Revealed Comparative and Competitive Advantage in Trade in Services: Evidence from India and Other Leading Countries

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Abstract:

The purpose of this paper is to investigate the comparative and competitive advantage of India and other nine leading countries in services exporters. This study used Balassa's (1965) Revealed Comparative Advantage (RCA) and Vollrath's (1991) Revealed Competitiveness (RC) to measure the comparative advantage of selected services during the period of 2000 to 2013. The study found that India has strong comparative advantage over other countries in computer and information services and other business services. In addition to that, it has competitive advantage in travel, communication services and personal, cultural and recreation services sector. Among the other nine countries, Spain has more comparative advantage in Transportation and Travel, while Insurance and Financial services are highly advantaged for United Kingdom. Further, USA and Japan are having main comparative advantage in Royalties and licence fees services, and China having greater competitive advantage on other business services.

Key words: Service sector, comparative advantage, revealed competitiveness, services export

1. Introduction

The remarkable development in the Information and Communication Technology (ICT) and transportation services made facilitation in both modern and traditional services as easily tradable not only within a country, but also across the border of the countries. Moreover, liberalisation of regulatory policies by the countries across the globe has shaped scattered world markets as a single market. These developments have boosted the world trade. Consequently, major economies started to focus on services sector for economic growth of their countries. The growth of trade in services is widely recognised as one of most important trends in international economy (Makoto Hisanaga, 2008). In the recent decade, both developed and developing countries are started to transform their economy from manufacturing orientation to services oriented economy. Many Asian economies are also structurally transforming from agriculture to not low -productivity services subsectors (ADB, 2013). Pascal Lamy (2012) narrated that "The global economy is being transformed at an unprecedented speed and at the heart of that transformation is the services economy". This is further evidenced by the 65% contribution of services sector in the world gross domestic product (GDP) in 2013.

In the context of India, the services sector too has witnessed a tremendous growth in the last two decades and it turned as service-led economy (Hansda 2009). It is owing to the liberalised global environment rather than the major changes in the internal policy (Burange, Chaddha and Kapoor, 2010). At present, India is the second fastest growing services economy in the world after the China. It is supported by the fact that service sector contributed 57% of its GDP in 2013 (Government

of India, 2014-15). According to the WTO statistics of 2014, India has been ranked as 6th among the leading commercial services exporting countries. The contribution of Indian services export to world services export has increased 3.2% in 2013 from 1.2% in 2000. In 2013, the share of services sector in employment and total export is 28.1% and 3.6% respectively. Meanwhile, the surplus from the services trade has been used to offset 49.3% trade deficit from merchandise trade in 2013-14 (ESI, 2014-15). Therefore, it is vastly important to promote the services sector to achieve the high economic growth. The efficiency of services sector is important for the economic growth and to enhance the competitiveness in the globalised world (De and Raychaudhuri, 2008). Further, among twelve majorly classified services sector, software and travel services are key services export of India. They are accounting for more than 55% of total services export. Thus, this study aims to identify the potential sectors in expanding the exports, excluding the above stated two sectors.

Comparative advantage models can be useful to identify the globally comparatively advantaged countries. Measuring aggregate comparative advantage is helpful to direct the trade and investment towards particular sector or product which can exploit the international differences in supply and demand (Vollrath, 1991). Revealed Comparative Advantage (RCA) Index (Balassa, 1965) and Vollrath's (1991) Revealed Competitiveness (RC) index are thus applied in this study.

2. Literature Review

Kapur and Ramamurti (2001) examined the business opportunities created to services sector by the changes in economic and political arena of India. They stated that India is going to emerge as the major country in software and knowledge based services in future. Further, they recommended that the foreign firms that enter sooner into the

Indian markets can seize the emerging opportunities. Batra and Khan (2005) studied level of comparative advantage using Balassa (1965) index in case of China and India regarding goods classification based on HS taxonomy. They found that India is having superior advantage in agriculture and allied products.

Fourie and von Finstel (2009) estimated the RCA for entire services sectors of the countries, which GDP is above $100 billion in 2005. According to the level of RCA, they ranked the countries. Based on their findings, India hold high RCA for computer and information services, indicating India is remarkable expert in this sector. Besides, communication, construction, insurance and other business services also have comparative advantage.

Belay Seyoum (2007) studied the RCA for selected services such as business, financial, transport and travel services of developing countries for the period of 1998 to 2003. He used both indexes Balassa (1965) and Vollrath (1991). The result of the study revealed that India has comparative advantage for business services and financial services. De and Raychaudhuri (2008) studied the pattern of services exports and comparative advantage by applying two stage least square (TSLS). They found that services exports has impact on the poverty reduction.

Mukherjee and Goyal (2012) discussed the overall aspects in services sector. They mentioned several barriers that are hindering the services exports such as lack of policy focus, FDI restrictions, lack of reforms in certain sectors and poor infrastructure.

Van der Marel (2011) examined the factors determining the comparative advantage of services sectors in sample of OECD countries by using Poisson Pseudo Maximum Likelihood (PPML) regression. He found that the population of high and mid-skilled labour, level of trust by any importers and quality

of regulatory governance are the major factors determining the services trade comparative advantage.

Barattieri (2010) evaluated the relationship between comparative advantage and current account balances of 66 OECD and non-OECD countries by employing Balassa (1965) RCA index and the PPML. He revealed that RCA in 2006 have negative relationship with trade balance in 1999.

Burange et al., (2010) studied factors influence the aggregated and dis-aggregated services sector of India and its effect on performance. They also computed RCA by using Balassa (1965) index. They found that communication and computer information services are having high comparative advantage.

3. Methodology and Data

3.1. Measuring Revealed Comparative Advantage (RCA) Index

The theoretical concept of comparative advantage was initially alluded by Adam Smith in his book of "The Wealth of Nations". It was popularised by the seminal work of David Ricardo and later by Heckscher – Ohlin. The theoretical models are usually specified in pre-trade relative price where all markets are free to access. While, the problems of using theoretical models are lack of pre-trade data related to services production in the practical world. At the same time, most of the service markets were protected for entry of the foreign investors (Makoto Hisanaga, 2008). In order to resolve this issue, Balassa (1965) proposed the concept of "Revealed" Comparative Advantage (RCA). He argued that it may not be necessary to include all factors which are affecting the comparative advantage of a country; instead it can be "Revealed" by observing the trade patterns of a country. Using post-trade data, the Balassa index can be used to identify whether a country has revealed comparative advantage rather than to determine the sources of

comparative advantage (Utkulu & Seymen, 2004). Balassa (1965) Revealed Comparative Advantage (RCA) Index is used to measure the comparative advantage of particular sector by using its observed trade pattern. This measures the country's export of services relative to the total export of that particular country corresponding to the share of that sector in the world services exports. It can be written as follows.

$$RCA\ 1 = (X_{ij}/X_{jt})/(X_{nj}/X_{nt})$$

where, X denotes exports, i is a country, j is services sector, n is set of all countries, and t is total exports. The comparative advantage of a sector is revealed if the RCA1 is >1, and it is comparatively disadvantage if index is <1. The neutral point of this index is 1. The above RCA1 is the original index proposed by Balassa (1965), which is taking total goods and services exports in the denominator. The alternative index is modification of Balassa's original index which can used for bilateral, regional and other trade specification (Vollrath 1991; Belay Seyoum 2007).

$$RCA\ 2 = (X_{ij}/X_{js})/(X_{nj}/X_{ns})$$

where, s represents the total services exports of a country and set of all countries. Since the Balassa (1965) RCA considering only the export, the influence of import in overall trade has been neglected. Vollrath (1991) suggested (to use) revealed competitiveness (RC) index, which allows to assess the trade flow by taking import as well as export. Thus, both supply and demand balances are embodied in the index (Ishchukova and Luboš , 2013).

The measure of Vollrath's revealed competitiveness can be expressed as:

$$RCA\ 3 = RC = (ln\ RXA - ln\ RMA)$$

where, $ln\ RXA$ is simply the natural logarithm of $RCA2$.

$$RXA = ln(X_{ij}/X_{js})/(X_{nj}/X_{ns})$$
$$RMA = ln(M_{ij}/M_{js})/(M_{nj}/M_{ns})$$

The *ln (RMA)* is same as logarithmic value of *RCA2* where the import *(M)* will be substituted instead of export *(X)*. The natural logarithm is used to make index become symmetric through the origin (Fertő & Hubbard, 2003).The positive value of RCA3 reveals the comparative/competitive advantage and negative value indicates the comparative/competitive disadvantage.

3.2. Data

In this study, data were collected from the United Nation Conference on Trade and Development (UNCTAD) – statistics, particularly sector and year wise data have been extracted for top 10 leading exporters of commercial services. Selected countries for this study are U.S.A (USA), U.K (GBR), Germany (DEU), France (FRA), China (CHN), India (IND), Netherland (NLD), Japan (JPN), Spain (ESP), and Hong Kong (HKG). The sample period covers from 2000 to 2013. All the services sector such as Travel, Transportation, Other commercial services including Communication, Construction, Insurance, Financial services, Computer and information, Royalties and licence fees, Other Business services, Personal-cultural-recreational services (Categorised by UNCTAD) are considered for analysis, except Government services n.i.e. (not included elsewhere) which cannot be included in the commercial services trade (GATS, 1995).

4. Results and Discussion

4.1. Comparative and Competitive Advantage for India's Services Sector

The largest English speaking, technically qualified people and lower manpower cost have been backbone for the magnificent growth of Indian computer and information services exports. It made India as the top leading exporter of computer and

information services, excluding European Union (WTO, 2014). Additionally, positive balance of trade and low RMA than RXA in this sector led India to enjoy comparative and competitive advantage throughout the period (See Table 1 and Table 2). The reforms in 1991 had been stimulated the communication sector and it led to the substantial growth in the international trade of this sector, the India had comparative advantage until the 2007. But, the significant growth of China, Kuwait and Hong Kong in this sector has supressed the comparative advantage for India since after 2007. However, low RMA than RXA has given competitive advantage to this sector, except 2002 and 2011.

The growth in the Other business services which includes miscellaneous services such as merchanting and other-trade related services, operational leasing services and miscellaneous business etc., has led to comparative advantage for India. The low RMA positive trade balance in travel (except 2008 and 2009) and Personal, Cultural and Recreational services (since 2005, except 2010) has given competitive advantage to these sectors.

Conversely, the services related to Royalties and License fees, Construction and Personal, Cultural and Recreational Services proves great comparative disadvantage. Meanwhile, Insurance and Transportation Services indicates low disadvantage. On the other hand, since 2004, Royalties and License Fees and Transportation Services are having high competitive disadvantage and Insurance and Construction services are having low competitive disadvantage. This may be attributed to the India's poor infrastructure development – ranked 87 in 2014 (WEF - World Economic Forum, 2014), low expenditure on Research and Development – 0.8% of GDP in 2012 (World Bank Group, ed, 2014), low financial development – ranked 51 in 2014 (WEF, 2014) and low technological upgradation – ranked 121 in 2014 (WEF, 2014). It is the fact that devising good trade policy may help to reach comparative

and competitive advantage in the above stated low dis-advantaged sectors.

Table.1 RXA for India based on Balassa index

Sector	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Transportation	0.52	0.53	0.58	0.60	0.52	0.50	0.50	0.47	0.47	0.61	0.55	0.63	0.60	0.58
Travel	0.66	0.60	0.53	0.65	0.57	0.52	0.47	0.49	0.45	0.49	0.51	0.52	0.50	0.48
Other Commercial Services	1.47	1.48	1.47	1.37	1.45	1.48	1.48	1.46	1.49	1.33	1.32	1.26	1.32	1.35
Communication	1.59	2.67	1.75	1.71	1.22	1.29	1.28	1.14	0.93	0.80	0.53	0.49	0.45	0.57
Construction	1.52	0.18	0.55	0.55	0.67	0.30	0.37	0.35	0.27	0.28	0.18	0.25	0.26	0.36
Insurance	0.85	0.83	0.63	0.60	0.90	0.93	0.75	0.79	0.68	0.61	0.61	0.77	0.66	0.65
Financial Services	0.26	0.29	0.50	0.24	0.13	0.31	0.44	0.46	0.53	0.53	0.69	0.62	0.51	0.55
Computer and Info. Services	8.09	9.84	9.35	9.06	7.81	7.59	7.10	7.07	6.72	6.54	6.08	5.74	5.53	5.38
Royalties and license fees	0.08	0.04	0.02	0.02	0.02	0.06	0.01	0.03	0.02	0.03	0.03	0.03	0.03	0.04
Other Business Services	-	-	-	-	1.41	1.49	1.52	1.46	1.45	1.17	1.17	1.09	1.25	1.27
PCR Services*	-	-	-	-	0.12	0.23	0.54	0.76	0.88	0.60	0.33	0.28	0.59	0.90

Source: Authors' Calculation

*Personal, Cultural and Recreational services

Table.2 RC for India based on Vollrath's Measurement (RC)

Sector/Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Transport	-	-	-	-	-0.97	-1.16	-1.13	-1.21	-1.29	-1.10	-1.05	-1.01	-1.07	-
	1.15	1.09	0.99	0.89										1.10
Travel	0.32	0.13	0.05	0.21	0.13	0.05	0.02	0.04	-0.05	-0.03	0.24	0.08	0.19	0.23
Other Commercial Services	0.45	0.45	0.41	0.29	0.31	0.46	0.42	0.43	0.55	0.53	0.50	0.49	0.49	0.51
Communication	1.84	1.52	-	0.44	0.48	1.15	1.04	0.71	0.55	0.24	0.17	-0.07	0.21	0.34
			0.21											
Construction	1.25	-	-	-	-0.62	-0.77	-0.54	-0.24	-0.19	-0.64	-0.87	-0.62	-0.45	-
		2.02	1.07	1.62										0.50
Insurance	-	-	-	-	-0.28	-0.30	-0.35	-0.30	-0.50	-0.55	-0.43	-0.39	-0.58	-
	0.62	0.35	0.53	0.60										0.57
Financial Services	-	-	-	-	-1.73	-0.58	-0.70	-0.98	-0.82	-1.03	-0.97	-1.16	-0.86	-
	2.26	2.47	1.55	1.05										0.84
Computer and Info. services	1.67	1.54	1.57	2.00	1.90	1.92	1.71	1.30	1.45	1.93	2.09	2.45	2.16	2.15
Royalties and License	-	-	-	-	-2.47	-1.25	-2.78	-2.17	-2.44	-2.31	-2.86	-2.26	-2.53	-
	1.11	1.99	2.76	3.04										2.26
Other Business Services	-	-	-	-	-0.09	0.08	0.09	0.22	0.34	0.27	0.18	0.24	0.23	0.28
PCR Services*	-	-	-	-	-0.18	0.21	1.23	1.20	0.83	0.44	-0.19	0.06	0.38	0.42

Source: Authors' Calculation

*Personal, Cultural and Recreational services

4.2. Comparative and competitive advantage for top ten countries

Implementation of advanced technology, high transportation infrastructure (ranked 5th WEF- Competitiveness Indices) and huge FDI flow in transportation sector (Japan's Ministry of Finance-2004), transportation service becomes the prime export sector of Japan's disembodied exports (Ito and Krueger, 2003) with the share of 26.74% in the total services export in 2013 (UNCTAD, 2014). Moreover, Japan is second country with high innovation and R&D (The Bloomberg Innovation Index, 2014). It is spending 3.9% of GDP for R&D research (WDI, 2013). The above all factors led Japan to gain highest

comparative advantage and competitive advantage among the sample countries in Transportation, Royalties & License Fees and also in Construction services.

Spain has gained both comparative and competitive advantage for the Travel services. Travel services are vital services sector of Spain, which is contributing more than 40% of total services export for a decade. Spain is the third most favoured destination of world tourist and second country in terms of tourist receipts. In 2013, it received $ 67,608 million from 60.66 million tourist and, it is 6.98% of its GDP (WDI, 2013).

The UK has been enjoying comparative and competitive advantage in Financial and Insurance services. Both the sectors together contribute more than 26% of total services trade in the recent years. The cross border bank lending, interest rates OTC derivatives, international insurance premium, foreign exchange trading, London Stock Exchange (LSE) and 20 of the world largest international insurance and reinsurance companies are the prime reasons for UK's financial and insurance sector growth.

Since China is the second leading exporter of other business services after USA, with the highest contribution of 38% share in the total services in exports in 2013. Thus, China has gained both comparative and competitive advantage in this sector. In addition, the low share of communication and construction services in the total services import, it also gained competitive advantage in these sectors.

The Royalties and License Fees is the comparative and competitive sector of USA due its growth in advanced technology (ranked 1), high number of patents (ranked 3) and its overall innovation (ranked 6) (The Bloomberg Innovative Index, 2014). Netherlands and France have gained comparative advantage in Communication and Personal, Cultural and Recreational services.

The following are the list of countries which have gained comparative and competitive advantage in different sectors.

4.2.1. Countries which have comparative advantage in different service sector (2000-2013):

- Transportation: Japan, Hong Kong, Netherlands, Germany, France *(except 2011)*, and China *(2006 to 2012, and except 2009)*.
- Travel: Spain, China *(except 2013)*, France *(except 2010, 2011 and 2013),* US *(except 2009 to 2012)* and Hong Kong *(2012 and 2013)*.
- Other Commercial Services: India, UK, Netherlands, Japan, Germany, US, Hong Kong *(2000 to 2007),* France *(only in 2011 and 2013)*, and China *(only in 2013)*.
- Communication: Netherlands, UK, France *(2002 to 2013, except 2009)*, Germany *(only in 2012 and 2013)*, and India *(2000 to 2007)*.
- Construction: Japan, China *(except 2000)*, Germany, France *(except 2012)*, Spain *(2007 to 2013)*, and Netherlands *(2000 to 2005)*.
- Insurance: UK *(except 2005)*, US *(2005 to 2013)*, and Germany *(only in 2002 to 2004 and 2007)*.
- Financial Services: UK, US, and Hong Kong.
- Computer and Information: India, Germany, UK *(2000 to 2007)*, China *(2010 to 2013)*, Spain (2000 to 2002).
- Royalties and License Fees: Japan, US, Netherlands *(since 2003)*, UK *(2000 to 2006, except 2004)*, France *(2007 to 2011)*, Germany *(only in 2009)*.
- Other Business Services: China, India, Germany, UK, Hong Kong, France *(except 2004 and 2006 to 2008)*, Netherlands and Japan *(except 2004 and 2012)*.
- Personal, Cultural and recreational services: France, UK, Spain, and Netherlands *(only in 2000, 2001 and 2005)*.

4.2.2. Countries which have revealed Competitiveness

- Transportation: Netherlands, Germany, Japan, Hong Kong, France *(2003, 2006 to 2010, 2012 and 2013)* and China *(only in 2008)*.
- Travel: Spain, China *(until 2009)*, India *(except 2008 and 2009)*, US, and France *(except 2010 and 2011)*.
- Other Commercial Services: India, UK, China *(only in 2003 and from 2009 to 2013)*, Hong Kong, Germany, Japan *(except 2013)*, US *(2000 to 2007)* and France *(only in 2011)*.
- Communication: China *(except 2001, 2005 and 2006)*, India *(except 2002 and 2011)*, France *(since 2004, except 2009 and 2013)*, Japan *(2000 to 2003)*, Netherland *(2001 and 2005)*, US *(2012 and 2013)* and France *(2013)*.
- Construction Services: China *(except 2000 and 2001)*, Spain *(except 2004 and 2005)*, France, Japan, Netherlands *(until 2010)*, UK *(until 2004)*, India and Hong Kong *(only in 2000 and 2010 respectively)*.
- Insurance: UK, France *(2001, 2003, and 2009 to 2013)*, Germany, Netherlands *(2005 to 2008)*, Japan *(only in 2005)* and Spain *(only in 2009 and 2012)*.
- Finance Services: UK, US *(since 2002)*, Japan and Hong Kong *(2000 to 2006, except 2004)* and Germany *(only in 2000, 2002 and 2003)*.
- Computer and Information: India, China *(2000 and from 2006 to 2013)*, UK *(until 2007)*.
- Royalties and License Fees: US, Japan, Germany *(since 2002, except 2006 and 2007)*, Netherlands *(since 2003)*, France *(2001 to 2012)* and UK *(except 2011)*.
- Other Business Services: China, Hong Kong, India *(since 2005)*, Germany, UK *(except 2009)*, Japan *(until 2011)*, US *(until 2010)* and France *(only in 2011)*.
- Personal, Cultural and recreational: UK, Hong Kong *(since 2001)*, India *(since 2005, except 2010)*, US *(until*

> *2011)*, China *(2005 to 2008)*, Netherlands *(2000 to 2011, except 2003 and 2004)* and France *(2010 to 2012)*.

5. Conclusion

This study examined the revealed comparative and competitiveness advantage of India and other nine countries which are in top ten leading services exporters by using Balassa (1965) - RXA and Vollrath (1991) - RC for the period of 2000 to 2013. Both the indices show that most of the developed countries in the samples such as Japan, Hong Kong, Germany and Netherlands are always enjoyed the comparative advantage in the transportation services. Spain is the only country has highest comparative advantage in travel services. In insurance, financial and personal, cultural and recreation services, UK is maintaining its comparative advantage. The Japan and USA have been enjoying highest comparative advantage over other countries in the Royalties and license fees services. In the other business services, China has gained comparative advantage.

Without any doubt, both the indices confirmed that India has high comparative and competitive advantage in computer and information services. The RXA index indicates that India had comparative advantage in communication services until 2007 and it also revealed that India has comparative advantage in other business services. Though, the RC index indicates that India has competitive advantage in communication services and other business services throughout the period, except 2002 and 2011 in communication services.The RC too indicates that (in the) India has competitive advantage in travel services, except 2008 and 2009. In the recent years, it can be observed that Personal, Cultural and Recreation services are gaining competitiveness. However, the magnitude of the indices decreases in case of all advantaged services sectors. Among the services exports, Computer and

information services are declining more than the other sectors. Therefore, it is necessary to take appropriate policy action to sustain the comparatively advantaged sectors. Thus the study concluding that India should consider travel, communication and personal, cultural and recreation services categories of services to enhance its competitive advantage along with the computer and information services.

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