Ethiopia’s export promotion and the misalignment of the tariff and exchange rate regimes

Mulu Gebreyesus and Alekaw Kebede

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Abstract

By examining how much aligned the tariff and exchange rate regimes are with the export promotion in Ethiopia, this study tries to shed some light on why the export performance of the country and particularly that of manufacturing sector remained poor despite continued government promotion and support. Toward this it quantifies the extent of effective protection and defacto anti-export bias generated by the existing tariff and foreign exchange rate regimes. The disaggregated (approximately 2-digit) industry level estimates of the NRP, ERP and anti-export bias in the manufacturing sector show wide difference among industries. With about 35% nominal duty rate, the export oriented sectors such as Textiles, Apparels, Leathers, Footwear industries are the most protected ones within the manufacturing sector. The anti-export bias estimates suggest that the value added obtainable in the domestic market vis a vis exporting is greater than 1.5 times for the Leather and Footwear industries and more than 70% for the Textile & Apparel industries. The anti-export bias in these sectors remained large, even after considering a 100% of duty drawback on imported inputs, making the domestic market lucrative relative to the export market. This study further shows that exporters are penalized by the increasing overvalued exchange rate of the Birr. Finally, it highlights the inconsistency of the tariff and exchange rate policies with the export promotion of the country and provides some recommendations to address these anomalies.

Keywords: Export promotion, protection, anti-export bias, macroeconomic policy, Ethiopia
1. Introduction

The failure of import substitution industrialization (ISI) strategy in the developing world (notably Latin America and Africa), on the one hand, and the success of export oriented industrialization (EOI) strategy in a number of East Asian countries, on the other, prompted trade policy reforms worldwide starting from the 1980s. Several developing countries including Ethiopia, the case of this study, adopted the IMF/World Bank sponsored Structural Adjustment Program (SAP) and progressively liberalized their economies. They have abandoned the ISI strategy in favour of export oriented strategy. The policy instruments supporting import substitution regimes were a mix of interventions covering tariffs, quotas, exchange controls and overvalued currencies. Policies to promote export expansion have, thus, included among others the removal of import restrictions, ‘realistic’ exchange rates and provision of different forms of implicit subsidies (Manu, 2009).

These reforms were expected to reduce anti-export bias and make exports more competitive, thus, lead to export expansion and diversification. However, not many countries in the developing world have embraced export success. Ackah and Morrissey (2005) demonstrated that the extensive trade liberalization and particularly tariff reduction in African countries have usually resulted in an increase in imports, but export growth has often been sluggish such that in many countries the trade deficit has increased. Ethiopia’s export performance is not any different from the rest of Africa. The extensive promotion efforts have not brought the anticipated export success particularly in the manufacturing sector (see section 2).

Both demand and supply factors can affect export performance with varying degree depending on the country and stage of development. The demand-side factors, for example, market access have shown improvement through time due to preferences and other concessions provided by the advanced countries (for example, GSP, EBA, and AGOA). However, the less developed countries (LDCs) including Ethiopia are often unable to take up opportunities for trade under preferential trading regimes. It is argued that the major bottleneck affecting the LDCs exports is the supply capacity such as linkages to international markets, physical infrastructures, soundness of the macroeconomic framework and quality of institutions (UNCTAD, 2005).

Using extensive data for Ethiopia, the present study aims to identify and quantify the prevailing disincentives to export with a focus on the macroeconomic framework and particularly how much favorable the tariff and exchange rate regimes are for export development. Ethiopia liberalized its trade regime in the early 90s and has been pursuing an export-led development strategy since the early 2000s. Despite measures to reduce import tariffs, Ethiopia is still characterized by higher rates of import tariff (see Table 1). Import tariff is much higher (up to 35%) in the export oriented priority sectors such textile, garment and leather. Tariffs create a disincentive to export by directly raising the domestic price of imports relative to exports, or equivalently, by reducing the price of exports relative to imports. Moreover, the domestic currency, the Birr, has been increasingly overvalued in recent years as the nominal devaluation
did not keep the pace with the relative price developments of Ethiopia versus its major trading partners (see Fig. 1 and 2).

The protection and overvaluation of the exchange rate are believed to have generated a large disincentive towards exports as it lowers their domestic currency equivalent of the foreign exchange receipt. Export growth has shown declining trend particularly in recent years. For example, as per the National Bank of Ethiopia (NBE) annual reports, the average annual export growth had fallen from 23.1 between 2004/05 and 2009/10 to 9.6% in 2011/12 to 2014/15. Exports have in fact fallen in absolute amount (-8.5%) in the year 2014/15. The export growth of the manufacturing sector also shows the same declining pattern. According to the Central Statistics Agency (CSA) survey reports, the export sales to total sales ratio of the Medium and Large Scale Manufacturing (MLSM) sector fell from about 10 percent in 2002/03 to 4 percent in 2014/15. During this year only 5% of the manufacturing firms participated in the export market. This demonstrates most of export firms have become increasingly interested in the domestic market suggesting the relative attractiveness of domestic market in contrast to export market.

This study tries to quantify the anti-export bias generated by the existing tariff and foreign exchange regimes with a focus on the various industries within the manufacturing sector. The bias against exporting can be expressed as the percentage excess of domestic value added in import substitution over that obtainable in exporting (Balassa, 1971: p. 9). We assume for an established firm there is a choice where to sell its products, that is whether to sell in domestic market or exporting it. Export supply is expected to depend positively on the relative profitability of export versus domestic market (that is, the ratio of export price to domestic price level). If the domestic price effect of import restrictions and other domestic market protection exceeds the exporter price effect of export incentives, then there exists anti-export bias (Tyler, 1983).

Toward this and as a first step we calculated (by major industries) the Nominal Rate of Protection (NRP) and Effective rate of protection (ERP) by assuming a simple partial equilibrium framework and using alternatively the Balassa (1971) and Corden (1966) methods, the latter also considers value added element of non-traded goods. Second, we estimated the anti-export bias by major industry in the manufacturing sector to show the relative incentives the system of protection under two scenarios; in the absence and presence of 100% drawback of duties on imported inputs. Third, overvaluation of the exchange rate compared to the free trade situation have also depressing effect on exporting industries because it lowers the domestic currency equivalent of the foreign exchange receipts of exporters. We, thus, make adjustment to the overvaluation of the exchange rate and calculate the net real effective rate of protection (NERP).

The remaining part of this paper is organized as follows; section 2 provides some background on trade policy and performance of Ethiopia. Section 3 gives the conceptual framework and methodology as well as data source. Section 4 is devoted to the analysis and interpretation of main findings of the paper. And finally section five presents the conclusions and policy implications.
2. Overview of the Ethiopian Trade and Industrial Policy and Performance

2.1 Trade Opening: the Tariff Reform

The Transitional Government of Ethiopia (TGE) initiated a structural adjustment program in 1992/1993. Industrial restructuring that included, trade opening, de-regulation, and privatization were the key elements of the SAP. The trade opening reform aimed at first dismantling quantitative restrictions and then gradually reducing the level and dispersion of imports tariff rates. Accordingly, six successive tariff reforms were implemented between 1993 and 2003, during which the maximum tariff rate was reduced from 230 percent to 35 percent, the average weighted tariff rate from 41.6 percent to 17.5 percent, and the number of tariff bands from 23 to 6 including the zero rate band (Bigsten, Gebreeyesus and Soderbom, 2016).

Despite measures to reduce import tariffs, Ethiopia is still characterized by higher rates of import tariff. Table 1 compares Ethiopia with the averages tariff rates of different group of countries (i.e., all countries, least developed and sub-Saharan Africa countries) based on the simple average and weighted average tariff rates and by raw material, consumer goods and WTO HS industrial products. The table shows that in all measures Ethiopia imposes higher tariff rate in comparison to the average of the above groups of countries.

Table 1: Tariff rates: comparing Ethiopia with other group of countries

<table>
<thead>
<tr>
<th>Duty Type</th>
<th>Ethiopia Simple Average</th>
<th>Ethiopia Weighted Average</th>
<th>All countries Simple Average</th>
<th>All countries Weighted Average</th>
<th>LDCs Simple Average</th>
<th>LDCs Weighted Average</th>
<th>Sub-Saharan Africa Simple Average</th>
<th>Sub-Saharan Africa Weighted Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Name</td>
<td>Raw materials</td>
<td>14.85</td>
<td>9.89</td>
<td>4.53</td>
<td>1.72</td>
<td>10.92</td>
<td>7.87</td>
<td>7.76</td>
</tr>
<tr>
<td></td>
<td>Consumer goods</td>
<td>23.95</td>
<td>15.42</td>
<td>7.69</td>
<td>3.9</td>
<td>16.03</td>
<td>12.23</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>WTO HS Industrial</td>
<td>17.49</td>
<td>12.88</td>
<td>5.3</td>
<td>2.24</td>
<td>11.2</td>
<td>10.53</td>
<td>9.89</td>
</tr>
</tbody>
</table>

Source: WITS, World Bank

2.2. Exchange Rate Management and Overvaluation

For about twenty years (until 1992), the exchange rate of the Ethiopian Birr had been fixed at 2.07 Birr per US$. In this period, the Birr was increasingly overvalued and negatively affected the Ethiopian economy and particularly the external balance. The TGE undertook reform measures one of which was management of the exchange rate. In October 1992, the Birr was devalued by about 150% (i.e., from 2.07 to 5 Birr per US$) and allowed to be progressively adjust through auction system. The country implemented an exchange rate policy which is
closer to managed floating, where there is a government intervention whenever necessary to stabilize the foreign exchange market. However, the Birr has been, more often than not, overvalued ever since then despite frequent adjustment by the government.

The degree of overvaluation can be measured as the percentage difference between the official exchange rate and the parallel market exchange rate. We assume the parallel exchange rate as a proxy for free trade exchange rate and the higher the deviation of such exchange rate from the official exchange rate (which is called exchange premium), the stronger is the extent of overvaluation against the exporting enterprises. Fig 1 presents the premium (in percent) of the parallel exchange market over official rate. As can be seen the wedge between the two rates had been on decline throughout the 1990s and kept low in the first half of the 2000s. The difference between the two rates started to rise between 2006/07 to 2008/09 prompting to a drastic nominal devaluation in 2009/10. However, the nominal devaluation did not keep the pace with the parallel market exchange rate leading to a continuous increase in the exchange rate premium starting from 2010/11. The deviation between the parallel and official exchange rate reached about 12% in 2015/16.

**Figure 1: Deviation of the parallel from official exchange rate (in %)**

![Graph showing deviation of parallel from official exchange rate](image)

**Source:** National bank of Ethiopia but author’s compilation

**Note:** Exchange rate premium is calculated as: \( \text{PREMIUM} = \frac{(\text{PER} - \text{OER}) \times 100}{\text{OER}} \), where PER is parallel exchange rate and OER is official nominal exchange rate.

Fig. 2 gives the trend in the Nominal Effective Exchange Rate Index (NEERI) and Real Effective Exchange Rate Index (REERI) another method of measuring the extent of overvaluation of the exchange rate. The figure shows a continuous decline (depreciation) of the NEERI reflecting the
continuous and incremental devaluation of the Birr overtime. As a result, the REERI of the Birr against the major foreign currencies was kept relatively constant over long time period preceding 2005/06. It started to continuous appreciate until government intervene with a major devaluation (15%) in October 2010 bringing the REERI to 100. However, since then the NEERI did not keep pace in the face of higher domestic inflation versus major trading partners. This has led to the appreciation of the REERI by cumulative of about 71 percent since the nominal devaluation in October 2010 up to this year (2016/17). Both measures, thus, suggest the Birr has been overvalued significantly particularly since 2010/2011 leading to the deterioration of the competitiveness of the country’s export commodities.

Figure 2: Trends in Nominal and Real Effective Exchange Rates

![Fig. 2: Trends in Nominal and Real Effective Exchange Rates](image)

**Source:** National bank of Ethiopia but author’s compilation

**Note:** The real effective exchange rate is defined in such a way that an increase is appreciation while a decrease is depreciation

2.3. Export Promotion

In the early 1990s, Ethiopia dismantled export duties and has since introduced several export incentives with the aim of reducing the costs for exporters. In 1998, the government developed an Export Promotion Strategy as a reaction to the slow growth and diversification in exports.
The export promotion was reinforced by the formulation of IDS in 2002/03. One of the core principles of the IDS is that a sustainable and fast industrial development can only be ensured if the sector is competitive in the international market. Accordingly, the export oriented sectors such as textile and garment; meat, leather and leather products; and other agro-processing industries (e.g. sugar and sugar related industries) were declared among the priority sectors for government direct support (Gebreeyesus, 2016).

The export targets for these selected industries were explicitly stated in the consecutive the country five year development plans the so-called PASDEP (2005/06-2009/10) and the Growth and Transformation Plan (GTP) covering the period 2010/11-2014/15. In order to meet the targets the government has provided extensive support to exporters that included fiscal packages (for example, access to intermediate inputs at world market prices and income tax exemptions or tax holiday packages, free duty capital imports) and non-fiscal packages (for example, export credit, retaining some of their foreign exchange earnings, and provision of cheap land) most of which revised and updated through time. However, the only widely implemented incentive scheme among these is the duty drawback scheme and specifically the voucher system. The other incentives are not well implemented mainly due to bureaucratic hurdles and inefficiency of the civil service (see Gebreeyesus and Demile, 2017).

2.4. Overview of Ethiopia’s Merchandise Trade Performance

Ethiopia has experienced double digit economic growth over the past decade. The economic growth was accompanied by increasing trade deficit as the country’s merchandise import bill increased more rapidly than the export receipt (see fig. 3). For example, between 1995 and 2015, merchandize imports grew by about 19 fold, reaching 19 billion US$. In contrast, exports during this period grew by about 10 fold reaching 3.8 billion US$. The merchandise import and export gap has been widened through time resulting in 15.2 billion US$ deficit in 2015. The trade deficit is increasingly high and unsustainable at which the Ethiopia’s merchandise export recipient can finance only about 20 percent of the import bill. This incapacity of the export sector to finance the import expenditure forced the country to suffer from shortage of foreign currency which is crucial to import capital goods and other intermediate inputs that are required to sustain growth.
Even more worrying is that the less diversification in the export baskets with negligible structural change in transforming the import and export commodity baskets during the last ten years (see table 2). Above three-fourth of the merchandise export revenue in Ethiopian comes from agriculture and manufacturing contributes below 15 percent of merchandise exports. Fishery and mining (particularly the extraction of gold) accounted for about 5 percent of the total merchandise export receipt over the last ten years. On the other hand, more than 90 percent of the import expenditure is allocated for products of manufacturing activities. However, expenditure on Agricultural imports has shown a declining trend falling to less than 3 percent.
### Table 2: Contribution in total Trade by Main Sector (2005 -2013)

<table>
<thead>
<tr>
<th>Year</th>
<th>Share in total value of Export</th>
<th>Share in total value of Import</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Agriculture</td>
<td>Fishery Mining and Quarrying</td>
</tr>
<tr>
<td>2005</td>
<td>77.67</td>
<td>5.57</td>
</tr>
<tr>
<td>2006</td>
<td>77.97</td>
<td>5.57</td>
</tr>
<tr>
<td>2007</td>
<td>78.68</td>
<td>5.78</td>
</tr>
<tr>
<td>2008</td>
<td>81.36</td>
<td>5.56</td>
</tr>
<tr>
<td>2009</td>
<td>84.21</td>
<td>6.75</td>
</tr>
<tr>
<td>2010</td>
<td>81.82</td>
<td>9.07</td>
</tr>
<tr>
<td>2011</td>
<td>81.24</td>
<td>6.17</td>
</tr>
<tr>
<td>2012</td>
<td>82.58</td>
<td>7.23</td>
</tr>
<tr>
<td>2013</td>
<td>80.22</td>
<td>6.49</td>
</tr>
<tr>
<td>2014</td>
<td>82.25</td>
<td>5.81</td>
</tr>
<tr>
<td>2015</td>
<td>79.54</td>
<td>6.01</td>
</tr>
</tbody>
</table>

Source: ERCA and Author’s computation

#### 2.5. The Ethiopian Manufacturing Sector at a Glance

The Ethiopian manufacturing sector has registered annual growth of about 12 percent over the period 2005 – 2015, which is much higher than many comparable countries. But the manufacturing sector contribution to the economy (as measured by share of the value added to of GDP) remained to be the lowest compared to the sub-Saharan Africa average and many emerging countries. In fact, the Ethiopian manufacturing value added as percent of GDP has dropped from 6.0 percent in 2000 to 4.1 percent in 2015 (NBE 2015/16). These indicate that the aim of becoming middle income country with a transformed economy from agriculture to industry declared in the GTP of Ethiopia requires daunting efforts.

Table 3 provides some summary statistics on the performance of the Ethiopian manufacturing sector based on the (CSA survey on the Medium and Large Scale Manufacturing (MLSM) firms that employ 10 or more workers for selected years 2002/03 and 2014/15. The first two columns give distribution of value added by industry groups and shows that the Ethiopian manufacturing sector is dominated by light industries. Food and Beverage sector alone accounted for 46 percent of the MLSM value added followed by other non-metallic mineral industry and the chemical industry. The third and fourth columns give industry contribution of export earnings. The table shows the narrow base of the Ethiopian manufacturing exports at which only few sectors are meaningfully participating in the export market. The leather industry generates about 42 percent of manufacturing export earnings followed by food & beverage and textiles accounting for nearly a third of export earnings. The textile and apparel, which is highly anticipated sector in terms of export contributes below 10 percent of total manufacturing exports.

---

1. The mining and quarrying includes gold exports and imports
Table 3: Manufacturing value added, export sales and imported raw materials by industry

<table>
<thead>
<tr>
<th>Industry</th>
<th>Industry contribution in terms of value added</th>
<th>Industry contribution in terms of export earnings</th>
<th>Exports’ share in sales (%)</th>
<th>Imported raw materials share (%)</th>
<th>Exports coverage of imported raw materials (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>food &amp; beverage</td>
<td>47.02</td>
<td>46.56</td>
<td>24.94</td>
<td>32.59</td>
<td>6</td>
</tr>
<tr>
<td>Tobacco</td>
<td>3.51</td>
<td>1.35</td>
<td>0.00</td>
<td>0.03</td>
<td>0</td>
</tr>
<tr>
<td>Textile</td>
<td>4.16</td>
<td>2.95</td>
<td>14.13</td>
<td>9.43</td>
<td>17.24</td>
</tr>
<tr>
<td>Apparel</td>
<td>0.9</td>
<td>0.66</td>
<td>0.01</td>
<td>0.33</td>
<td>0.1</td>
</tr>
<tr>
<td>Leather</td>
<td>4.38</td>
<td>3.7</td>
<td>60.26</td>
<td>42.25</td>
<td>69.11</td>
</tr>
<tr>
<td>wood products</td>
<td>1.03</td>
<td>0.51</td>
<td>0.00</td>
<td>0.29</td>
<td>0</td>
</tr>
<tr>
<td>Paper</td>
<td>5.55</td>
<td>2.3</td>
<td>0.00</td>
<td>0.16</td>
<td>0</td>
</tr>
<tr>
<td>Chemical</td>
<td>5.43</td>
<td>5.37</td>
<td>0.00</td>
<td>2.38</td>
<td>0</td>
</tr>
<tr>
<td>rubber &amp; plastic</td>
<td>5.98</td>
<td>2.38</td>
<td>0.00</td>
<td>0.49</td>
<td>0</td>
</tr>
<tr>
<td>Other non-metallic mineral</td>
<td>13.79</td>
<td>15.86</td>
<td>0.66</td>
<td>3.45</td>
<td>0.57</td>
</tr>
<tr>
<td>basic iron &amp; steel</td>
<td>2.38</td>
<td>3.79</td>
<td>0.00</td>
<td>0.01</td>
<td>0</td>
</tr>
<tr>
<td>fabricated metal</td>
<td>6.81</td>
<td>0.00</td>
<td>1.02</td>
<td>0</td>
<td>0.87</td>
</tr>
<tr>
<td>machinery &amp; equipment</td>
<td>0.06</td>
<td>-0.08</td>
<td>0.00</td>
<td>0.51</td>
<td>0</td>
</tr>
<tr>
<td>Motor vehicles etc.</td>
<td>1.61</td>
<td>7.63</td>
<td>0.00</td>
<td>0.00</td>
<td>0</td>
</tr>
<tr>
<td>Furniture</td>
<td>2.28</td>
<td>0.21</td>
<td>0.00</td>
<td>7.06</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
<td><strong>100.00</strong></td>
<td><strong>100.00</strong></td>
<td><strong>9.95</strong></td>
</tr>
</tbody>
</table>

Source: CSA, different years but author’s calculations.
Table 3 also reports the exports’ share in sales, share of imported raw materials, and export coverage of exports by sector. The export to sales ratio of the manufacturing sector exhibited a declining trend over time. For example, the export sales to total sales ratio fall from about 10 percent in 2002/03 to 4 percent in 2014/15. The major export sectors such as leather, food, textile, and apparel have also shown similar trend. On the other hand, the overall dependence of the Ethiopian manufacturing sector on imported raw materials has shown an increasing trend in the last decade (i.e. from 43.5 percent in 2002/03 to 49 percent in 2014/15). The stagnation in the share of export sales and simultaneous increase in import dependence of many of the export oriented sectors means the export coverage of imported raw materials of the manufacturing sector had fallen through time. The total export coverage of imported raw materials in the MLSM plunged from about 53 percent in 2002/03 to 14.54 percent in 2014/15. This is rather a worrying development and suggests the lack of domestic linkage particularly between industry and the agriculture sectors.

The level and trend of dependence on imported raw materials differs by sector. Imported share of raw materials has been traditionally lower in the agro-industries such as food, beverage, textile, apparel, leather, as well as other furniture and non-metallic mineral products. But what seems worrying is that import dependence of these sectors has increased sharply over the last decade. For example between 2002/03 and 2014/15, imported raw materials share increased from 22% to 31% for food and beverage, from 29% to 64% for textile, from 25.6% to 51.6% for apparel, and from 21.6% to 27.6% for leather. Correspondingly, the export coverage of imported raw materials of these sectors has declined over the same period. On the contrary, the other sectors known for high dependence of imported raw materials (for example, 70% and above in 2002/03) such as paper, chemical, fabricated metal, basic iron and steel, and machinery & equipment have shown declining trend in their import dependence.

3. Anti-export Bias: Conceptual Issues, Methodology and Data

3.1. Some Conceptual Issues

The main objective of this paper is to examine the supply side factors and particularly macroeconomic management behind the poor manufacturing export performance in Ethiopia and why firms are less motivated to export their products despite widespread efforts by the government to promote exports. We assume for an established firm there is a choice where to sell its products, that is whether to sell in domestic market or exporting it. The relative profitability of domestic versus export market depends upon prices received by the firm, which in turn is affected by economic policies such as tariffs, exchange rates, and export incentives.

Tariffs: Many countries levy tariffs on imported goods to raise revenue and to protect domestic industries from competition of cheaper foreign goods. Since tariffs are among the easiest taxes to impose and arouse little domestic protest they are applied easily on goods when crossing the boundary of the country. Tariffs on final goods raise the prices of imported goods. This causes
consumers to reduce their consumption (or substitute other products). The impact on producers may, however, differ depending whether the firm is import competing or export oriented. Tariffs encourage import substituting sectors by allowing domestic prices to rise above the c.i.f value of imports. Instead of having to lower prices to compete with cheap imports, import competing producers can raise prices to the inflated price level of the imports, thus, received protection.

Tariffs, however, create a disincentive to export by directly raising the domestic price of imports relative to exports, or equivalently, by reducing the price of exports relative to imports. This is because the firm can obtain the tariff-inclusive domestic price in the home market while it gets world market price when selling abroad. Lerner (1936) shows the symmetry, or equivalence, between the effects of an import tariff and an export tax on domestic relative prices.

The other channel of effect of tariff is through material inputs. Tariff on imported material inputs by raising the cost of production reduces the extent of protection for firms oriented toward domestic market and at the same time increases the anti-export bias for firms oriented towards export market. Hence, distinction need to be made between nominal or product protection and effective protection or the protection on value added (Belassa, 1971).

In a general equilibrium context, trade barriers also alter the price of exports relative to nontraded or home goods. The rise in the price of imports force consumers to shift from expensive imports to domestic produced substitute goods, thus, higher price of home goods relative to exports. Tariffs on imports can also alter the price of primary factors inputs; wage and rental on capital. If imports are labor intensive then higher tariff would raise the wage rates and assuming labor is mobile across all sectors it would increase the cost of production in the export sectors and reduce output. Tariff on imports discourage all types of exports – not just exports from a single sector – because they tend to cause a country’s real exchange rate to appreciate (Belassa, 1971).

Many countries employ duty-drawbacks schemes in an attempt to overcome the bias against exports due to tariff on imported inputs. But these schemes often do not eliminate the bias completely partly inefficiency in administering them. Provision of other export incentives [including income tax exemptions (tax holiday packages), export credit, free of tariff imports of capital and other non-fiscal schemes] are also common aiming to reduce the anti-export bias. Again there are concerns with regard to efficiency of these incentives and enforcement of the required performance from exporters’ side.

Previous studies found that protection (e.g. tariffs) generates substantial anti-export bias. Schiff and Vales (1992) examined the relative bias against agriculture production and exports from direct (agriculture sector policy) and indirect (industrial protection and macroeconomic policy such as real exchange rate appreciation) interventions using data from 18 developing countries between 1960 and 1985. They found that both direct and indirect interventions taxed agriculture producers. However, in almost all countries considered, the tax equivalent of the indirect interventions was 22%, which is three times higher than the magnitude of the direct protection. Manzur and Subramaniam (1995) estimated the effect of protection on exports based on
Malaysian data for 1989. The nominal tariff rate on imports which was 18% resulted in a tax on exporters of about 9% wiping out the 1% nominal assistant given to exporters. They further estimated that the cost of protection to Malaysian exporters was equivalent to 2.56% of GDP or USD 3,034.5 million.

Athukorala (2006) estimated the anti-export bias generated from protection in Vietnamese manufacturing. It is found that all industries suffer significant anti-export bias, with an average anti-export bias of 105% for all industries listed. Under the assumptions of complete duty exemption a 6% price-wedge arising from domestic tax exemptions, the measured degree of anti-export bias decline from 105% to 25%. Tokarick (2007) assessed how import protection and specifically their own tariff discourages exports in developing countries. Using data from 26 developing countries he finds that the average export-tax equivalent of import tariffs is about 12.5%, while seven countries had export-tax equivalent in excess of 16%.

**Exchange rate overvaluation:** Overvaluation of the exchange rate compared to the free trade situation results in decline of the external competitiveness of a country; not only by reducing exports and import substituting goods but also by increasing imports. This is because an overvalued currency makes import artificially cheaper for consumers while it makes exports relatively more expensive for the producers. The theory suggests different ways through which an overvalued exchange rate hurts the domestic industry. First it discriminates against exports. Since a significant portion of the costs of production is paid in domestic currency, the overvalued exchange rate results in the reduction of incentives and the ability of exporters to compete in the foreign markets (Dornbusch, 1988).

An overvalued exchange rate also negatively affects import-competing industries as they are faced increased pressure from cheap imports. It can also affect the allocation of resources. By lowering down of the prices of tradable goods relative to non-tradable it results in a shift of resources from tradable to non-tradable activities where there are decreasing returns (Shatz and Tarr, 2000). An overvalued currency may be caused due to fixed or managed float exchange rates regime, and translates into a direct loss of price competitiveness for exporting firms. This is of particular importance for commodities and manufactured products that are labour-intensive (UNCTAD, 2005). Manufactured exports are more likely to be negatively affected by overvalued exchange rate than other primary products as the former are more price-responsive and have higher income elasticity. An overvalued exchange rate by discouraging exports and encouraging imports worsens the trade balance. This leads to shortage and rationing of foreign currency, which in turn negatively affects productivity and economic growth. Shatz and Tarr (2000) have an excellent review on the adverse effect of overvaluation in developing countries.

The East Asian countries’ experience tells us that exchange rate was a key policy variable in the drive to promote exports. For example, during the last half of the 1950s, South Korea’s Industrial expansion was largely oriented toward the domestic market, with import substitution for light manufactured and non-durable consumer goods playing a major role. The foreign exchange rate was overvalued and based on complex structure of multiple exchange rates. With the installation of the military government led by General Park Chung Hee in 1961, the
economic policy shifted towards export-led industrialization. In 1964, the exchange rate was devalued by 100% and the system was switched from multiple to unitary floating exchange rate. At times, the government tried to compensate for periodic domestic currency overvaluation by means of financial and tax incentives for exporters. Thus, exporters enjoyed stable real exchange rates throughout the 1960s and 1970s (Westphal, 1990).

3.2. Methodology: Measuring Protection and Anti-Export Bias

3.2.1. The Nominal Rate of Protection (NRP) and Effective Rate of Protection (ERP)

The nominal rate of protection of a particular commodity is defined as the percentage excess of the domestic price over the world market price, resulting from the application of protective measures. If tariffs are the only protective measure then the nominal protection will be equal to the ad valorem rate of tariff. For example, if a tariff of 20 percent of the CIF value is collected on a particular product as it enters the country, then the nominal rate of protection is that same 20 percent.

The effective rate of protection measures the total effect of the entire tariff structure by taking into account tariffs levied not only on final goods but also on inputs. The ERP expresses the margin of protection on value added on the production process rather than on the price of the product. The concept of effective rate of protection has been widely used to measure the overall structure of protection and has been extensively refined by Corden (1966) and Balassa (1971). The effective rate of protection (ERP) could be defined as the percentage excess of domestic value-added attainable by reasons of imposition of tariffs and other protective measures on both product and inputs over world value-added (Corden, 1966; Anderson, 1996; Balassa, 1971). Thus, 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 to differ by tariff rate. Algebraically, ERP for activity $j$ can be given as:

$$ ERP_j = \frac{VA_j^D - VA_j^W}{VA_j^W} $$

(1A)

where $ERP_j$ refers to effective rate of protection in producing product $j$, $VA_j^D$ value added of the final product $j$ at tariff distorted prices(domestic price), and $VA_j^W$ value added of the final product $j$ at free trade prices.

While nominal tariffs influence consumer behaviour through the price raising effect, effective protection affects production by attracting resources from non-tradables sectors with lower ERPs to sectors with higher ERPs. The above general equation of calculating effective rate of protection doesn’t consider special treatment of nontraded inputs. There is slight difference between the Balassa and Corden in terms of the treatment of nontraded inputs. The Corden
procedure of treating nontraded inputs in the estimation of effective rate of protection includes
the value added element of the nontraded inputs with the value added in the processing so that
the effective protection is estimated with respect of the sum of two parts of value added.
Derivation of the Corden measure is based on summing up the direct and indirect contribution of
primary factors on various stages of producing a nontraded good. This means that the value of
nontraded inputs can be divided into (1) direct and indirect material inputs that are combined
with the value of material inputs in the production process and (2) direct and indirect value
added (cumulated value added parts of nontraded inputs at various stage of production) that are
combined with the value added in the production process. Therefore, tariffs on material inputs
which are used in producing nontrade goods can increase the cost of inputs to the producer.
Under the Balassa method, on the other hand, nontraded inputs are assumed to be supplied to
the processing industry at constant cost and it is only the value added in production process that
is considered in estimating effective rate of protection.

Thus the effective rate of protection under Balassa (\(ERP_B\)) and Corden (\(ERP_C\)) method are
estimated from the domestic input-output coefficient by the following equations:

\[
ERP_B = \frac{W_j^B - V_j^B}{V_j^B} \quad (1B)
\]

\[
ERP_C = \frac{W_j^B - V_j^B}{V_j^B + \sum_w \sum_n a_{ni} r_{wn}} \quad (1C)
\]

where the \(W_s\) are domestic value added in the presence of tariff and the \(V_s\) are free market
value added, \(a_{ni}\) represents domestic value of input per unit of output (domestic technical
coefficient) of nontraded inputs and \(r_{wn}\) is the valued added element of nontraded input in the
production process.

3.2.2. The Net Nominal and Net Effective Rates of Protection

According to Belassa (1971) protection through tariff and other mechanisms makes it possible
to maintain balance-of-payments equilibrium at a lower exchange rate (i.e. fewer units of
domestic currency per dollar) than that existing under free trade. It appears that the exchange
rate observed under protection tends to overvalue the domestic currency as compared to the
free trade situation, and effective rates calculated at this rate will overstate the extent of
protection of individual industries. Net effective rate of protection could be derived by adjusting
the estimated effective rate of protection from the actual exchange rate for the extent of over-
valuation compared to the hypothetical free trade situation.

Accordingly, the net effective nominal rate of protection and effective rate of protection can be
estimated by expressing world market values in terms of domestic currency at the exchange
rate that would have been obtained under free trade conditions. Thus we can have the following equations;

\[ P_{id} = P_{iw}R(1+t_j) \]  
\[ P_{id}' = P_{iw}'R' \]

where \( P_{id} \) is domestic price expressed in domestic currency and \( P_{iw} \) is the world price expressed in foreign currency under protection, \( R \) is the exchange rate under protection, \( P_{id}' \) is domestic price expressed in domestic currency under free trade case and \( R' \) is a free trade exchange rate (parallel exchange rate).

Net nominal rate of protection (NNRP), the percentage excess of domestic price under protection over free trade can be expressed as;

\[ \text{NNRP} (%) = \left( \frac{P_{id}}{P_{id}'} - 1 \right) \times 100 = \left[ (1 + t_j) \frac{R}{R'} - 1 \right] \times 100 \]

In the absence of nontrade inputs, the same adjustment is made in the effective rate of protection since output as well as input values are adjusted in the same way. Hence net effective rate of protection (Net ERP') can be estimated from the effective rate of protection as follows;

\[ \text{NetERP}_j (%) = \left[ (1 + ERP_j) \frac{R}{R'} - 1 \right] \times 100 \]

### 3.2.3. The Bias against Export

Tariffs on imports raise the domestic price of imported goods and this causes consumer to shift consumption away from expensive imports towards home goods. This increases the price of home goods that are close substitutes to the one being imported and the price of exports to fall relative to home goods. Lerner’s symmetry theorem establishes that restrictions on imports act as a tax on export production. Because tax is part of the cost of production from the point of view of producers, import tariffs could reduce the profitability of exporting firms (Tokarick, 2007). On the other hand, since import tariff raises price in the domestic markets, profitability of producers in selling at domestic market is attractive. The tariff on imports will reduce the export performance by lowering the price of exports relative to selling in domestic market of both traded and nontraded goods, hence, anti-export bias. If the domestic price effect of import restrictions and other domestic market protection exceeds the exporter price effect of export incentives, then there exists anti-export bias (Tyler, 1983).

The bias against export is defined as the percentage excess of the domestic values added obtainable as a result of protection in producing for domestic market against over that obtainable in exporting in the free trade international market (Balassa, 1971). Accordingly, the
bias against export for a particular activity or industry (Bias$_j$) producing for either domestic or export market could be estimated by using the following equation:

$$Bias_j = \frac{W_j - Y_j}{Y_j}$$  \hspace{1cm} (6)

where $j$ is the activity producing the goods, $W_j$ is the domestic value added created due to tariff, $Y_j$ is the value added created by the exporting firm in free market while producing in protected economy.

3.3. Data Sources and Construction of Variables

The domestic technical coefficients ($a_{ij}^{'}$), is obtained from the Input-Output table of Ethiopian Development Research Institute (EDRI) Social Accounting Matrix, SAM 2010/11, $t_i$ (nominal tariffs on intermediate inputs) and $t_j$ (nominal tariffs on the final product $j$) are estimated as a weighted average of nominal tariff rates weighted by cif-value of import( ex-post tariff rate). Trade data of import is obtained from Ethiopian Customs and Revenue Authority (ERCA) at eight digit Harmonized System (HS) code level and a concordance of HS code and ISIC level of classification are made as the input output coefficient is based on ISIC classification. Once the HS code of import data and ISIC classification of the SAM activities are matched, technical coefficients, $a_{ij}^{'}$, are mapped from the input output table of EDRI SAM2010/11 to the trade data by sectors. We used, an official tariff rate weighted by cif-value at eight digit HS code to examine how the protection measure would look like.

4. Estimation and Discussion: Rate of Protections and Anti-Export Bias

4.1. The Nominal and Effective Rate of Protection

Ethiopia had eliminated quantitative restrictions on imports following the 1990s liberalization reforms. Similar to many developing countries, Ethiopia levies tariffs on imported goods to protect domestic industries as well as to generate revenues for government. In this particular paper we are assuming that the only difference between international free market price and the protected domestic price is the tariff rate. Other types of taxes are not considered here as they are equally levied on domestic produced goods.

Table 4 presents the average nominal rate of protection (NRP) and effective rate of protections (ERP) at aggregated sectors (the agriculture and manufacturing) as well as a disaggregation of the manufacturing sector into 9 industries for the four selected years between 2005 and 2015. In the estimation of NRP and ERP the official tariff rate on commodity at Harmonized System Codes (HS Code) is used. Both the Balassa and Cordon based methods were estimated and the NRP and ERP in most cases provide similar and very close results except the fact that the former gives slightly inflated magnitude as it ignores value added elements of non-traded inputs.
For the sake of brevity we only report and discuss the Corden based estimates. The Corden approach is superior to Balassa for it considers value added elements of non-traded inputs. A comparison of the two sectors, agriculture and manufacturing, (upper panel of Table 4) revealed that in 2005 the agriculture sector had higher nominal as well as effective protection rate than the manufacturing sector. The agriculture sector protection, however, exhibited a declining trend through 2005 to 2013 from nearly 20 percent to 13 percent and then rose up to 17 percent in 2015 in nominal terms. The effective protection rates for this sector had also changed from 24 percent in 2005 to 16 percent and then back to nearly 20 percent. In contrast, nominal protections in the manufacturing sector had been steady during the same period. The ERP for manufacturing sector had shown slight increase, i.e. from about 14 percent to 17 percent in the given period. We can, thus, conclude that in the last decade the manufacturing sector protection has been increasing while that of the agriculture declining.

The lower panel of Table 4 provides industry level disaggregated (approximately at 2-digit ISIC classification level) estimations of protection for the manufacturing sector. The nominal tariff rate (NRP) differs by industry ranging between 8.8 – 35 percent based on the official tariff rate. The Textiles, Apparel, Leather, and Footwear are the industries subject to high tariff rate of above 30 percent based on the official rate. On the other hand, wood and wood products, chemical and medicines, and metal and mineral products are among the sectors with low nominal tariff rate.

Table 4: Nominal and Effective Rate of Protection by sector

<table>
<thead>
<tr>
<th>Major Sector</th>
<th>Nominal rate of protection (NRP)</th>
<th>Effective rate of protection (ERP) Corden Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major sectors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agriculture</td>
<td>19.8</td>
<td>14</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>16.4</td>
<td>15.1</td>
</tr>
<tr>
<td>Manufacturing by industry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prepared Food</td>
<td>20.6</td>
<td>18.49</td>
</tr>
<tr>
<td>Textiles</td>
<td>31.93</td>
<td>31.16</td>
</tr>
<tr>
<td>Apparel</td>
<td>34.91</td>
<td>34.95</td>
</tr>
<tr>
<td>Tanning and leather prod.</td>
<td>31.21</td>
<td>34.42</td>
</tr>
<tr>
<td>Footwear</td>
<td>33.5</td>
<td>34.35</td>
</tr>
<tr>
<td>Wood and Paper Prod.</td>
<td>10.73</td>
<td>10.74</td>
</tr>
<tr>
<td>Chemicals and medicines</td>
<td>12.25</td>
<td>11.8</td>
</tr>
<tr>
<td>Other manufacture</td>
<td>24.56</td>
<td>18.9</td>
</tr>
</tbody>
</table>

Source: ERCA data and Author’s computation

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2 The industry level Balassa based estimates can be made available upon request.
One may observe similar picture when looking at the effective rate of protection. That is all sectors in the economy are protected to some degree as evidenced by the large estimates of ERP with the exception of two industries; the Metals and Metallic Products and Wood and paper products. In fact, the ERP in the Metals and Metallic Products sector is very low and in some case negative implying that the tariff on importable inputs are higher than tariffs on the final output, thus, the domestic production of this industry is discriminated against imported goods. On the other hand, the Textiles, Apparel, Leather, and Footwear sectors are the most protected sectors with above 35 percent of ERP. The agro-processing industries that include the Prepared Foods and Diary and Animal products are also among the highly protected sector. These are the priority industries in which the country is believed to have comparative advantage and special support scheme for export promotion has been granted. It should be noted that the high protection in these sectors means firms have higher incentive to sell their products in the protected domestic market instead of exporting. This suggests that the high tariff rates in these sectors have countervailing efforts on the export promotion.

4.2. Anti-Export Bias of Protective Tariff

Next we proceed to formally quantify the bias against exports emanated from the tariff structure. The bias against export is measured as the percentage excess of the domestic value added obtainable against that obtained by exporting. In this case, the bias against exporting arises because firms can obtain the tariff-inclusive price in home markets whereas-in the absence of export subsidies and tariff protections-they get the world market price on export sales, which is less attractive.

In calculating the bias against export we rely on the official exchange rate, thus, the estimated bias is the lower bound. Under scenario 1, we assume that exporters receive no duty drawbacks on imported inputs. Whereas under scenario 2, we take account of 100 percent duty drawbacks, thus, calculated the bias against exports on the assumption that exporters are exempted from paying duties (or rebated the paid duty) on imported inputs that are used to produce for exports. This is because similar to many other countries, Ethiopia has introduced a duty drawback scheme as a way of allowing exporters to have free access for intermediate inputs at world market prices. Although the duty drawback system never recovers 100 percent of the costs incurred (financial and time), looking at such scenario could help us understand the extent to which avoiding input tariffs can reduce the anti-export bias.\(^3\)

Table 5 (the upper panel) reports the estimated bias against exports by broad sector category, agriculture versus manufacturing under the two scenarios. The estimates show that the anti-

\(^3\) Besides the duty drawback and other schemes to facilitate easy and world price level access to intermediate inputs, Ethiopian exporters are also provided other incentives including income tax exemptions (tax holiday packages), export credit, free of tariff imports of capital and other non-fiscal schemes. Gebreeyesus and Demile (2017) show that the additional incentives provided for exporters are in most cases marginal taking into consideration not only the challenges associated with exporting and anti-export bias created by the existing policies but also in comparison to the investment incentives that are available for all investors including firms that produce for domestic market.
export bias in the manufacturing is larger than the case in agriculture. For example, based on the 2015 estimates under scenario 1, we can say that the value added created by selling in domestic market for manufacturing products is about 34.2% higher than that of obtainable from exporting. The comparable estimate for agriculture is about 21.3%. But the difference in the bias against export between the two sectors narrows down in the presence of duty drawbacks for exporters (scenario 2). This shows the manufacturing which is hugely relying on imported inputs is better benefiting from the presence of duty drawback scheme.

Table 5: Anti-export Bias (%) by sectors under different scenarios

<table>
<thead>
<tr>
<th>Sector</th>
<th>Scenario 1</th>
<th>Scenario 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bias in the absence of duty drawback</td>
<td>Bias with 100% duty drawback</td>
</tr>
<tr>
<td>Major sectors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agriculture</td>
<td>28.68</td>
<td>18.5</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>33.91</td>
<td>33.08</td>
</tr>
<tr>
<td>Manufacturing by industry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prepared Food</td>
<td>51.84</td>
<td>47.26</td>
</tr>
<tr>
<td>Textiles</td>
<td>68.31</td>
<td>66.66</td>
</tr>
<tr>
<td>Apparel</td>
<td>70.64</td>
<td>70.7</td>
</tr>
<tr>
<td>Tanning and leather prod.</td>
<td>137.39</td>
<td>151.48</td>
</tr>
<tr>
<td>Footwear</td>
<td>142.5</td>
<td>146.11</td>
</tr>
<tr>
<td>Wood and Paper Prod.</td>
<td>41.48</td>
<td>40.66</td>
</tr>
<tr>
<td>Chemicals and medicines</td>
<td>13.54</td>
<td>17.44</td>
</tr>
<tr>
<td>Other manufacture</td>
<td>55.43</td>
<td>42.6</td>
</tr>
</tbody>
</table>

Source: ERCA data and Author’s computation

Table 5 (lower panel) gives estimates of the bias against export by relatively disaggregated industry group under the assumption of protected intermediate input market (scenario 1). In general the export bias for most of the industries is positive with the exception of metal and metallic products. When comparing the sectors, the highest estimate of anti-export bias under this scenario is observed for Leather and Footwear sector followed by Textiles and Apparel sector. The anti-export bias estimates in the leather sector (including the Tanning and Footwear sub-sectors) is between 137% and 153%, while in the Textile & Apparel sector greater in the range of 66.6% to 70%. This suggests that value added obtainable in the domestic market is 1.5 times greater than that obtained in producing for export in the Leather and Footwear sectors. In the same way, value added obtainable in the domestic market is nearly 70% more than the value added gained from exporting in Textile & Apparel sectors. The anti-export bias estimate for the prepared food industry and other manufacturing is nearly 50% making them the next

\[ \text{Bias} = \frac{\text{a} - \text{b}}{\text{b}} > 1 \] implies that \( \frac{\text{a}}{\text{b}} > 2 \) where \( \text{a} \) is value added of import competing firm(sold in domestic market) and \( \text{b} \) is value added at the export market.
highest following leather and textile industries. As demonstrated above, the chemical and metal industries are the one with low level of anti-export bias.

As can be seen from Table 5, the bias against exports has substantially been reduced under the second scenario, i.e. when considering the full exemption of tariff on imported inputs. However, it also shows that access to intermediate inputs at world market prices could not completely avoid the export bias. The remaining anti-export bias is still large enough to make the domestic market lucrative relative to the export market despite access to intermediate inputs at free world market prices. Moreover, the assumption of full compensation of duty drawback is not realistic as it involves high transaction costs emanating among others from foregone interest of the withheld capital, tedious and time consuming bureaucratic procedures. To overcome the administrative hurdles of duty drawbacks, the government introduced other schemes including voucher scheme, bonded export factory scheme, bonded export manufacturing warehouse scheme, the bonded input supplies warehouse scheme. However, these schemes are not free of transaction costs and discretionary system and they are not well functioning for a similar reason of bureaucratic inefficiencies. The implication is that only using duty drawback schemes cannot overcome the bias against exports, thus, there is a need to look for other complementary measures including fiscal and non-fiscal incentives as well as improving the bureaucratic bottlenecks.

The fact that the export oriented sectors are subjected to high anti-export bias is against the spirit of the export promotion strategy. As a result the actual performance of these favored export sectors, for example the textile and leather, remained unsatisfactory and far below the targets set by the government. For example, 1 billion USD and 500 million USD from textiles and garment, and leather and leather products export were expected by the end of GTP I period. The actual export performance of textiles and garment sector export turned out to be USD 97.9 million, which is only 9.8% of the target while the leather and leather products sector was USD 131.6 which is less than 26.5% of the target set for the period (FDRE: NPC, 2016).

Another concern is that despite the high level of protection for the manufacturing sector in general and for Textiles, Apparel and Leather and footwear sectors in particular, the import expenditure on these products continued to grow over the last ten years. For example, the ERP for textiles rose from 38.83 percent in 2005 to 39.77 percent in 2015 and that of apparel from 45.51 percent to 46.63 percent respectively (see Table 5). But, the import expenditure on textiles increased significantly from USD 137.60 million in 2005 to USD 253.5 million in 2012 and further rose to USD 347.7 in 2015 (see Table 6). Import expenditure on wearing apparel also grew to more than doubled, i.e. increased from USD 72.7 million in 2005 to USD 177.3 million in 2012 and to USD 285.8 in 2015. Similarly, even though the effective rate of protection in the footwear industry rose from 46.20 percent in 2005 to 49.72 percent in 2015, the spending on footwear import went up from USD 26.7 million in 2005 to USD 88.5 million in 2015. This shows that the strong protective measures (effective rate of protection) on the textiles, apparel and footwear sector was not able to reduce the import expenditure by switching the demand from imported commodities to domestically produced substitutes.

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5 See Gebreeyesus and Demile (2017) for elaborative discussion on this.
### Table 6: CIF Value of Import (Million USD)

<table>
<thead>
<tr>
<th>ISIC Code</th>
<th>ISIC Description</th>
<th>CIF Value of Import (Million USD)</th>
<th>Import Penetration index</th>
</tr>
</thead>
<tbody>
<tr>
<td>171</td>
<td>Spinning, weaving and finishing of textile</td>
<td>82.7</td>
<td>106.7</td>
</tr>
<tr>
<td>172</td>
<td>Manufacture of other textiles</td>
<td>37.7</td>
<td>96.8</td>
</tr>
<tr>
<td>173</td>
<td>Manufacture of knitted, crocheted fabric</td>
<td>17.2</td>
<td>21.6</td>
</tr>
<tr>
<td></td>
<td>Total Textiles</td>
<td>137.6</td>
<td>225.1</td>
</tr>
<tr>
<td>181</td>
<td>Manufacture of wearing apparel, except</td>
<td>72.7</td>
<td>101.0</td>
</tr>
<tr>
<td>182</td>
<td>Dressing and dyeing of fur</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>Total Wearing Apparel</td>
<td>72.7</td>
<td>101.0</td>
</tr>
<tr>
<td>191</td>
<td>Tanning and dressing of leather</td>
<td>4.1</td>
<td>6.8</td>
</tr>
<tr>
<td>192</td>
<td>Manufacture of footwear</td>
<td>26.7</td>
<td>34.6</td>
</tr>
<tr>
<td></td>
<td>Total Leather and Footwear</td>
<td>30.8</td>
<td>41.4</td>
</tr>
</tbody>
</table>

Source: ERCA and Author’s computation

The implication is that instead of encouraging import substitution the high protection grants incentive for domestic producers to survive with their inefficiencies and sell their products in the domestic market. It is argued that the demand for the products in the domestic market is so enormous that domestic producers have less interest in transforming their production and market innovation. For example, in 2010, about 76.6 percent of the domestic demand of Wearing Apparel was covered by imports and it further grew to 83.3 percent in 2015. More than 67 percent of the domestic demand for Footwear in 2010 and about 36 percent in 2015 were satisfied by imports (see Table 6). Due to the static and traditional nature of the production technology implemented, production and productivity in these sectors are at a lower state especially for exporting firms. The fact that domestic firms in the Textile, Apparel and Leather and Footwear industries are provided a strong protection but could not either reduce the import demand in the domestic market or be competent in the export market, signals that these sectors need careful examination.

**4.3. Net Nominal and Effective Rate of Protection**

We now turn to analyzing the effect of overvaluation of the exchange rate of the Birr. Table 7 provides the estimated net nominal and net effective rate of protections that is adjusted for exchange rate overvaluation. In doing so, the parallel exchange rate is used as a free trade exchange rate and the official exchange rate is used as an exchange rate under protection. As can be seen from this table for all activities, obviously the net nominal rate of protections is lower than the nominal rate of protections. Likewise, the net effective rate of protection is lower than the effective rate of protection. As can be seen adjusting the currency overvaluation lowers the absolute value of the protection although the average level of protection remains substantial. This indicates that not adjusting the effective rate of protection against the overvaluation of exchange rate (i.e. net effective exchange rate) tend to overstate the level of protection given to all industries. The overstatement of protection due to overvaluation of exchange means that...
discrimination against import competing firms is overstated since exports are penalized by the low (overvalued) exchange rate. In other words, the export activities are discouraged by both high tariff and overvalued exchange rate.

Table 7: Net Nominal and Net Effective Rate of Protection by industry

<table>
<thead>
<tr>
<th>Sector</th>
<th>Net Nominal rate of protection</th>
<th>Net Effective rate of protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepared Food</td>
<td>16.00</td>
<td>15.55</td>
</tr>
<tr>
<td>Textiles</td>
<td>26.89</td>
<td>27.89</td>
</tr>
<tr>
<td>Apparel</td>
<td>29.76</td>
<td>31.59</td>
</tr>
<tr>
<td>Tanning and leather prod.</td>
<td>26.2</td>
<td>31.07</td>
</tr>
<tr>
<td>Footwear</td>
<td>28.4</td>
<td>31</td>
</tr>
<tr>
<td>Wood and Paper Prod.</td>
<td>6.5</td>
<td>7.98</td>
</tr>
<tr>
<td>Metals and Mineral Prod.</td>
<td>6.72</td>
<td>7.04</td>
</tr>
<tr>
<td>Other manufacture</td>
<td>19.8</td>
<td>15.94</td>
</tr>
</tbody>
</table>

Source: ERCA data and Author's computation

The calculation of the net protection rate does not necessarily change the ranking of the industries in terms of protection but could show us the extent of protection arising from exchange overvaluation. In doing so, we calculated the difference between net nominal rate of protection and the nominal rate protection and similarly the difference between net effective protection rate and effective rate of protection based on the Corden method (see Table 8). The calculated differences in protection are above 10 percentage points suggesting that overvaluation of exchange rate indeed highly overstates the level of protection. That is, the contribution of the overvaluation of exchange rate on the protection differs by industry and ranges from 10 per cent to above 40 per cent depending on the level of industry protection. And most importantly, the differences between the protection and net protection tend to rise through time (from 2005 to 2015) suggesting an increasing overvaluation of the exchange rate.
Table 8: The impact of overvaluation of exchange rate on protection

<table>
<thead>
<tr>
<th>Industry/Year</th>
<th>Share of protection from overvalued exchange rate</th>
<th>((\text{NRP-NNRP})/ \text{NRP})</th>
<th>((\text{ERP-NERP})/ \text{ERP})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepared Food</td>
<td></td>
<td>22.33</td>
<td>15.90</td>
</tr>
<tr>
<td>Apparel</td>
<td></td>
<td>14.75</td>
<td>9.61</td>
</tr>
<tr>
<td>Tanning and leather prod.</td>
<td></td>
<td>16.05</td>
<td>9.73</td>
</tr>
<tr>
<td>Footwear</td>
<td></td>
<td>15.22</td>
<td>9.75</td>
</tr>
<tr>
<td>Wood and Paper Prod.</td>
<td></td>
<td>39.42</td>
<td>25.70</td>
</tr>
<tr>
<td>Chemicals and medicines</td>
<td></td>
<td>35.02</td>
<td>23.64</td>
</tr>
<tr>
<td>Metals and Mineral Prod.</td>
<td></td>
<td>38.69</td>
<td>28.02</td>
</tr>
<tr>
<td>Other manufacture</td>
<td></td>
<td>19.38</td>
<td>15.66</td>
</tr>
</tbody>
</table>

Source: ERCA data and Author’s computation

5. Summary and Concluding Remarks

By examining how much aligned the macroeconomic framework and particularly the tariff and exchange rate regimes are with the export promotion in Ethiopia, this study tries to shed some light on why the export performance of the country and particularly that of the manufacturing sector remained poor despite continued government promotion and support. Toward this, it tried to quantify the protection (nominal and effective rate of protection) and anti-export bias generated by the tariff structure and overvalued exchange rate. The aggregated estimate for the major sectors shows that protection of the agriculture sector has been higher than the manufacturing. Whereas, through time the protection for the agriculture sector had exhibited a declining trend while that of manufacturing has shown an increasing trend. This has led to narrowing down of the difference in protection between the two sectors. On the other hand, the anti-export bias is higher for the manufacturing sector (34%) than agriculture sector (21%), while this difference narrows down when considering 100% duty drawback. This suggests that the value added created in domestic market is about 20% higher than obtainable from exporting in both sectors.

The disaggregated (approximately 2-digit) industry level estimates of the NRP, ERP and anti-export bias for the manufacturing sector show wide difference among industries. With about 35% nominal duty rate, the export oriented sectors such as Textiles, Apparels, Leathers and Footwear are the most protected ones. The ERP for these sectors is estimated to be in the range of 40% to 50% depending on the sector. The anti-export bias created by the existing tariff structure in these sectors is, thus, large. The estimates show that value added obtainable in the domestic market is 1.5 times and 70% greater than that obtained in producing for export respectively in the Leather and Footwear sectors and textile & apparel sectors. The Prepared
Food industry which is also among the export oriented sectors faces high protection and anti-export bias next to the textile and leather industries.

To ensure that exporters have access to intermediate inputs at international prices, the government of Ethiopia introduced duty drawback scheme. To reflect this we calculated the anti-export bias on the assumption of 100% of duty drawbacks on intermediate inputs and raw materials. While exhibiting certain reduction, the anti-export bias remained large particularly in the export oriented sectors. The value added obtainable from the export oriented sectors in the domestic market is about 50 percent greater than that could be obtained from exporting. This suggests that the access to intermediate inputs at world price cannot fully eliminate the anti-export bias given the high tariff rates on the final products. But more importantly, the 100% duty drawback is unrealistic assumption in calculating the anti-export bias. In practice, the operation of duty draw-back schemes involves arbitrariness and complicated administrative requirement raising transaction cost of importing intermediate inputs for export production. The implication is that the anti-export bias will be even larger if we consider such inefficiencies.

The Textile, Apparel, Leather, Footwear and Prepared Food are the main sectors in which the country is believed to have comparative advantage and are also under continuous support for export promotion. The high protection in these sectors implies that firms in this industry will have higher incentive to sell their products in domestic market instead of exporting. This is contrary to the government’s interest to boost exports and in fact one cause why firms in these sectors are increasingly interested in the domestic market and the consequential failure in meeting the export targets. In contrast, the estimates show that the import substituting sectors such as the Chemical and Metal industries are among the sectors with lower protection rate. Theory and the empirics justify some extent of protection of import substituting sectors rather than export sectors. Hence, the high protection of export oriented sectors vis a vis import substituting sectors in Ethiopia suggests a misdirected tariff policy. Moreover, the fact that domestic firms in the export oriented sectors are provided a strong protection but could neither reduce the import demand in the domestic market (import substitution) or be competent in the export market (export promotion), signals the policies towards these sectors need careful examination.

The theory and practice suggest that protecting domestic market and export promotion simultaneously for a given sector are not compatible. The presence of high tariff rates and protection makes the export promotion policy very expensive as the incentives should be large enough not only in compensating for the anti-export bias created by the protection policies but also over and above those which prevail in a neutral strategy. Thus, the first alternative to eliminate the anti-export bias is to sufficiently reduce the existing final goods tariff rates. In this case, the fiscal implication of such an action may need to be worked out a priori.

This study also documented the fact that the Ethiopia’s exchange rate has been increasingly overvalued particularly in the recent years. It shows the extent of anti-export bias that arises from overvaluation of the exchange rate by calculating the net nominal and effective rate of protections. As expected, the net nominal rate of protections and net effective rate of protection are lower than respectively the nominal rate of protection and effective rate of protection. This is
because the existing (official) exchange rate overestimates the domestic value added. In other words, not adjusting the rate of protection against the overvaluation of exchange rate understates the discrimination against exports since exports are penalized by the low (overvalued) exchange rate. The implication is that export activities are discouraged not only by the protection that arise from output tariffs but also overvalued exchange rate.

Appreciation of the Birr is, thus, another major factor for the low export competitiveness and growth. The first best solution in this regard is to devalue the Birr. But drastic devaluation may entail other macro problems. Thus, some sort of direct support to exporters (for example, rewarding certain Birr for each earned dollar from exports) to offset the progressively greater overvaluation of the Birr is may be considered as a second best solution. The bottom line is that Ethiopian could not achieve its exports ambitions unless carefully and continuously using the exchange rate management as one of the most important instrument to (dis/en)couage exports. Maintaining realistic exchange rates was one key component of the successful export-led growth in East Asian countries.

References


Ethiopian Revenue and Customs Authority (ERCA), unpublished reports, Addis Ababa, Ethiopia.


Appendices

Appendix 1

Technical methodology

Assuming that there are fixed physical input coefficients in the production of commodity j, the domestic price is equal to the border price plus tariffs. The assumptions of fixed technical coefficients imply that price distortions do not affect technology used and that there is no substitution between traded and non-traded inputs because of price distortions. Let the unit value added for activity \( j \) in the absence of a tariff be expressed as:

\[
P_v = P_j (1 - a_{ij})
\]

where, \( P_v \) is value added per unit of good \( j \) at free trade price, \( a_{ij} \) are free market technical coefficients that represent the amount of material inputs(i) used per unit of output (j), \( P_j \) is the world free market price.

If a tariff \( t_j \) is levied on the final output of activity \( j \) and \( t_i \) levied on the intermediate input used in the activity, then value added for activity \( j \) after tariffs is imposed can be expressed as:

\[
P_{v'} = P_j [ (1 + t_j) - a_{ij} (1 + t_i) ]
\]

where, \( P_{v'} \) is value added per unit of good \( j \) at tariff distorted prices, \( t_j \) is the nominal tariff levied on industry \( j \), \( t_i \) is the nominal tariff levied on intermediate input \( i \). The \( a_{ij} \) represents free trade the technical coefficients.

The change in value added accompanying the policy intervention can be derived by subtracting equation (1) from equation (2) to obtain:

\[
z_j = \frac{P_{v'} - P_v}{P_v}
\]

where, \( z_j \) is the effective rate of protection and simplifying the above expression give the following.

\[
z_j = \frac{t_j - a_{ij} t_i}{1 - a_{ij}}
\]

If there are many inputs used in the production of commodity \( j \) (\( i = 1, 2, \ldots, n \)), the weighted average of input tariffs is used in place of the single input tariff and we will have the following equation:
However, as the calculation of effective rate of protection in this paper is made by using the domestic (post-protection) rather than free trade (pre-protection) input output coefficients, the effective rate of protection is estimated by deflating the domestic values by relevant price ratios (Balassa, 1971). Accordingly, the following equation based on Balassa (1971) proposition of calculating effective rate of protection can be applied.

\[ z_j = \frac{p_j - \sum_{i}^{n} a_{ij}'}{1 - \sum_{i}^{n} \frac{a_{ij}'}{1 + t_j}} - 1 \]  

(6)

where, \( p_j = 1 + t_j \) is domestic output price which corresponds to a unit worth in the free trade market, \( a_{ij}' \) is domestic value of input per unit of output (domestic technical coefficient), \( z_j \) is the effective rate of protection for the \( j^{th} \) sector. Thus equation (6) can be used to compute the effective rate of protection.

The above equations of calculating effective rate of protection do not consider special treatment of non-traded inputs.

Let the input-output coefficient for nontraded inputs be denoted by \( a_{ni} \), and let \( a_{nj} \) be divided into cumulated value of material inputs denoted by \( r_{jn} \) and valued added in the production of nontraded goods denoted by \( r_{wn} \) such that

\[ \sum_{n} a_{nj} = \sum_{j} \sum_{n} a_{nj} r_{jn} + \sum_{w} \sum_{n} a_{nj} r_{wn} \]  

where \( r_{in} + r_{wn} = 1 \)  

(7)

The Balassa and Corden methods of estimating value added on the basis of domestic input output coefficient can be stated as follows:

\[ W_j^B = P_j - \sum_{j} a_{ij}' - \sum_{n} a_{ni} \]  

(8)

\[ W_j^C = P_j - \sum_{i} a_{ij}' - \sum_{n} a_{ni} r_{jn} = W_j^B + \sum_{w} \sum_{n} a_{ni} r_{wn} \]  

(9)

\[ V_j^B = \frac{P_j}{1 + t_j} - \sum_{i} \frac{a_{ij}'}{1 + t_i} - \sum_{n} \sum_{i} \frac{a_{ni} r_{in}}{1 + t_i} - \sum_{w} \sum_{n} a_{ni} r_{wn} \]  

(10)
\[
V_j^C = \frac{P_j}{1 + t_j} - \sum_{i} \frac{a_{ij}}{1 + t_j} - \sum_{n} \sum_{m} a_{mn} r_{wn} = W_j^B + \sum_{n} \sum_{m} a_{mn} r_{wn} \quad (11)
\]

where the W’s are domestic value added in the presence of tariff and the V’s are free market value added, \( P_j = 1 + t_j \) is domestic output price which corresponds to a unit worth in the free trade market, \( a_{ij} \) and \( a_{mn} \) represent domestic value of input per unit of output (domestic technical coefficient) of traded and nontraded goods respectively.

Thus the effective rate of protection under Balassa (B) and Corden (C) method are estimated from the domestic input-output coefficient by the following equations:

\[
Z_j^B = \frac{W_j^B - V_j^B}{V_j^B} \quad (12)
\]

\[
Z_j^C = \frac{W_j^B - V_j^B}{V_j^B + \sum_{n} \sum_{m} a_{mn} r_{wn}} \quad (13)
\]

\[Z_j^B > Z_j^C \quad (14)\]

The net effective nominal rate of protection and effective rate of protection can be estimated by expressing world market values in terms of domestic currency at the exchange rate that would have been obtained under free trade conditions. Thus we can have the following equations;

\[
P_{id} = P_{iw} R (1 + t_j) \quad (15)
\]

\[
P_{id}^' = P_{iw} R' \quad (16)
\]

where \( P_{id} \) is domestic price expressed in domestic currency and \( P_{iw} \) is the world price expressed in foreign currency under protection, \( R \) is the exchange rate under protection, \( P_{id}^' \) is domestic price expressed in domestic currency under free trade case and \( R' \) is a free trade exchange rate (parallel exchange rate).

Net nominal rate of protection (NNRP), the percentage excess of domestic price under protection over free trade can be expressed as:

\[
\text{NNRP}(\%) = \left( \frac{P_{id} - 1}{P_{id}} \right) \times 100 = \left( \frac{1 + t_j}{R} \right) \times 100 - \quad (17)
\]
In the absence of nontrade inputs, the same adjustment is made in the effective rate of protection since output as well as input values are adjusted in the same way. Hence net effective rate of protection ($Z'$) can be estimated from the effective rate of protection as follows:

$$Z' = \left(1 + \frac{R}{R' - 1}\right) \times 100$$

The bias against export for a particular activity or industry ($Bias_j$) producing for either domestic or export market could be estimated by using the following equation:

$$Bias_j = \frac{W_j - Y_j}{Y_j}$$

where $j$ is the activity producing the goods, $W_j$ is the domestic value added created due to tariff, $Y_j$ is the value added created by the exporting firm (in the free market).

$$Bias_j = \frac{[(1 + t_j) - \sum_i a_{ij}(1 + t_i)] - [(1 + S_j) - \sum_i a_{ij}(1 + t_{ix})]}{[(1 + S_j) - \sum_i a_{ij}(1 + t_{ix})]}$$

where, $a_{ij}$ is the amount of material inputs (i) used per unit of output (j) in free trade, $t$'s are tariff rates.

The numerator of equation (20) will simplify as the difference between the tariff rate and rate of export subsidy if the tariff rate of material inputs for either domestic consumption or exporting are the same. If there is no export subsidy, $S_i = 0$ and the numerator of equation (20) turns out to be the rate of tariff on material inputs. Meanwhile, in the presence of export trade duty incentives and no subsidies, tariff rate of material inputs for exporting firms will become zero i.e $t_{ix} = 0$ while tariff rate of material inputs for non-exporting firms is nonzero. Consequently, the numerator of equation (20) will be equal to:

$$t_j - \sum_i a_{ij}(1 + t_i) + \sum_i a_{ij}$$

which is less than the numerator of equation (20) confirming that export incentives can reduce anti export bias. However, it is clear to draw a conclusion that in the absence of subsidies implementing export incentive packages only is not able to avoid anti-export bias.

For the purpose of benchmarking, let us assume that there is no subsidy and export incentives. Then an equation of anti-export bias that considers the nontraded inputs can be adopted from the earlier discussion of the Balassa and Corden approaches of treating nontraded inputs. As the present context estimation is based on the post-protection technical coefficient (domestic input–output table), the anti-export bias could be estimated using the Balassa(1971) and Corden (1966) Effective rate of protection as shown by equation (22 and 23) respectively.
Bias^B(j) = \frac{t_j}{1 - \sum_i a_{ij} - \sum_n a_{ni}} \hspace{1cm} \text{(22A)}

Bias^C(j) = \frac{t_j}{1 - \sum_i a_{ij} - \sum_n a_{ni} + \sum_w \sum_n a_{rnw}} \hspace{1cm} \text{(23A)}

where \( a_{ij} \) is domestic value of input per unit of output (domestic technical coefficient), \( a_{ni} \) nontraded material input output coefficient and \( a_{rnw} \) is the valued added element of nontraded input.

If export trade duty incentives packages are considered, the anti-export bias for an exporter who used the incentives can be modified and estimated using the following equations:

Bias^B_1(j) = \frac{t_j - \sum_i a_{ij} - \sum_n a_{ni} + \sum_i a_{nj} + \sum_n a_{ni}}{1 - \sum_i a_{ij} - \sum_n a_{ni}} \hspace{1cm} \text{(22B)}

Bias^C_1(j) = \frac{t_j - \sum_i a_{ij} - \sum_n a_{ni} + \sum_i a_{nj} + \sum_n a_{ni} - \sum_w \sum_n a_{rnw}}{1 - \sum_i a_{ij} - \sum_n a_{ni} + \sum_w \sum_n a_{rnw}} \hspace{1cm} \text{(23B)}
## Appendix 2

Table 1: Nominal and effective rates of protection

<table>
<thead>
<tr>
<th>Activity Name</th>
<th>Nominal</th>
<th>Rates of Protection</th>
<th>Effective Rates of Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growing of Wheat</td>
<td>8.73</td>
<td>7.85</td>
<td>6.02</td>
</tr>
<tr>
<td>Growing fruits</td>
<td>29.44</td>
<td>29.37</td>
<td>29.67</td>
</tr>
<tr>
<td>Growing of oil seeds</td>
<td>8.73</td>
<td>7.85</td>
<td>6.02</td>
</tr>
<tr>
<td>Growing of cotton</td>
<td>na</td>
<td>7.85</td>
<td>6.02</td>
</tr>
<tr>
<td>Growing of coffee</td>
<td>29.44</td>
<td>na</td>
<td>29.67</td>
</tr>
<tr>
<td>Growing of crops nec</td>
<td>8.73</td>
<td>7.85</td>
<td>6.02</td>
</tr>
<tr>
<td>Growing of flowers</td>
<td>20.84</td>
<td>9.71</td>
<td>7.75</td>
</tr>
<tr>
<td>Livestock farming</td>
<td>18.95</td>
<td>9.80</td>
<td>6.16</td>
</tr>
<tr>
<td>Forestry</td>
<td>24.35</td>
<td>19.11</td>
<td>6.96</td>
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<tr>
<td>Fishing</td>
<td>23.25</td>
<td>22.62</td>
<td>22.18</td>
</tr>
<tr>
<td>Mining and quarrying</td>
<td>14.10</td>
<td>10.08</td>
<td>11.26</td>
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<tr>
<td>Manufacture of grain mill products</td>
<td>18.50</td>
<td>8.58</td>
<td>7.70</td>
</tr>
<tr>
<td>Grain milling service</td>
<td>18.50</td>
<td>8.58</td>
<td>7.70</td>
</tr>
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<td>Manufacture of sugar</td>
<td>9.69</td>
<td>6.80</td>
<td>6.65</td>
</tr>
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<td>Manufacture of meat and meat products</td>
<td>23.25</td>
<td>22.62</td>
<td>22.18</td>
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<td>Distilling, rectifying and blending of spirits</td>
<td>18.21</td>
<td>18.33</td>
<td>20.29</td>
</tr>
<tr>
<td>Manufacture of tobacco products</td>
<td>35.00</td>
<td>35.00</td>
<td>35.00</td>
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<tr>
<td>Preparation and spinning of textile fibres</td>
<td>31.93</td>
<td>31.16</td>
<td>32.19</td>
</tr>
<tr>
<td>Manufacture of wearing apparel</td>
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<td>34.91</td>
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<td>Tanning and dressing of leather</td>
<td>31.21</td>
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<td>Footwear</td>
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<td>34.36</td>
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<td>Wood and wood products</td>
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<td>11.76</td>
<td>9.59</td>
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<td>Manufacture of paper and paper products</td>
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<td>10.25</td>
<td>11.89</td>
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<td>Manufacture of chemicals, rubber and plastic</td>
<td>10.90</td>
<td>10.82</td>
<td>10.89</td>
</tr>
<tr>
<td>Manufacture of pharmaceuticals, medicinal</td>
<td>10.96</td>
<td>9.11</td>
<td>8.29</td>
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<td>Manufacture of mineral products</td>
<td>18.78</td>
<td>13.50</td>
<td>15.05</td>
</tr>
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<td>Manufacture of basic iron and steel</td>
<td>9.38</td>
<td>10.39</td>
<td>10.87</td>
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<td>Manufacture of metal products</td>
<td>16.82</td>
<td>15.70</td>
<td>14.71</td>
</tr>
<tr>
<td>Manufacture of ovens, furnaces and furnace</td>
<td>8.17</td>
<td>8.21</td>
<td>8.18</td>
</tr>
<tr>
<td>Manufacture of accumulators batteries</td>
<td>15.31</td>
<td>10.00</td>
<td>12.49</td>
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<td>Manufacture of bodies for motor vehicles</td>
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<td>16.63</td>
<td>16.40</td>
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<td>19.51</td>
<td>25.67</td>
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Table 2: Net nominal and Net effective rates of protection

<table>
<thead>
<tr>
<th>Activity Name</th>
<th>Net nominal Rates of Protection</th>
<th>Net effective Rates of Protection</th>
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<tbody>
<tr>
<td>Growing of Wheat</td>
<td>4.58</td>
<td>5.17</td>
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<tr>
<td>Growing of Vegetables</td>
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<tr>
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<td>4.58</td>
<td>5.17</td>
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<td>Growing of cotton</td>
<td>0.00</td>
<td>5.17</td>
</tr>
<tr>
<td>Growing of coffee</td>
<td>24.50</td>
<td>0.00</td>
</tr>
<tr>
<td>Growing of crops nec</td>
<td>4.58</td>
<td>5.17</td>
</tr>
<tr>
<td>Growing of flowers</td>
<td>16.23</td>
<td>6.98</td>
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<td>Forestry</td>
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<td>16.14</td>
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<tr>
<td>Fishing</td>
<td>18.54</td>
<td>19.56</td>
</tr>
<tr>
<td>Mining and quarrying</td>
<td>9.74</td>
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<tr>
<td>Manufacture of dairy products</td>
<td>15.65</td>
<td>17.90</td>
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<tr>
<td>Manufacture of grain mill products</td>
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<td>Grain milling service</td>
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<td>4.14</td>
</tr>
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<td>Manufacture of meat and meat products</td>
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<td>19.56</td>
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<td>Manufacture of tobacco products</td>
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<td>Manufacture of wearing apparel</td>
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<td>Tanning and dressing of leather</td>
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<td>Footwear</td>
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<td>31.00</td>
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<tr>
<td>Wood and wood products</td>
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<tr>
<td>Manufacture of paper and paper products</td>
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<td>7.50</td>
</tr>
<tr>
<td>Manufacture of chemicals, rubber and plastic</td>
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<tr>
<td>Manufacture of pharmaceuticals, medicinal</td>
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<td>Manufacture of cement, lime and plaster</td>
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<tr>
<td>Manufacture of basic iron and steel</td>
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<tr>
<td>Manufacture of metal products</td>
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<td>12.82</td>
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<tr>
<td>Manufacture of ovens, furnaces &amp; furnace</td>
<td>4.04</td>
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<td>Manufacture of accumulators batteries</td>
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<td>Manufacture of bodies for motor vehicles</td>
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<td>Manufacture of furniture</td>
<td>20.67</td>
<td>16.53</td>
</tr>
<tr>
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<td>1.97</td>
<td>na</td>
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### Table 3: Anti-export Bias (%) by sectors under different scenarios

<table>
<thead>
<tr>
<th>Activity Name</th>
<th>Bias in absence of duty drawback</th>
<th>Bias with 100 % duty drawback</th>
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<tbody>
<tr>
<td>Growing fruits</td>
<td>30.71</td>
<td>30.63</td>
</tr>
<tr>
<td>Growing of oil seeds</td>
<td>8.94</td>
<td>8.04</td>
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<tr>
<td>Growing of cotton</td>
<td>na</td>
<td>8.59</td>
</tr>
<tr>
<td>Growing of coffee</td>
<td>32.33</td>
<td>na</td>
</tr>
<tr>
<td>Growing of crops nec</td>
<td>9.23</td>
<td>8.30</td>
</tr>
<tr>
<td>Growing of flowers</td>
<td>22.28</td>
<td>10.38</td>
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<tr>
<td>Forestry</td>
<td>25.16</td>
<td>19.75</td>
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<td>Fishing</td>
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<td>23.43</td>
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<td>Mining and quarrying</td>
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<tr>
<td>Manufacture of dairy products</td>
<td>71.91</td>
<td>74.28</td>
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<tr>
<td>Manufacture of grain mill products</td>
<td>117.60</td>
<td>54.57</td>
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<tr>
<td>Grain milling service</td>
<td>21.82</td>
<td>10.13</td>
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<tr>
<td>Manufacture of sugar</td>
<td>16.67</td>
<td>11.70</td>
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<tr>
<td>Manufacture of meat &amp; meat products</td>
<td>62.45</td>
<td>60.74</td>
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<tr>
<td>Distilling, rectifying &amp; blending of spirits</td>
<td>41.89</td>
<td>42.17</td>
</tr>
<tr>
<td>Manufacture of tobacco products</td>
<td>374.84</td>
<td>374.84</td>
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<tr>
<td>Preparation &amp; spinning of textile fibres</td>
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<td>Footwear</td>
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