India’s Agricultural Trade with USA: Trends and Comparative Advantage

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1. Introduction:

Economic and trade relations between the India and United States have experienced a number of ups and downs since India’s independence in 1947. During much of the 1950s and early 1960s, the United States was a leading trading partner for India, providing the nation with about a third of its imports. However, those economic ties quickly subsided when India fostered closer ties with the Soviet Union following the Indo-Pakistani War of 1965. For the next 40 years, political and economic relations between India and the United States were rather cool. Recognizing India as a key to strategic U.S. interests, the United States has sought to strengthen its relationship with India. The two countries are the world's largest democracies, both committed to political freedom protected by representative government. India is also moving gradually toward greater economic freedom.

The economies of world are under stress and the trade between the largest economy, the USA, and one of the fastest growing economies, India, is of vital importance in relieving this stress in their respective economies. U.S.-India two-way agricultural trade has expanded by about 9 percent annually between 1990 and 2010, reaching $2.35 billion in 2010. U.S. agricultural exports to India grew by 10.2 percent per year during 1990-2010, while U.S. imports from India grew by 9.0 percent annually. However, India maintains a positive agricultural trade balance with the United States; U.S agricultural imports from India were $1.59 billion in 2010, while U.S. agricultural exports to India totaled $755 million. Major regular U.S. agricultural exports to India now include edible tree nuts (primarily almonds), raw cotton, fresh fruit (primarily apples), and pulses. Vegetable oils are a significant category of trade in some years, depending on the competitiveness of U.S. soybean oil in the Indian market. Growth in U.S. exports to India has accelerated to 14 percent annually since 2000, with faster growth in many categories of agricultural trade, including fruit and vegetables, pulses, and vegetable oils. However, U.S. grain exports to India have declined along with overall Indian cereal import demand. The United States imports a wide variety of agricultural products from India, with tree nuts (primarily cashews), spices, essential oils, basmati rice, and fresh and processed fruits and vegetables accounting for most U.S. imports. Total U.S. agricultural imports from India grew by about 9 percent annually between 1990 and 2010, but annual growth has slowed to about 7 percent since 2000, with most categories of U.S. imports showing slowed growth.

This paper aims to examine relative competitiveness and compare the trade advantage in agricultural commodity trade between India and USA and also to study the trends in India’s agricultural commodity trade with USA. The empirical analysis of the present paper is based on revealed comparative advantage (RCA) and percentage share.
2. Review of Literature:

Shinoj P. A and V.C. Mathur’s (2008) study on ‘Comparative Advantage of India in Agricultural Exports vis-à-vis Asia: A Post-reforms Analysis’ has ascertained the changes in comparative advantage status of India’s major agricultural exports and other Asian players during the post-reforms period (1991-2004). It was found that in exports of certain commodities like cashew and oil meals, India was able to maintain its comparative advantage, but several others like tea, coffee, spices, marine products, etc. were negatively affected. India was found losing out its comparative advantage in export of some of the agricultural commodities to other Asian competitors during the period after economic reforms.

The study showed that an export of various agricultural commodities from India had responded differently in terms of comparative advantage during the post-reforms period. India had enjoyed a comparative advantage in tea exports but had depicted a declining trend over the years. However, Sri Lanka had shown a far better advantage in comparison to India and other countries like China and Indonesia. India’s status in exports of meat and its preparations and marine products had not been very comfortable. In nutshell, India’s comparative advantage in most of the important agricultural exports had been found to be eroding and losing out to other Asian competitors in certain commodities during the period after economic reforms.

Manoj Siwach & Sneh Nanda (2012) have analyzed the competitiveness of India’s merchandise export in its major market, USA on the basis of Revealed Comparative Advantage (RCA) analysis for the period 2006 to 2010. The findings suggest that India had a comparative advantage over other countries in USA market in agricultural based sector such as lac; gums, resins, coffee, tea, mate and spices. Analyzing comparative advantage that both India and USA hold over other countries and the competitiveness of each commodity in the trade basket helps generate a useful tool that can identify what are the target areas that one need to focus on in the trade basket. India’s competitiveness in trade was expected to increase with the growing economy and new policies being implemented. However, the results showed that the advantages of India have been declining over the studied period. Hence to identify the root cause for such a trend, foreign trade policy was analyzed and tested on the results generated from this study.

Amita Batra & Zeba Khan (2005) have made an analysis of Revealed Comparative Advantage for India and China. The study used trade data on the base of HS Code and SITC classification for the years 2000 and 2003, to compare India and China on a common platform and identify what good trade strategies are being followed by competitors and also explore complimentary trade strategies.

Gupta, Kriti Bardhan, (2007) have studied structural analysis and performance of Indian agricultural and allied sector in international trade. In this study Revealed Comparative Advantage (RCA) of India in agricultural and allied products was estimated for each agricultural and allied sector product at 2-digit HS Code level for the three latest years for which comparable data was available for both India and the world. The study found that the India being a labour-intensive country, it is generally said that it has comparative advantage in agriculture and allied sector. However, the comparative advantage is not uniform across all the sub-sectors. The study identified the different sub-sectors where there are higher or lower comparative advantage. It also segregated the sub-sectors where there are lower or higher comparative disadvantages. Further, India may use its resources in the sectors having higher comparative advantage, which may increase the economic welfare of the country.

3. Data and Methodology:

The present study aims to provide some updates using recent trade data on whether there have been any significant changes in trade structures among the India and USA economies during recent
years, particular in the past five years. This paper follows the Balassa index (RCA) used in a study conducted by Manoj Siwach & Sneh Nanda (2012) on competitiveness of India’s merchandise export. In this study, a RCA is formulated based on the Balassa index (Balassa 1965) is used for study the trade advantage. The formula for the index, RCA is:

### 3.1 Balassa Index (or Revealed Comparative Advantage, RCA):

The idea to determine a country’s 'strong' sectors by analyzing the actual export flows was pioneered by Liesner (1958). Since the procedure was refined and popularized by Bela Balassa (1965). It is popularly known as the Balassa Index. Alternatively, as the actual export flows ‘reveal’ the country’s strong sectors it is also known as Revealed Comparative Advantage. The RCA index is the most frequently employed measur of trade specialization. This index was first proposed by Balassa (1965) and this is defined follows:

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RCA_i = \frac{(X_{ij}/\sum_j X_j)}{(X_{iworld}/\sum_i X_{iworld})}
\]

Where: \( RCA_i \) = Revealed Comparative Advantage for good \( i \)

\( X_{ij} \) = Exports of \( i \) by country \( j \)

\( \sum_j X_j \) = Total exports by country \( j \)

\( X_{iworld} \) = World exports of good \( i \)

\( \sum_i X_{iworld} \) = Total world exports

If \( RCA_i > 1 \), then country \( j \) has a revealed comparative advantage in good \( i \), since this good is more important for country \( j \)’s exports than for the exports of the reference countries. If \( RCA_i < 1 \), then country \( j \) has a comparative disadvantage in good \( i \).

RCA is based on observed trade patterns. The RCA measures a country’s exports of a commodity relative to its total exports and to the corresponding export performance of a set of countries. This index takes values between 0 and +1. A value of index grater than one denotes product in which country is relatively more specialized on the country; a value less than 1 characterises that country \( j \) is accepted not specialized in product \( i \).

### 3.2 Analysis of Changing Composition:

The present paper covered edible vegetables and certain roots and tubers, edible fruit, nuts, peel of citrus fruit, melons, coffee, tea, mate and spices, cereals, oil seed, oleagic fruits, grain, seed, fruit, etc. nes, sugars and sugar confectionery, vegetable, fruit, nut, food preparations, and tobacco and manufactured tobacco substitutes agricultural commodities for 2006 to 2010 period. For showing changing composition of exports/imports of different agricultural commodities percentage share to total agricultural exports/imports is worked out.

The study aimed at assessing the structure of comparative advantage in India and the change in the scene over a 5 year period from 2006 to 2010. Data as per the HS classification is used to compute the index of RCA. The study is based on secondary data which is collected from UN COMTRADE Statistics.
4. Trends in Exports and Imports of Agricultural Commodities:

4.1. Analysis of India's exports to United States of America & World:

The information about share of India’s agricultural commodity exports to USA & World for 2006 to 2010 period has been given in the table 1. The agricultural commodities considered in the present study are edible vegetables, edible fruit, coffee, tea, mate, and spices, cereals, oil seed, sugars, vegetable, tobacco.

The share of India’s agricultural commodity exports to USA for 2006 to 2010 period shows that, the export of coffee, tea, mate and spices (HS- 09) (0.53 per cent), oil seed (HS- 12) (0.32 per cent), vegetable (HS- 20) (0.25 per cent) and tobacco (HS- 24) (0.08 per cent have marginally increased in year 2010 compared to year 2006 . It has also been shown that, edible vegetable (0.20 per cent), edible fruit (1.16 per cent), and sugars (0.03 per cent) exports have marginally decreased in year 2010 compared with the year 2006.

The data regarding the share of India’s agricultural commodity exports in world exports for 2006 to 2010 period is given in table 1. The table shows that the share of India’s agricultural commodity exports of cereals (HS- 10) (1.31 per cent to 1.33 per cent), oil seed (HS- 12) (0.40 to 0.49 per cent) and tobacco (HS- 24) (0.30 per cent to 0.40 per cent) in World exports has marginally increased in year 2010 compared to year 2006. But the share of agricultural commodity exports of edible vegetable (HS- 07) (0.50 per cent to 0.44 per cent), edible fruit (HS- 08) (0.71 per cent to 0.49 per cent), coffee, tea, mate and spices (HS- 09) (0.93 per cent to 0.91 per cent), sugars (HS- 17) (0.56 per cent to 0.47 per cent), and vegetable(HS- 20) (0.16 per cent to 0.12 per cent) in World exports has marginally decreased in year 2010 compared to year 2006.

4.2. Analysis of India's Imports from United States of America and World:

The information about share of India’s agricultural commodity imports in total agricultural imports during 2006 to 2010 is given in the table 2. The imports of agricultural commodities considered in the present study are edible vegetables, edible fruit, coffee, tea, mate, and spices, cereals, oil seed, sugars, vegetable, and tobacco.

USA:

The share of India’s agricultural commodity import from USA of edible vegetable (HS- 07) (0.36 per cent to 0.56 per cent), edible fruit (HS- 08) (1.28 per cent to 1.41 per cent), sugars (HS- 17) (0.03 per cent to 0.05 per cent) and vegetable (HS – 20) (0.04 per cent to 0.06 per cent) has marginally increased in year 2010 compared year 2006. But the share of tobacco (HS- 24) (0.01 per cent to 0.00 per cent) imports from USA has decreased in year 2010 compared to year 2006.

World:

The data regarding the share of India’s agricultural commodity imports in world imports from 2006 to 2010 period are given in table 2.

The share of India’s agricultural commodity import in World imports of edible vegetable (HS-07) (0.49 per cent to 0.51 per cent), and sugars (HS- 17) (0.01 per cent to 0.24 per cent) has marginally increased in year 2010 compared to year 2006. But the share of India’s agricultural commodity imports of edible fruit (HS- 08) (0.44 per cent to 0.39 per cent), coffee (HS- 09) (0.10 per cent to 0.09 per cent) and cereals (HS- 10) 0.18 per cent to 0.02 per cent) in World imports has decreased in year 2010 compared to year 2006. The import share of oil seed (HS- 12), vegetable (HS- 20) and tobacco (HS-24) world import remained constant over the 5 year period under study.
5. Revealed Comparative Advantage - The Analysis:

In this paper Revealed Comparative Advantage (RCA) analysis has been undertaken at product level. The RCA indices have been calculated for India and USA. The present study uses the Harmonized System (HS) classification for the year 2006 to 2010. As it is possible that the pattern of comparative advantage may differ across different levels of dis-aggregation and sectors in which a country’s exports may be typically strong may often include disaggregated sub-products in which they are not and conversely, the paper also analyses revealed comparative advantage analysis at the more disaggregated level i.e. the 6 digit level of HS classification. The index of RCA is calculated using data on exports for both India and USA as from UN COMTRADE. Broad trends that emerge from this analysis for the two countries are discussed below.

India:

The index of RCA is greater than one (RCA>1) for 7 sectors out of 8 sectors for the study indicating that India holds comparative advantage in these sectors in the world market in 2006. But in year 2009 India holds comparative advantage only for 5 sectors out of chosen sectors (see tables 3). The analysis of Balassa index (RCA) shows that comparative advantage to India in world market in case of edible vegetables (HS- 07), edible fruits (HS- 08), coffee, tea, mate and spices (HS- 09), cereals (HS- 10) and oil seeds (HS- 12), sugars (HS- 17), and tobacco (HS- 24) commodity export in the year 2006 because value of RCA is (RCA>1) greater than one but in year 2009 comparative advantage was found only for 5 sectors out of chosen sectors. But index value of RCA of edible vegetable (HS- 07), oil seed (HS- 12), sugars (HS-17), and vegetable (HS- 20) is less than 1 RCA (RCA<1) in year 2009. It indicates the comparative disadvantage to that sector of India.

USA:

A similar exercise was done for commodities exported by USA. According to the Table 3, only 4 sectors out of chosen 8 sectors for the study the USA enjoyed comparative advantage in the world market in the year 2006. But comparative advantage in world market for USA had decreased in 3 sectors in the year 2009 (see table 3). The analysis of Balassa index (RCA) shows the comparative advantage to USA from export of edible fruit, cereals, oil seed, and tobacco in 2006 because index value of RCA is (RCA>1) greater than one. But comparative advantage in the world market to USA from export of edible fruit, cereals, and tobacco in 2009, because index value of RCA is (RCA>1) greater than one.

6. Inter-temporal Variation in Revealed Comparative Advantage:

Inter-temporal variation in RCA between India and USA is given in table 4.

India:

The number of sectors for which India enjoys comparative advantage remains roughly the same between 2006 and 2009. In 2006, India enjoyed comparative advantage in 7 sectors but in the year 2009 only in 5 sectors. While 5 out of the 7 sectors retain their comparative advantage in 2009, oilseeds (HS-12) and sugars (HS-17) have lost their advantage (see table 4).

USA:

As is true for India, the number of sectors for which USA enjoys comparative advantage remains the same between 2006 and 2009. USA enjoyed comparative advantage in 4 sectors in 2006 and in 3 sectors the year 2009. While 3 out of the 4 sectors retain their comparative advantage in 2009, tobacco and manufactured tobacco substitutes (HS-24) lose their advantage (see table 4) RCA for this sector took the value less than one (RCA <1).
7. India-USA: A Comparative Analysis:

Table 5 shows the India-USA comparative analysis of Revealed Comparative Advantage (RCA). There are 3 sectors where India and USA both enjoy comparative advantage in 2006 and 2 sector in year 2009. The one sector i.e. edible fruit (HS-08) India had a higher comparative advantage relative to USA in 2006 but has lost this in 2009. India and USA are equally advantageously placed in edible fruit (HS-08) and cereals (HS-10) for 2006 and 2009. India is more advantageously placed than USA in the world market in edible vegetables and certain roots and tubers (HS-07), coffee, tea, mate and spices (HS-09), and tobacco and manufactured tobacco substitutes (HS-24) in both 2006 and 2009.

8. Main Findings and Conclusion:

In this paper revealed trends in India’s trade with USA and comparative advantage have analyzed at HS classification for India and USA. This study found that the share of coffee, tea, mate and spices; oil seed; vegetable and tobacco exports from India to USA was marginally increased in year 2010 compared to year 2006. But the share of edible vegetable, edible fruit, sugars was marginally decreased during the same period. The India’s share of World market cereals, oil seeds and tobacco was increased marginally during the study period.

The share of India’s import from USA of edible vegetable, edible fruit, sugars and vegetable was increased in year 2010 compared to year 2006. But the share of tobacco imports was decreased during the study period. The share of India’s imports from World market of edible fruit and vegetable was increased.

India is more advantageously placed than USA in the world market in edible vegetables and certain roots and tubers (HS-07), coffee, tea, mate and spices (HS-09), and tobacco and manufactured tobacco substitutes (HS-24) in both 2006 and 2009. India and USA are equally advantageously placed in edible fruit (HS-08) and cereals (HS-10) during the period under study. From this it can be concluded that India got more revealed comparative advantage from edible vegetable, coffee, tea and spices and tobacco sectors from exports to USA during the period of this study.