvalued exchange rate than they would otherwise be, reflecting an implicit subsidy on those imported raw materials (where there are no other restrictions on import);
- At an overvalued currency, there is excess demand for imports (which are cheaper) so the foreign exchange requirements of many industries are not satisfied, which leads to lower utilization of their capacities;
- An overvalued currency augments the disparity of effective protection across industries, since the proportion of imported inputs vary among industries;
- An overvalued currency promotes black marketing of foreign exchange, by affording room for arbitrage; and
- An overvalued currency also encourages smuggling of imported goods across the border, again because of arbitrage profits to be made.

When the extent of overvaluation of the exchange rate is taken into account, the ERP measured is referred to as the net effective rate of protection (NERP). The NERP may be expressed algebraically as:

$$NERP_i = (1+e^*) \left(\frac{VADP_i - VAWP_i}{VAWP_i} \right) \quad (5)$$

Where e^* is the estimated exchange rate distortion.

In this study, the ERP is estimated at the prevailing officially declared exchange rates by Bank of Ghana, although strong evidence suggests that Ghana's exchange rate has been overvalued since 2002.

4. Estimation of Nominal and Effective Rates of Protection: Methodology

The template for Ghana was developed using an adaptation of the Trade Policy Impact Model (TPIM) developed in Southern Africa for the calculation and simulation of effective and nominal rates of protection based on firm level data. Because the original model included data from six SADC member states, it was necessary to modify the model for use in a single country. The database, named "Ghana_ERP.mbd," was developed as a quantitative tool to assist Republic of Ghana in assessing the tariff schedules and estimate the effective rate of protection resulting from current or simulated tariff rates. As such, the model incorporates estimates that take into account the benefits of tariff reductions and implementation of tariff policy strategy. On the basis of these estimates, the Government of Ghana may then formulate tariff policies regarding bindings and reductions of tariff rates. The intent of the model is to offer an analytical

tool from which to examine alternative tariff strategies and estimate effective rate of protection by applying different tariffs.

MS Access is used as the database software to operate the model. The analytical model contains several tables, queries, forms and reports that help the user to operate the model and get results to estimate current and simulated effective rates of protection. Microsoft Visual Basic was used to write code and functions to operate the model. The technical details of Model are in Appendix 1 of this report.

5. Data Requirements for Estimation of the Effective Rates of Protection

The estimation of effective rates of protection requires data on inputs used in the production of all products being studied as well as data on nominal rates of protection for all relevant inputs and outputs. Many studies start with relatively aggregated data, with input-output data at fairly broad sectoral levels (from industrial surveys or input-output tables) and tariff rates and other data aggregated to the same level, often by taking the ratio of duties collected to import values over broad categories of goods as a proxy for nominal protection rates. While this is sufficient to capture broad patterns in the impacts of trade policies, it does not provide sufficient detail to allow discrete policy decisions to be made about particular products and tariff lines, nor does it allow policy makers to understand the incentives and/or disincentives at play. Only with detailed firm-level data can the costs of trade policy distortions be fully analyzed. Therefore, the data collected for the study in Ghana were classified at the HS 6 digit level for both the nominal and effective rate of protection analyses.

A target of 100 companies was set for the study. These firms were classified as exporters, import-competing producers with imported inputs, or import-competing producers with domestic inputs. The Ministry chose to focus on medium (20 to 99 employees) and large (100 or more employees) companies due to their export potential. The sectors selected were agriculture (fresh and processed products), plastics, pharmaceuticals, wood and furniture, metals, and textiles. The sample identified included firms from all regions of the country.

The questionnaire, adapted from the one used in Southern Africa, was completed and pilot tested in September 2006. The survey instrument had two parts, one which collected quantitative financial and production data and a second which served as the guideline for collecting qualitative information during interviews. The quantitative section included information on production, material inputs, inventory changes, labour, and overheads. The qualitative section solicited views on such questions as key challenges, utility services, exchange rates, export destinations and specific trade regimes.

Following the pilot testing and revisions to the survey instrument, a meeting was held to explain the study to the private sector participants. Representatives from MOTIPSD/PSI and USAID/TIPCEE explained the goals of the study, reviewed the questionnaire in detail, assured the potential respondents of confidentiality, and entertained questions.

Appointments were made with participants for interviews and the collection of the completed quantitative questionnaires.

MOTIPSD/PSI officers from regions outside of Accra attended the private sector stakeholder meeting. Following the forum, the officers received additional training on the concept of effective rate of protection and the administration of the questionnaires. Companies in the different regions were vetted with the officers, and some companies were added or subtracted based on their input. A plan for the collection of data and time lines were established with each officer.

MOTIPSD/PSI and USAID/TIPCEE staff began data collection in October 2006. The process proved to be very challenging. Sometimes numerous appointments had to be made to conduct interviews, and getting the quantitative data was even more difficult. The smaller companies frequently did not have the data, and even the larger companies did not keep data in the format required by the survey instrument. Several trips were made outside of Accra to provide support for the officers in the field who were having great difficulty completing their assignment.

6. Data Collection, Analysis, and Results of the Survey

6.1. Survey Instruments

Two questionnaires were designed to collect the relevant information required for the calculation of the effective rates of protection and to evaluate the overall costs of doing business that affect competitiveness of firms. The first questionnaire required quantitative data on output and inputs of the firms. The second questionnaire addressed the qualitative issues that are typically cross-cutting variables which affect cost of doing business, hence the competitiveness of firms. (Questionnaires are attached as Appendix 2.) Questionnaires were administered to approximately 100 firms among industry-sectors considered by MOTIPSD/PSI to be industrial growth points of the economy.

6.2. Results of Qualitative Questionnaires

6.2.1. Firm Demographics

After many months of effort, 64 qualitative questionnaires were completed and 34 of those companies provided useable quantitative data. Considerable effort was expended to check and verify the quantitative data provided. The difference between 64 and 34 can be accounted for by the fact that some of the firms would not provide data or did not have data; some data provided was not credible or contained too many errors and was thus discarded. After passing through a quality control process in which numbers were checked and in some cases verified with the respondents, the quantitative questionnaires were input into the Ghana ERP model. (See discussion of the model in Appendix 1.)

The qualitative questionnaires were analyzed in an effort to summarize the interviews which were conducted by MOTIPSD/PSI staff. Consistent with the goals of the study there was a good distribution of firms by sector as well as by size as shown in the tables below.

Table 1

| Firms by Sector | Number | Percent |
|------------------------|---------------|----------------|
| Agro-processing | 15 | 23 |
| Metals | 17 | 27 |
| Pharmaceuticals | 11 | 17 |
| Plastics | 8 | 13 |
| Textiles | 5 | 8 |
| Wood & Furniture | 8 | 13 |

Table 2

| Firms by Size | Definition | No. of Employees | Percent |
|----------------------|-----------------------|-------------------------|----------------|
| Small | <20 employees | 7 | 11 |
| Medium | 20 to 99 employees | 25 | 39 |
| Large | 100 or more employees | 32 | 50 |

A high percentage of Ghanaian producers are located in the Greater Accra/Tema region; however, due to the efforts of the MOTIPSD/PSI staff, almost 40 percent of the companies participating in this study were located outside of this area. The final distribution reflects their efforts, as well as the reality of the geographical distribution of industry in Ghana.

As seen in the table below, the Ashanti region had the largest share of participants after the Greater Accra/Tema region. Eastern, Western, and Central regions were well-represented, and consistent with the dearth of industry in the Northern and Volta regions, there were few participants from that part of the country.

Table 3

| Geographical Distribution | Number | Percent |
|----------------------------------|---------------|----------------|
| Greater Tema/Accra | 38 | 59 |
| Ashanti | 11 | 17 |
| Eastern | 4 | 6 |
| Western | 4 | 6 |
| Central | 4 | 6 |
| Volta | 1 | 2 |
| Northern | 2 | 3 |

Firms were also queried about the length of time they had been in business. The longevity of the respondent firms was impressive. A little over a fifth of the firms had been in business 10 years or less; 20 percent had been in business for more than 40 years as shown in Table 4 below.

Table 4

| Years in Business | Number | Percent |
|--------------------------|---------------|----------------|
| 1 to 5 years | 5 | 8 |
| 6 to 10 years | 9 | 14 |
| 11 to 20 years | 15 | 23 |
| 21 to 30 years | 5 | 8 |
| 31 to 40 years | 17 | 27 |
| >40 years | 13 | 20 |

6.2.2. Exporting Firms

Given the Government of Ghana's commitment to export-led growth, the interviewers attempted to solicit information about the export behaviour of the respondent companies. Sixty-one percent (39 firms) of the managers reported that they exported their products; the largest number, 27, exported to the ECOWAS region. Seven companies exported to other regions in Africa, and eight companies reported exports to the EU. The remaining three companies exported to other countries or regions.

As expected, the size of exporting firms tended to be larger than in the overall sample. Only one small company reported exports; 36 percent of the exporters were medium sized companies, and 62 percent were classified as large firms. Consistent with the overall sample, agro-processors and metal producers made up the largest share of exporters, and textiles firms and wood and furniture manufacturers, the lowest shares. Unlike the total sample, plastics manufacturers made up a higher percentage of exporters than pharmaceutical companies as illustrated below.

Table 5

| Exporters by Sector | Number | Percent |
|----------------------------|---------------|----------------|
| Agro-processing | 11 | 28 |
| Metals | 11 | 28 |
| Pharmaceuticals | 4 | 10 |
| Plastics | 8 | 21 |
| Textiles | 3 | 8 |
| Wood & Furniture | 2 | 5 |

The number of years a firm had been in business did not appear to affect its export behaviour. Similar numbers of firms in four of the six categories were exporters including two companies which had been in business for five years or less. A firm with six to 20 years of experience was just as likely to export as a firm with more than 40 years of experience as detailed in Table 6.

Table 6

| Exporters' Years in Business | Number | Percent |
|-------------------------------------|---------------|----------------|
| 1 to 5 years | 2 | 5 |
| 6 to 10 years | 8 | 21 |
| 11 to 20 years | 8 | 21 |
| 21 to 30 years | 1 | 3 |
| 31 to 40 years | 11 | 28 |
| >40 years | 9 | 23 |

Firms in Ghana have access to trade regimes which are designed to provide them with preferential treatment. The trade regime for ECOWAS countries is ECOWAS Trade and Liberalization Scheme (ETLS). Despite its advertised advantages, only eight of 27 countries exporting to the West African region utilised the scheme. Even the companies which had spent the time to register were disappointed in its operation. Comments recorded by interviewers include:

- ❖ It does not work.
- ❖ System has too many roadblocks.
- ❖ Application process is cumbersome and slow.
- ❖ Scheme hinders business.

The other well-publicised trade regime is the U.S. African Growth and Opportunity Act (AGOA). Only one company out of the 64 interviewed had exported under the AGOA regime. Another company had secured an order but the freight rates between Ghana and the United States made his products uncompetitive on a delivered basis.

6.2.3. Challenges Faced by Ghanaian Firms

MOTIPSD/PSI officers asked the respondents to identify the top five obstacles they faced in their businesses. The answers varied somewhat according to sector, but there was a consensus around a number of challenges. Perhaps in part because the survey was conducted during a period of load shedding, unreliable utility services were mentioned by a majority of the firms. These included power (electricity) outages as well as water shortages. The power outages were both scheduled and unscheduled. Respondents agreed that the scheduled outages were easier to accommodate, albeit at a high cost to the bottom line. It was the unscheduled and unexpected outages that proved costly in terms of damaged machinery and loss of productivity.

Other obstacles mentioned included an unfavourable tax system, lack of working capital, scarcity of long term loans, high port charges, and transport issues and cost. Some firms were saddled with obsolete machinery and were unable to acquire the land they needed to expand. The unavailability of skilled labour was cited by a number of companies, as well as access to raw materials at competitive prices, and unfair competition from imports including smuggling.

The reliability of utility services was investigated during the interviews. Energy was identified as the least reliable forcing most companies to purchase and run generators leading to increased cost of production and lost production during the changeovers. Problems with both quality and shut offs were identified with the water service. The solution for many firms was to drill their own bore holes. The difficulties with water service were largely associated with specific geographic areas, and some companies reported only infrequent problems. Telecommunications was identified as the most reliable but still in need of improvement. A number of the managers indicated that they had switched from land lines to mobile phones to solve some of the problems with interrupted service.

The transport of both raw materials and finished products posed numerous challenges to the respondent firms. Trucks were often delayed due to age and lack of maintenance and spare parts. The rising cost of fuel, bad road conditions, and insufficient freight capacity were frequent complaints. These problems were exacerbated by the high and ever increasing cost of transport as well as the difficulties encountered at every border crossing.

Respondents were able to cite many factors which affected their competitiveness related to Ghana's ports. In addition to high fees -- congestion, inefficiency, bureaucracy, the lack of reliable service by GHAPHA, and delays in berthing were mentioned. Managers said that down time at GCNet, a shortage of containers, high and inconsistent duties, and excessive freight charges hindered their ability to compete.

Many firms expressed satisfaction with their employees and with the ample supply of labour. They said that their employees were reliable, productive with good management, and responded positively to incentives. However, some managers expressed the need for more technically trained persons. The demand at some companies had been met by hiring employees from technical schools and/or by training employees in house. Other managers expressed frustration with their employees and noted the need for improvement in a number of areas. These included employee theft, unauthorized absenteeism, a lack of responsibility, and the need for a better attitude on the part of their workers.

A final challenge explored by this study was the effect of the exchange rate on the respondent companies. Not surprisingly, the answers given were directly correlated to their business activities as exporters, manufacturers with imported inputs, or manufacturers with primarily local inputs. Exporters explained that the exchange rate is a serious issue when the cost of production increases due to domestic inflation but prices in foreign markets do not. In all cases, the local wage increases had exceeded the price increases for the finished product. They all agreed that the overvalued cedi was hurting their export competitiveness, but the effect varied somewhat depending on whether their transactions were in euros or dollars.

Manufacturers with primarily imported inputs liked the current value of the cedi as it made their inputs cheaper; indeed several yearned for more appreciation to further lower their costs. A stable cedi also facilitated their planning. Similarly, producers with

domestic inputs liked the stable cedi for planning purposes, and the effect overall was small because all their transactions were in cedis.

6.2.4. Firms' Responses to Market Changes

MOTIPSD/PSI officers were interested in learning about how the participant firms had responded to market changes and how they saw the future of their firms. Myriad strategies were offered for responses to changes in the market including advertising, seeking new markets, checking pricing structures, reducing prices, and cutting shifts. Managers said that they analyzed the cause of the changes and took remedial actions, developed new products, and worked harder to meet increased demand.

When asked specifically what they had done to increase sales, managers reported a wide range of approaches including:

- ❖ Sought certifications
- ❖ Found new customers
- ❖ Diversified into new markets
- ❖ Added new products
- ❖ Produced higher quality products
- ❖ Improved packaging
- ❖ Advertised
- ❖ Lowered prices to compete with imports
- ❖ Motivated staff
- ❖ Extended credit to customers
- ❖ Reduced cost of production
- ❖ Increased sales force
- ❖ Developed new marketing strategies.

The firms' five to ten year plans exhibited a sense of optimism and resolve. Despite what looked like difficult odds, most respondents were determined to persevere and grow their businesses. Their plans varied according to the nature of their business and included plans to acquire more land to expand and build a new plant; they wanted to secure capital to purchase new equipment in order to add value to their products and compete more effectively with imports. Other managers wanted to increase their productivity and operate at full capacity while increasing the quality of their goods, including the development of organic products. Export goals included expansion to more countries, entrance into the ECOWAS market, and "capture the West African market." On the domestic front, managers sought to reach 40% of the national market, get listed on the Ghana Stock Exchange, and "Be number one in Ghana!"

6.2.5. Private Sector and Public Sector Interaction

Respondent companies were almost evenly split between those which had received government incentives or support (30 – 47%) and those which indicated that they had not (34 – 53%). Incentives or support received included tax cuts or exemptions, free zone status, duty drawback, VAT refunds, and access to the venture capital fund. Other

benefits mentioned were Export Development and Investment Fund (EDIF) and concessionary loans, advice from extension service, donor loans and grants, and “a peaceful country.”

As might be expected, respondents had countless suggestions when asked: “What could the Government of Ghana do to improve your business environment?” The suggestions cut across a range of MDAs. For example, under the Ministry of Finance/Bank of Ghana/IRS umbrella they wanted taxes reduced and the withholding system made simpler, lower bank rates, depreciation of the cedi, low (10%) interest loans, the removal of VAT and duties on all inputs and equipment, and a credit guarantee for equipment and raw materials. They looked to MOTIPSD/PSI/GEPC/GFZB to create industrial estates, disseminate information on MSME programs, provide training in entrepreneurial activities, address the issue of dumping and smuggled goods, promote exports, and make the free zone system work better. Respondents wanted high duties placed on cheap imports and the tariff structure changed to support local industries; they wished for the Ministry to take trade policy issues seriously: “implement!” They looked to the Ministry of Energy to provide stable, reliable, and affordable energy, and they wanted energy priced in favour of the manufacturing sector.

Managers recognized the need to support an educational system to meet industry’s needs and to encourage applied research at Ghanaian universities. They desired a Ghana Standards Board that was properly equipped to do the necessary analyses.

Many of their answers involved multiple MDAs: curb corruption in CEPS and the police force, decentralize decision-making, encourage Ghanaians to buy made-in-Ghana goods, give priority to Ghanaians under the procurement law, improve the road system, and make land available for expansion and investment.

6.3. Results of Quantitative Questionnaires

6.3.1. Estimates of Effective Rates of Protection

The designed ERP template is able to generate nationwide estimates, firm level estimates, and industry level estimates and/or any combination that is required for evidence-based policy. The ERP template is also able to generate both nominal and effective rates of protection targeted at domestic competing products and exports. The model estimates two rates of effective protection: one when firms produce for the domestic market and one when firms sell their production in the international market.

The domestic ERP (ERP_d) measures products sold in the domestic market, reflecting the duty on both the inputs and the final product at the current MFN tariff rates. For all sectors investigated, this is estimated at 15%, as shown in Table 7.

The export ERP (ERP_w) deals with products sold in international markets, and reflects domestic MFN tariffs on their inputs and zero duty on the outputs. This assumes that exporters do not benefit from EPZ or other duty drawback or exemption privileges on imported inputs. If there were full duty exemption on all importable inputs, the ERPs for

exporters would be zero. For the baseline survey, the estimated export ERP is negative 30% for all sectors of the economy captured by the survey. Table 7 shows the effective rates of protection for selected industry groups considered to be strategic to Ghana’s industrialization quest and that of all sectors investigated. (See Appendix 3 for detailed results for all firms).

Table 7 Effective Rates of Protection for Selected Industry Groups

| Industry Group | MFN Tariff | ERPw | ERPd |
|---------------------------|------------|------|------|
| Textile | 17 | -341 | 109 |
| Clothing | 20 | -6 | 33 |
| Furniture | 20 | -295 | 319 |
| Plastics | 18 | -224 | 211 |
| Basic chemicals | 2 | -225 | 7 |
| Iron And Steel Products | 14 | -33 | 12 |
| Fabricated Metal products | 19 | -93 | 37 |
| Total All Sectors | 14 | -30 | 15 |

6.3.2. Interpreting Effective Rates of Protection: Distorting Production Incentives and Policy Implications as Baseline ERPs

Economic theory suggests that those activities with the highest ERP will have the greatest incentive for expansion arising from the price effects created by protection. Positive ERPs indicate that industries are able to operate with higher level of value added than would prevail under free trade, increasing financial profits and/or permitting lower levels of efficiency, and constituting a subsidy to these activities. The higher are the implicit subsidies, the greatest will be the incentives for the movement of domestic resources into these activities. Conversely, activities with negative ERPs are being implicitly taxed through the combined effects of price distortions on their inputs and outputs. The degree to which resources will actually move in response to these incentives will depend on upon supply elasticities. The range of effective rates of protection also matters. For a given aggregate level of protection, high effective rates provided to some activities draw resources into these activities at the expense of those with lower effective protection. The result can be considerable waste of domestic resources, as most of the estimated results have shown in this study.

6.3.3. Positive Effective Protection in the Domestic Market

The design of the ERP template and the calculations of the various ERPs serve as the baseline for Tariff Advisory Board activity. The ERP measures the net protective effect on producers of nominal protection on both its inputs and outputs. Analytically, if a producer’s input prices are raised above international levels by more than his output prices, he is being penalised rather than encouraged by the protective system, even though his output may have a positive tariff. Consider first the overall sector net effective protection at a rate of 15% in Table 7. With this level of protection, domestic manufacturers could incur labour, capital, and management costs that are 15% higher

than similar internationally manufactured goods and still compete against imports in the domestic market. Under this structure of incentives created by the tariff regime in Ghana, it would be privately profitable to use domestic resources worth \$115 to produce fabric that could be obtained in world markets for only \$100. Each \$100 in foreign exchange “saved” through domestic production of fabric costs the country \$115. The economic waste from such production amounts to \$15 for each \$100 of foreign exchange “savings”. Similarly reasoning can be applied to firm level and industry level ERPs that are positive. For textiles, for example, the ERP of 109% suggest that costs of locally used resources can be 109% higher than those obtained in the world market and yet Ghanaian textile products can compete with imported products. Positive effective protection makes an activity that is economically wasteful privately profitable by increasing financial profits and/or permitting lower levels of efficiency, and constituting a subsidy to these activities. The higher the implicit subsidies, the greater are the incentives for the movement of domestic resources away from more efficient ones into these less competitive activities to the detriment of the economy as a whole.

6.3.4. Negative Effective Protection for Exports

The study revealed that virtually all selected sectors in Ghana have negative value added at world prices. The incidence of negative value added at world prices indicates that the costs of inputs into the production process exceed the value of sales by more than the returns to labour and capital. For example, consider the estimated negative 30% ERP for all sectors under investigation. Under this burden Ghanaian manufacturers would have to manufacture at a cost of labour, capital, and management at least 30% less than international competitors in order to compete in world markets. Production at any cost greater than this, even at less than international costs, would not be privately profitable for domestic producers. Exports worth \$100 in world markets that could be produced domestically at a cost of, say, \$71, would not be privately profitable and therefore would not take place. Negative effective protection ends up in a net loss of up to \$30 for each \$100 worth of manufactured exports that do not occur as a result of the perverse incentives created by trade policies. The textiles industry, one of the designated priorities of Ghana’s export-led strategy, has an estimated negative 341% ERP. Local resources used must be at least 341% cheaper than those used in the rest of the world if Ghanaian textiles are to be internationally competitive. The textile is worth less than its component parts. This implies that the resources used in the production of the textiles would certainly be better employed elsewhere. The country would actually increase the value of its total output and save foreign exchange by closing down the textile factories, releasing and reallocating their resources. Similar arguments can be applied to all the other industry groups with negative export ERPs. These products are not be competitive in the rest of the world.

In summary, where negative value added at world prices occurs, the product in question is worth less than its component parts. This implies that the resources used in the production of the product would certainly be better employed elsewhere. The country would actually increase the value of its total output and save foreign exchange by closing

down such a factory, releasing and reallocating its resources, and importing its requirement of the closed factory's output.

6.4. MOTIPSD/PSI's Response to the Study

The company interviews proved to be a valuable source of information to the Ministry in some unanticipated ways. Even before the survey was completed, MOTIPSD/PSI responded to the needs of the private sector as expressed during the interviews. Because the data were collected during a period of relentless load shedding, there were serious concerns expressed by nearly every company interviewed. To address these concerns, the Minister of Trade convened a group of private sector operators to hear their views and exchange information. He was then better able to represent the private sector in discussions on the energy crisis with other Ministers and MDAs.

The Ministry formed a task force on electric cable issues following discussions with respondent companies which exposed problems related to sub-standard cables being smuggled into the country and then sold to unsuspecting consumers. The task force included representatives from the electrical cable industry, CEPS, GSB, and the Ministry who worked together to analyze the problems and come up with implementable solutions.

The estimated ERP results are very much appreciated by management of MOTIPSDPSI, who have accordingly adopted it and started preparations to rollout further studies. Similarly, some industry groups (*e.g.*, the pharmaceutical sector) that were reluctant during the phase of data collection are now very willing to participate, calling on MOTIPSDPSI to come for the requisite data to calculate ERPs for their sectors. The presentations of the findings of the ERP have created awareness among Ghanaian industrialists and have also underscored the need for evidence based policies.

Appendix 1

Development of the Effective Rate of Protection Model Template

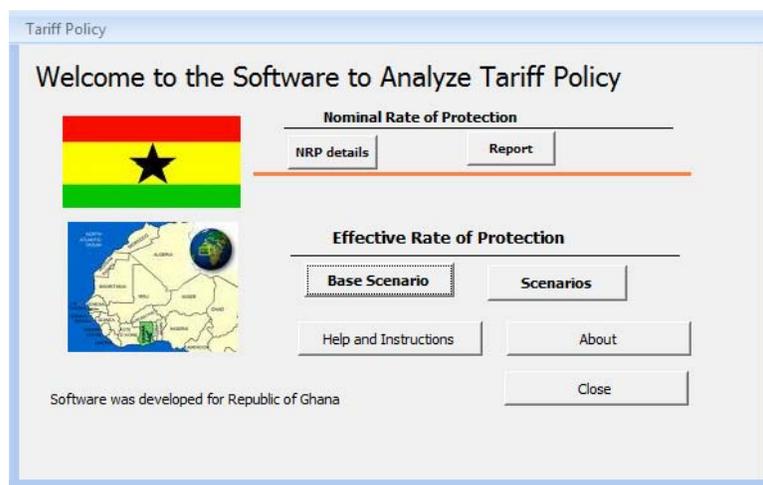
1. The ERP Template

The ERP Template was developed in Microsoft Office Access to serve as an analytical model for measuring of the actual impact of tariff on production. The database “Ghana_ERP.mbd” was developed as a quantitative tool to assist Republic of Ghana in assessing the tariff schedules and estimate the effective rate of protection resulting from current or simulated tariff rates. As such, the model incorporates estimates that take into account the benefits of tariff reductions and implementation of tariff policy strategy. The intent of the model is to offer an analytical tool from which to examine alternative tariff strategies and estimate effective rate of protection by applying different tariffs.

2. Using the Model

When the program is launched from Microsoft Access, the first screen the user encounters is the Welcome Screen labelled “Tariff Policy” as displayed below:

Figure 1. Welcome Screen



The Welcome Screen offers three options:

- 1) Nominal rate of protection
- 2) Effective rate of protection
- 3) Instructions and help

In the Section “Nominal Rate of Protection” (NRP) the tool is considering Ghana import and current tariff structure. The User has an option to see the NRP Report (using the “**report**” button) which includes (average tariff rate, weighted average tariff rate, variance, standard deviation, minimum and maximum rates).

Figure 2. Sample of NRP report

Ghana. Nominal Rate Of Protection by Industrial Sectors. (Tariff on Import)

| 2dig | Description | Lines# | Avg | Weighted | Var | StDev | Min | Max |
|------|--------------------------|--------|------|----------|------|-------|------|------|
| 01 | Agriculture And Forestry | 261 | 16.1 | 15.6 | 41.7 | 6.5 | 0.0 | 20.0 |
| 02 | Fishing | 41 | 11.2 | 10.4 | 56.0 | 7.5 | 5.0 | 20.0 |
| 03 | Mining | 104 | 10.9 | 14.7 | 12.3 | 3.5 | 0.0 | 20.0 |
| 04 | Food Processing | 399 | 17.2 | 19.0 | 27.9 | 5.3 | 0.0 | 20.0 |
| 05 | Beverages | 23 | 18.9 | 16.2 | 9.0 | 3.0 | 10.0 | 20.0 |
| 06 | Tobacco | 6 | 20.0 | 20.0 | 0.0 | 0.0 | 20.0 | 20.0 |
| 07 | Textile | 510 | 17.1 | 18.5 | 21.1 | 4.6 | 0.0 | 20.0 |
| 08 | Clothing | 273 | 20.0 | 20.0 | 0.0 | 0.0 | 20.0 | 20.0 |
| 09 | Leather and Footwear | 67 | 16.7 | 19.7 | 22.4 | 4.7 | 10.0 | 20.0 |
| 10 | Wood and wood Products | 71 | 18.6 | 15.0 | 15.1 | 3.9 | 0.0 | 20.0 |
| 11 | Furniture | 24 | 18.8 | 19.9 | 11.4 | 3.4 | 10.0 | 20.0 |
| 12 | Paper | 120 | 17.7 | 17.2 | 19.7 | 4.4 | 0.0 | 20.0 |
| 13 | Publishing | 36 | 17.8 | 8.1 | 89.2 | 9.4 | 0.0 | 20.0 |

A second option is to consider the details on tariff and import structure aggregated by each industrial sector line (using the “**details**” button). By double clicking on a record line raw data on the record in the table will be displayed. These will include all products (at 6 digits level) in that category, the tariff imposed, and value of imports. A sample of this report type displayed below in Figure 3.

Figure 3. Sample of NRP report in detail view

| Description | Min | Max | Avg | Var | StDev | Weighted |
|-----------------------------|-----|-----|------|------|-------|----------|
| 01 Agriculture And Forestry | 261 | 0.0 | 20.0 | 16.1 | 41.7 | 6.5 |
| 02 Fishing | 41 | 5.0 | 20.0 | 11.2 | 56.0 | 7.5 |

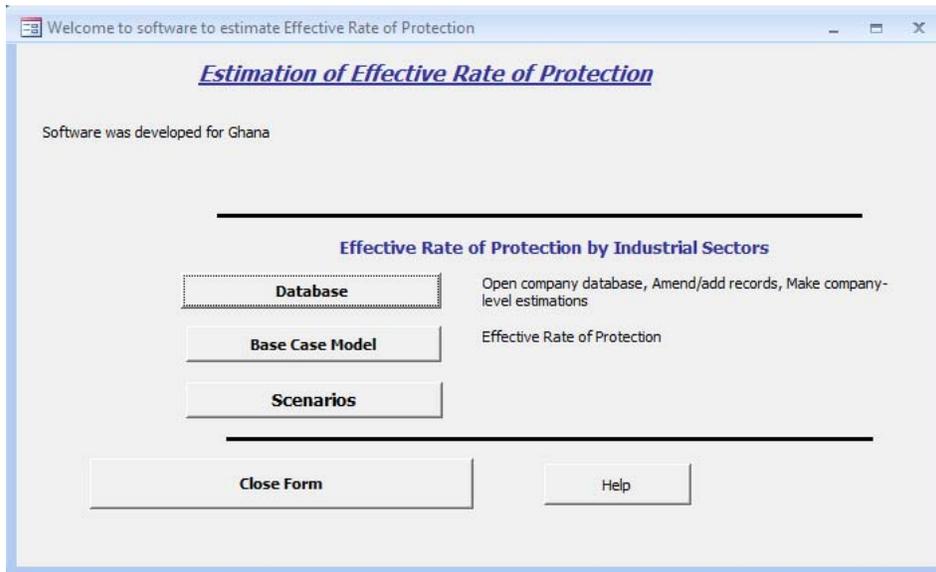
| 6digDisc | GHN_1% | 2dig | Import |
|---|--------|------|-----------|
| --Ornamental fish | 20.02 | | 5,000.0 |
| --trout (Salmo trutta, Salmo gairdneri, Salmo clarki, Salmo aguabonita, Salmo gilae) | 5.02 | | 0.0 |
| --eels (Anguilla spp.) | 5.02 | | 0.0 |
| --carp | 5.02 | | 0.0 |
| --other | 5.02 | | 0.0 |
| --trout (Salmo trutta, Salmo gairdneri, Salmo clarki, Salmo aguabonita, Salmo gilae) | 5.02 | | 0.0 |
| --Pacific salmon (Oncorhynchus spp.), Atlantic salmon (Salmo salar), Danube salmon (Hucho Huch) | 5.02 | | 0.0 |
| --other | 5.02 | | 26,322.0 |
| --halibut (Reinhardtius hippoglossoides, Hippoglossus hippoglossus, Hippoglossus stenolepis) | 5.02 | | 0.0 |
| --place (Pleuronectes platessa) | 5.02 | | 0.0 |
| --sole (Solea spp.) | 5.02 | | 0.0 |
| --other | 5.02 | | 116,167.0 |
| --albacore or longfinned tunas (Thunnus alalunga) | 5.02 | | 0.0 |
| --yellowfin Tunas (Thunnus albacares) | 5.02 | | 0.0 |
| --skipjack or stripe-bellied bonito | 5.02 | | 0.0 |
| --other | 5.02 | | 0.0 |
| --Herrings (Clupea harengus, Clupea pallasii), excluding livers and roes | 5.02 | | 0.0 |
| --Cod (Gadus morhua, Gadus ogac, Gadus macrocephalus), excluding livers and roes | 5.02 | | 0.0 |
| -- Sardines (Sardina pilchardus, Sardinops spp.), sardinella (Sardinella spp.), brisling or sprats (Spratulus spp.) | 5.02 | | 197,704.0 |
| --haddock (Melanogrammus aeglefinus) | 5.02 | | 0.0 |
| --coalfish (Pollachius virens) | 5.02 | | 0.0 |

Effective Rate of Protection

This section allows user to consider the base case scenario (application of current tariff rate), application of different strategies in adjusting tariff on inputs and final products, as well as adding new company and inserting data.

The screen (Fig. 4) below displays a menu for ERP

Figure 4. ERP Menu



2.1 Firm Database

The "Database" button opens the firm-level database, where the user can add new survey data as well as look for data from other companies or make preliminary estimations of results of ERP (Figure 5). This form is based on the format of the survey that was used to collect data and includes information on the company, products, and inputs that were used for production, overhead and labour costs. These data are confidential and do not identify the firms from which data were taken.

Figure 5.

The forms show that the database contains 32 companies (see continuous arrow). By using the navigator, the user can access and edit any company information, including products, materials and costs.

To add an entry, the user presses the button “New Company”. This will pop-up the form below.

Fig. 6: Form for entering new company overheads

It is necessary to fill in all data into the empty text boxes. Company ID will appear automatically when any data are put into the box/boxes.

Press the button “Products and Inputs” to enter data on Products and Inputs for the new company.

Figure 7. Form for entering new company data on products and inputs

The screenshot shows a software interface for entering company data. At the top, there are fields for 'Company Name', 'Country' (set to 'Ghana'), and 'Company_ID' (set to '(New)'). Below this is a 'Products' table with columns: Products, HS_produ, NAME, Local, Region, Stoc, Other, Revenue, and ID. A single record is shown with values: (New), 0.0%, 0.0%, 0.0%, 0.0%, 0, and 0. Below the table is a record navigation bar showing 'Record: 1 of 1' and 'No Filter'. Underneath is an 'Inputs' table with columns: Companies, HS-code, Name, costhor, costregic, costoth, and Sales Ta. A single record is shown with values: 0, 0.0, 0.0, 0.0. Below the table are input fields for various costs: Electricity, Rent, Maintenance, Revenue, Telecom, Water, Marketing, Cost, Fuel, Transport, Other Expense, and Total Overhead. At the bottom, there are buttons for 'Calculate', 'Add Record', 'Delete Record', 'Close', 'New Company', and 'Find HS'. A record navigation bar at the very bottom shows 'Record: 33 of 33' and 'No Filter'.

Products

All products receive an automatic ID ‘Product_ID’. All HS_code need to be chosen from the combo-box or filled by the user. Sum of local, region and stock should be 100%, and revenue must be inserted.

Inputs

Similar to the products, all inputs record entries will receive an automatic ID ‘Input_ID’ which will also be linked with the ‘Companies_ID’.

Buttons on the form:

- “Other company information” – opens a form with other overhead and labour costs of the company.
- “Add record” – to add additional records for a new company.
- “Delete record” – to delete a record (permanently).
- “Calculate” – to make preliminary estimation of ERP and value added for products produced by the company. This will highlight products for which negative value added is observed (See Figure 8).

Figure 8.

By products

Companies_ID: 863

R_BASE_all subform

| 6DigHS | Description | ERPw | ERPd | Tariff | VAd |
|--------|------------------------------|--------|--------|--------|-----------|
| 520100 | -Yarn waste (including tread | -5.38% | 16.42% | 10.00% | 37719.883 |
| 540120 | -Of artificial filaments: | -5.38% | 16.42% | 10.00% | 81460.946 |
| 550200 | Artificial filament tow: | -5.38% | 16.42% | 10.00% | 1695.2320 |

Record: 1 of 7

nW_inputs subform

| 6digits | 6digdisc | MFN_T | Compa | Cost World | Cost Domest | UN_ID |
|---------|----------------------------|-------|-------|---------------|---------------|-------|
| 470692 | --chemical | 10.0% | 863 | 5756.60458051 | 6332.26503857 | |
| 140420 | -Cotton linters | 10.0% | 863 | 407.656355837 | 448.421991421 | |
| 310520 | -Goods of this Chapter in | 0.0% | 863 | 191.697786578 | 191.697786578 | |
| 844250 | -Printing type, blocks, pl | 0.0% | 863 | 317.246336942 | 317.246336942 | |
| 470692 | --chemical | 10.0% | 863 | 12432.1291807 | 13675.3420988 | |

Record: 1 of 35

All Products from the country

Close Form

This form shows a preliminary estimation of five ERPs, VAs, and shows name of product and the applied tariffs on final and inputs.

ERP Base Case Model and Scenarios

From Figure 4, if a user selects the button “Base Case Model”, the menu in Figure 9 below will display.

Figure 9.

ERP by Industrial Sectors. Ghana

Only Preview

Report Details View

Close

Show Results

- Only Preview
- Save and Preview as HTML
- Save as Excel

Non-Tradables

- Non-Tradables Coefficients = 1
- Non-Tradables Coefficients set by User
- Non-Tradables Coefficients = 0

Type of Statistics Report

- ERP Results, (Domestic, World, MIN, MAX)
- Variance and Standard Deviation Report

This menu will display different kinds of reports based on the selections made. For instance, if a user selects ‘Only Preview’ from the ‘Show Results’ section, selects ‘ERP Results (Domestic, World, MIN, MAX)’ from the ‘Types of Statistics Report’

section, selects ‘Non-Tradable Coefficients set by user’ from the Non-Tradables section and presses on the “Report” button, a report in preview mode as below will be displayed.

Figure 10

ERP by Industrial Sectors - Base Case Scenario

| ID | Description | Industry | ERP (%) |
|-----------------------|---------------------------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 01 | Agriculture and Forestry | 7 | 10% | 10% | -3% | 10% | 0% | 21% | 0% | 10% | 0% | 21% | 0% | 20% | 0% | 20% | 0% | 20% | 0% | 20% |
| 02 | Mining | 1 | 10% | 10% | 0% | 10% | 0% | 10% | 0% | 10% | 0% | 10% | 0% | 10% | 0% | 10% | 0% | 10% | 0% | 10% |
| 04 | Food Processing | 24 | 10% | 17% | -3% | 20% | -2% | 20% | -10% | 0% | 21% | 10% | 10% | 20% | 0% | 20% | 0% | 20% | 0% | 20% |
| 07 | Textile | 6 | 7% | 17% | -6% | 20% | -6% | 20% | -6% | 10% | -9% | 20% | 10% | 20% | 0% | 20% | 0% | 20% | 0% | 20% |
| 08 | Clothing | 1 | 0% | 20% | -0% | 20% | -2% | 20% | -2% | 20% | -2% | 20% | -2% | 20% | -2% | 20% | -2% | 20% | -2% | 20% |
| 10 | Wood and Wood Products | 2 | 20% | 20% | -1% | 20% | -2% | 20% | -2% | 20% | -2% | 20% | -2% | 20% | -2% | 20% | -2% | 20% | -2% | 20% |
| 11 | Rumour | 1 | 10% | 20% | -20% | 20% | -20% | 20% | -20% | 20% | -20% | 20% | -20% | 20% | -20% | 20% | -20% | 20% | -20% | 20% |
| 12 | Basic Chemicals | 8 | 2% | 2% | 22% | 7% | -2% | 2% | -2% | 0% | 0% | 11% | 0% | 10% | 0% | 10% | 0% | 10% | 0% | 10% |
| 19 | Industrial Chemical | 11 | 10% | 0% | -2% | 10% | -1% | 10% | -2% | 10% | -2% | 10% | -2% | 10% | -2% | 10% | -2% | 10% | -2% | 10% |
| 17 | Other Chemicals | 1 | 0% | 10% | -2% | 10% | -2% | 10% | -2% | 10% | -2% | 10% | -2% | 10% | -2% | 10% | -2% | 10% | -2% | 10% |
| 18 | Plastic | 2 | 10% | 20% | 12% | -10% | 10% | -10% | 10% | -10% | 10% | -10% | 10% | -10% | 10% | -10% | 10% | -10% | 10% | 10% |
| 22 | Iron and Steel Products | 4 | 10% | 10% | -2% | 10% | -2% | 11% | -2% | 10% | -2% | 10% | -2% | 10% | -2% | 10% | -2% | 10% | -2% | 10% |
| 24 | Fabricated Metal Products | 12 | 10% | 10% | -10% | 20% | -10% | 20% | -10% | 10% | -10% | 10% | -10% | 10% | -10% | 10% | -10% | 10% | -10% | 10% |
| Total Sectors: | | | 6% | 11% | 1% | -2% | 12% | -2% | 2% | -2% | -10% | -10% | 2% | 2% | 0% | 2% | 0% | 2% | 0% | 20% |

ERP (%) and ERP (%) - change ERP in response to price
 ERP (%) and ERP (%) - change ERP in response to price
 ERP (%) and ERP (%) - change ERP in response to price

Page: 1 of 1

The result could be seen with coefficient on tradables =1 or 0; or coefficient can be chosen by user.

Button “Details view” opens table from which the user can see all details by clicking on appropriate industrial sector.

2.2 Base Case (observed)

After all data are filled into the database a calculation ERP can be made. Going back to the Welcome screen, press button “Base Case Model” (Figure 4).

Figure 11.

| Country: Ghana | | | | | | | | | |
|----------------|---------------------------|-------|-------|--------------|---------|---------|---------|---------|----|
| 2c | Description | Pr_No | MFN_T | AverageInput | wERPd | wERPw | aERPw | aERPd | Ma |
| 01 | Agriculture And Forestry | 7 | 12.9% | 10.1% | 16.0% | -2.1% | 9.2% | 27.1% | |
| 03 | Mining | 1 | 17.5% | 15.0% | 18.3% | -0.5% | -0.4% | 18.3% | |
| 04 | Food Processing | 24 | 16.9% | 13.6% | 24.2% | -26.3% | -57.4% | 50.1% | |
| 07 | Textile | 6 | 16.7% | 7.3% | 20.2% | -4.4% | -4.0% | 24.7% | |
| 08 | Clothing | 1 | 20.0% | 6.0% | 33.1% | -5.6% | -4.7% | 33.1% | |
| 10 | Wood and wood Products | 2 | 20.0% | 20.0% | 32.5% | -30.8% | -25.6% | 32.5% | |
| 11 | Furniture | 1 | 20.0% | 10.0% | 318.8% | -295.1% | -245.9% | 318.8% | |
| 15 | Basic chemicals | 9 | 2.2% | 2.5% | 7.0% | -255.1% | -26.3% | 2.0% | |
| 16 | Industrial Chemical | 11 | 9.4% | 10.3% | 10.4% | -4.7% | -47.3% | 9.6% | |
| 17 | Other chemicals | 1 | 10.0% | 6.0% | 14.2% | -5.1% | -4.7% | 14.2% | |
| 19 | Plastics | 2 | 20.0% | 10.0% | -140.4% | 126.9% | 105.8% | -140.4% | |
| 23 | Iron and Steel Products | 4 | 10.0% | 10.0% | 11.8% | -33.1% | -30.2% | 11.2% | |
| 24 | Fabricated Metal Products | 15 | 19.3% | 16.3% | 28.8% | -99.6% | -144.7% | 32.2% | |

The base table considers the following columns:

1. Pr_No – number of products observed.
2. MFN Tariff – average tariff rates applied on product
3. AverageInputs – Average tariff rate applied on inputs within this category.
4. ERP –columns with results on ERP, average and weighted average on domestic, world as well as minimum and maximum ERP.

By double clicking on any category the user can access details on each product.

Figure 12.

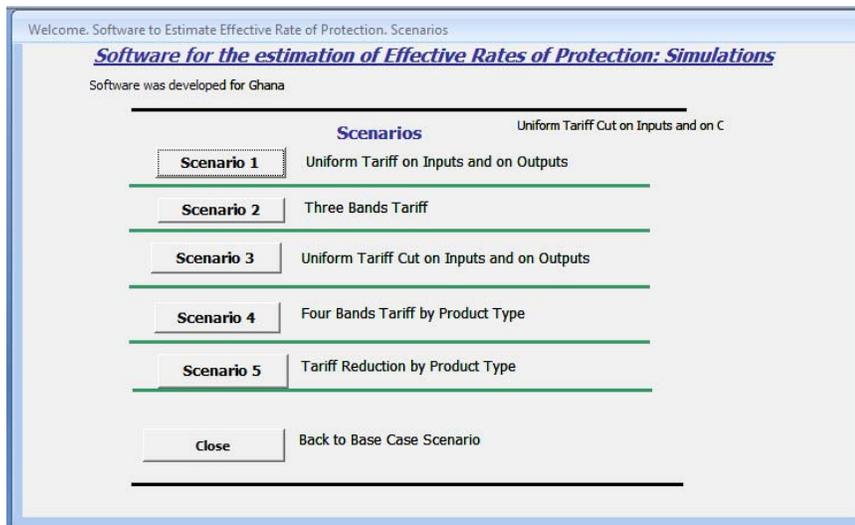
| 6DigHS | Description | ERPw | ERPd | Tariff | VAd | VAe | VAr |
|--------|------------------------------|--------|--------|--------|---------------|---------------|--------------|
| 010511 | --chicken: | | | 0.00% | | | |
| 010511 | --chicken: | 51.28% | 51.28% | 0.00% | -1484.7942932 | -1484.7942932 | -981.505980 |
| 010599 | --other: | | | 20.00% | | | |
| 070990 | -other | -0.47% | 21.76% | 20.00% | 6624.8 | 5415.2 | 5440.957579 |
| 080300 | Bananas, including plantains | -0.01% | 24.21% | 20.00% | 12693.8863114 | 10219.1809780 | 10219.810600 |
| 080300 | Bananas, including plantains | -0.01% | 24.21% | 20.00% | 5633.28568863 | 4535.06235529 | 4535.341780 |
| 520100 | -Yam waste (including tread | -4.66% | 14.23% | 10.00% | 42717.1842115 | 35653.638757 | 37395.925600 |

This will be the result if the user checks the details on the Agriculture and Forestry sector.

SCENARIOS

By selecting the “Scenarios” button from Fig. 4, the menu below will be displayed. In this section, five different possible tariff policy scenarios can be tested with a variety of tariff data sets on inputs and products.

Figure 13.



Choosing scenario 1 as a test case, from the menu in **Figure 13**, the screen in **Figure 14** will be displayed. This will allow the user to apply the same tariff on inputs and outputs with non-tradable coefficients of zero (0). (See Figure 9.)

When all entries are done, the user presses the “Report” button and subsequently the “Accept” button to see the results for domestic ERPs.

Figure 14. Application of Scenarios

ERP by Industrial Sectors. Ghana

Application of Uniform Tariff on Inputs and Final Products Scenario 1

Uniform tariff on Inputs

Uniform tariff on Final

Non-Tradables

Non-Tradables Coefficients

Non-Tradables Coefficients

Non-Tradables Coefficients

Show Results

Only Preview

Save and Preview as HTML

Save as Excel

Only Preview

Accept

Close

Type of Statistics Report

ERP Results, (Domestic, World, MI)

Variance and Standard Deviation

All reports and statistics information are generated by the tool and can be previewed by the user. Other scenarios can be generated.

3. ORGANIZATION OF DATA

Step 1: Organization of tables

The Tariff Policy File (table “tarifftbl”) contains all tariff lines of Republic of Ghana. This table contains the following columns:

HS code – tariff lines of the Republic of Ghana

6digits – the column describes tariff lines by HS6 (table “6digits_all”) product line.

Short Description – Description of tariff lines

Ghn_t – MFN tariff of Ghana

The tables “A_companies”, “A_comp_prod”, “A_com_inputs” contain the information about company overhead costs, revenue and cost of inputs by product: 32 companies and 100 final products and 114 inputs or semifinal products that are used in production of final products from Republic of Ghana, are included in the model.

Tariff Rates of Ghana are located in Table “6digits_all” in column Ghn_t.

All the tables used in the model and their descriptions are listed in Tables A.1 and A.2.

Step 2: Calculation of Input Cost

The model calculates the cost and revenue derived from information obtained in the survey, by company and by product.

$$\text{World cost of inputs} = C0a : ([\text{CostHome}] + [\text{CostRegion}] + [\text{CostOther}]) / (1 + [\text{MFN_Wa}]) * [\text{shareP}]$$

where

MFN_Wa – Most Favoured Nation tariff of the country
 CostHome, CostRegion, CostOther – cost on inputs as provided in the survey
 ShareP – share of final product in the products produced by company

$$\text{Domestic cost of inputs} = C1a: ([\text{Cost}]) * [\text{shareP}]$$

where

Cost – observed cost of inputs as reported in the survey

$$\text{Minimum regional cost of inputs} = C2a: \frac{([\text{CostHome}] + [\text{CostRegion}] + [\text{CostOther}]) * (1 + [\text{Min_Tariff}])}{(1 + [\text{MFN_Wa}])} * [\text{shareP}]$$

where

Min_tariff – group minimum tariff.

Step 2b: Non-tradables

By default, the model assumes all non-tradables are fully included in the cost of inputs. It is possible to change this assumption however, by setting individual non-tradables coefficients. The cost calculation is then amended as follows:

$$\text{Let BT: } [b1] + [b2] + [b3] + [b4] + [b5] + [b6] + [b7] + [b8] + [b9] \quad (2.1)$$

where b1 – electricity,
 b2 – telecommunication,
 b3 – water,
 b4 – fuel,
 b5 – transport,
 b6 – maintenance,
 b7 – rent,
 b8 – marketing,
 b9 – other expenses.

And let

BTC:

$$[bc1]*[b1]+[bc2]*[b2]+[bc3]*[b3]+[bc4]*[b4]+[bc5]*[b5]+[bc6]*[b6]+[bc7]*[b7]+[bc8]*[b8]+[bc9]*[b9] \quad (2.2)$$

where bc1-bc9 are the coefficient selected by the user for non-tradables.

Then the “new” non-tradables deflated world cost of inputs is:

$$C0arc: [C0a]+[BTC]*[shareP]$$

Once costs are calculated, estimation can start of product revenue, value added and effective rates of protection. The list of queries used in the calculation of costs appears in Table A.3.

Step 3: Calculation of value added and ERP, by product, company and industrial sectors

Let R – Observed Revenue as reported in the survey, then “world” revenue Rr is

$$Rr: ([R]*[local]/(1+[MFN_T]))+ [R]*[region]/(1+[MFN_T])+[R]*[Other]$$

where

local, region, other – percentage of sales (must equal 100%, where stock appears, this amount is reallocated to sales pro rata)

MFN_T – most favoured nation tariff on the product

Given the two alternates of revenue and the three alternate costs calculated above, five added values are calculated:

$$\text{World Value Added - VAr: } [Rr]-[Cr]$$

$$\text{Domestic Value Added - VAd: } [Rd]-[Cd]$$

$$\text{Export Value Added - VAe = } Rr - Cd$$

Where: small letter *r* indicates as this variable belong to the *Rest of the World*, small letter *d* indicates that the associated variables belong to the *Domestic* Small letter *e* indicate *Export*

Given these three calculations, two effective rates of protection are estimated. These are all referenced to the world value added, as follows:

$$\text{Domestic ERP - ERPd: } ([VAd]/[VAr])-1$$

$$\text{World ERP - ERPr: } ([VAr]/[VAr])-1$$

| |
|--|
| 1) Export ERP - ERPe: $(\frac{[VA3e]}{[VAr]})-1$ |
|--|

The same formulas are using when the coefficients on non-tradables are changed.

The list of queries and tables used to calculate VAs and ERPs is provided in Table A.4. Once VAs and ERPs are calculated for all products, these are aggregated by companies and by sectors.

Table A.1: Main tables used in the model

| Table Name | Description |
|---------------|--|
| A_companies | Information about company (includes overheads, labour) |
| A_comp_prod | Final product (Name, HS-Code, % of Regional, Local, Other Sales) |
| A_com_inputs | Inputs used for final product (Name, Real cost (regional, local, other)) |
| Countries_OH | Includes Country_ID, Flags, and Coefficients for Non-tradables |
| TariffTBL | All 6-digits products (5114 items) and full description |
| 6digits_all | All tariff rates at 6-digits level, by country |
| CODE_HS | Indexed HS-code by 2-4-6 digits, by categories and by product type |
| ConvertHS_SIC | 31 industrial sectors of ISIC, which aggregate the 5114 HS tariff lines |

Table A.2: List of queries used in the model to calculate costs

To calculate ERP we need to calculate Value Added which is considered as Revenue minus cost and as a result calculation is made by several steps.

- 1) Calculation of cost with and without tradables
- 2) Calculation of revenue by company and by product
- 3) Calculation of Value Added (World and Domestic)
- 4) Calculation of ERP

| Name of query | Explanation and results |
|-------------------|--|
| a-Step1_Q_OH | In this step cost of overhead (OH) calculated by companies Calculation of OH and OHC Where OHC considered as Overhead times coefficients (such as electricity, telecommunication, water, fuel, etc....) on overhead calculated to specific country (Ghana) |
| a-Step1_Q_OH_base | |
| a-Step1_Q_OH_NT0 | |

| Name of query | Explanation and results |
|-------------------------------|--|
| a-Step1_Q_OH_NTchanged | |
| a-Step1_RevenueProduct_ghn | <p>Calculates revenue of the companies as it consist of the revenue from domestic (ad), regional (ar), and rest of the world trade (aw) Calculation is done by using the data from the survey of the companies that are saved in database. The following equations are used in this query:</p> <p><i>ad</i>: $[local] + (([local] * [Stock]) / ([local] + [Region] + [other]))$ <i>ar</i>: $[region] + (([Stock] * [region]) / ([local] + [Region] + [other]))$ <i>aw</i>: $[other] + (([other] * [Stock]) / ([local] + [Region] + [other]))$</p> <p>In the same query we calculate World Revenue <i>Revw</i>: $[Revenue] * ([aw] + ([ad] + [ar]) / (1 + [MFN_T])) * [convert]$</p> |
| a-Step2_Q_rev_comp | <p>Calculates revenue of the companies Sum of Revenue World and Sum of Revenue Domestic <i>RevWt</i>: <i>Revw</i> and <i>RevDt</i>: <i>Revd</i></p> |
| a-Step3_rwcQ_Share | <p>Calculates share of Revenue by product and by companies in world prices: <i>ShareP</i>: $[RevW] / [RevWt]$</p> |
| a-Step3_RetriveWorldCost | <p>Calculate Cost in world price (without application of tariff) <i>CostW</i>: $([convert] * ([Costhome] + [costregion] + [costother])) / (1 + [mfn_t]) * [shareP]$ Domestic cost <i>CostD</i>: $([convert] * ([Costhome] + [costregion] + [costother])) * [shareP]$ Cost with duty drawback <i>costw1</i>: $([convert] * ([Costhome] + [costregion] + [costother])) * ([ad] / (1 + [mfn_t]) + [ar] + [aw]) * [shareP]$</p> |
| a-Step3_rwQ_FCost_Product_com | <p>Calculates total (sum) Inputs cost by product (inputs in world price) <i>InWt</i>: <i>CostW</i> Domestic cost <i>InDt</i>: <i>CostD</i> and inputs with drawback <i>Inw1</i>: <i>costw1</i></p> |
| a-step4_Q_Share_prod_New | <p>Calculate share of product in world price <i>ShareP</i>: $[RevW] / [RevWt]$</p> |
| a-step5_Q_FCost_comp | <p>Calculate total cost with OH World <i>CostTW</i>: $[inWt] + [OH]$ Domestic <i>CostTD</i>: $[inDt] + [OH]$</p> |
| a-Step6_Q_Share_NEW_Base | <p><i>CostTDR</i>: $[CostTD] * [shareP]$</p> |

| Name of query | Explanation and results |
|----------------------------|---|
| | CostTWR: $[\text{costTw}] * [\text{shareP}]$ WMFN: $[\text{RevW}] * [\text{MFN}_T]$ |
| a-Step7_Q_Share_prod_baseF | Combining two tables with cost and revenue in one Showing Revenue; Cost; Average Tariff on Inputs and Final |
| a-Step8_Q_Share_Prod | Calculating Value added World; Export; Domestic $\text{VA}_w: [\text{Revw}] - [\text{costtwr}]$ $\text{VA}_e: [\text{Revw}] - [\text{costtdr}]$ $\text{VA}_d: [\text{Revw}] * (1 + [\text{MFN}_T]) - [\text{costtdr}]$ Calculates Effective Rate of protection (ERP) world and domestic $\text{ERP}_W: [\text{VA}_e] / [\text{Va}_w] - 1$ $\text{ERP}_D: [\text{Va}_d] / [\text{VA}_w] - 1$ On each product |
| a-R_BASE | Combines all result received and linked to HS-code and convert to SCI tables |
| a-R_Product | Combines result by industrial sectors: These results are Ready to use Number of products covered $\text{Pr_No}: \text{Count}(\text{HS_product})$ Average and Weighted ERP world and domestic $a\text{ERP}_W: \text{Avg}(\text{ERP}_W)$ $a\text{ERP}_D: \text{avg}(\text{ERP}_D)$ $w\text{ERP}_W: \text{Sum}([\text{sERP}_W]) / [\text{rw}]$ $w\text{ERP}_D: \text{Sum}([\text{sERP}_D]) / [\text{rw}]$ Minimum and Maximum ERP, value of Value Added of world, domestic and export Standard Deviation, Variance, Average and Average Weighted tariff on inputs and on final products |
| R_BASE_all | To show calculation from database section (Button "Calculate") |
| NRP_sectors | Aggregate MFN and customs duties by industrial sectors |
| NRP_sectors_sum | Total aggregated MFN rates |

Appendix 2: Qualitative Questionnaire

Company Name: _____ ID # _____

Interviewer: _____ Date _____

Interview questions for Tariff Study: (Draft for review without spacing for answers)

1. Receive the questionnaire: is there anything else you would like us to know about the data you've given us?
2. How representative is the year you used to fill in the questionnaire?
3. How many years have you been in business?
4. Have there been significant changes in your operations in the last 5 years? In production? Marketing? Sales? Were these changes the result of a decision on your part or the consequences of an outside factor? If the latter, what were the factors?
5. What are the top 5 obstacles you face in your business? (Tariffs? Labor? Standards? Utility costs? Financing? Debtors? Transport and handling? Exchange rate?)
6. Check capacity utilization (if below 70%). Is this level of capacity utilization recent? What are its causes? (inadequate supply/demand? Finance? Utilities?) What is your break-even capacity utilization?
7. Do you own the land your facilities (farm) are located on?
If no, how long is the lease?
8. Do you own the facilities? When were they built? Were they built for your operation?
9. Do you own the machinery? Where did you source it? When? If out of Ghana, are there domestic sources for your machinery?
10. Could you tell me a little about your employees? Are employees with the right skills available? Reliability? Productivity? Are there problems in obtaining work permits for your expatriate staff?
11. How reliable are utility services such as water, energy and telecommunication services? Have you lost production or sales as a result of interruptions?

12. (Check questionnaire for domestic versus imported inputs) Can you tell me why you source _____ domestically? Why you import _____? In which currency do you pay for your imports? Has this changed recently? What would it take for you to change from imported to domestic inputs?
13. How does the exchange rate affect your business/decisions?
14. Do you have specific challenges with the transport of your products?
15. For importers and exporters: are there issues at the port that affect your competitiveness?
16. Who are your competitors in the domestic market?
17. Who are your competitors in the export market?
18. Have you taken advantage of the Africa Growth and Opportunity Act AGOA? EBA? ETLs?
19. How do you respond to market changes?
20. What have you done to increase your sales?
21. How do you find information on new products?
22. Where do you see your business going over the next year? The next 5-10 years?
23. What incentives or support have you received from Government? Credit? Training? Inputs? Market dependent (duty drawback, export subsidies)?
24. What else could Government do to improve the conditions in which you operate? (investment/export promotion, infrastructure, forex, finances) Which of these is the most important?

Status of quantitative questionnaire: _____
Person responsible for follow-up: _____

Follow-up activities for MOTIPS/PSI:

- 1.
- 2.
- 3.
- 4.

Appendix 3: Quantitative Questionnaire

*****All information supplied on this questionnaire is STRICTLY CONFIDENTIAL.*****

Company Name:

Company Address:

Contact Person:

Telephone:

Fax:

Mobile:

Email:

All the information on this questionnaire must be from the same year, namely the most recent complete year as specified below.

1. Year covered by questionnaire: _____
2. Month of year end: _____
3. Capacity utilization (or cultivated holdings) for reported year: _____%
4. Number of shifts per day (or crop cycles per year): _____

When you have completed the questionnaire, please calculate your profit before tax and enter the amount (in million cedis) below. The total sales revenue in (A) for the last year, less the cost of domestic and imported inputs in (B), plus the value of the stock adjustment (or minus stock-adjustment if the value is negative), less the overheads in (E) and the labour in (D), must equal profits before tax. This is a check to ensure that the values entered in sections (A), (B), (C), (D) and (E) are consistent.

Profit before tax: _____ (million cedis)

Note:

The annual production in Section (A) must correspond to the material inputs in Section (B), and all the overheads in (E) and labor costs in (D). Please enter all values in million cedis. Use decimals as necessary. Enter quantities in the most appropriate units, and specify both the unit of measure (e.g., tonnes), and the quantity (e.g., thousands).

Section A: Annual Production

| Products | Tariff Code (HS) | Volume (‘000) | Unit Type | Ex-Factory or Farm Gate Unit Price | Market Destination (%) | | | | Sales Revenue (Million Cedis) |
|--------------|------------------|------------------|--------------|--|------------------------|-------------|------------|------------|-------------------------------------|
| | | | | | Domestic a | ECOWAS b | Other c | Stock d | |
| A. | | | | | | | | | |
| B. | | | | | | | | | |
| C. | | | | | | | | | |
| D. | | | | | | | | | |
| E. | | | | | | | | | |
| F. | | | | | | | | | |
| G. | | | | | | | | | |
| H. | | | | | | | | | |
| I. | | | | | | | | | |
| J. | | | | | | | | | |
| Total | | | | | | | | | |

Notes:

(i) If your firm produces more than one distinct product group, enter each product group separately. Products can be grouped together if they have the same tariff heading. For more than 10 products copy the page and continue.

(ii) Please enter the tariff code, if known, that is applied by CEPS for the import or export of this product.

(iii) The production volume should be specified with the units in the adjacent column. These should be in internationally recognized units such as tonnes, kg, litres, etc. Please do not use “cartons”, “rolls” etc.

(iv) The ex-factory or farm gate unit price should exclude sales tax or value added tax. Please specify if the unit price is in different units from those stated in the production unit column e.g. production unit in tonnes, unit price in kilogrammes.

(v) Please enter the product destination: whether domestic sales; ECOWAS (region); the rest of the world (other); or stocks. These entries should be listed as percentages in the appropriate columns, where the sum $a+b+c+d = 100\%$.

(vi) Please enter sales revenue for the latest year that corresponds with the production data given in (A).

Section C: Change in Inventory

| | Inputs | Outputs |
|--|--------|---------|
| Beginning Inventory (million cedis) | | |
| Ending Inventory (million cedis) | | |
| Change + or (-) | | |

Enter the difference in value between the opening and closing inventory balances for the year. Please distinguish between input (materials) and output (finished goods) stocks, and indicate stock decreases in brackets.

Section D: Labour

| Employees | Total Annual Cost (million cedis) | | Number of Employees | |
|---------------------------|--|-------------------|----------------------------|-------------------|
| | Local | Expatriate | Local | Expatriate |
| Managers | | | | |
| Production workers | | | | |
| Casual/Seasonal | | | | |
| Total | | | | |

Note:

The labour costs, including directors fees, should include benefits such as medical cover, pensions, insurance, etc. and bonuses in addition to wages and salaries. Where possible, numbers of nationals and expatriate personnel and their costs should be identified. If you do NOT pay expats in cedis, please indicate the currency here: _____.

Section E: Overheads

| Overhead Expenses | Million Cedis |
|-------------------------------------|----------------------|
| Electricity | |
| Telecommunications | |
| Water | |
| Fuel/gas | |
| Transport & distribution | |
| Rent or property rates | |
| Repairs & maintenance | |
| Marketing & sales promotion | |
| Depreciation for the year | |
| Royalties / licensing fees | |
| Quota fees | |
| Management charges | |
| Interest charges | |
| All other expenses (describe below) | |
| | |
| | |
| | |
| Total | |

Note:

All overhead costs must relate to the production volume in (A). Indirect labor should be included in section (D). Dividends should not be included.

