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Who pays more in the international market? An examination of terms of trade and tariffs of the countries of Africa

Abstract

The paper examines the terms of trade of African countries in relation to their tariffs and volume of trade. Results show that among African countries, Togo pays the most while Libya pays the least in the international market. A positive and significant correlation exists between net barter terms of trade and tariffs but not with volume of trade as percentage of GDP. Policy implications of these results are discussed.

Keywords: international market, terms of trade, tariffs, Africa.

Introduction

In the wake of globalization, African countries and other emerging economies have embraced the need for participation in the international market in order to reap the benefits arising from reciprocity and comparative advantage. Recent developments around the world have necessitated the importance of countries entering the global marketplace. Such developments include: increase in and expansion of technology, liberalization of cross-border trade and resource movements, development of services that support international business, growing consumer pressures, increased global competition, changing political situations, and expanded cross-national cooperation (Daniels, Radebauch, Sullivan, 2007). Therefore, terms of trade of African countries in relation to their tariffs and volume of trade are critically significant in order to determine fairness of operational standards and guidelines.

Engaging in the international marketplace largely depends on countries' objectives and the means with which they carry them out. Addressing the question why nations participate in international market, Peng (2008) identifies economic gains, stability, and trade surplus as the fundamental factors underlining it. Employing the concept of resource- and institution-based approach, Peng, Wang & Yang (2008) explain that African countries as well as other developing nations participate in the international market because firms in one nation generate valuable, unique, and hard-to-imitate exports that firms in other nations find beneficial to import. Other explanations provided for participation in the international market include sharing gains from trade, and establishing a win-win relationship (Hoskisson & Peng, 2005).

An analysis of countries participating in the global marketplace clearly indicates that the objectives are beneficial. However, conditions and terms of trade among engaging countries need to be more carefully negotiated in order to ensure that both developed

and developing economies enjoy favorable and balanced terms of trade. As a trend in the 21st century, recent research supports the concept of globalization and participation in international market. For example, Daniels, Radebauch & Sullivan (2007) explained that technology is expanding, especially in transportation and communications, many governments are eliminating international restrictions, national institutions provide services to ease the conduct of international business, local consumers have acquired global taste (and they know about and want foreign goods and services), multi-domestic competition has advanced to a global level, political relationships have improved among some major economic powers, and countries now cooperate more on transnational issues. Against the preceding background, this paper specifically examines the terms of trade of African countries in relation to their tariffs and volume of trade.

Terms of trade are very important relative prices in the global market. Commodity exporting African countries' terms of trade determines their macroeconomic performance with great impact on real national incomes (Cashin and Pattillo, 2000). The allegation has always been that developing countries face unfavorable terms of trade in the international market, which is held to be detrimental to their economic prospects (Ghorashi, 1990). Various explanations have been offered for this phenomenon including such things as trade structure, dissimilar wage and price determination, different income elasticities of demand for primary versus manufactured products, as well as transfer pricing by multinational firms (Appleyard, 2006). Results of empirical studies have been mixed as to whether terms of trade have improved or deteriorated for developing countries over the years. In view of the theory of trade feedback effects, nations have always been encouraged to adopt more and more open trade policies by such important bodies like the World Bank, and the International Monetary Fund (IMF). Hence, much negotiation has often been embarked upon for countries to lower their tariffs, or taxes on imports. But at what cost? How will this affect net barter term of

trade which, as defined by The World Bank (2007), is the ratio of the price of a country's exports to the price of its imports? Focusing on the developing countries of Africa, this paper examines the relationship between tariffs and net barter terms of trade, after exploring which of these African countries pay the most in the international market as evidenced by their terms of trade. The results will be very useful for African policy makers as they chart their course in the international market placing during the 21st century.

1. Literature

Over the past years, terms of trade of developing countries have been examined in relation to various factors that are believed to impact them. For example, on terms of trade and exchange rate regime, following a study of 75 developing countries, Broda (2004) reported that flexible exchange rate regimes insulate the economy against terms of trade shocks than fixed regimes. Senhadji (1998) studied the relationship between terms of trade and trade balance for less developed countries. He found the relationship to be S-shaped just as it was found earlier for OECD countries (Backus, Kehoe and Kydland, 1994; cited in Senhadji, 1998). The relationship between developing countries' terms of trade and commodity prices in world market was examined by Powell (1991). He found that apart from only three breaks, non-oil commodity terms of trade were stationary over a period of one century. His analysis also shows "a stable long-run relationship between the commodity terms of trade, the terms of trade of non-oil exporting developing countries and the oil price" (p. 1485). The relationship between terms of trade and real national income was studied by Ghorashi (1990). Data from 1950 to 1980 for both developing and industrialized countries were used. The author found that while barter terms of trade deteriorated for developing countries during the period, this did not necessarily result in negative real income for those nations. Rather, for both developing and industrialized countries studied, income terms of trade actually increased though the rate of increase for the industrialized countries was more than that of the less developed countries. In their own study, Blattman, Hwang and Williamson (2007) also studied terms of trade and commodity price volatility in the world market. They reported that less developed countries that faced more volatile commodity prices grew much slowly relative to other less developed countries or industrial countries. Lutz (1994) for his part examined the relationship between terms of trade volatility and economic output growth. He reported that a negative correlation existed between the two. In other words, the

higher the volatility in terms of trade is, the lower are the growth rates of economic output.

Tariff is an essential part of international marketing. Tariff is a tax assessed by a government in accordance with its Tariff Schedule on goods as they enter or leave a country. It may be imposed to protect domestic industries from imported goods and/or to generate revenue (Capela and Hartman, 2000). While several factors have been examined in the literature, few studies have focused on the relationship between terms of trade and trade policy in terms of tariff. Lutz and Singer did something close, but not exactly it. Lutz and Singer (1994) studied 91 less developed and industrial countries examining the relationship between terms of trade and trade openness. Trade openness was operationalized by the authors using two variables: (i) total trade, i.e. sum of imports and exports, and (ii) total trade as percentage of GDP. Overall, they found a strong negative correlation between terms of trade and trade openness, especially for the richer countries and oil-exporting ones. It is noted that Lutz and Singer (1994) used sum of imports and exports, and their percentage of GDP as measure of trade openness. Thus the study does not treat tariff, which is a very important trade policy measure used by governments.

Some studies have studied tariffs but not in relation to terms of trade. For example, Clemens and Williamson (2004) examined tariff and its relationship with economic growth. They found a distinction between pre World War II, and post World War II periods. Before World War II, high tariffs led to fast growth rates but after World War II they led to slow growth rates! Then they went on to suggest that retaliation strategy, whereby both trade partners raising their average tariffs, could reverse the negative relationship of the post World War II. In their own study, Beladi and Samanta (1991) examined the issue of optimal tariff. They found that this depended on the relative wage rate in the exportable sector of a country. The optimal tariff would be higher for a country paying higher wage rate but lower for a country paying lower wage rate in its exportable sector. Despite these studies, the relationship of tariffs with terms of trade especially for developing countries remains to be determined. Tariff is a ready policy tool, relatively quicker and easier to apply in response to market conditions than most other policy measures. It will be informative, and useful to know its effects on terms of trade, which have been shown to impact economic growth.

2. Methodology

Based on data availability, 44 African countries were included in this study. The data for the study

were obtained from the World Bank (2007). The source provides data on net barter terms of trade, as well as weighted mean tariff for the year 2005. The net barter terms of trade were indexed with the year 2000 = 100. Data were also available for trade as percentage of GDP. The effects of trade policy, and trade openness on terms of trade were examined by a correlation and regression analysis where terms of trade were used as the dependent variable, and tariff and trade as percentage of GDP as independent variables.

3. Results

The countries in the study were ranked according to the size of their net barter terms of trade. In interpreting the results it should be noted that the lower the net barter terms of trade the more a country pays in the international market. According to this ranking shown in Table 1, Togo has the lowest terms of trade standing at 30 (least favorable), whereas Libya

has the highest (most favorable) term of trade, which stands at 186! For a closer analysis, all the countries were divided into four paying groups based on the size of their terms of trade, as follows:

| | |
|----------------------|------------------------------|
| <i>Paying group:</i> | <i>Terms of trade range:</i> |
| High payers | 1-90 |
| Premium payers | 91-100 |
| Moderate payers | 101-120 |
| Low payers | 120+ |

At the least favorable end is the high payers group consisting of 8 countries, which include: Togo, Sierra Leone, Madagascar, Malawi, Burundi, Mauritius, Uganda and Rwanda. The terms of trade of all these countries are below 90. At the other extreme is the low payers group that consists of 10 countries. These include Angola, Congo Republic, Cote d'Ivoire, Sudan, Nigeria, Ghana, Gabon, Algeria, Niger, and Libya. The terms of trade of all these countries are above 120.

Table 1. Tariffs and net barter terms of trade in Africa: 2005

| Country | Trade as % of GDP | Weighted tariff | Net barter terms of trade (2000 = 100) | Ranking of net barter terms of trade |
|--------------------------|-------------------|-----------------|--|--------------------------------------|
| Togo | 80.3 | 10.4 | 30 | 1 |
| Sierra Leone | 66.7 | .. | 79 | 2 |
| Madagascar | 66.0 | 5.2 | 82 | 3 |
| Malawi | 79.8 | 10.2 | 82 | 4 |
| Burundi | 44.8 | 19.9 | 84 | 5 |
| Mauritius | 117.4 | 4.7 | 85 | 6 |
| Uganda | 40.3 | 9 | 88 | 7 |
| Rwanda | 41.5 | 9.7 | 89 | 8 |
| Ethiopia | 55.5 | 13.5 | 91 | 9 |
| Lesotho | 135.9 | 16.8 | 91 | 10 |
| Botswana | 85.3 | 11.2 | 92 | 11 |
| Benin | 39.6 | 12.4 | 93 | 12 |
| Eritrea | 64.5 | .. | 93 | 13 |
| Congo, Dem. Rep. | 70.9 | 13 | 94 | 14 |
| Guinea-Bissau | 92.9 | .. | 94 | 15 |
| Mozambique | 74.9 | 8.6 | 94 | 16 |
| Swaziland | 183.7 | 10.5 | 94 | 17 |
| Mauritania | 130.6 | 9.9 | 95 | 18 |
| Senegal | 69.0 | 9.2 | 96 | 19 |
| Namibia | 91.3 | 1.3 | 97 | 20 |
| Burkina Faso | 30.6 | 11.7 | 98 | 21 |
| Central African Republic | 28.7 | 16.8 | 98 | 22 |
| Tunisia | 98.6 | 9.1 | 99 | 23 |
| Tanzania | 43.4 | 8.4 | 100 | 24 |
| Morocco | 79.3 | 13.7 | 100 | 25 |
| Chad | 98.2 | 12.5 | 101 | 26 |
| Zimbabwe | 95.7 | 17.3 | 105 | 27 |
| Guinea | 55.7 | 12.7 | 107 | 28 |
| Egypt, Arab Rep. | 63.2 | 12 | 107 | 29 |
| South Africa | 55.7 | 5.4 | 109 | 30 |

Table 1 (cont.). Tariffs and net barter terms of trade in Africa: 2005

| | | | | |
|---------------|-------|------|-----|----|
| Cameroon | 48.6 | 16.5 | 112 | 31 |
| Mali | 63.1 | 10.7 | 113 | 32 |
| Gambia, The | 110.2 | .. | 115 | 33 |
| Zambia | 41.6 | 9.4 | 119 | 34 |
| Angola | 121.8 | 6 | 121 | 35 |
| Congo, Rep. | 137.2 | 17.7 | 121 | 36 |
| Cote d'Ivoire | 92.1 | 10.3 | 121 | 37 |
| Sudan | 46.0 | 19.6 | 121 | 38 |
| Nigeria | 88.4 | 10.8 | 122 | 39 |
| Ghana | 97.7 | 11 | 123 | 40 |
| Gabon | 97.1 | 16.8 | 125 | 41 |
| Algeria | 71.1 | 10.6 | 126 | 42 |
| Niger | 39.3 | 12.8 | 131 | 43 |
| Libya | 83.9 | 25.2 | 186 | 44 |

The countries in the low paying group have varied characteristics as to population size and export structure. For example, they include both oil and non-oil exporting countries. However, it is known that tariff is a crucial element of pricing in the international market. Tariffs on imports raise the price of such imports in the domestic marketing. If countries embark on retaliatory strategy, a trading partner could also raise its tariffs on from the other country leading to less favorable terms of trade. Given this possibility, the impact of tariffs on terms of trade was examined using correlation and regression analyses. The results are presented in Table 2. The table shows that there is a positive correlation between tariffs and terms of trade for the African countries included in this study. Moreover, this correlation is significant at the 0.01 level.

Given this result, a regression analysis was run with tariffs as predictor variable, and terms of trade as dependent variable. The result is presented in Table 3. The table shows an R Square of .164 indicating that 16.4% of terms of trade is accounted for by the level of tariffs. The table also shows an F-ratio of 7.438, which is significant at the 0.01 level indicating an adequate goodness of fit. The regression equation stands at $Y = 80.333 + 1.965X$, where terms of trade is "Y" and tariff is "X." Thus, in general the correlation and regression analyses tend to suggest that the higher the tariffs are, the higher are the net barter terms of trade; in essence, the lower a country pays in the international market relative to what it collects for its exports.

Table 2. Correlations with terms of trade

| | | |
|---------------------|---------|-------------------|
| | Tariffs | Trade as % of GDP |
| Pearson correlation | .405** | .0418 |
| Sig. (2-tailed) | 0.01 | 0.788 |
| N | 40 | 44 |

Note: ** Correlation is significant at the 0.01 level.

This indication was reexamined further by looking at the mean tariff for each of the four paying groups. It was found that the countries in the high paying group had a mean tariff of 9.87, while those in the premium-paying group had a mean tariff of 13.4. Likewise, the moderate paying group had a mean tariff of 12.06 whereas that of the low paying group stood at 14.08. This tariff scheme tends to harmonize with the result of the correlation and regression analyses reported above.

Table 3. Tariffs and terms of trade: regression results

| Items | Value |
|----------------------|--------|
| R | .405 |
| R Square | .164 |
| F | 7.438 |
| Sig. (F) | 0.01** |
| Constant | 80.333 |
| Coefficient (Tariff) | 1.965 |
| T | 2.727 |
| Sig. (t) | 0.01** |

In order to round out the analysis, the relationship between trade as percentage of GDP (indicator of trade openness) and terms of trade for African countries was examined using a correlation analysis. As shown in Table 2, the Pearson correlation coefficient was 0.0418 and it was not significant at the 0.01 level, not even at 0.05 level. This result is different from Lutz and Singer (1994) who found a significant negative correlation between terms of trade and total trade as a percentage of GDP (their indicator of trade openness). It is to be noted though that Lutz and Singer (1994) combined both developing and industrial countries together in their analysis. For the developing African countries included in the present study, size of total trade (imports and exports) as percentage of GDP does not appear to influence terms of trade. Given this result, no re-

gression analysis was performed any further on the two variables.

4. Policy implications

The positive and significant correlation between tariffs and terms of trade implies that African nations can influence the terms of trade they face in the international market. They can make their net barter terms of trade more favorable by increasing their weighted mean tariffs. This is contrary to the advice often touted by such world financial bodies as the World Bank, and the IMF (International Monetary Fund), which is to lower tariffs. From the result of this study, lowering tariffs for African countries would be at the cost of favorable net barter terms of trade for them in the international market. On the other hand, the non significant correlation between trade as percentage of GDP and terms of trade implies that African countries may not necessarily lower or raise their terms of trade by importing and/or exporting more. This tends to support the "small country assumption" (Lutz and Singer, 1994), in international trade. A practical strategy for African countries therefore is to embark on both measures. Thus, they should raise their tariffs to get higher net barter terms of trade and then increase their trade volume (imports plus exports) to take advantage of the resulting in more favorable terms of trade.

Conclusion

This paper has examined the terms of trade of African countries to determine which of them pay more than the others in the international market. Of the 44 countries included in the study, 8 were found to be high payers. Led by Togo, these countries include Sierra Leone, Madagascar, Malawi, Burundi, Mauritius,

Uganda, and Rwanda. The mean tariff of these countries was also the lowest (9.87) of the four paying groups examined.

Consequently, the paper examined the relationship between tariffs and terms of trade for African countries. Also the relationship between terms of trade and volume of trade as percentage of GDP was examined. A positive and significant correlation was found between tariffs and terms of trade. On the other hand, no significant correlation was found between terms of trade and trade volume as percentage of GDP.

Thus, the results tend to suggest that governments of African countries could improve their net barter terms of trade by increasing their average tariffs. On the other hand, the terms of trade of these countries do not seem to be affected either way by their volume of trade relative to GDP.

Readers should note that what was examined in this paper was *net barter* terms of trade, not income terms of trade. This might provide explanation for the seeming contradiction of the results of this paper with the philosophies of the World Bank and the International Monetary Fund and received economic theory within the African context. Net barter terms of trade studied in this paper are mainly concerned about pricing of traded goods in the international market, not volume of such trade. The latter is the focus of the aforementioned world bodies, which may be better captured by income terms of trade. Hence future studies will do well to examine tariffs and *income* terms of trade of African countries and to compare the results with the ones reported in this paper.

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