

# **Has the Inflation and Growth Process Resulted the Domestic Terms of Trade in Favor of Agriculture or Industry? Evidence from Cross Country Analysis**

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## **1. Background:**

The recent price trends indicate that the subject inflation has come back and is concentrated in food and primary commodities in the current phase. Some analyses have inferred that the previous oil price increases could have impacted on the agricultural prices through price of machinery fuels and fertilizers. Similarly, it has been argued that the financial activities of hedging and speculation (due to the commodity future exchanges) could have indirectly contributed to the commodity price developments. Since, the commodity price inflation is likely to adjust the relative price structures of agriculture, metals or energy inputs differently in an economy; it would be very pertinent to look into the extent to which prices of aggregate industrial sector have advanced in relation to the primary sector. It is in this context that the sectoral terms of trade (hereafter TOT) emerges as a useful analytical tool to understand the relative commodity price developments in an economy. But, the analysis of sectoral TOT are normally carried out in a dual economy framework consisting of agriculture and industry (non-agriculture), whereas the price increases for services have continued to surpass the same for commodities in many economies for several years. Therefore, while it remains empirically appealing to examine the extent to which the prices of industrial commodities moved in relation to the primary commodity prices, it becomes equally relevant to focus on how the service sector's prices developed in relation to commodity prices in an economy. A three-sector approach of estimating domestic TOT would be more appropriate to explain the relative spread of commodity and service price inflation in the present context.

## **2. Objectives:**

The main objective of this paper is to use an alternative methodology to construct TOT estimates at the broad 3-sector classification for a number of sample economies, and subsequently examine the patterns of sectoral TOT movements in the course of economic growth. To be specific, we extend the basic two-sector framework of terms of trade analysis to include the service sector, since it is the largest economic segment in countries with diverse levels of economic growth. We have mainly considered economies for which the role of domestic terms of trade variable has been historically highlighted in the relevant literature, which includes Bangladesh, China (People's Republic of), Ethiopia, India, Indonesia, Japan, Malaysia, Mexico, Nigeria, Korea (Republic of), South Africa, Sri Lanka, Sudan, Uganda and Tanzania (United Republic of). We use a methodology in the national income accounting framework to construct sectoral TOT estimates for these fifteen economies during the period 1970-2009. We then use statistical analysis to discern the trend direction of TOT movements in each of these economies and subsequently examine whether there is a pattern of TOT movements for the domestic sectors across economies with different levels of growth, viz. low, middle and high.

### **3. Methodology and Data:**

The extent of resource transfer out of agriculture has so far been analyzed by exploring the net barter TOT (NBTOT) and net inter-sectoral resource flow (NIRF) measures. The detailed methodological framework and interpretations of the multi-sectoral TOT measure have been discussed in Deb [2006], while carrying out TOT analysis for the Indian economy.

### **4. Results:**

Results indicate that sectoral TOT in recent years have remained adverse to agriculture in most of the economies, viz., Bangladesh, Ethiopia, Japan, Mexico, Korea, South Africa, Sri Lanka and Sudan. While adverse TOT for the industry sector can be noticed for China, Japan, Korea, South Africa and Sri Lanka, the economies of India, Indonesia, and Malaysia seem to have experienced adverse TOT towards the services sector.

#### *4.1 Trend of Sectoral TOT:*

The statistical trend of TOT effects in these three broad sectors are examined after grouping the economies according to their income levels. The classification of information on all the statistically significant time trend of sectoral TOT effects in different economies signify a deteriorating TOT for agricultures in some of the low and middle-income countries and all the high-income countries. On the other hand, it appears that TOT for services sector has improved for all the high-income countries and also a few low and middle-income countries.

#### *4.2 Relationships between Growth Process and TOT Patterns:*

We attempt to examine whether there is a pattern of TOT movements for domestic sectors across economies with different growth outcomes, viz. low, middle and high income levels.

##### **4.2.1. Analysis of Individual Economies:**

We notice a negative correlation between agricultural TOT and per capita GDP for economies that are in the high income category. On the contrary, Japan, Mexico and Korea also revealed a positive correlation between TOT for the services sector and per capita GDP.

##### **4.2.2. Analysis across Economies of Diverse Growth Levels:**

We group the fifteen economies in three categories, viz., low-income economies consisting of Bangladesh, Ethiopia, Nigeria, Sudan, Uganda and Tanzania, middle-income economies consisting of China, India, Indonesia, Malaysia and Sri Lanka, and high-income economies consisting of Japan, Mexico, Korea and South Africa. The regression results employing the pooled data with appropriate intercept and slope dummy variables suggested a pattern in sectoral TOT movements along with growth transition process. The domestic TOT remained favourable to the commodity segment (agriculture and industry) and unfavourable to the service segment at initial levels of economic growth, but turned favourable to services as the growth level caught up to the middle and high income levels and concurrently unfavourable to agriculture.