Volume or International Price: Which One Matters More?

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1. Introduction

Ethiopia like many developing countries follow an export-led growth that has been focus of economic policy since 1992. The country works on the role of export to bring the country's export competitiveness and to achieve higher level of growth. Despite the change in policy, Ethiopia's exports were less competitive over time due to overvalued currency (Ethiopian Birr), inappropriate pricing policy, lack of economic infrastructure, high bank interest rate and heavy taxation policy (Geda, A. 1996). Moreover, the export structure of Ethiopia still depends on agricultural or primary products, these makes the sector to be vulnerable to external shock. There is a wide view that higher volume of exports on primary merchandises and natural resources can have an adverse effect on a country's growth prospects (Berrettoni, 2006).

Export is expected to promote economic growth through increased earnings of foreign currencies (thus relaxing balance of payments constraints), economies of scale, and access to new technologies and knowledge (Helpman and Krugman 1985). Though the export sector of Ethiopia is expected to compensate the bill for import, the deficit is still massive. The theoretical association between economic growth and trade, traced back to the classical economic theory that started by Adam Smith (1776), who argued that international trade plays an important role in economic growth and there are economic gains from specialization and subsequently David Ricardo (1817) who emphasized that trade improves efficiency of resource utilization and a positive-sum game which leads to more productive, such that every nation achieves a higher level of national wealth that it could not achieve without trade.

In 1950s and 1960s numerous developing countries pursued import-substitution strategy for growth and development but with the remarkable achievement of the East Asian countries like Taiwan, Hong Kong, South Korea and Singapore over the past decades, many emerging countries made a decisive shift away from import-substitution to export-led growth strategy (Todaro, 1997).

Fatou Cisse (2017) explores the relationship between exporting and productivity in the manufacturing firms of Senegal using a unique firm-level panel data for the period 1998-2011 and found that firms with better financial health are likely to export which intern increases the production of exportable commodities Furthermore, the study emphasizes on the ownership of intangible assets like brevet and the quality of labor positively affect the probability to export of the manufacturing firms. Export performance and its determining factors such as supply and demand constraints Using quantile regression techniques found that poor supply-side increasing volume of exportable products) conditions to be the more important constraint on export performance in various regions of Africa and Middle east. Furthermore, this study suggests about institutional quality being major determinants in the development process of the external sector (**Marco Fugazza 2004),** Policy Issues in International Trade and Commodities Study Series No. 26. In the same fission, Paolo E. et al (2012) in their study about Food Prices and the Multiplier Effect of Export Policy argued about Small exporters that take world prices as given and have concluded of no impact of individual exporters to the global markets. However, as they all face the same international price of food and have similar incentives to insulate the domestic food market in existence of loss version, their coinciding behavior will have aggregate consequences. Intuitively, the international price of agricultural price is determined by the equilibrium of global export supply and import demand.

The export sectors of Ethiopia are very important to the performance of the economy. Exports account for a very large fraction of total production in Africa, providing a quarter or more of the GNP in 14 of 27 countries, Mark Gersovitz and Christina H. paxson (1990). As presented on the works of Mark Gersovitz and Christina H. paxson, Changes in the prices of exports can therefore have large effects on the countries total incomes from export revenue. Similarly, growth in exports can contribute significantly to the growth of GNP as a whole.

Policy makers and scholars had a great interest on the relationship between exports and economic growth. Their main reason and motivation is that they want to know if a country should increase its export to achieve a higher economic growth or whether they should improve economic growth from the beginning to lead to more export. Thus, economists came up with different views at different period of times and the literature puts forward a debate for researchers and policy makers since the last few decades (Thomas, 2011).

2. Ethiopian Export sector at a glance

The Ethiopian export structure still remains undiversified and still depend on some primary agricultural products export including coffee, oilseeds, gold, chat, fruits & vegetable, pulses and live animal. Ethiopia's export

sustained to be primary agricultural commodities (more than 75 %) in 2016[1] indicating that export diversification is still unseen and the earnings from the sector has not been growing as planned. The reliance of export revenue generation on few commodities has made the country export performance highly volatile.

The total export revenue generated in 2016 deteriorated by 6.1 percent relative to the prior year performance. Export sector was the most missed sector of Ethiopia during the First Growth and Transformation Plan (GTP-I) and continued worsening for the first three years of the Second Growth and Transformation Plan (GTP-II) period. In fact, there is an attempt to establish and expand the manufacturing sector by establishing the industrial parks in different parts of the country to support the foreign currency earnings generated from primary commodities by exporting industrial products. But still those attempts did not bring the desired outcome and the trade balance remains deteriorating.

The entire commodity export sector is dominated by few primary products including coffee, oilseeds, gold chat and pulse. This five commodity alone constitute 70 percent shares of the total export. In the review year coffee have a share of 25.5 percent, oilseeds (16.8), gold (10.2), chat 9.3 percent and pulse 8.2 percent in value earning. Above all, the prices of merchandises exports / primary Agricultural products/ are fluctuating more than any commodity in the global market because of Varity of reasons such as recent global economic recession and the El Niño-induced drought effect in some parts of Ethiopia has hampered both the production (supply) and export earnings and leads the country to receive lower price. The sector is hanged by logistics problems, lack of quality products to meet most of the standards of trading partners, for example, the coffee quality problem that happened with Japanese market before some years and the meat and meat products quality problem with United Arab Emirates a year before are some of the reasons. The sector is also struggling with default cases management. According to the ministry of trade in the year 2015/16 there has been more than 50 contract agreement default cases which the ministry tries to solve only amicably because of there is no legal ground to obliged local exporters and foreign buyers in Ethiopia.

Furthermore, the export sector of the country has been adversely affected by the lack of supply of exportable products. It is indicated above that most of those exported by Ethiopia are primary agricultural products which highly depends on rainfall. Complement to this, the domestic level of consumption is increasing which in turn result the price to raise up. Due to this, exporters are being reluctant to export their product to the rest of the world because domestic price for the products are increasing above the international price as a result of the increasing domestic demand. The case of coffee can be a typical example for this argument.

 To sum up, the export sector of the countries is not at a higher level which mainly depends on the export of few products and lacks value addition. Though there exist few new products added into the list of exportable products (example white kidney bean and green mung), it lacks horizontal and vertical diversification. Thus, the government has to work on diversifying those exportable products and shift into exporting products other than raw-materials and agricultural products.

3.   What determines the Export performance of Ethiopia, Volume or Price?

3.1. Methodology

The export revenue is affected by different factors, here this review attempted to show the relative effect of quantity and price to the change in total value. In order to know the approximate changes in trade values by adjusting quantities of goods traded in a respective dollar terms to account for a relative contribution due to fluctuations of volume and prices. The change of Trade in value is accounted whether by relative volume change or relative price change or by the interaction effect of both volume and price variation has been assessed below.

The linear representation for the trade value is export trade Value =Volume multiplied by price V= Q.P …………………………………..………………………………………….… (3.1)

Where, V = Export trade value

Q = Export trade volume

P = Export trade Price

The logarithmic transformation form of equation (1) becomes $\ln V = \ln Q + \ln P$…........... (3.2)

The absolute contribution of volume and price for the trade value can be computed as: -

$$\frac{dV}{V} = \frac{dQ}{Q} + \frac{dP}{P} + \left(\frac{dQ}{Q}\frac{dP}{P}\right)$$ ….……………………………………………………………… (3.3)

The relative contribution of volume and price for the trade value has been computed by dividing natural logarithm of the respective values to the total trade value/ revenue / using the following formula as: -

$$\frac{d\ln V}{d\ln V} = \frac{d\ln Q}{d\ln V} + \frac{d\ln p}{d\ln V}$$ ………………………………………………………………… (3.4)

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[1] This is taken from Ethiopian Economics Association Annual Macroeconomic report, 2016.

4.   Results and Discussions

The comparisons made between the relative contributions of volume and Price to know the relative share of international price and quantity of product exported to the world market. The source of growth performance of trade value is different at the given periods. It also indicates about the contributions for the major exportable products that pay on average more than 70 percent for the total export earnings. Therefore, what contributes more for the trend of value of the overall export earnings, volume or price on the performance of export is determined below.

Average growth rate of coffee export value *(2001 - 2016)* and relative effect of volume and price

Particulars	V	Q	P	dlnV	dlnQ	dlnP	dlnQ*dlnP
2001-2005	213.97	130.62	1.63	18.99	13.15	5.92	-0.08
2006-2010	444.66	160.22	2.77	12.72	2.99	9.15	0.58
2011-2016	775.02	185.39	4.21	7.21	2.63	5.53	-0.95

Source: NBE data and own computation

The trend of coffee export value shows an average growth accordingly with the sub periods. Between the sub periods of 2001-2005, the export performance of coffee grew annually on average by 18.99 percent. The relative contribution of quantity exported by Ethiopia was higher than the international price incremental contribution that registers 13.15 percent growth from quantity and 5.92 percent was a share from the escalation of the world price of coffee. The interaction effect of coffee exported quantity and international price of coffee export is -0.08 percentages. On the other hand, the price effect was higher than the volume effect in the year 2006-2010. During the year under review interval the average growth rate of export value was 12.75 percent. This growth rate is however declined when compared to the previous period by 33 percent on average. Likewise, the contribution of international price was 9.15 percent than the quantity influence of 2.99 percent on average and also their cumulative effect to the export earnings was 0.58 percent. The price effect is still higher by contributing 5.53 percent than the quantity contribution of 2.63 percent for the total average export revenue growth of 7.21 in the year 2011-2016.

Average growth rate of oilseeds export value (2001 - 2016) and relative effect of volume and price

Particulars	V	Q	P	dlnV	dlnQ	dlnP	dlnQ*dlnP
2001-2005	63.7	98.24	0.62	43.18	34.10	9.29	-0.21
2006-2010	269.76	247.74	1.11	28.06	20.32	14.65	-6.91
2011-2016	481.32	329.18	1.49	7.91	9.30	1.01	-2.41

 Source: NBE own computation

Oilseed one of the biggest source of foreign exchange earnings becomes the most important cash crop for Ethiopia that contributes 16.8 percent for the total export revenue next to coffee. In a similar fashion, the average export revenue generated from oilseed fails from 43.18 percent in the year 2001-2005 to 7.91 percent growth rate during the year 2011-2016. The relative contribution of volume to the total export growth was 34.1 and 20.32 percent in the consecutive sub periods. Though the relative contribution for the total export revenue generation is higher, the relative contribution of international price is prominent accounted for 9.29, 14.65 and 1 percent in the year 2001to 2016 because of the global worlds demand for oilseed was increasing in a broad range of oils products, not only for the food industry, but also for cosmetics and industrial purposes. The interaction effect of both international price and quantity export is (-0.21, -6.91 and -2.41) in the respective years.

Average growth rate of Gold export value (2001 - 2016) and relative effect of volume and price

Particulars	V	Q	P	dlnV/	dlnQ	dlnP	dlnQ*dlnP
2001-2005	42.71	5.02	8.47	20.48	6.88	14.89	-1.28
2006-2010	125.91	5.64	20.80	51.30	14.75	28.42	8.12
2011-2016	452.90	23.92	31.74	4.57	58.26	-10.26	-43.43

Source: NBE, Own computation

During the sub periods 2001–2005, growth in trade value of gold resulted from a balanced contribution of price and quantities. On average, a 20.4 per cent increase in value terms was due to a 6.88 percent contribution of volume and 14.89 percent of price. In 2006-2010 sub periods, the highest average growth rate for oilseed export value was registered as 51.3 percent with a cumulative contribution of 8.12 percent. The relative contribution of price was larger than the contribution of volume which is 28.42 percent change and 14.75 percent change. Due to the international price increased during the economic crises. Likewise, the year 2011-2016, growth in trade value was declined compared to the pervious sub periods accounted an average growth of 4.57 percent change. Volume developments contributed more than price change, resulting in a 58.26 per cent contribution in volume and the price change was -10.26 per cent change. The interaction contribution of both price and volume is negative which is -43.43 percentages.

Average growth rate of Pulse export value *(2001 - 2016)* **and the relative effect of quantity and price**

Particulars	V	Q	P	dlnV	dlnQ	dlnP	dlnQ*dlnP
2001-2005	23.93	79.44	0.31	76.88	86.00	-2.65	-6.47
2006-2010	94.54	173.17	0.53	41.17	20.82	16.19	4.17
2011-2016	205.96	312.88	0.66	11.45	10.62	1.59	-0.77

Source: NBE and own computation

In the sub 2001-2005 period, growth in total gold trade value resulted from volume has a crucial contribution of 86.00 percent while price was declining to 2.65 percentage change. The growth rate in trade value of gold during the sub period 2006-2010, resulted from a balanced contribution of price and quantities. On average a 41.17 percent increase in value terms was due to a 20.82 percent contribution of volume change and a 16.19 percent change in price. The interaction effect of volume and price was also positive and 4.17 percent change. During the sub period of 2011-2016, the growth rate of trade volume of pulse was dropped on average by 72.2 percent due to the global financial crises which was in value term 11.45 percent, that is, volume changes accounted for 10.62 percent and the relative contribution of price was 1.59 percent change. The interaction effect of both volume and price was -0.77 percent.

Average growth rate of Chat export value *(2001 - 2016)* **and the relative effect of quantity and price.**

Particulars	V	Q	P	dlnV	dlnQ	dlnP	dlnQ*dlnP
2001-2005	71.31	13.06	5.96	15.97	37.93	10.55	-32.51
2006-2010	127.89	25.76	4.85	17.88	14.18	3.50	0.20
2011-2016	263.7	46.2	5.7	4.1	4.8	-0.7	0.0

Source: NBE and own computation

Chat has contributing 9.3 percent for the total export and continues being the fourth largest export commodity of the country in generating foreign currency. During the sub period 2001-2005, trade in terms of value increased on average 15.97 percent resulted from an average volume of 37.93 percent change and a relative contribution of price of 10.55 percent increase. The collaboration effect of volume and price to the growth of trade value of chat has a declining effect of 32.51 percent. During the sub period 2006-2010, trade value of chat increased on average by 11.97 percent relative to the previous sub periods. The trade value was 17.88 percent change and it was mainly because of the relative contribution of volume by 14.18 percent change and an average of 3.5 percent change in price. In 2011-2016 sub periods, the value of chat export dropped by 77percent on average and price was responsible for the downward growth by 119 percent change decrease. The value of chat in these sub periods registered a 4.1 percent average growth. Volume has a relative positive effect of 4.8 percent while price has a declining impact of -0.7 percent change. The interaction effect of both volume and price was zero.

Conclusion and Recommendation

In conclusion, the Ethiopian export trend is determined by both price and volume based on the product types. In the case of coffee, for the average trade value growth price has a relatively higher contribution than volume[1] for the periods 2001-2016. Since the Ethiopian coffee has a premium in the international market. On the contrary, the rest of the products such as oilseed, chat and pulse products the volume has a relatively bigger effect than price had. In case of gold the price effect was higher before the global crisis but after the crisis the relative contribution changed to volume.

Therefore, the supply side of the sector should strengthen its production capacity and productivity, working on the quality issue and value addition especially on oilseed products. Oilseed is mentioned here for the fact that we export the raw sesame seed and mostly import palm oil from the rest of the world. If the trade policy of the country is being executed properly, the government of Ethiopia could substitute palm oil import by the domestic production of sesame oil from the sesame seed. This can be an opportunity for the government to reduce the import of palm oil which in turn increases the hard currency of the country. Therefore, the country should work on the value addition of the exportable products instead of exporting raw materials.

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[1] Domestic consumption of coffee is an average more than 50 percent of the total production.

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