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# Recent US-China Tariff War: Opportunities for Indian Pharmaceutical Exports?

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## Abstract

The inception of World Trade Organization (WTO) in 1995 was expected to reduce trade barriers across member countries on one hand and facilitate growth through promotion of international trade in merchandise products and services on the other. The subsequent WTO-led reforms deepened the globalization wave. In recent times however, the world is witnessing a phase of ‘de-globalization’, with rise in trade barriers and inwardness. The recent increase in US tariffs on Chinese exports and countermeasures imposed by China are a case in point. In 2014 India has initiated the Make-in-India scheme for deepening industrialization and facilitating exports. The current paper evaluates the possible opportunities for expanding Indian pharmaceutical exports in the US market, given the increase in tariff against Chinese products with the help of select trade indices. The analysis portrays a modest opportunity for Indian pharmaceutical exports in the US market, based on their past performance. Only six products at HS 6-digit level, based on the six indicators, are found to be enjoying competitiveness in the US market. The paper concludes that facilitating R&D in pharma segment as well as expanding the coverage of mutual recognition of standards in US may be explored as possible steps for enhancing Indian exports.

**JEL Classification:** F10, F13

**Keywords:** India, US, Pharmaceutical trade, Trade indices, Trade policy, Make in India

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# Recent US-China Tariff War: Opportunities for Indian Pharmaceutical Exports?

## 1. Introduction

The inception of World Trade Organization (WTO) in 1995 was expected to reduce trade barriers across member countries on one hand and facilitate growth through promotion of international trade in merchandise products and services on the other. The subsequent WTO-led reforms deepened the globalization wave in the next two decades. In recent times however, the world is witnessing a phase of 'de-globalization', with rise in trade barriers and inwardness (James, 2017). The backlash towards globalization can be explained by the undercurrent of several factors. First, slow progress of the Doha round of negotiations since 2001 have lowered the attraction of the multilateral trade reform process to a major extent. The deadlock at the multilateral forum occur primarily due to the differences between developed and developing countries over key reform agendas (Fergusson, 2011). Second, faster resolution of tariff and other non-tariff barriers (NTBs) reforms have enhanced the role of regional trade agreements (RTAs) as a trade-promotion route (Neufeld, 2014). It has further been noted that trade facilitation measures are instrumental in strengthening participation in Global Value Chains (GVCs) and International Production Networks (IPNs) (Shepherd, 2016). Hence over the last decade a number of RTAs have implemented trade facilitation measures, investment agreement, mutual recognition agreements (MRAs) on technical standards etc. within their fold (Horn *et al.*, 2009). However, freer trade within the RTAs have lowered the incentive for countries to proactively commit at the WTO forums, and thereby threatened the multilateral negotiation process (Baldwin, 2014). Finally, the declining growth projections in the time of recession (IMF, 2018) has fueled the protectionist mindsets, in line with past trends (Baldwin and Evenett, 2009).

Since 1995, the US has participated aggressively in the WTO negotiation process and often pushed the developing countries for undertaking reform commitments within their territories. For instance, manufacturing subsidy reforms in China has been a major agenda for the country (CTI, undated). However, in the recent period the US policies have been increasingly influenced by the domestic defensive compulsions. For instance, the pullout from Trans-Pacific Partnership (TPP) in 2017 (Helble, 2017) and the rhetoric even against the North American Free Trade Agreement (NAFTA) partners like Mexico (Deeds and Whiteford, undated) deserve mention. While the rising protectionism in US can be part explained by electoral politics, perceptions on prevalence of WTO-incompatible trade policies in developing countries is another major driver (Lim, 2018). While the mindset change has been questioned within US (Lincicome, 2017), it is felt that the protectionist inclination would be in place there for some time.

While the US has raised voice against policies of several trade partners (e.g., Mexico, Russia), its intervention on Chinese products has by far been most harsh. In June 2018, the US Trade Representative (USTR) announced increased tariff on a wide range of Chinese exports to US worth \$50 billion. The trade war was further escalated with subsequent announcement on increased tariffs on Chinese imports worth another \$200 billion. The covered items facing 25 percent duty include both low and high tech manufacturing products (USTR, 2018). In retaliation, the Chinese government imposed countermeasures, covering American exports of meat, seafood, grains, alcohol, tobacco etc. with a trade value of \$60 billion, where the duties were increased between 5-

10 percent (DW, 2018). It is noted that continuation of such trade wars would lead to significant losses for countries subjected to such measures (Bouet and Laborde, 2017).

In 2014 India has initiated a drive towards deepened industrialization (Make-in-India) by both attracting foreign multinationals to produce in India and by improving the Doing Business indicators and enabling the domestic players to participate in GVCs and IPNs. The sectors covered under this initiative includes both medium (e.g., food processing, leather, textile and garments) and high tech manufacturing sectors (e.g., auto-components, aviation, defense manufacturing, electronic and electrical machinery, pharmaceuticals). The country is also increasingly focusing for RTA route and newer opportunities for export promotion (Chakraborty, 2018). Therefore a prolonged trade war between China and US may provide Indian manufacturing exports a greater foothold in the US market for key manufacturing products.

In this background, the current paper evaluates the possible opportunities for expanding Indian exports in the US market by bridging the possible gap emerging due to the trade war between the US and China. It is observed from Table 1 that the USTR tariff impositions on China are spread over 10 HS chapters. In the Table the count of products at disaggregated level under the 10 HS chapters are noted, along with the number of Indian export items. The third column shows the degree of commonality between the US measures on China and possible Indian export items. A higher number implies opportunities for Indian exports in US, as the corresponding Chinese products are witnessing higher import tariff against them. In the last column, the percentage share of India in world exports across the HS chapters are noted.

<b>Table 1: Count of Sanctioned Products</b>					
<b>HS Code</b>	<b>Description</b>	<b>Count of total Make in India Products</b>	<b>Count of tariff-facing Chinese Products</b>	<b>Percent of Affected Products (%)</b>	<b>India's Percent Share in World Exports (%)</b>
28	Inorganic chemicals	273	4	1.5	1.2
29	Organic chemicals	1111	38	3.4	3.1
30	Pharmaceuticals	59	45	76.3	2.5
73	Articles of Iron and Steel	254	44	17.3	2.3
76	Aluminum and articles thereof	72	27	37.5	1.7
85	Electrical machinery and equipment	641	241	37.6	0.4
86	Railway and locomotives	32	17	53.1	0.5
87	Vehicles and auto-components	218	47	21.6	1.1
88	Aircraft, spacecraft, and parts thereof	17	16	94.1	1.2
89	Ships, boats and floating structures	22	11	50.0	2.9

Source: Authors' calculation based on Trade Map online database

It is observed that for aircraft, spacecraft, and parts thereof (HS 88) and pharmaceutical products (HS 30) the ratio is 94 percent and 76 percent respectively, underlining the opportunities for India in US market in these segments. However, in case of pharmaceutical products India contributes

2.5 percent to world exports as compared to 1.2 percent in case of aircraft, spacecraft, and parts thereof. Therefore the current paper focuses on assessing opportunities for pharmaceutical products in the US market. The analysis is arranged along the following lines. The introduction is followed by a brief discussion on Make in India initiative for Pharma sector and US imports in the same sector respectively. Then through a few well-known trade indices, the competitiveness of India's pharma exports to US is commented upon. Finally, based on the findings, certain policy conclusions are drawn.

## **2. Make-in-India initiative in Wider Policy Context: Pharma Sector**

In 2004, India formed the National Manufacturing Competitiveness Council to promote the manufacturing sector competitiveness. In 2011, the 'National Manufacturing Policy' identified a number of sectors where through competitiveness enhancement India can deepen its presence in the world (GoI, 2011a). Subsequently, the need for enhancing manufacturing exports were explored through policy initiatives (GoI, 2011b). In continuation, the 'Make in India' scheme was introduced in 2014 to attract investments, encourage innovation, enhance skill level and make India a global hub of manufacturing activities. The initiative focusses on 25 key sectors, which include - automobiles, aviation, chemicals, IT & BPM, pharmaceuticals, construction, defense manufacturing, electrical machinery, food processing, textiles and garments, ports, leather, media and entertainment, wellness, mining, tourism and hospitality, railways, automobile components, renewable energy, biotechnology, space, thermal power, roads and highways and electronics systems (GoI, undated).

It is observed that pharma sector is in the reckoning of the policymakers consistently as a major contributor to both value addition and exports. The notable initiative under the 'Make in India' programme in this sector are visible through – reduction of coronary Stents price by 85 percent, launching of Pharma Jan Samadhan and Pharma Sahi Daam, approval of 11 National Institutes of Pharmaceutical Education & Research (NIPERs) and so on (GoI, 2018).

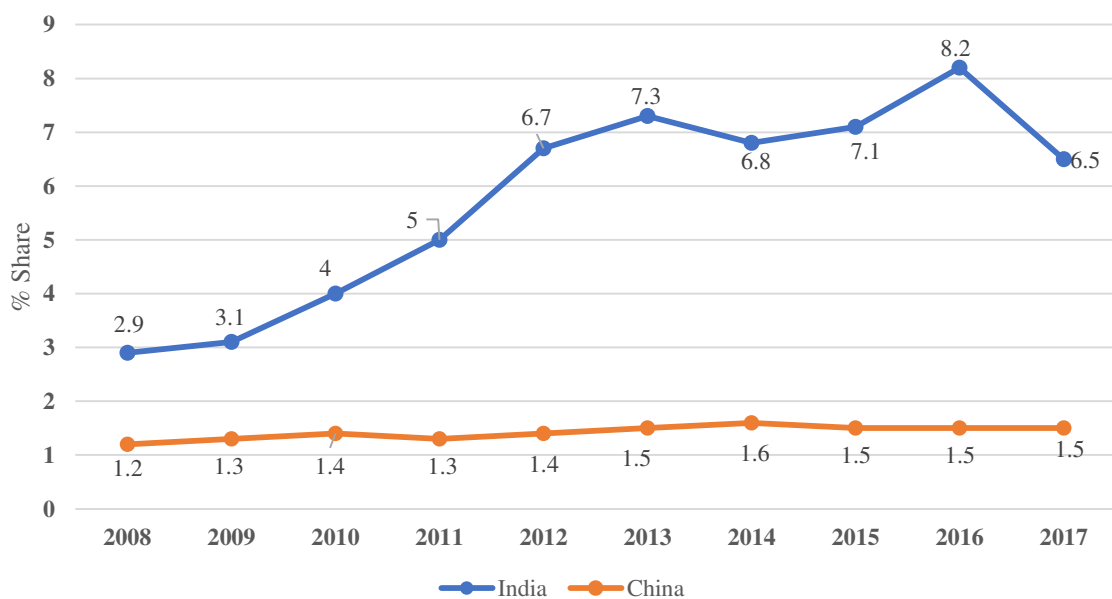
The pharma industry in India is 3<sup>rd</sup> largest in terms of volume and 10<sup>th</sup> largest in terms of value, thus contributing to around 10 percent of global production. The sector, which stood at US\$ 16.4 billion in 2016-17, has contributed to 6 per cent of the country's total exports (IBEF, 2018). India is an exporter of both bulk drugs and formulations. It has also emerged as a major player in R&D services for global corporates, either through contracts or collaborative programmes (PWC, 2010). To facilitate technology transfer from abroad under Make in India, FDI in the pharmaceutical sector is allowed up to 100 percent through automatic route for manufacturing of medical devices. In addition, 'Pharma Vision 2020' has been introduced to make India a global leader in end-to-end drug manufacture (IBEF, 2015), which would make India a drug discovery and innovation powerhouse through capacity creation at home. Focus is also given on encouraging indigenization of Active Pharmaceutical Ingredients (APIs) with a goal to lower their imports from China (ASSOCHAM, 2016). A concerted effort in this sphere is crucial because while the generic drug exports from the country is increasing, it's reliance on China for import of raw materials is quite high (Kallummal and Bugalya, 2012). It has been noted that India's global presence can be deepened further through coordinated policy efforts, namely - upgradation of quality systems, infrastructure creation, capability enhancement, move to create a brand for reliable, high-quality medicine supply, improving transparency and predictability of regulations and so on (FICCI, 2015).

Apart from the direct influence of the ‘Make in India’ initiative, the pharma sector has received support from other government programmes as well. India’s Foreign Trade Policy (2015-20) was launched in 2015 with the objective to boost exports and establish India as a major player in global trade by 2020. The introduction of Merchandise Exports from India Scheme (MEIS) under the FTP (2015-20), which intends to ensure the competitiveness of Indian exports in partner countries through incentives in terms of duty credit scrip, provided a major boost to the pharmaceutical sector (GoI, 2015). In addition, the ‘Make in India’ products are also entitled to public procurement policies (GoI, 2017). At the broader canvas, the FTP instruments integrate with the Make in India initiative and other regulatory reforms to improve Ease of Doing Business in India, and thereby intensify manufacturing activities and exports.

### 3. Comparing Presence of China and India in US Pharmaceutical Imports

According to IFPMA (2017), global pharmaceutical market is expected to reach USD 1.48 trillion by 2021, growing from USD 1.10 trillion in 2016, which can be explained by market expansion in emerging countries and ageing population growth in the developed countries. The growth of the global brand medicines and generics sales are forecasted to reach USD 815-832 billion and USD 495-505 billion respectively by 2021. It is observed from Trade Map data that in global import of pharmaceutical products (HS 30), US’s share has significantly increased from 12.6 percent in 2013 to 17.2 percent in 2017. India on the other hand has emerged as one of the major exporters of generic drugs, accounting for 20 percent of the global demand. Indian medicines are now exported to almost all countries with US as the key market (IBEF, 2018). It is observed from Trade Map data that in global export of pharmaceutical products (HS 30), India’s share has increased marginally from 2.4 percent in 2013 to 2.5 percent in 2017.

**Figure 1: Percent share in US Pharma imports (by value)**



Source: Authors’ calculation based on Trade Map (ITC, undated)

Figure 1 shows the shares of India and China in US pharmaceutical imports over the last decade. It is observed that the penetration of India in US market for this category has been deeper as compared to China throughout the period. While the share of China has stagnated around 1.5 percent since 2013, India has improved its share from a meagre 2.9 percent in 2008 to 6.5 percent in 2017, though over 2016-17 a drop in the same has been noticed. The graph indicates growing recognition and consequent demand for Indian pharma products in US market.

Table 2 displays the share of China and India in US import of pharmaceutical products by HS headings (4-digit). It is observed that while China is a major player in dried glands and other organs (HS 3001), wadding, gauze, bandages and the like (HS 3005) and pharmaceutical preparations and products (HS 3006), Indian exports are mostly concentrated in medicaments consisting of mixed or unmixed products (HS 3004), medicaments consisting of two or more constituents mixed together (HS 3003) and pharmaceutical preparations and products (HS 3006). It is observed that India's average shares in US imports of HS 3003, 3004 and 3006 have increased considerably during the recent period. In other words, a clearly demarked pattern of competitiveness of the two countries emerges from the US import analysis at the heading level.

<b>Table 2: US Imports by Value (USD 000 and Percent share)</b>					
<b>HS Code</b>	<b>Description</b>	<b>India</b>		<b>China</b>	
		<b>2008-12</b>	<b>2013-17</b>	<b>2008-12</b>	<b>2013-17</b>
3001	Dried glands and other organs for organo-therapeutic uses etc.	816 (0.17)	406 (0.10)	264772 (56.28)	176268 (43.62)
3002	Human blood; animal blood prepared for therapeutic, prophylactic or diagnostic uses etc.	6606 (0.07)	6629 (0.37)	23971.8 (0.28)	75099.2 (0.42)
3003	Medicaments consisting of two or more constituents mixed together etc.	27022 (2.01)	36443 (4.01)	36303.4 (2.71)	55192.8 (6.07)
3004	Medicaments consisting of mixed or unmixed products etc.	2625511 (5.56)	5782129 (9.66)	60943 (0.12)	269849 (0.45)
3005	Wadding, gauze, bandages and the like	195 (0.02)	4619 (0.45)	263320 (34.62)	391619 (38.30)
3006	Pharmaceutical preparations and products	4595 (0.21)	69132 (2.70)	168828 (7.77)	283980 (11.10)

Source: Authors' calculation based on Trade Map (ITC, undated)

#### 4. Methodology and Data

For the analysis, six well-known trade indices have been used for understanding India's competitiveness in general and in the US market in particular, while comparing with the corresponding numbers for China. The following indices have been calculated at HS sub-heading level (6-digit).

First, for understanding overall competitiveness of Indian exports, the Revealed Comparative Advantage (RCA) index has been computed by the following formula:

$$RCA_i = \frac{\sum A_{ix} / \sum A_x}{\sum W_{ix} / \sum W_x}$$

where,  $\sum A_{ix}$  stands for export of a particular HS 6-digit product from country A (say, India),  $\sum A_x$  stands for total exports from A,  $\sum W_{ix}$  stands for exports of the product by all countries and  $\sum W_x$  stands for total global exports. If the RCA index is higher than unity, then a country is said to possess comparative advantage in that product category.

Second, for understanding whether Indian exports are increasingly moving towards a partner country, the Export Intensity Index (EII) has been computed by the following formula:

$$EII_{IND,j} = \frac{IND_j^X / IND_W^X}{WOR_j^X / WOR_W^X}$$

where,  $IND_j^X$  stands for a particular HS 6-digit product from India to country  $j$  (say, US),  $IND_W^X$  stands for total exports of that product from India to all countries,  $WOR_j^X$  stands for total export of the HS 6-digit product from rest of the world to country  $j$  (or, import of the product by country  $j$  from rest of the world) and  $WOR_W^X$  stands for total global export of the HS 6-digit product (or, total global export of the HS 6-digit product). If the EII index for India in a product category is found to be greater than unity, then it is said to be having an intensive export relationship with that partner for that product.

Third, for understanding whether Indian exports are indeed deepening their presence in the imports of a partner country, Revealed Trade Barrier (RTB) index has been computed by the following formula:

$$RTB_{PART, IND} = \frac{PART_{IND}^{Mi} / PART_{IND}^{MT}}{PART_{WOR}^{Mi} / PART_{WOR}^{MT}}$$

where,  $PART_{IND}^{Mi}$  stands for imports of a particular HS 6-digit product by trade partner (say, US) from India,  $PART_{IND}^{MT}$  stands for total imports by partner country from India,  $PART_{WOR}^{Mi}$  stands for imports of the HS 6-digit product by partner country from rest of the world and  $PART_{WOR}^{MT}$  stands for total imports by partner country from rest of the world. In case the RTB index is greater than unity, it might be noted that India is not facing many trade barriers in import relationship in the partner country. EII and RTB taken together can be considered as a measure of competitiveness of a product in a partner country market.

Fourth, in case there is both-way trade between India and the partner country in a HS 6-digit level product, the emerging specialization can be checked with the Export Specialization Index (ESI), computed by the following formula:

$$ESI_{ij} = \frac{IND_{ij}^X / IND_{Tj}^X}{PRT_{IND}^X / PRT_{TIND}^X}$$



where,  $IND_{ij}^X$  stands for exports of a particular HS 6-digit product from India to country j (say, US),  $IND_T^X$  stands for total exports from India to partner country,  $PRT_{iIND}^X$  stands for exports of the particular product by partner country to India and  $PRT_{TIND}^X$  stands for total exports by partner country to India. In case the ESI index exceeds unity, India is said to be developing an export specialization with respect to the partner country. It can be confirmed by checking whether India's export value is consistently greater than the corresponding import value, i.e., whether India enjoys a positive trade balance (TB) in that category.

Finally, India's nature of price competitiveness in a particular product category can be checked by computing the Unit Price Ratio (UPR) by the following formula:

$$UPR_{ij} = \frac{UV_{ij}^X}{UV_{ij}^M}$$

where,  $UV_{ij}^X$  stands for the unit value of India's exports of a particular HS 6-digit product to country j (say, US) and  $UV_{ij}^M$  stands for the unit value of India's imports of that product from the partner country. If the UPR index exceeds unity, and India is enjoying positive trade balance as well as ESI greater than 1, it might occur due to better quality of Indian export, in line with the framework developed by Stiglitz (1987). Conversely, a UPR less than unity can coexist with positive trade balance and ESI greater than 1, if there is price competitiveness in favour of Indian exports.

The data on trade values and unit prices for computing the indices used in the analysis has been accessed from the Trade Map database (ITC, undated). The last decade, i.e., 2008-17 has been considered as the period of analysis to identify the emerging trends, if any. In order to ensure that annual fluctuations do not influence the conclusions, five-year averages of the trade indices have been compared.

## 5. Interpretation of Trade Indices

The Indian competitiveness scenario for the HS 6-digit codes under pharmaceuticals (HS 30) in both absolute and bilateral levels, are reported in Table 3. From the first set of columns, it is observed that the average RCA for only seven products has been consistently above unity over the two periods considered in the analysis. In other words, India is enjoying competitiveness in export of these products in global scale. Second, comparing the average EII and RTB indices for India with respect to the US market for the corresponding time periods, it can be seen that the indices for these products are also above unity. It can therefore be noted that, India may benefit in these product categories in the US market as a result of the importing country increasing tariff against China therein. These product categories are: Medicaments containing hormones or steroids used as hormones (HS 300339), Medicaments consisting of two or more constituents mixed together (HS 300390), Medicaments containing penicillins or derivatives thereof with a penicillanic acid structure (HS 300410), Medicaments containing antibiotics, put up in measured doses (HS 300420), Medicaments containing provitamins, vitamins etc. (HS 300450), Medicaments consisting of mixed or unmixed products for therapeutic or prophylactic purposes (HS 300490) and Chemical contraceptive preparations based on hormones, prostaglandins, thromboxanes, leukotrienes etc. (HS 300660). As noted from Table 2, India already enjoys deepening presence in US market for the corresponding HS chapters.

Table 4 depicts the corresponding scenario for China. It is noted from the table that only for Opacifying preparations for x-ray examinations; diagnostic reagents for administration to patients (HS 300630), China enjoy an absolute competitiveness in global market (i.e., RCA greater than unity). The product group is observed to be enjoying bilateral competitiveness (i.e., both EII and RTB greater than unity) in the US market as well.

Table 5 summarizes India's bilateral competitiveness as reflected from the ESI, TB and UPR. It is seen that the first two conditions are favourable (i.e., ESI greater than unity, TB positive) for a total of nine product segments. The HS headings are – Extracts of glands or other organs or of their secretions, for organo-therapeutic uses (HS 300120), Medicaments containing antibiotics, not in measured doses or put up for retail sale (HS 300320), Medicaments containing insulin, not in measured doses or put up for retail sale (HS 300331), Medicaments containing hormones or steroids used as hormones (HS 300339), Medicaments consisting of two or more constituents mixed together (HS 300390), Medicaments containing penicillins or derivatives thereof with a penicillanic acid structure (HS 300410), Medicaments containing antibiotics, put up in measured doses (HS 300420), Medicaments containing provitamins, vitamins etc. (HS 300450) and Medicaments consisting of mixed or unmixed products for therapeutic or prophylactic purposes (HS 300490). Among the nine products, barring the exception of HS 300120 all other commodities have the UPR less than unity. In other words, India's entry in the US market for these products might be backed by price competitiveness.

The corresponding ESI, TB and UPR scenario for China has been shown with the help of Table 6. It is observed that only for Medicaments containing antibiotics, not in measured doses or put up for retail sale (HS 300320), the competitiveness conditions (i.e., ESI greater than unity, TB positive) are getting fulfilled. The UPR for the product is less than unity, indicating possible price competitiveness therein.

Combining the two lists emerging from Tables 3 and 5, it can be seen that India is enjoying clear advantage in six product categories in the US market, namely – Medicaments containing hormones or steroids used as hormones (HS 300339), Medicaments consisting of two or more constituents mixed together (HS 300390), Medicaments containing penicillins or derivatives thereof with a penicillanic acid structure (HS 300410), Medicaments containing antibiotics, put up in measured doses (HS 300420), Medicaments containing provitamins, vitamins etc. (HS 300450) and Medicaments consisting of mixed or unmixed products for therapeutic or prophylactic purposes (HS 300490). As noted from Table 2, India's presence in US imports of HS 3003 and HS 3004 are already substantial. Based on the evidence from the indices, it appears that China might not offer significant competition to India in these six product categories in US market.

Table 3: Trade Indices for India in Pharmaceutical Products (HS Code 30)						
HS Code	Revealed Comparative Advantage		Export Intensity Index		Revealed Trade Barrier	
	2008-12	2013-17	2008-12	2013-17	2008-12	2013-17
300410	5.47	8.46	0.99	1.72	14.60	11.03
300420	3.44	3.82	3.94	3.98	15.99	16.10
300339	10.94	3.55	26.44	3.11	16.32	6.68
300450	4.05	3.21	3.12	3.01	1.77	10.12
300660	0.78	2.68	0.02	1.39	0.29	3.21
300490	1.13	2.09	2.06	2.35	3.58	5.45
300390	2.92	1.91	1.29	2.83	1.60	2.71
300691	0.32	1.59	0.00	0.00	0.00	0.00
300220	0.80	1.48	0.02	0.03	0.00	0.00
300331	1.65	0.98	7269.83	2.04	22.52	0.20
300320	5.98	0.98	1.17	0.45	0.81	1.07
300670	0.77	0.95	1.06	0.05	0.01	0.00
300431	0.65	0.88	1.79	0.69	0.01	0.00
300120	0.76	0.55	5.57	22.77	2.54	1.31
300610	0.29	0.34	0.07	0.12	0.04	0.11
300630	0.06	0.20	0.33	0.44	0.00	0.21
300439	0.25	0.20	0.99	1.04	0.81	0.76
300290	0.38	0.19	0.49	0.60	0.20	0.08
300640	0.23	0.16	1.17	1.33	0.09	0.03
300230	0.13	0.13	0.05	0.35	0.05	0.01
300432	0.04	0.12	0.00	0.52	0.03	0.42
300510	0.12	0.09	0.12	0.10	0.01	0.00
300620	0.05	0.03	4.75	0.00	0.20	1.37
300212	0.00	0.00	0.00	0.00	0.00	0.00
300215	0.00	0.00	0.00	0.00	0.00	0.00
300449	0.00	0.00	0.00	0.00	0.00	0.00
300219	0.00	0.00	0.00	0.00	0.00	0.00
300211	0.00	0.00	0.00	0.00	0.00	0.00
300213	0.00	0.00	0.00	0.00	0.00	0.00
300214	0.00	0.00	0.00	0.00	0.00	0.00
300341	0.00	0.00	0.00	0.00	0.00	0.00
300342	0.00	0.00	0.00	0.00	0.00	0.00
300349	0.00	0.00	0.00	0.00	0.00	0.00
300360	0.00	0.00	0.00	0.00	0.00	0.00
300441	0.00	0.00	0.00	0.00	0.00	0.00
300442	0.00	0.00	0.00	0.00	0.00	0.00
300460	0.00	0.00	0.00	0.00	0.00	0.00

Source: Authors' calculation based on Trade Map (ITC, undated)

<b>Table 4: Trade Indices for China in Pharmaceutical Products (HS Code 30)</b>						
<b>HS Code</b>	<b>Revealed Comparative Advantage</b>		<b>Export Intensity Index</b>		<b>Revealed Trade Barrier</b>	
	<b>2008-12</b>	<b>2013-17</b>	<b>2008-12</b>	<b>2013-17</b>	<b>2008-12</b>	<b>2013-17</b>
300410	0.26	0.32	0.01	0.01	0.01	0.05
300420	0.01	0.06	0.85	0.67	0.06	0.07
300339	0.00	0.00	3.79	0.00	0.95	0.00
300450	0.13	0.12	3.85	2.56	0.04	0.03
300660	0.04	0.06	0.48	2.33	0.01	0.23
300490	0.00	0.00	0.20	0.38	0.01	0.02
300390	0.00	0.00	2.07	2.41	0.16	0.36
300691	0.11	0.03	2.29	1.48	0.00	0.00
300220	0.01	0.02	0.00	0.01	0.00	0.00
300331	0.01	0.00	0.00	0.00	0.00	0.00
300320	1.39	2.43	0.16	0.69	0.12	0.13
300670	0.24	0.36	10.88	2.92	0.02	0.50
300431	0.01	0.14	0.00	0.00	0.00	0.00
300120	0.50	0.34	1.87	1.34	0.01	0.54
300610	0.03	0.01	2.33	1.34	0.01	0.00
300630	1.01	1.41	2.32	2.49	1.11	1.35
300439	0.02	0.01	0.04	0.07	0.00	0.00
300290	0.03	0.03	0.75	0.55	0.01	0.01
300640	0.09	0.09	0.73	0.39	0.05	0.04
300230	0.04	0.03	0.00	0.00	0.00	0.00
300432	0.03	0.03	0.00	0.00	0.00	0.01
300510	0.70	0.82	2.00	1.63	0.92	1.09
300620	0.01	0.02	0.72	0.04	0.02	0.02
300212	0.14	0.14	0.00	0.00	0.00	0.00
300215	0.25	0.22	0.00	0.00	0.00	0.00
300449	0.00	0.00	0.00	0.00	0.00	0.00
300219	0.00	0.00	0.00	0.00	0.00	0.00
300211	0.00	0.00	0.00	0.00	0.00	0.00
300213	0.00	0.00	0.00	0.00	0.00	0.00
300214	0.00	0.00	0.00	0.00	0.00	0.00
300341	0.00	0.00	0.00	0.00	0.00	0.00
300342	0.00	0.00	0.00	0.00	0.00	0.00
300349	0.00	0.00	0.00	0.00	0.00	0.00
300360	0.00	0.00	0.00	0.00	0.00	0.00
300441	0.00	0.00	0.00	0.00	0.00	0.00
300442	0.00	0.00	0.00	0.00	0.00	0.00
300460	0.00	0.00	0.00	0.00	0.00	0.00

Source: Authors' calculation based on Trade Map (ITC, undated)

<b>Table 5: Trade Indices for India in Pharmaceutical Products with USA (HS Code 30)</b>						
<b>HS Code</b>	<b>Export Specialization Index</b>		<b>Trade Balance</b>		<b>Unit Price Ratio</b>	
	<b>2008-12</b>	<b>2013-17</b>	<b>2008-12</b>	<b>2013-17</b>	<b>2008-12</b>	<b>2013-17</b>
300331	863.01	907.32	1551	265	0.00	0.03
300339	174.59	34.87	45475	2764	0.05	0.08
300450	13.72	14.61	27756	19440	0.27	0.14
300410	5.61	7.11	26120	128829	0.40	0.37
300230	7.37	5.73	-2286	-3022	0.93	0.95
300420	5.53	5.30	219750	338724	0.23	0.35
300691	0.79	5.23	-71	-537	0.33	1.79
300120	3.24	3.56	77	1434	0.38	1.62
300390	2.48	3.28	63834	59596	0.19	0.34
300320	7.27	2.15	7581	233	0.23	0.74
300490	1.02	1.64	1279701	3509898	0.06	0.15
300670	3.52	1.57	-191	-1206	0.65	2.21
300220	1.05	1.20	-12868	-25946	0.08	0.06
300660	0.46	0.94	-42	60476	0.12	0.11
300610	0.54	0.55	-3058	-5050	0.18	0.09
300431	0.28	0.28	31558	32671	0.15	0.03
300640	0.16	0.12	-1791	-2116	0.25	0.10
300630	0.03	0.11	-439	1102	0.70	1.03
300439	0.15	0.11	7027	4351	0.03	0.05
300510	0.12	0.09	-1058	-2042	0.27	0.30
300432	0.02	0.06	2	2631	0.07	0.04
300290	0.14	0.05	-2884	-9927	0.07	0.18
300620	0.16	0.05	-270	-1285	0.27	0.16
300212	0.00	0.00	0	-4245	0.00	0.09
300215	0.00	0.00	0	-4749	0.00	0.03
300449	0.00	0.00	0	724	0.00	0.02
300219	0.00	0.00	0	-1098	0.00	0.16
300211	0.00	0.00	0	-254	0.00	0.01
300213	0.00	0.00	0	-707	0.00	0.00
300214	0.00	0.00	0	1	0.00	0.00
300341	0.00	0.00	0	0	0.00	0.02
300342	0.00	0.00	0	0	0.00	0.00
300349	0.00	0.00	0	0	0.00	0.06
300360	0.00	0.00	0	0	0.00	1.14
300441	0.00	0.00	0	0	0.00	0.06
300442	0.00	0.00	0	0	0.00	0.03
300460	0.00	0.00	0	0	0.00	0.00

Source: Authors' calculation based on Trade Map (ITC, undated)

<b>Table 6: Trade Indices for China in Pharmaceutical Products with USA (HS Code 30)</b>						
<b>HS Code</b>	<b>Export Specialization Index</b>		<b>Trade Balance</b>		<b>Unit Price Ratio</b>	
	<b>2008-12</b>	<b>2013-17</b>	<b>2008-12</b>	<b>2013-17</b>	<b>2008-12</b>	<b>2013-17</b>
300331	59.43	0.09	0	0	0.00	0.00
300339	0.04	0.01	15	-86	0.01	0.02
300450	0.45	0.53	-20877	-41272	0.15	0.12
300410	0.27	0.26	-14556	173	0.13	0.13
300230	2.23	1.31	-61260	-176908	0.53	0.60
300420	0.22	0.20	-102890	-124679	0.10	0.10
300691	0.25	0.11	-71	-537	0.56	0.60
300120	2.13	2.11	651	-242	1.27	7.86
300390	0.22	0.40	-15474	44621	0.18	0.27
300320	2.35	5.44	1928	10225	0.11	0.09
300490	0.04	0.05	-372115	-828073	0.04	0.05
300670	1.01	0.59	-363	-1644	0.36	0.59
300220	0.01	0.01	-46301	-58580	0.16	0.12
300660	0.01	0.02	791	14763	0.33	0.33
300610	0.07	0.02	-44749	-117101	0.08	0.05
300431	0.00	0.05	-138344	-26491	0.51	0.52
300640	0.06	0.07	-1840	-11838	0.22	0.13
300630	0.51	0.79	165895	319813	1.25	1.85
300439	0.01	0.01	-63969	-103043	0.06	0.07
300510	0.66	0.76	44887	59704	0.36	0.42
300432	0.01	0.02	-1412	-2052	0.03	0.03
300290	0.01	0.01	-6254	-28198	0.18	0.09
300620	0.02	0.04	-3525	-17033	0.01	0.01
300212	0.00	0.00	0	-131239	0.00	0.05
300215	0.00	0.00	0	-175231	0.00	0.01
300449	0.00	0.00	0	-3302	0.00	0.01
300219	0.00	0.19	0	-8305	0.00	0.02
300211	0.00	0.00	0	-14	0.00	0.00
300213	0.00	0.00	0	-142	0.00	0.00
300214	0.00	0.00	0	-63	0.00	0.00
300341	0.00	0.00	14	78	0.00	0.00
300342	0.00	0.00	14	78	0.00	0.00
300349	0.00	0.16	0	0	0.00	0.02
300360	0.00	0.03	0	0	0.00	0.05
300441	0.00	0.00	-3585	-4846	0.00	0.00
300442	0.00	0.00	-3585	-4846	0.00	0.00
300460	0.00	2.53	0	9	0.00	0.03

Source: Authors' calculation based on Trade Map (ITC, undated)

## 6. Conclusion

One crucial objective of the Make in India initiative has been to attract foreign firms to establish production facility in India and transfer modern technology, so that domestic firms also benefit from the spillover effect in long run. The other goal is to reduce import dependency and enhance domestic production throughout the value chain, ensuring maturity of the Indian players in the process. For facilitating the process in manufacturing sector in general and pharma sector in particular, a number of steps has been undertaken in the last couple of years (GoI, 2018). Though India offer a growing domestic market to facilitate Make in India scheme, export promotion would play a crucial role in realization of both the objectives. It is therefore imperative that India is able to extract the benefits of appropriate opportunities in trade arena, and the recent US tariff imposition on China offer India one such occasion.

The analysis however portrays a modest opportunity for Indian pharmaceutical exports in the US market, based on their past performance. Only six products, based on the six indicators, are found to be enjoying competitiveness in the US market. The result can be part explained by the fact that Chinese and Indian pharma exports are entering US market in demarked product categories (Table 2). Nevertheless, the results reflect modestly on absolute performance of Indian pharma exports in the US market so far, despite greater focus on the sector in recent period. The scenario therefore pose a crucial challenge for Indian pharma sector. The modest performance expectation might be shaped by two broad factors. First, the Indian exports are intensive in generic products, rather than patented medicines. The scenario is not expected to change drastically, given the modest R&D scenario prevailing in pharma sector (Joseph, 2011). Government incentives to facilitate research in the pharma sector might play a crucial role in this regard. Second, though Indian firms have adopted the Good Manufacturing Practices (GMP) guidelines, compliance with the evolving standards set by US Food and Drug Administration (USFDA) would continue to play a crucial role. Many Indian products, including medicine items, have been rejected by USFDA over the last decade (ET, 2016; Phadnis, 2017). Therefore, developing a framework to ensure standard equivalence with US would be important in enhancing Indian pharma exports.

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