Empirical Analysis of Services Trade of India

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1.0 Introduction:

Empirical research is data based research, coming up with conclusions which are capable of being verified by observation or experiment. It relies on experience or observation alone. In this type of research, researcher must first provide himself with a working hypothesis or guess as to probable results. Researcher then works to get enough facts (data) to prove or disprove his hypothesis. This research today considered to be the most powerful support possible for a given hypothesis. The conclusions of this research are exclusively derived from concrete, verifiable evidence. In other words, any research where conclusions of the study are strictly drawn from concretely empirical evidence and therefore "verifiable" evidence is called empirical research.

There are two types of empirical research. One is qualitative research which methods are used to gather non- numerical data. It is used to find meanings, opinions, or the underlying reasons from its subjects. These methods are unstructured or semi structured. The sample size for such a research is usually small and it is a conversational type of method to provide in depth information about the problem, for example Interviews, focus groups. Another type of empirical research is quantitative research. These methods are used to gather information through numerical data. It is used to quantify opinions, behaviours or other defined variables. These are predetermined and are in a more structured format. e. g. survey, polls.

Services sector has become important for many economies in the world and very important particularly for India. It is a large and most dynamic part of the Indian economy both in terms of employment potential and contribution to national income. Indian services sector has emerged as the largest and the fastest growing sector. Services sector remains the key driver of India's economic growth.

Taking into consideration the revealed comparative advantage in services trade during 2000 to 2005 researcher found that, according to Balassa RCA, RSCA index values India has a comparative advantage in the exports of the telecommunication, computer and information services in the study period and according to TBI index values India was in capacity of net exporter of the telecommunication, computer and information services.

2.0 Objectives of the Study:
1. To know the empirical analysis in research
2. To study services trade of India

3.0 Research Methodology of the Study:
This study is purely depending on secondary data. Data is collected from various articles/research papers published in journals, reference books, RBI website and other websites. For analysis used empirical research methods. Here researcher apply RCA, RSCA and TBI index for empirical analysis.

4.0 Steps for conducting Empirical Research:
1. Establishing the research objective
2. Reviewing relevant literature and supporting theories
3. Framing the hypothesis and measurement.
4. Defining the research design, methodology and data collection techniques.
5. Conducting data analysis and framing the results.
6. Making conclusions

5.0 Empirical Research Cycle:
1. **Observation:** At this phase an idea is sparked for proposing a hypothesis.

During this phase empirical data is gathered using observation. e.g. India has comparative advantage in services trade.

2. **Induction:** Inductive reasoning is then carried out to form a general conclusion from the data gathered through observation. e. g. why India has a comparative advantage in services trade?

3. **Deduction:** This phase helps the researcher to deduce a conclusion out of his/her experiment. This has to be based on logic and rationality to come up with specific unbiased results. e. g. In which services trade India has comparative advantage?

4. **Testing:** This phase involves the researcher to return to empirical methods to put his/her hypothesis to the test. The researcher now needs to make sense of his/her data and hence needs to use statistical methods to determine services and comparative advantage in trade relationship.

5. **Evaluation:** During this phase the researcher puts forth the data he/she has collected, the support argument and his/her conclusion. The researcher also states the limitations for the experiment and his/her hypothesis and suggests tips for others to pick it up and continue a more in depth research for others in the future.

6.0 Empirical Analysis of Services Trade of India:

In this study assessed the comparative advantage of India for a considerable period of time, i.e. 2000 to 2005. Here studying comparative advantage over a period of time benefits importance. If change in world exports/imports in a particular year will have an effect on India's comparative advantage therefore India's exports/imports are evaluated from a relative point of view. The main objective of the study is to find out in which service category India has a scope for specialisation. Liesner (1958) who first carried out the analysis of international trade by using ex-post data and he made an attempt to calculate the comparative advantage of the industrial products export from Great Britain to its European competitors.

The Revealed Comparative Advantage (RCA):

To measure country's revealed comparative advantage in trade in particular services by calculating the share of that particular services in the country's total exports relative to the services share in total world export. Here used Bela Balassa (1965) derived index of revealed comparative advantage (RCA) which is often called in practice as the Balassa Index. We can identify whether a country has a revealed comparative advantage or not. Its formula is as follows:

Balassa (1965) RCA: $RCA_{ij} = (X_{ij}/X_{wj})/(X_i/X_w)$

Where, X_{ij} = ith country's exports of commodity j

X_{wj} = world exports of commodity j

X_i = total export of country i

X_w = total world export.

The RCA index value range are from zero to infinity ($0 < RCA < \infty$). If the RCA index value exceeds unity, the country is said to have a revealed comparative advantage in that commodity or services produced domestically. But if the RCA index value is less than unity, the country is said to have a comparative disadvantage in the commodity or services.

7.0 Empirical Results:

In order to determine the competitiveness of the services which have the largest share in India's services exports. Researcher used Balassa Index, the RSCA and TBI indices. In this study also created 'Product Mapping' of the services benefiting from the RSCA and TBI index values.

The Results of Balassa Index:

The Balassa index results are shown in Table1. According to Balassa index results, India had a comparative advantage in the telecommunication, computer and information services, other commercial services and other business services. According to the results of the Balassa index, telecommunication, computer and information services had the highest index value for the period studied. Other services with the highest RCA values were other commercial services, other business services and transportation services. On the other hand, while India had a comparative disadvantage in financial services. According to the classification of the RCA index (Balassa Index) values generated by Jeroen Hinloopen and Charles V. Marrewijk (2001), India had a strong comparative advantage in telecommunication, computer and information services. India had a weak comparative advantage in other business services and other commercial services. It had revealed comparative disadvantage in

transportation, travel, financial and construction services.

Table 1: The Revealed Comparative Advantage of Services using Balassa Index:

Year	Transportation Services	Telecommunication, Comp. and Information Services	Financial Services	Travel Services	Construction Services	Other Business Services	Other Commercial Services
2000	0.53	21.30	0.31	0.67	1.59	NA	1.48
2001	0.54	26.20	0.56	0.61	0.19	NA	1.50
2002	0.58	25.10	0.49	0.53	0.57	NA	1.50
2003	0.59	25.80	0.25	0.64	0.57	NA	1.40
2004	0.52	22.10	0.14	0.56	0.67	1.38	1.48
2005	0.55	17.10	0.30	0.53	0.30	1.49	1.47

Source: Author's Calculations

The Revealed Symmetric Comparative Advantage (RSCA):

To know the revealed comparative advantage in services exports here used the RSCA index created by Dalum, Laursen and Villumsen (1998) which is the indicator of comparative advantage. It is a simple decreasing monotonic transformation of the RCA or Balassa index. The RSCA index created by Dalum, Laursen and Villumsen (1998) is formulated as follows:

$RSCA_{ij} = (RCA_{ij}-1) / (RCA_{ij}+1)$

Where, RCA_{ij} represents the Balassa Index (RCA). The values of the RSCA index can vary from minus one to plus one (or $-1 \leq RSCA \leq 1$). The RSCA value greater than zero implies that country i has a comparative advantage in the group of products j. In contrast, if RSCA value less than zero implies that country i has a comparative disadvantage in the group of products j.

The RSCA index results are shown in Table 2. This index has similar results with the Balassa index. The values of the RSCA index are greater than zero in the telecommunication, computer and information services, other commercial services and other business services during 2000 to 2005. In other words, India had a comparative advantage in the said services and period. The fact that values of the RSCA index are less than zero implies that India had a comparative disadvantage in the transportation, travel, financial and construction services.

Table 2: The Revealed Comparative Advantage of India in Exports of Service According to RSCA Index:

Year	Transportation Services	Tele. Comp and Information Services	Financial Services	Travel Services	Construction Services	Other Business Services	Other Commercial Services
2000	-0.31	0.91	-0.53	-0.20	0.23	NA	0.19
2001	-0.30	0.93	-0.28	-0.24	-0.68	NA	0.20
2002	-0.27	0.92	-0.34	-0.31	-0.27	NA	0.20
2003	-0.26	0.93	-0.60	-0.22	-0.27	NA	0.17
2004	-0.32	0.91	-0.75	-0.28	-0.20	0.16	0.19
2005	-0.29	0.89	-0.54	-0.31	-0.54	0.20	0.19

Source: Author's Calculations

The Trade Balance Index (TBI):

To analyse whether a country has specialization in export (as a net-exporter) or in import (as a net-importer) for a specific group of products or services Widodo (2009) and Lafay (1992) has formulated The Trade Balance Index (TBI). The TBI is formulated as follows:

$TBI_{ij} = (X_{ij} - M_{ij}) / (X_{ij} + M_{ij})$

Where TBI_{ij} denotes the Trade Balance Index of country i for the group of products j. The values of the index range from -1 to +1.The TBI value equals -1 if a country only imports; in contrast, the TBI value equals +1 if a country only exports. When the value of the TBI is positive a country is referred to as a net-exporter and as a net-importer where the value of the TBI is negative. When the value of TBI between -1 and +1 implies that the country exports and imports a commodity simultaneously. The index is not defined when a country neither exports nor imports. In this case we consider zero since the group of products shows either potential to be exported or imported.

The TBI index results are shown in Table 3. According to the TBI index results, India was

a net exporter in the telecommunication, computer and information services, other business services, other commercial services, travel services during study period. In other words, the trends of the TBI index are the same as those of the RSCA index.

Table 3: The Revealed Comparative Advantage of India According to TBI Index:

Year	Transportation Services	Tele. Comp and Information Services	Financial Services	Travel Services	Construction Services	Other Business Services	Other Commercial Services
2000	-0.63	NA	-0.64	0.13	0.60	NA	0.17
2001	-0.61	0.72	-0.71	0.03	-0.76	NA	0.16
2002	-0.55	0.66	-0.44	0.02	-0.44	NA	0.19
2003	-0.51	0.80	-0.14	0.11	-0.63	NA	0.16
2004	-0.50	0.82	-0.40	0.12	-0.23	0.03	0.23
2005	-0.52	0.84	0.14	0.10	-0.27	0.15	0.32

Source: Author's Calculations

Thus by using empirical research analysis researcher found that, according to Balassa RCA, RSCA index values India has a comparative advantage in the exports of the telecommunication, computer and information services in the study period and according to TBI index values India was in capacity of net exporter of the telecommunication, computer and information services during study period.

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