Webology (ISSN: 1735-188X)
Volume 18, Number 5, 2021

Trade Intensity And Trade Complementarity Between India And Bangladesh

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ABSTRACT

Bangladesh is one of the most important export markets for India. For the past several decades it has been the largest export market for India in the SAARC region. This paper is an attempt to study the trade intensity and trade complementarity between India and Bangladesh. Trade Intensity Indices and Trade Complementarity Index are used to find the intensity and complementarity of trade between both the countries. The measure of the extent of trade between both the countries reveals that the share of India's exports to Bangladesh out of world exports to Bangladesh is more than expected and significant. But share of Bangladesh's exports to India out of world exports to India is less than expected and insignificant. The trade complementarity between both the countries reveal that there is high complementarity in Bangladesh's import and India's export but low complementarity in India's import and Bangladesh's export.

Keywords: India, Bangladesh, Trade intensity, trade complementarity.

1. INTRODUCTION

Bangladesh is one of the most important export markets for India. For the past several decades it has been the largest export market for India in the SAARC region. India's exports to Bangladesh increased more than three-fold from US$ 1.7 billion in 2003-04 to US$ 6.1 billion in 2013-14, while India's imports from Bangladesh increased nearly six-fold from US$ 77.6 million in 2003-04 to US$ 460.9 million in 2013-14 (EXIM Bank, 2015). During 2012-2016 India's imports from Bangladesh grew at an average of 6 percent per year whereas during the same period its imports from world decreased by 8 percent per year (Kathuria, 2017). In the year 2018, India's export to Bangladesh was US$ 9214.40 million with an annual growth of 25.10% over 2017. In the same year India's export to Bangladesh as percentage share of world exports was 2.73%. For Bangladesh too, India is an important trading partner. During 1985-90 the growth rate of Bangladesh's trade with India was higher than that with the world and SAARC countries as a whole (Bangladesh High

Commission, 2015). Therefore, Bangladesh is an important trading partner for India. Bangladesh's imports from the Indian market started to increase rapidly since 1996, her exports to the Indian market started to rise significantly only from 2004 (Rahman et.al, 2012). Both the countries are the founding members of the WTO and India followed WTO procedures to reduce tariff on a multilateral basis to Bangladesh (Islam, 2004; Rahman et al., 2012).

2. DATA AND TECHNIQUES

The data to study trade intensity of India's trade with Bangladesh have been collected from the IMF's Dataset, Direction of Trade Statistics (DOTS)[1]. The time period to observe the trade intensity in India's trade with Bangladesh is from 1972 to 2018. The data collected have been adjusted for inflation by converting the nominal values into real values[2] by using GDP deflator[3]. To capture the extent of trade between India and Bangladesh, Trade Intensity Index (TII), Modified trade intensity Index (MTII), Export Intensity Index (EII) and Import Intensity Index (III) have been used.

The data used to study the trade complementarity is collected from United Nations International Trade Statistics Database (UNCOMTRADE)[4]. Harmonised System[5] (HS) 92 of classification has been selected to study the commodity composition. This classification is selected for the study based upon the data availability for a comprehensive study of the commodity composition between both the countries from the year 1988 to 2018. The HS classification is useful in studying the commodity composition in details. GDP (constant 2010 US$) and GDP (current US$) data is collected from the World Bank Database. The data used are adjusted for inflation by converting the nominal values into real values.

3. TRADE INTENSITY BETWEEN INDIA AND BANGLADESH

To study the extent of trade between India and Bangladesh the trade intensity indices have been used.

[1] DOTS includes the value of merchandise exports and imports disaggregated according to the country's primary trading partners and the world aggregates included in the display of trade flow between major areas of the world. The import values are reported on a cost, insurance, and freight (CIF) basis and exports are reported on a free on board (FOB) basis.
[2] Real Value=Nominal Value/GDP deflator
[3] GDP deflator= [GDP (current US$)/GDP (constant 2010 US$)]*100.
[4] UNCOMTRADE records import, cif (cost, insurance and freight) and the exports are recorded fob (free on board). It provides annual international trade statistics data detailed by commodities or service categories and partner countries.
[5] The HS of trade classification is an international nomenclature for classification of goods which was introduced in the year 1988 and is adopted by most of the countries. It is a six digit coding system in the international level. It consists of 99 chapters which are grouped into 21 sections. The classification has undergone changes termed as revisions and are entered in the years 1996, 2002, 2007, 2012 and 2017.

3. 1 TRADE INTENSITY INDICES

As per the definition of Trade Intensity Index given by World Bank (2010) it is defined as the share of one country's export going to a partner country divided by the share of world exports going to the partner. Therefore it is used to determine whether the value of trade between both the countries is greater or smaller than would be expected on the basis of their importance in world trade. Kojima (1964) formula has been used to calculate the intensity indices.

The formula for calculating India's trade intensity with Bangladesh:

$$TII_{ib} = \frac{\left(\frac{x_{ib}}{X_{it}}\right)}{\left(\frac{x_{wb}}{X_{wt}}\right)}$$

Where, TII_{ib} = Trade Intensity Index of India's Trade with Bangladesh; x_{ib} = India's export to Bangladesh; x_{wb} = world export to Bangladesh; X_{it} = India's total export; X_{wt} = world total export.

The formula for calculating India's modified trade intensity with Bangladesh:

$$TII'_{ib} = \frac{\left(\frac{x_{ib}}{X_{it}}\right)}{\left(\frac{x'_{wb}}{X'_{wt}}\right)}$$

Where, TII'_{ib} is the Modified Trade Intensity of India's Trade with Bangladesh; x_{ib}= India's export to Bangladesh, x_{wb}= world export to Bangladesh; $x'_{wb}=x_{wb}-x_{ib}$ (rest of the world export to Bangladesh); X_{it} = India's total export; X_{wt} = world total export and $X'_{wt} = X_{wt}-X_{it}$ (rest of the world total export)

The formula for calculating India's export intensity with Bangladesh:

$$XII_{ib} = \frac{\frac{X_{ib}}{X_{it}}}{\frac{M_{bt}}{\left(M_{wt} - M_{it}\right)}}$$

Where, XII $_{ib}$= Export intensity index of India with Bangladesh; X_{ib}=India's exports to Bangladesh; X_{it}= India's total exports; M_{bt}= total import of Bangladesh; M_{wt}= total world import; M_{it}= total import of India.

Similarly, **India's import intensity with Bangladesh is calculated using the following formula:**

$$MII_{ib} = \frac{\frac{M_{ib}}{M_{it}}}{\frac{X_{bt}}{\left(X_{wt} - X_{it}\right)}}$$

Where, MII_{ib}=Import Intensity Index of India with Bangladesh; M_{ib}= import of India from Bangladesh; M_{it} = total import of India; X_{bt}= total export of Bangladesh; X_{wt}= total world export; X_{it}= total export of India.

An index of more than one indicates a bilateral trade flow that is larger than expected and a value less than one indicates a bilateral trade flow that is smaller than expected, given the partner countries' importance in world trade. In case of Modified Trade Intensity Index its values are more or less similar to Trade Intensity Index. According to Bhuyan (2004) TII and MTII values remain the same for countries with insignificant share in world exports and difference in TII and MTII values may be significant for countries with significant share in world exports. Line graphs have been used to depict the values of intensity indices.

3.2 EMPIRICAL STUDIES ON TRADE INTENSITY

Some of the empirical studies on trade intensity are discussed in the following paragraph.

Bhuyan (2004) used trade intensity index, modified trade intensity index to study India's performance in international trade in goods with few important economies of south and south-east Asia. The results showed that on the basis of performance of international trade in goods, India did not match with the economies of China, Hong Kong SAR (China), Taiwan (China), Indonesia, Republic of Korea, Malaysia, Philippines, Singapore and Thailand. Chandran (2010) used trade intensity index, export intensity index and import intensity index to study whether trade between India and the ASEAN countries is greater or smaller than would be expected on the basis of their

importance in world trade. Results showed that for Indonesia, Malaysia, Myanmar, Singapore, Thailand and Vietnam the export intensity index was 1 and for Brunei, Laos and Philippines the intensity fluctuated over the years. The import intensity showed smaller volumes from the less developed countries of ASEAN, that is from Brunei, Cambodia and Lao PDR and restricted imports from Philippines and Vietnam. Sundar raj and Ambrose (2014) used trade intensity index, export intensity index and import intensity index to study the intensity of trade between India and Japan from 2001 to 2011. Their results showed that India's export intensity declined over the years and imports remained steady while on the other hand Japan's export intensity and import intensity both declined over the years. Tyagi (2014) used the export intensity index and import intensity index to show trade intensity between India and China from 1992 to 2002. He found that though there was considerable increase in trade between both the countries but they were trading less than the extent they should have. Anand and Garg (2016) used trade intensity index, export intensity index and import intensity index to study India's bilateral trade with UAE. Results of the indices showed that both the countries had high scope of trade cooperation.

4. TRADE COMPLEMENTARITY INDEX

The trade complementarity is studied with the help of Trade Complementarity Index. As per the definition given by World Bank (2010) Trade Complementarity Index (TCI) indicates the extent of the match (complements) of the reporter country's export profile with the import profile of the partner. High index indicates that the two countries would stand to gain from the increase of trade and that it may be useful in evaluating prospective bilateral or regional trade agreements. Therefore, it is a type of overlap index and changes over time may show if the trade profiles are becoming more or less compatible.

To check the complementarity of trade between India and Bangladesh the Trade Complementarity Index (TCI) is calculated. Michael's (1996) formula is used to check the compatibility of India's import with that of Bangladesh's export and compatibility of Bangladesh's import with that of India's export.

The formula for trade complementarity of India's imports with exports of Bangladesh is:

$$Sm_i x_b = 1 - \frac{\sum_i | m_{ki} - x_{kb} |}{2}$$

Where,

$Sm_i x_b$=index of compatibility of India's imports with exports of Bangladesh.

m_{ki}= share of good k in total imports of India.

x_{kb} =share of good k in total exports of Bangladesh.

The formula for trade complementarity of India's exports with imports of Bangladesh is:

$$Sx_i m_b = 1 - \frac{\sum_i | x_{ki} - m_{kb} |}{2}$$

Where,

$Sx_i m_b$= index of compatibility of India's exports with imports of Bangladesh.

x_{ki} = share of good k in total exports of India.

m_{kb} = share of good k in total imports of Bangladesh.

The value of the index lies between 0 and 1. If the value is 0 then there is no similarity in trade flows. On the other hand, if the value is 1, it indicates that it is at maximum level and the trade flows are identical wherein one country's exports precisely match with the other country's import.

The values of trade complementarity index from 1989 to 2015 are shown in appendix. In this chapter index values are analysed for the years 1990, 1995, 2000, 2005, 2010 and 2015.

5. RESULT OF TRADE INTENSITY BETWEEN INDIA AND BANGLADESH

The values of the trade intensity indices are plotted in line graphs as shown in figure 1and 2.

Figure 1 shows India's trade intensity indices with Bangladesh and figure 2 shows Bangladesh's trade intensity indices with India. Figure 1 reveals that the lines depicting TII and MTII nearly overlap each other till the year 1989, which implies that the difference in values of TII and MTII is very less. However, from the year 1989 there is difference between the values of TII and MTII and the values of MTII are higher than the values of TII. Comparatively higher values of MTII than TII depict the growing significance of India's exports to Bangladesh out of world exports to Bangladesh. It is visible from figure 1 that TII and MTII started to increase from the mid 1980's and the values of both the indices are greater than 1 throughout, which indicates that bilateral trade flow from India to Bangladesh is more than expected. However, fluctuations in the values can be noticed, with greater index values till mid 2000 after which it began to fall implying that there is a fall in India's share out of total world exports to Bangladesh.

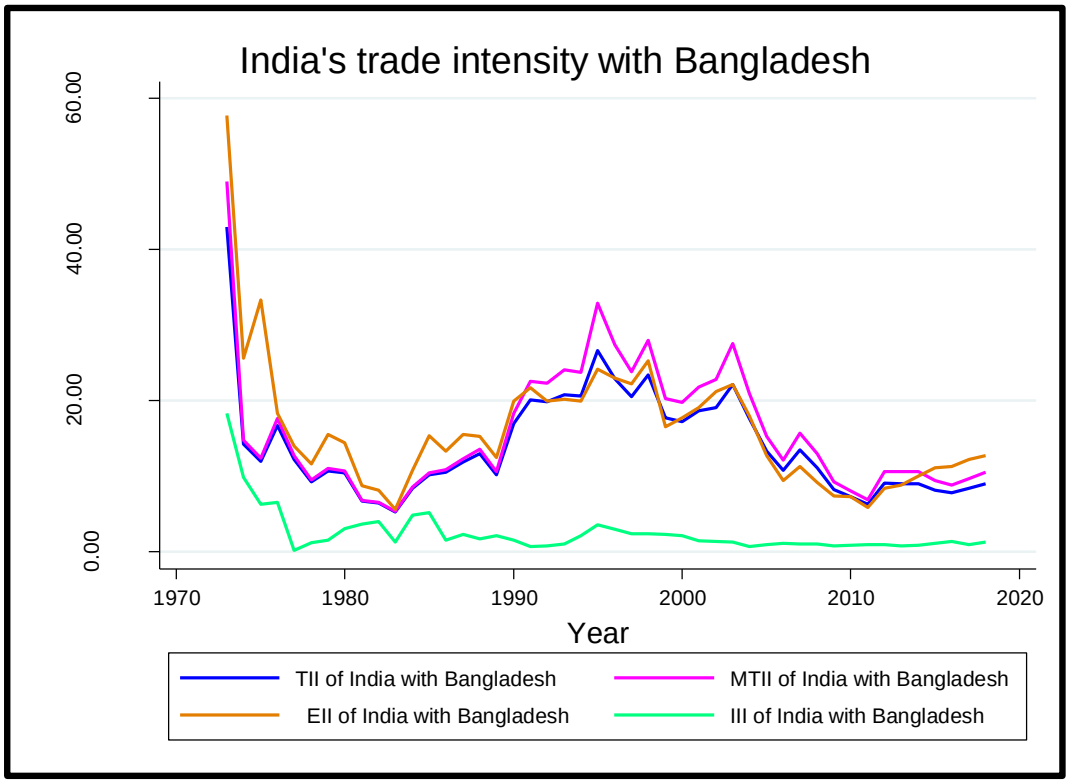

Figure 1 India's trade intensity with Bangladesh

Similarly, TII and MTII in figure 2 reveal that both the lines have overlapped each other since there is hardly any difference between both the indices implying that export of Bangladesh to India out of total world export to India is insignificant. Fluctuations in values can be observed with comparatively higher values till 1992 after which the values declined and remained more or less stagnant. Decrease in these values indicates a fall in share of Bangladesh's exports to India out of world exports to India.

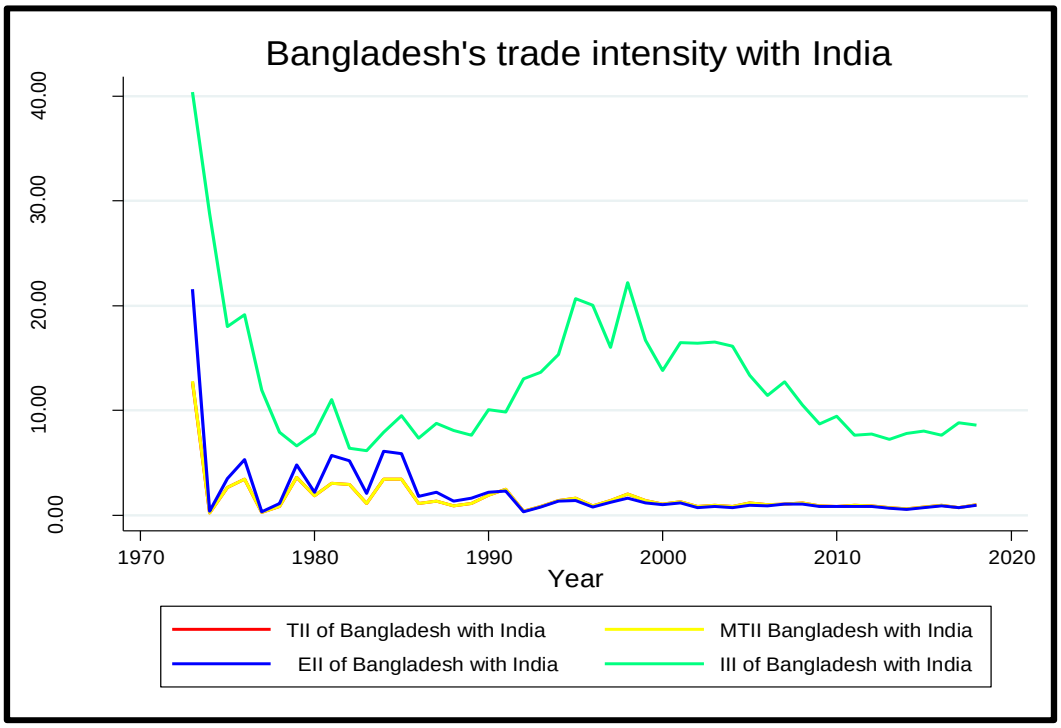

Figure 2 Bangladesh's Trade Intensity with India

The line showing EII in figure 1 was above all the other lines till the year 1990 after which it remained below the TII and MTII but in recent times it surpassed TII and MTII. The line showing III remained below all the other lines throughout the entire time period. The III values hover around 1. It can be observed in the table shown in appendix that in certain years the values of the III was less than 1 indicating that imports are lesser than expected. In the years 1977, 1991, 1992, 2004, 2005, 2009, 2010, 2011, 2012, 2013, 2014 and 2017 the values of III were less than 1. In the remaining years the values of the III were more than 1.

In figure 2 the line showing EII represents Bangladesh's export intensity with India and it can be observed that till 1992 there was some difference between EII and TII after which EII also overlaps with TII like MTII. The III in figure 2 showed high values from the 1990's to mid 2000, after which it declined.

6. RESULTS OF TRADE COMPLEMENTARITY BETWEEN INDIA AND BANGLADESH

The trade complementarity of India's import and Bangladesh's export and trade complementarity of Bangladesh's import and India's export is shown with the help of figure 3.

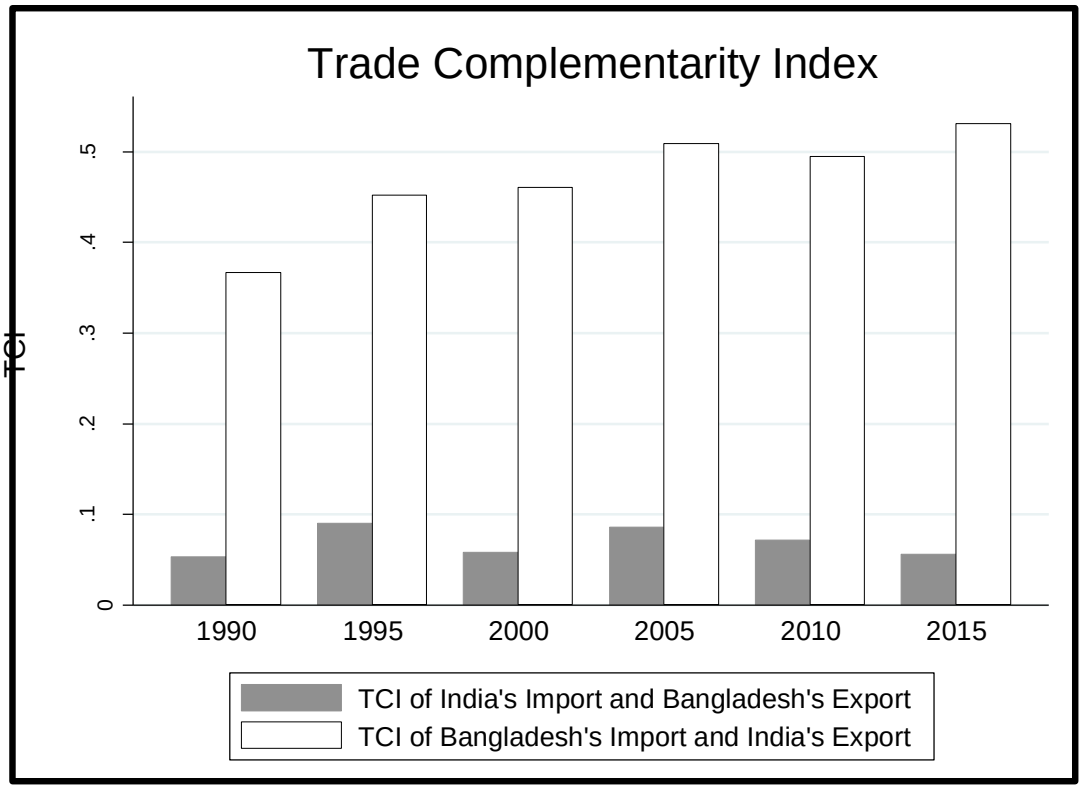

Figure 3 Trade complementarity between India and Bangladesh

It is evident from the figure that the TCI values of Bangladesh's import and India's export are more than TCI values of India's import and Bangladesh's export. Over the years shown in the figure, in terms of trade complementarity of India's import and Bangladesh's export, the value was highest in the years 1995 and 2005 with an index value of meager 0.09. In the year 1990 the index value was 0.05, it was 0.06 in the years 2000 and 2015. The value was 0.07 in the year 2010. In terms of trade complementarity of Bangladesh's import and India's export the TCI value was highest in 2015 with an index value of 0.53. The figure reveals that TCI of Bangladesh's import and India's export has been increasing over time. The index values over the years were 0.37, 0.45, 0.46, 0.51 and 0.49 in the years 1990, 1995, 2000, 2005 and 2010 respectively.

The index values clearly imply that India's import is not complemented by Bangladesh's export to India, whereas Bangladesh's imports are complemented by what India exports to their country.

7. CONCLUSION

The measure of the extent of trade between both the countries reveals that the share of India's exports to Bangladesh out of world exports to Bangladesh is more than expected and significant. But share of Bangladesh's exports to India out of world exports to India is less than expected and insignificant. The trade complementarity between both the countries reveal that there is high

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8. REFERENCES

Anand, A., & Garg., K. (2016). A study of India's trade intensity with United Arab Emirates: An overview. International Journal of Electrical, Electronics and Computers (EEC Journal). 1(1), 22-28.

Bangladesh High Commission (2015). Bangladesh-India trade 2015. New Delhi ,India.

Bhuyan, P. (2004). International trade in goods: Performance of India vis a vis a few important economies in South and East Asia. Reserve Bank of India Occasional Papers .25(1,2,3), 105-128. https://www.rbi.org.in/scripts/PublicationsView.aspx?id=7923

Chandran, B.P. S.(2010). Trade complementarity and similarity between India and ASEAN countries in the context of the RTA. MPRA Paper No.29279. https://mpra.ub.uni-muenchen.de/29279/

EXIM Bank (2015). Bangladesh: A Study of India's Trade and Investment Potential. Occasional Paper No. 170. https://www.eximbankindia.in/Assets/Dynamic/PDF/Publication-Resources/ResearchPapers/8file.pdf

Islam, N. (2004). Indo-Bangladesh economic relations: Some thoughts. Economic and Political Weekly. 39(36) , 4069-4075.

Kathuria, S. (2017, September 28). Bangladesh corridor vital to India's 'Act East' policy. https://blogs.worldbank.org/endpovertyinsouthasia/bangladesh-corridor-vital-india-s-act-east-policy

Kojima, K .(1964). The pattern of international trade among advanced countries. Hitotsuboshi Journal of Economics. 5(1),16-36.

Michael, M. (1996). Trade preferential agreements in Latin America an ex-ante assessment. Working Paper No. 1583, Washington D.C.: The World Bank. https://core.ac.uk/download/pdf/6645169.pdf

Rahman, M., Ahamad, M. G., Islam, A. K. M. N & Amin, M.A. (2012). Agricultural trade between Bangladesh and India. (Working Paper No.3).Centre for policy Dialogue (CPD). https://www.cmi.no/publications/file/4599-agricultural-trade-between-bangladesh-and-india.pdf

Sundar raj, P., & Ambrose, B. (2014). A brief analysis of India-Japan bilateral trade: A trade intensity approach. International Journal of Economics, Commerce and Management. 2(2), 1-7.

Tyagi, S. (2014). Composition, intensity and revealed comparative advantage in Sino-Indian bilateral trade: A Preliminary study. Occasional Paper No. 8. Institute of Chinese Studies, Delhi.
https://www.icsin.org/uploads/2015/04/12/085caa2681e0faae4e9e0ddc6f411bb4.pdf

World Bank (2010). Trade Indicators.
https://wits.worldbank.org/wits/wits/witshelp/Content/Utilities/e1.trade_indicators.htm