Abstract

Globalization of Indian economy over the past two and half decades has affected a wide range of sectors, directly or indirectly. Spurred in part by technological advances and by political and economic compulsions, the process of globalization has led to the emergence of new forms of business opportunities, processes, and organizations in India. It is necessary to establish international rules and regulatory frameworks in areas which were previously the exclusive domain of domestic policies. The health sector is one such area which has been significantly affected by globalization.

The health care sector is among the most rapidly growing sectors in the world economy. Globalization of health products and services is reflected in the emergence of new kinds of health care markets over the past decade and in the increased cross-border delivery of health services through movement of personnel and consumers and through cross-border electronic and other means. It is also reflected in the growing number of companies engaged in joint ventures and collaborative arrangements in the health products and services sector and in the increased cross-border exchange and dissemination of information, education, and training in this sector. There has been a significant growth in opportunities and in the forms of trade and Foreign Direct Investment (FDI) in health products and services in recent years, both in developed as well as developing countries.

Although, health expenditure is increasing in most of the countries of the world over the past decades, but the per capita public expenditure on health has declined. Trade of health products and services is driven by many factors. These include: 1) the decline in per capita public sector expenditure on health, 2) the rise in private sector participation in health care in many countries, 3) the liberalisation of related sectors increased mobility of consumers, 4) due to declining travel costs and greater ease of travel, 5) technological advances enabling the cross-border delivery of many health services.

The presence of world-class hospitals and skilled medical professionals has strengthened India’s position as a preferred destination for medical tourism. The growth in this sector is underscored by the cost advantage that India provides to patients from developed countries. Notably, India attracts medical tourists from developing countries due to lack of medical facilities in these countries. Yoga, meditation, ayurveda, allopathy and other traditional
methods of treatment are major services offered that attracts medical tourists from Europe and the Middle-East to India.

One key ingredient of every health system is physical goods that are directly used for diagnosis and treatment of patients or that are vital for other elements of the health system, such as laboratory equipment to conduct medical research. The other main ingredients are the delivery of health services, and services related to public health. In an increasingly interconnected world, an ever larger share of these products and services is traded internationally.

The 12th Plan budget for the health sector has been enhanced by $55 billion, which accounts for 2.5 per cent of GDP (Gross Domestic Product). The government is encouraging the PPP model to improve availability of healthcare services. Incentives and tax holidays are being offered to hospitals and dispensaries providing health travel facilities.

It has observed that there is very less work on India’s trade in health products, neither any empirical study is attempted. Therefore, this study analyzing empirically India’s trade in health products and services. This study constitute the first attempt to cover all the traded health products using the product classification of the Harmonized System (HS) as a basis and health services using GATS classification of WTO in India.

Countries typically keep detailed records of goods that enter their domestic markets. In order to make national trade data comparable and in order to facilitate the exchange of goods across borders, the World Customs Organization has developed a classification for international trade in goods, the so called Harmonized System (HS) which is now being widely used across the world. The HS classification dissects all trade flows into clearly distinguishable groups and breaks them down into 97 chapters and almost 6000 subheadings.

It thereby follows a certain economic logic, mainly from crude products to more complex products and by sector of economic activity. The HS is a classification that was developed to clearly identify products that enter a country at the border and to be able to accord the respective treatment. Having been developed from a trade perspective, it does not offer the refinement which, from a public health perspective, would be desirable.

However, it offers enough detail to assemble a list of health products which covers a substantial share of all health products that enter the public health sphere and thus offers interesting opportunities for analysis. In this study, all internationally traded goods are taken into consideration that can contribute in one way or another to public health.
Analysing in detail the HS classification, following goods are-

- Chapter-29 (Organic chemicals),
- Chapter-30 (Pharmaceutical Products),
- Chapter-35 (Albuminoids, modified starches, glues, enzymes),
- Chapter-38 (Miscellaneous chemical products),
- Chapter-40 (Rubber and articles therof),
- Chapter-70 (Glass and glassware),
- Chapter-84 (Machinery, boilers, nuclear reactors, etc.),
- Chapter-87 (Vehicles other than railway tramway),
- Chapter-90 (Optical, photo, technical, medical, etc apparatus),
- Chapter-94 (Furniture, lighting, signs, prefabricated buildings)

On the basis of HS classification at 2-digit level and 207 subheadings (at 4 and 6-digit HS-2007) containing products which can be directly linked to a health purpose.

- All these products come under six sub-groups as follows:
  - Dosified Medicines
  - Bulk Medicines
  - Inputs specific to the pharmaceutical industry
  - Chemical inputs of general purpose
  - Hospital and laboratory inputs
  - Medical technology equipment

The present study has calculated the export revealed comparative advantage index. In the trade literature this index has been extensively used to analyze the comparative advantage of exports of a country trade, its changing pattern of export structure over the years. The RCA is an index for calculating the relative advantage or disadvantage of a certain class of goods or services as evidenced by trade flows. It is based on Ricardian Comparative
Advantage concept. It most commonly refers to an index introduced by Bela Balassa in 1965. Measures of RCA have been used to help assess a country’s export potential. The RCA measures relative export performance by country and industry/commodity. It defines a country’s share of world exports of a commodity divided by its share of total world exports. The index takes a values between 0 to $+\infty$. A value less than unity ($RCA<1$) implies that the country has no comparative advantage in the product. If the index exceeds unity ($RCA>1$), the country is said to have a revealed comparative advantage in the product.

Intra-Industry Trade Index (IIT) refers to the exchange of similar products belonging to the same industry. The term is usually applied to international trade where the same types of goods or services are both imported and exported. Balassa (1963) proposed the first measures of intra-industry trade that measured the degree of trade overlap-simultaneous import and export of good within an industry. The Balassa index has not found much favour, because an index, which measured trade that gave pure trade overlap a value of zero, was not intuitively appealing. In the present study Grubel-Lloyd (1975) index has been used for measuring the degree of India’s intra-industry trade in health products. In the literature many indices have been proposed to calculate the level of intra-industry trade, but the GL-index has been used because even today it is most widely used and most accepted index. Herb Grubel and Peter Lloyd (1975) provided the definitive empirical study on the importance of intra-industry trade and how to measure it. If $GL_i = 1$, there is only intra-industry trade, no inter-industry trade. This means for example the Country in consideration Exports the same quantity of good $i$ as much at it Imports. Conversely, if $GL_i = 0$, there is no intra-industry trade, only inter-industry trade. This would mean that the Country in consideration only either Exports or only Imports good $i$.

Early empirical investigation of IIT had been confined to “static” indicators such as the standard GL-index, which do not have adjustment process. However, a paper by Hamilton & Kniest (1991) pioneered the use of indicators based on marginal trade flows. It has revealed a new and potentially challenging dimension to the empirical analysis of IIT by suggesting a measure of marginal intra-industry trade (MIIT). Three methods have been proposed to date for the ‘dynamic’ analysis of IIT; viz., the Hamilton-Kniest index, the Greenaway et al. (1993) index, and the Brulhart (1994) index. Among the different versions of MIIT index, the most widely used index has been the one developed by Brulhart (1994). The Brulhart index of MIIT takes on values between 0 and 100. With 0
representing the scenario where new trade flows over a period of time are entirely due to inter-industry trade. Value 100 indicates a situation where new trade flows over a period of time are purely because of intra-industry trade.

For obtaining data on health products and services, we have to rely on secondary data source such as UN COMTRADE, ITC (International Trade Centre), WTA (World Trade Atlas), WTO (World Trade Organization), UNCTAD, WB-World Development Indicator, DGCI&S, Kolkata, etc. In the present study, Data is collected for the period of 2001 to 2014 (14 years). The data has collected at HS 2-digit level, 4-digit level, and 6-digit level for specific chapter.

India not only imports health products, but also exports a number of health products to various parts of the world. As a responsible member of the global community, India must take all possible steps to export only those products which do not pose a risk to health safety, which are effective and high quality. The export of organic chemicals has a rising trend over the period except in the year 2008. The down fall has occurred due to global recession in that period caused external demand for organic chemicals has declined which lead to decreased in export. India’s import of organic chemicals from the world has increased from US$176.9 million in 2001 to US$1823.9 million in the year 2014. There was unfavorable trade between India and the world for organic chemicals throughout the time period. Trade deficit was low in the beginning but after that it has deepened. India’s export of pharmaceutical products (chapter-30) has persistently rising except a mild fall in 2014, with having increasing trend in BoT.

India’s export of Chapter 35 to the world has increased in a step manner over the years and import of Chapter 35 from the world has increased continuously during the study period. India’s percentage share of export for Chapter 35 in the world has increased with some fluctuations over the time period. India’s percentage share of import for Chapter 35 in the world shows increasing trend. It has increased from 0.3 per cent in 2001 to 1.1 per cent in 2014.

India’s export of Chapter 70 (glass and glassware) to the world has increasing trend with a dip in 2008-09 due to global financial crisis in the same year. The highest volume of export has registered i.e., US$70.2 million in 2014 and lowest US$17.3 million in 2001. India’s import of Chapter 70 from the world has also increasing trend. It has increased from US$13.5 million in 2001 to 81.6 million in 2014. India’s percentage growth of
export for glass & glassware to the world has fluctuation over the time period. It has recorded a negative percentage growth in the year 2009 and very quick recovery in the succeeding year. The highest growth has registered i.e., 49 per cent in the year 2011. India’s percentage growth of import for glass & glassware from the world gained momentum in the initial years and registered highest growth in 2005 i.e., 48 per cent.

There was a continuous increasing trend of India’s export of Chapter 90 (Optical, photo, technical, medical etc. apparatus) to the world. It has increased from US$30.2 million in 2001 and US$87.9 million in 2007 to US$233.5 million in 2014. India’s import of Chapter 90 from the world has persistently increased over the years. It has increased from US$ 114.2 million in 2001 to US$464.8 million in 2008 and US$705.1 million in 2014. India’s percentage share of export for Chapter 90 has become double from 2001 (i.e., 0.2 per cent) to 2014 (i.e., 0.4). India’s percentage share of import for optical, photo, technical, medical etc. apparatus in the world has increased in a step like manner. It has increased from 0.6 per cent in 2001 to 1.3 per cent in 2014.

United States of America hold leading destination position in export of pharmaceutical products by India to different countries in the world. Its share has increased persistently over the years. It has increased from mere 11.9 in 2001 per cent to 33 per cent in 2014. South Africa (3.9 per cent), UK (3.8 per cent), Nigeria (3.3 per cent), Russia (3.8 per cent) are other top destination countries for export of pharmaceutical products by India in 2014. United States of America (20 per cent), Germany (13.9 per cent), China (7.7), Indonesia (7), Switzerland (7.8), France (6.5), Italy (6), Belgium (3.8), Brazil (3.6), and Denmark (3.4) are the leading exporters of pharmaceutical products to India in 2014.

India has comparative advantage in chapter 29 and 30 throughout the years except 2005 and 2009 for pharmaceutical products. It has comparative advantage in chapter 35 only in the year 2007, and in chapter 40 in 2002, 2003 and 2005. It also has comparative advantage for chapter 38 in some years. In all the health products, India’s comparative advantage has improved over the time period.

Switzerland has highest degree of comparative advantage among all the competitive nations throughout the study period. India has comparative advantage in chapter 38 (Miscellaneous chemical products) only for few years like 2001, 2005, 2006, 2007, 2008 and 2013. RCA in 9018 (Electro medical apparatus) and 2942 (Organic Compounds) for India is highest among its all competitive countries. India, Denmark, Italy, France and
Belgium have comparative advantage in 3503 (Gelatin and Gelatin derivatives) throughout the years (table A.4.23). France has highest degree of comparative advantage in 3503 among all competitive member countries.

All the competitive countries except Ireland, Netherlands, Spain and India have comparative advantage in 8414 (Air, Vacuum pumps) during the study period. Denmark, Belgium and UK have Comparative advantage for some years. Germany has highest degree of comparative advantage among all nations. India does not have comparative advantage in 8414, so it is advisable for India to import 8414 (Air, Vacuum pumps) from those countries which have comparative advantage. Germany, USA, France, UK, Italy and France have comparative advantage in 8413 (Pumps for liquids) over the years. Germany has keeping leading position followed by France in comparative advantage. India does not comparative advantage in 8413, thus it is fruitful for India to import 8413 (Pumps for liquids) from countries like Germany, France, USA, etc.

All the competitive countries except USA and Spain have comparative advantage in 300420 (Antibiotics nes, in dosage) over the time period. Switzerland has highest degree of comparative advantage among all the nations. India has significantly high comparative advantage in 300420 over the years. It is favorable for India to export 300420 (Antibiotics nes, in dosage) in the world market. India has highest comparative advantage in 300410 (Pencillines, or other streptomycin, in dosage) throughout the years among all its competitive nations. India, Spain, Ireland, France, Belgium and Switzerland have comparative advantage in 300390 (Medicaments nes, formulated in bulk) over the time period.

There is high Intra-industry trade for India in chapters 29 (Organic chemicals), 35 (Albuminoids, enzymes, etc.), 38 (Miscellaneous chemical products), 40 (Rubber and articles thereof), 70 (Glass and Glassware), and 84 (Machinery, nuclear reactors, boilers etc.). In chapter 70 (Glass and Glassware), India has intra-industry trade over the years. The value of GL index remains as high as above 0.80 during the study period. For chapter 94 (Furniture, lighting, signs, prefabricated buildings), India has intra-industry trade over the years. The value of GL index remains quite high throughout the years. It maintains more than 0.90 over the time period except few years.

There is increasing MIIT for chapters 29 (Organic chemicals), 30 (pharmaceutical products), 40 (Rubber and articles thereof), 84 (Machinery, nuclear reactors, boilers etc).
38 (Miscellaneous chemical products); while declining for chapters 94 (Furniture, lighting, signs etc.), 90 (Optical, photo, medical apparatus), 87 (Vehicles other than railway and tramway) and 70 (Glass and Glassware) over the time period. In case of chapter 35 (Albuminoids, Modified starches, glues, enzymes), new trade flow is in favour of intra-industry trade. The value of MIIT was very high in few years like 98.81 per cent in 2003 and 99.61 in 2010. International trade in health products have grown in a very dynamic way, especially trade in dosified and bulk medicines. Our results further indicate that international trade in health products is strongly dominated by trade among a small number of developed countries.

Until the emergence of World Trade Organization in 1995, there was no multilateral agreement to facilitate trade of services. Negotiations at the WTO led to the General Agreement on Trade in Services, a comprehensive agreement on the international trade in services. GATS explicitly provides for successive rounds of negotiation with a view to achieving a progressively higher degree of liberalization. Trade discussions in health services typically adopt a wide definition of what constitutes trade, involving the four modes of supply namely Mode 1: cross-border supply, Mode 2: consumption abroad, Mode 3: commercial presence, Mode 4: movement of health personnel.

India, asides from an increase in revenues, the importance of telemedicine trade in improving the national health system and the country image were highlighted as key advantages. Several major private hospitals have adopted telemedicine services, and a number of hospitals have developed public-private partnerships (PPPs), among them Apollo, AIIMS, Narayana Hridyalaya, Aravind Hospitals and Sankara Nethralaya. The early successes of telemedicine pioneers have led to increased acceptance and proliferation of telemedicine. Today there more than 120 telemedicine centres are available throughout India. We can use telemedicine exports as a way to innovate and to catalyze and redesign our health system.

India has made great stride in the field of telemedicine and e-health. Most of the telemedicine activities are in project mode supported by Indian Space Research Organization, Department of Information Technology which are being implemented through state governments. Few corporate hospitals have recently developed their own telemedicine network. Around 400 telemedicine nodes are in place across the country. No systematic evaluation of the telemedicine projects have been undertaken till date so as to
gather evidence on cost-benefit aspects of integrating telemedicine tool into current health delivery system. Ministry of Health, Government of India is currently initiating evaluation exercise so as to decide investment on e-health in the 11th five year plan.

India has historically been a regional medical tourism hub for neighbouring countries such as Afghanistan, Bangladesh, Bhutan, Maldives, Nepal, Pakistan and the Middle-East. Evidence of ancient hospitals offering healthcare facilities funded by local kings and monarchs can be found in foreign travellers’ accounts as well as scripts. Medical tourists seek treatment abroad for two main reasons: 1) vastly disparate costs or 2) access to timely treatment. Several countries around the world provide destinations for medical tourists, but most of the increasing traffic is concentrated in Southeast Asia and South America. Popular destination countries include India, Thailand, Singapore, Argentina, Brazil, Columbia, Costa Rica, and Panama among others. Patients who seek treatment in these countries can expect highly trained physicians, often educated in the United States or Great Britain, and hospitals accredited by the Joint Commission International (JIC), an arm of the Joint Commission, an American non-profit organization that accredits a variety of health related organizations. These hospitals are staffed with highly trained medical staff and utilize the latest medical technologies and equipment.

Africa is the group which depicts that largest percentage of total FTAs visit to India for medical treatment i.e. 8 per cent followed by South Asia 7.4 per cent. There is significant increase of FTAs for medical treatment in 2012 i.e. 2.6 from 2.2 per cent in 2011. South Asia shows highest percentage increment from 2011 to 2012. More international accreditation is required for Indian hospitals. India holds 15th rank in MTI, which is above Thailand (20), China (22), and Russia (25), which proves India may be an attractive destination of medical tourism in the World. The cost of surgery in India is one-tenth as compare to USA and other developed nation.

The overall trend is towards opening up various segments of the health services sector to foreign equity or other forms of participation. With mounting pressures on public resources and a squeeze on public sector expenditures on health care in many countries, commercial presence in health services is likely to become more important as a means of generating resources for investment and upgrading of health care infrastructure. Trade flows in this mode are mainly from developed to developing countries. However, a few corporate hospitals in developing countries such as India are looking towards regional
markets for establishing hospital chains and in the areas of hospital operations and management. Since January 2000, FDI is permitted up to 100 per cent under the automatic route in hospitals in India. Prior to January 2000, FDI in hospitals was permitted under the FIPB route, which meant that the FIPB would consider the investment proposals and take a decision and the Indian company with the RBI would make thereafter filings. Foreign Direct Investment into India is governed by the Foreign Exchange Management Act (FEMA), 1999, the rules and regulations made there under by the Reserve Bank of India and the Industrial Policy and Procedures issued by the Ministry of Commerce and Industry through the Department of Industrial Policy and Promotion, Secretariat for Industrial Assistance. India is currently an important destination for Foreign Direct Investment (FDI) which is one of the biggest emerging markets. India has received USD 1,32,837 million as aggregate FDI from April 2000 to April, 2011 and specifically hospital and diagnostic centres have received FDI of USD 1030.05 million from April 2000 up to April 2011 constituting 0.78 per cent of the total FDI into India.

India being an extremely large country with a huge population and an enormous potential to supply English speaking health professionals to many developed countries stands to gain a lot particularly when their demand rises worldwide. In recent years, health care institutions in prosperous countries have discovered India as a new source country for recruiting well-trained, English-speaking nurses and physicians. Today, Indian doctors have become a powerful influence in medicine across the world - from US, UK, Australia and Canada etc.

The movement of doctors from India to developed countries, mainly the US and the UK, is not a new phenomenon. They have been movement to developed countries for better training and higher medical degree since 1960s. While a majority of doctors prefer to stay there, some of them have come back. Since most of the doctors in India come from middle and higher income families, they find their own way to migrate. Contrary to this, nurses in India belong to lower or lower-middle class background. Indian medical professionals occupy the highest positions in world renowned clinics like the Mayo Clinic and a number of other prestigious institutions in the US. States Kerala and Tamil Nadu have established their own manpower export corporation to help the low-skilled professionals to move abroad. India’s comparative advantage w.r.t. the world in health services i.e., travel, health related (4.2.1) has shown in favour of India in the years 2013 and 2014. The degree of comparative advantage has increased over the years.