Bilateral trade costs and growth of trade in services: India and China a comparative study
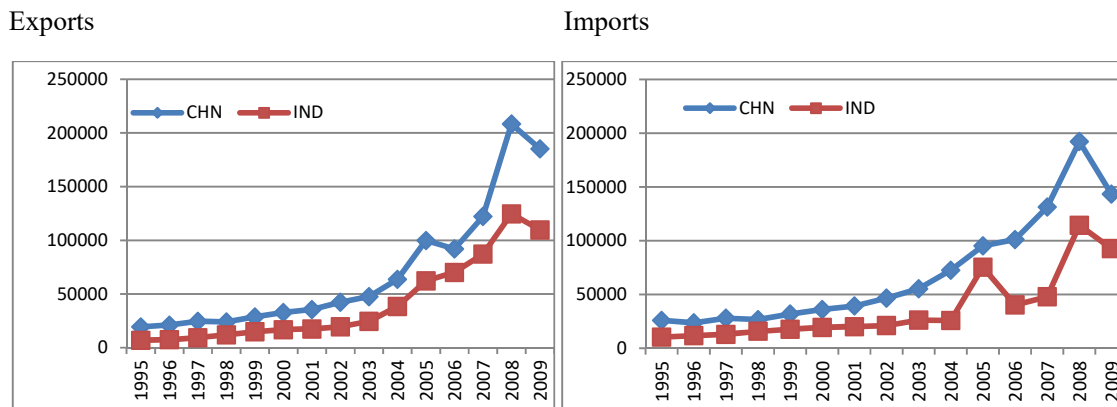
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Abstract: Compared to China, services are more important in the Indian economyin terms of its contributions both in GDP and total exports. This study estimate the bilateral trade costs of (aggregate) services both in India and China and check whether trade costs are significantly different for these two countries with respect to their major trading partners. The study also look at how much the decline in trade costs account for the growth of trade in services in these two countries over the period 1995-2010. The study finds that over the sample period (1995-2010), both the countries have witnessed a significant decline in trade costs with respect to many of their major trading partners but compared to India the decline in trade costs are larger in China. It has also been noted from the results that even though bilateral trade costs declined with many of their major trade partners over our sample period, increase in the economic size of these countries relative to the world played the most important role behind the growth of bilateral services trade both for India and China.

1. Introduction

Thegrowth story of the world economy since late twentieth century is broadly driven by the emergence of two Asian countries, China and India. Since 1980, both India and China have been able to sustain a significantly rapid growth. But their growth experiences are quite different from each other. China's growth story is mostly dominated by the expansion of the industrial sector and relatively broad based across agriculture, industry and services sectors compared to India. Whereas, India's growth story is primarily dominated by the expansion of the services sector. Similar to the contribution of different sectors in GDP, the contributions of different sectorsin total exports differ substantially across these two countries. Manufacturing exports accounts for the maximum share in total exports in case of China. According to OECD (2015), services contributed 9 percent of total exports in China in 2014.Whereas, compared to China, India's exports have a larger services share even though in terms of total value of exports of services it is quite less compared to China. For example, in 2014, India exported USD 156 billion and imported USD 147 billion worth of services and India is the largest exporter of computer services in the world. Whereas, compared to India, in 2014, China exported USD 232 billion and imported USD 382 billion worth of services (OECD 2015) and 'Other business services' contributed the maximum share in China's total services exports. Even if values of both exports and imports of services are quite larger in China compared to India, because of the relative importance of the manufacturing sector in total exports, very less attempt has been made to study the trade pattern of services in China compared to the much discussed expansion of trade in services in India.

We can see in Figure 1 that both India (IND) and China (CHN) have experienced a steady growth in their exports and imports of services to the world. Even though exports and import of services lines of India lies below the exports and imports lines of services of China, both the countries have experienced a similar increasing trend over the period 1995-2009.

Figure 1: Trends in services exports and imports to the world (China and India).

Exports

Imports

Pangariya (2006), Dimaranan et al. (2007) noted that even though India and China started greater liberalisation since early 1990s, their performances in terms of trade are very different from each other. First of all, their patterns of trade are significantly different. In 1980s China specialised and experienced a massive growth in the exports of light manufacturing (e.g., apparel, toys sporting goods etc.). In the 1990s they made a shift towards relatively more sophisticated products (e.g., office machines, electronic equipments, electrical machinery etc.) still employing large volumes of labour. Contrary to the export pattern of China, major of the exports items of India are skilled labour intensive or capital intensive (e.g., IT, ITES, textiles, petroleum products, iron and steel). According to Panagariya (2006), the difference in trade pattern and trade performance among these two countries lies in their domestic policies related to constraints in labour market and infrastructure (particularly specific to power) rather than their foreign trade and investment policies. Because of the differences in their domestic policies, investment in India concentrated on capital intensive or skilled labour intensive sectors and in case of China, investment concentrated on unskilled-labour intensive manufacturing.

Over the last three decades, China's economic policies focused at the investment activities and export-led manufacturing. Two major changes have been experienced by the economy in recent years. First, emergence of high-value manufacturing (e.g., high-end equipment manufacturing, chip industry) and increasing importance of the service sector as a driver of the economy. Over time, costs of China's labour and other factors of production have risen significantly and China is reorganising it's industrial growth by shifting their focus from the (low cost) labour-intensive manufacturing sectors towards the technology and innovation oriented high value added manufacturing and services also. For example, in recent times, increased demand for services from the middle class and government's encouragement for a consumption-led economy is tending a new dimensional shift of the service sector. This gets reflected particularly in the growth of the service sector FDI. In 2014, service sector accounted for more than 55 percent of FDI compared to 46 percent in 2010 (KPMG, 2015). The new economic reform guidelines have encouraged foreign companies to invest in financial services, tourism, entertainment and healthcare and other services. WTO (2015) notes that there is a significant correlation between investment and services trade and increasing FDI in services will further increase services trade in the developing countries.

Over the last few decades, technological innovations (e.g., internet) have played an important role behind the decline in trade costs and the recent increase in world trade in services. According to WTO (2015),contribution of the developing countries in world services exports has increased from 11percent in 1990 to 20 percent in 2011. But despite the recent technological advances, trade costs in

services are significantly high because of the existence of numerous domestic laws and regulations which mainly impairs trade and investment in this sector (WTO, 2015).

It is generally noted that unlike the manufacturing sector, high levels of public ownership and regulatory barriers still continue to prevail in the services sector in China. Based on the information on regulations related to restriction on foreign entry, movement of people, barriers to competition, other discriminatory measures, regulatory transparency etc., OECD Services Trade Restrictiveness Index (STRI indices, 2015) have been calculated for 42 countries(including China and India) for 18 different services sectors. The STRIs are composite indices which takes values between zero and one. Where zero represents a complete open market and one represents a market completely closed to foreign services providers. According to the indices, both China and India score above average on STRI for all the sectors (except road freight in India).Again, if the regulatory barriers are considered, services trade policies are more restrictive in India compared to China in many of the services (OECD STRI). Therefore, it is important to look at the factors behind the relative importance of the services exports(relative to the manufacturing sector) in India compared to China? Is it mostly associated with the expansion of output of the services sectors (relative to the manufacturing sector) or related to trade costs of services which are mostly considered to be associated with strict domestic regulations.

In this paper we estimate the bilateral trade costs of services both in India and China and check whether trade costs are significantly different for these two countries with respect to their major trading partners. We also assess how much the decline in trade costs account for the growth of trade in services in these two countries over the period 1995-2010. The study finds that over the sample period 1995-2010, both the countries have witnessed a significant decline in trade costs with respect to many of their major trading partners but compared to India the decline in trade costs are larger in China. It has also been found that (even though bilateral trade costs declined with many of their major trade partners over our sample period), increase in the economic size of these countries relative to the world played the most important role behind the growth of bilateral services trade both for India and China.This study will add to the very scanty literature of the analysis of trade costs in services comparing the case of India and China. Existing estimates largely use total trade or the goods sector without any focus on services trade. Although it would obviously be desirable to extend the study at the disaggregated level, our problem lies in obtaining adequate disaggregated production data that our approach requires.

The rest of the paper has been structured as follows. Section 2 reviews the studies which have looked at the issues related to the estimation of trade costs in services. Section 3 briefly describes the method and data that have been used in this paper to estimated trade costs in services. Section 4 reports and discusses the results and section 5 concludes.

2. Costs associated with services trade

Trade costs play an important role to determine the trade pattern among nations. In the international trade theories, trade cost is considered as the sum of factors resulting in a wedge between the export price and import price. Trade costs in general can be considered to include, transport costs, border related trade barriers, wholesale and retail distribution costs, traditional trade policies such as tariffs and RTA membership, language barrier, currency barrier (due to the use of different currencies), information cost barrier, and security barrier.Over time, whether the significant reduction in tariff rates has been able to reduce the trade costs among countries or not, it is a matter of empirical question. Arvis etal (2013) note that trade costs of a representative rich country might be as high as 170% ad valorem—far in excess of the 5% or so accounted for by tariffs (Anderson and Van Wincoop, 2004).

Nordås and Rouzet (2015) notes that compared to goods for which trade restrictions are largely associated with tariff and other costs on goods imports at the border, most restrictions associated with trade and investment of services are 'behind the border in nature'. They cite the examples of

'impediments to the entry and operation of foreign service providers' in support of their arguments. For example, discrimination in providing licenses to foreign investors, recognition of educational degrees earned abroad and these are very much specific to each country's laws. Miroudot et al. (2013) note that 'in services sectors, trade costs are largely related to regulatory measures' and trade costs can explain a large part of the huge difference in total value of trade in goods and services.

According to OECD STRI index (2015), road transport, engineering and construction are the least restricted sectors in India. These sectors are subject to general regulatory framework and no sector specific restrictions apply at the national level for these sectors. The most restricted sectors include, rail freight transport, legal services and air transport. Compared to India, in China the least restricted sectors include architecture, engineering and computer services whereas the most restricted sectors include courier services, broadcasting and air transport.

Table 1: Regulatory restrictions in different services, India and China

Services	China	India
Logistics storage and warehouse	0.2990477	0.2692013
Logistics freight forwarding	0.2529791	0.2492181
Logistics customs brokerage	0.3007415	0.2541592
Accounting	0.3903609	0.8867621
Architecture	0.2489108	0.6096109
Engineering	0.2453022	0.2855195
Legal	0.4603289	0.9457697
Broadcasting	0.7781873	0.4930616
Telecom	0.4143245	0.4569809
Air transport	0.5997208	0.649116
Maritime transport	0.3942059	0.319193
Road freight transport	0.3862816	0.1480144
Rail freight transport	0.4214754	1
Courier	0.8609087	0.518616
Distribution	0.3305613	0.3578947
Commercial banking	0.4709847	0.4908043
Insurance	0.4911061	0.6314303
Computer	0.2430103	0.3573338
Construction	0.3235059	0.3177442

Source: OECD (Services Trade Restrictiveness Index (STRI), 2015)
Note: STRI database is based on regulations currently in force. STRI indices take the value from 0 to 1, where 0 is completely open and 1 is completely closed. They are calculated on the basis of information provided in the STRI database.

We note that empirical studies which have estimated trade costs have mostly concentrated on the goods sectors especially because of the limitation in data availability of the service sector. Arvis etal. (2013) estimate trade costs in agriculture and manufactured goods for the period 1995–2010 considering 178 countries. They have found that trade costs are strongly declining in per capita income. Moreover, trade costs are falling noticeably faster in developed countries than in developing ones. Due to the constraints on the availability of wide scale data for services trade, studies looking at the trade costs in services especially in the developing countries are difficult to find. Using Novy's (2013) methodology, Miroudot etal. (2013) measured trade costs in services for 61 countries and 12 services sectors for the period 1995-2007. They found that trade costs in services are much higher than in goods sectors (two to three times in many cases) and which have remained relatively steady over the last decade.They used OECD Input-Output (IO) tables for major Asian economies like China, India, Indonesia or Taiwan. But the main problem with this dataset is that IO tables are

available only for every five years. Therefore, they had to interpolate the missing values for these four countries which inevitably entails some smoothing.

3. Novy's (2013) indirect approach to estimate trade costs

Studies which have concentrated on empirically estimating trade costs among countries have used the direct approach (traditional gravity model) mostly focusing on geographical distance as a source of trade cost. Literature in this respect has also considered other observable factors which are considered responsible for the overall trade cost. Two of the major problems of direct approach to estimate trade costs are: (1) to estimate the effect of trade costs on trade, one needs to specify a trade cost function by relating the unobservable bilateral trade cost variable to observable trade cost proxies (such as distance between countries, a range of cultural, historical or political variables, standards and technical regulations), (2) Many trade cost elements are unobservable. Chen and Novy (2012) note that a problem with specifying the trade cost function is it's inherent arbitrariness and theory generally gives no guidance as to the appropriate functional form. Since these studies consider a sub-set of the total factors influencing trade costs, the main problem with these approaches is that it captures a part of the total trade cost. Therefore, in these approaches, we cannot control for the problem of omitted variable bias in calculating trade costs among countries. Again, since many of the trade cost variables don't change over time (e.g., distance), it is difficult to track the changes in trade costs.

Anderson and Van Wincoop (2004) have done a pioneering work to unify the literature on the various determinants of trade costs. Later, Novy (2013), following Head and Ries (2001), takes a different approach to come to an all inclusive measure of trade costs based on the observed pattern of production and trade. These indirect approaches infer trade costs from trade data without specifying a trade cost function. Chen and Novy (2012) note that the direct approach uses measures for standards and regulations which are used to estimate the sensitivity of trade flows to standards and regulations, whereas, the indirect approach allows for a decomposition of the variance of total trade costs into the contribution that is attributable to standards and regulations.

Novy's model is based on the Anderson and Van Wincoop (2003) "gravity with gravitas" model. This model is consistent with all the other gravity models and does not depend on an assumption of CES preferences.

It starts with the gravity model,

$$x_{ij} = \frac{y_i y_j}{y_w} + \left(\frac{t_{ij}}{\pi_i p_j}\right)^{(1-\sigma)} \quad \text{...............................(1)}$$

where x_{ij} denotes nominal exports from i to j, y_i and y_j are nominal incomes of country i and and y_w is world income. $\sigma > 1$ is the elasticity of substitution across goods[1]. π_i and p_j are country i's and country j's price indices. The gravity equation implies that all else being equal, bigger countries trade more with each other. Bilateral trade costs t_{ij} decrease bilateral trade but they have to be measured against the price indices π_i and p_j. Anderson and van Wincoop (2003) call these price indices multilateral resistance variables because they include trade costs with all other partners and can be interpreted as average trade costs. π_i is the outward multilateral resistance variable, whereas p_j is the inward multilateral resistance variable.

It is therefore useful to multiply gravity equation (1) by the corresponding gravity equation for trade flows in the opposite direction to obtain a bidirectional gravity equation that contains both countries' outward and inward multilateral resistance variables. Substituting the solution from equation (1) and rearranging the bidirectional gravity equation yields[2].

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[1] σ is set to 8 following Novy (2013).
[2] For detailed derivation refer Novy (2013).

$$\tau_{ij} = \left(\frac{t_{ij}t_{ji}}{t_{ii}t_{jj}}\right)^{\frac{1}{2}} - 1 \;\; = \left(\frac{x_{ii}x_{jj}}{x_{ij}x_{ji}}\right)^{\frac{1}{2(\sigma-1)}} \;\ldots\ldots\ldots\ldots(2)$$

Equation 2 presents that measure in ad valorem equivalent terms. It is the geometric average of bilateral trade costs for exports from country i to country j and from country j to country i, expressed relative to domestic trade costs in each country ($\frac{t_{ij}}{t_{ii}}\; and \;\frac{t_{ji}}{t_{jj}}$).

Since these trade flows vary over time, trade costs can be computed not only for cross-sectional data but also for time series and panel data. This is an advantage over the procedure adopted by Anderson and van Wincoop (2003) who only use cross-sectional data.

Novy (2013) also uses the gravity framework to examine the driving forces behind the strong growth of international trade over the last decades. The growth of bilateral trade was decomposed into three distinct contributions – the growth of income, the decline of bilateral trade barriers and the decline of multilateral barriers.

$$100\% = \frac{2\Delta ln\left(\frac{y_i y_j}{y_w}\right)}{\Delta \ln(x_{ij}x_{ji})} + \frac{2(1-\sigma)\Delta ln(\tau_{ij})}{\Delta ln(x_{ij}x_{ji})} - \frac{2(1-\sigma)\Delta ln(\emptyset_i\emptyset_j)}{\Delta ln(x_{ij}x_{ji})} \;\ldots\ldots\ldots\ldots(3)$$

Where $\emptyset_i = \left(\frac{\pi_i p_i}{t_{ii}}\right)^{\frac{1}{2}}$ and $\emptyset_j = \left(\frac{\pi_j p_j}{t_{jj}}\right)^{\frac{1}{2}}$

Main advantages of this method over the gravity model are:Aggregate trade costs are inferred indirectly from observable trade data, there is no need to assume any particular trade cost function.Many typical trade cost proxies such as distance do not vary over time. Therefore, a static trade cost function cannot capture the variation of trade costs over time. However, the measure derived in Novy (2013) is a function of time-varying observable trade data and thus allows researchers to trace changes in bilateral trade costs over time.

Data: To estimate trade costs among countries using Novy's (2013) methodology, we need data on two aspects, intra-national trade (i.e., transaction within the boundary) and trade among countries.Francoise and Pindyuk (2013) provide a consolidated version of multiple sources (OECD, UN, Eurostat and IMF) of bilateral trade in services. The panel spans over the period 1981-2010. The dataset contains bilateral services trade flows for 248 countries as reporters and partners, world and rest of the world, including 20 economic activities according to the BOP classification. However, in terms of data availability, the higher the level of disaggregation, and the fewer the observations are available. Therefore, we have considered the aggregate services sector for our study.

To get data on intra-national trade in services, we need to deduct total services trade from the total services output. Novy (2013) notes that since trade data are available in gross value terms, to get the intra-national trade data, we should also consider gross output of services (rather than value added). Since, data for gross value of services output are not available over time, we have done the exercise taking value added of services output as a proxy for gross output of services. United Nations National Accounts Statistics provide data on gross value added of different services groups for most of the countries. Using these data we have estimated trade costs of services with the most important services trading partners of India and China.
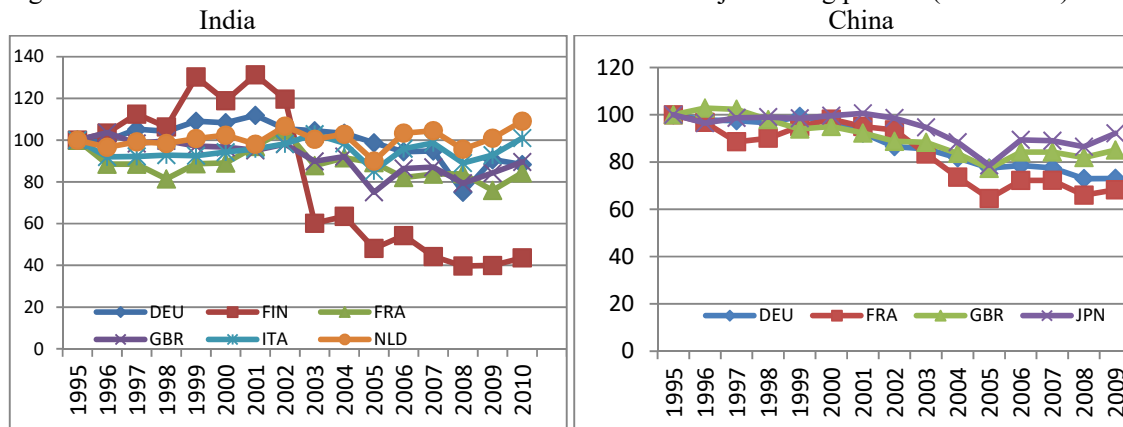
Francoise and Pindyuk (2013) data shows that in 2009, Belgium (BEL), Germany (DEU), Denmark (DNK), Finland (FIN), France (FRA), UK, Ireland (IRL), Italy (ITA), Japan (JPN), Netherland (NLD) and USA were the major trading partners of India for trade in services. Whereas, in terms of total trade in services, China's major trading partners were, Australia (AUS), Germany (DEU), Denmark (DNK), France (FRA), UK (GBR), Hong Kong (HKG), Ireland (IRL), Italy (ITA), Japan (JPN), India (IND), Korea (KOR), Singapore (SGP), Thailand (THA), USA, Russia (RUS) and Saudi Arabia (SAU). In this study, we have considered the time period, 1995-2010 (based on the availability of data) to estimate the trade costs and trade growth accounting for this set of countries. In 1995, GATS

became operational to promote trade in services. So it is expected that over that period, trade costs of services have gone down.

4. Decline in services trade costs

Figure 2 shows the decline in trade costs with respect to some their major trading partners over the period, 1995-2010. For both China and India we can see that in general trade costs of services have shown a declining trend[3]. In these figures we have considered year 1995 as the base year (trade cost for year 1995 = 100) and thus the trade cost lines can be considered as a proportional change in trade costs over the period 1995-2009.
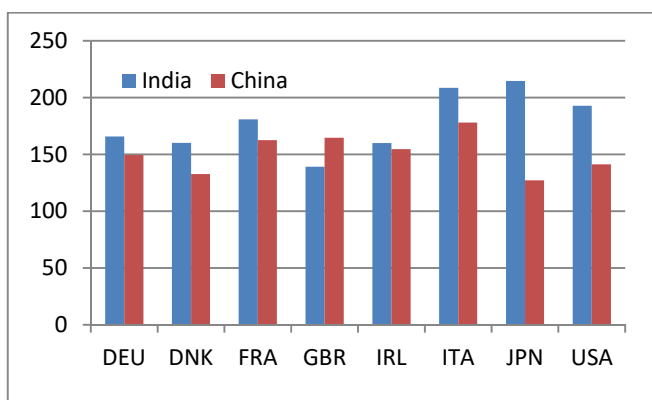
Figure 2: Decline in trade costs of India and China w.r.t their major trading partners(1995-2010).

Compared to year 1995, even though bilateral trade costs of services have experienced a declining trend for both the countries, the decline is not similar for all the trading partners. In case of India the highest decline in trade cost has happened for Finland and in case of China it has happened for France. For example, in case of India, bilateral trade costs in services with Finland was nearly 60 percent lower in 2009 compared to 1995. Similarly, in case of China, bilateral trade costs in services with France declined by almost 40 percent in 2009 compared to 1995.It is also interesting to note that in case of India, bilateral trade costs in services for some countries (e.g., Finland, Germany) first increased and then declined over the sample period but we do not find a similar trend for China with respect to its trading partners in Figure 2. Tariff equivalence of trade costs of services for India and China with respect to their major trading partners have been reported in the appendix(TableA.1 and A.2).

Figure 3:Average bilateral trade costs (percent ad valorem equivalent)of India and China with their common trading partners, (1995-2010).

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[3]Even if the numbers regarding absolute levels of trade costs in services are subject to uncertainty because of the limitations on data and assumption that the value of elasticity of substitution between goods and services are same (8) but we can be sure about the relative patterns of trade costs in our results.

In figure 3 we compare the average bilateral trade costs in services for India and China with respect to their common trading partners over the period 1995-2009. In this figure we see that except for GBR, for all the trading partners, bilateral trade costs are higher for India compared to China. Compared to China in case of India, the average trade costs are quite high with Italy, Japan and the USA. In Figure 4 we see that average trade cost in services (with their common trading partners) has declined both for India and China in 2009 compared to 1999 but the decline is more in China compared to India over the same period.
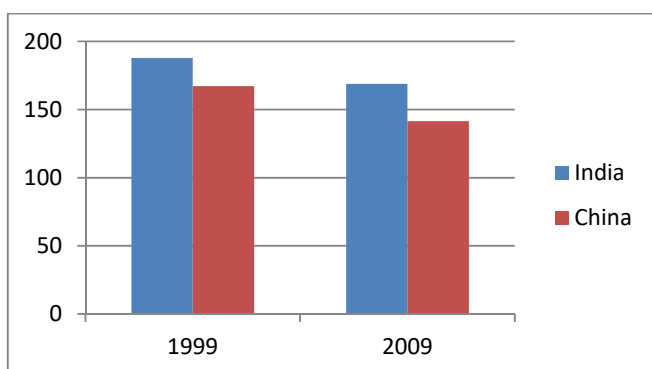
Figure 4:Average bilateral trade costs in services (percent ad valorem equivalent) of India and China with their common trading partners, 1999 and 2009.

In tables 2 and 3 we compare trade costs in agriculture, manufacturing and services for India and China respectively with respect to their major trading partners in terms of services trade. In order to compare the trade costs sectors, we have used data from ESCAP World Bank International Trade Costs Database for trade costs in agriculture and manufacturing where they have also used Novy's (2013) methodology to calculate trade costs.

Table 2: Average trade costs, India (percent ad valorem equivalent, 1995-2009)

Partner Code	Agriculture	Manufacturing	Services
BEL	202.9537	112.429	188.9985
DEU	206.886	109.6094	165.8642
DNK	264.2775	140.5253	160.0621
FIN	401.2051	161.6124	247.8062
FRA	218.0456	124.4434	180.8416
IRL	317.704	151.7381	139.219
ITA	230.1435	125.3498	159.9282

JPN	258.9435	134.1494	208.6485
NLD	175.6091	93.22162	214.726
GBR	208.955	107.3212	179.5193
USA	148.5462	105.8441	192.9042

Source: ESCAP World Bank International Trade Costs Database (agriculture and manufacturing) and our own calculations (services)

Table 3: Average trade costs, China (percent ad valorem equivalent, 1995-2009)

Partner	Agriculture	Manufacturing	Services
DEU	180.1805	78.24621	149.3781
DNK	224.9661	109.8788	132.6236
FRA	208.9938	101.1459	162.462
IRL	315.8816	112.0339	154.7146
ITA	263.8574	107.1299	178.0609
JPN	168.6904	64.59309	127.057
GBR	222.3629	99.71814	164.6549
USA	130.6814	74.83359	141.3417

Source: ESCAP World Bank International Trade Costs Database (agriculture and manufacturing) and our own calculations (services)

Arvis et al. (2013) noted that trade costs are high across countries in the agricultural sector when compared with the manufacturing sector and this is specially so when we consider the countries with lower income. Table 2 and 3 report the average bilateral trade costs in agriculture, manufacturing and services with their major trading partners over the period 1995-2009. In table 2 we can see that the average trade cost in agriculture for India with Finland was as high as 400% ad valorem. Similar to that in case of China the same is as high as 315% ad valorem with Ireland (table 3). Though average trade costs for services are in general lower than the trade costs in agriculture but compared to the manufacturing sector trade costs are quite high both in India and China. If we study tables 2 and 3 we see that the average bilateral trade costs are lower in China compared to India for agriculture, manufacturing and even for services.

Major findings that come out from the above discussions are:

- In general the average trade cost is higher in India compared to China for agriculture, manufacturing and also for services.
- Trade costs in services with respect to their major trading partners have declined over the period 1995-2010, both for India and China.
- Compared to India, decline in average trade costs in services is higher in China for the period 1999-2009.

Bilateral Trade growth accounting of India and China with their major trading partners:

There has been a significant growth in trade in services both for India and China with their major trading partners over the period 1995-2010. Using Novy's methodology we have decomposed the bilateral trade growth in services into three components: growth of the two country's economies relative to the world output (A), changes in bilateral trade cost (B) and changes in their multilateral trade barriers (C).We have reported the results in the following tables (4 and 5).

Table 4: Bilateral trade growth accounting (India)

Country	Trade Growth	A	B	C	
BEL (2002-2010)	481	0.498014	0.615355	0.113369	1

DEU(1995-2010)	291	0.715199	0.363817	0.079017	1
DNK(1999-2010)	322	0.743888	0.407651	0.151539	1
FIN(1995-2010)	995	0.277449	0.774136	0.051585	1
FRA(1995-2010)	373	0.67802	0.414989	0.093008	1
GBR(1995-2010)	327	0.875459	0.27805	0.153509	1
IRL(2002-2010)	339	0.6543	0.598484	0.252785	1
ITA(1995-2010)	222	1.229193	-0.04411	0.185083	1
JPN(1996-2010)	187	0.953352	0.055743	0.009095	1
NLD(1995-2010)	149	1.872532	-0.53272	0.339814	1
USA(1999-2009)	209	0.825752	0.276446	0.102198	1

Table 5: Bilateral trade growth accounting (China)

	Trade Growth	A	B	C	
AUS(1999-2009)	358	0.995362	0.282505	0.277868	1
DEU(1995-2009)	502	0.60422	0.527803	0.132023	1
DNK(1995-2009)	407	0.739288	0.452295	0.191583	1
FRA(1995-2009)	603	0.582358	0.554333	0.136691	1
GBR(1995-2009)	422	0.884396	0.341228	0.225624	1
HKG(2000-2009)	-61	-3.56797	3.592579	-0.9754	1
IND(2005-2009)	143	1.441005	0.035806	0.476811	1
IRL(2002-2009)	868	0.301794	0.84293	0.144724	1
ITA(1995-2009)	508	0.73394	0.442893	0.176832	1
JPN(2005-2009)	275	0.858987	0.236131	0.095118	1
KOR(1999-2009)	302	1.01563	0.257997	0.273627	1
RUS(2002-2009)	385	1.020367	0.322255	0.342622	1
SAU(2005-2009)	186	0.895279	0.269418	0.164698	1
SGP(2005-2009)	178	1.103743	0.186483	0.290226	1
THA(2005-2009)	104	1.848156	-0.24751	0.600647	1
USA(1999-2009)	165	1.598505	-0.25966	0.338843	1

In Table 4 we see that over the period 1995-2010, the bilateral output growth of India and its trading partners (relative to the world) explains the maximum share of total increase in trade in services between the trading partners. Income growth can explain almost whole growth in trade with Italy and Netherlands. From TableA.1 in the appendix we see that bilateral trade costs with these twocountries did increase in 2010 compared to 1995. Decline in trade cost played a significant role behind the increase in bilateral trade with Belgium and Finland for India. Netherland's trade barriers with it's other trading partners declined significantly for the sample period and thus the trade diversion effect is relatively strong (34%) for Netherlands.

Similar to India, China's bilateral trade in services with its major trading partners is mostly driven by their growth in output relative to the world (Table 5). Decline in trade cost plays a significant role behind the growth of trade in services with respect to the trading partners, Ireland, France and Germany. Trade diversion effect is relatively strong with respect to the trading partners, Thailand and India.

5. **Conclusion**

In this study we have estimated trade costs in services both for India and China (with respect to their major trading partners in services) for the period, 1995-2010. We have found that trade costs in services are quite high for both the countries especially relative to the manufacturing sector. Over the sample period (1995-2010) both the countries have witnessed a significant decline in trade costs with respect to many of their major trading partners but compared to India the decline in trade costs are larger in China. Similar to our results, Miroudot et al. (2013) also found a significant decline in trade costs in services in China over the period 2000-2005. They have noted that accession to the WTO led to significant liberalisation of the service sector especially related to access to foreign market which have resulted in a substantial decline in trade costs over time in many countries. We have also found that the average trade costs in services vary considerably across their major trading partners for both the countries and the decline in trade costs are also not symmetric with their major trading partners in services. Our findings are consistent with the findings of Miroudot et al. (2013) and Duval et al (2015) at the general level that trade costs in services are relatively higher compared to the manufacturing sector. This difference in trade costs between the manufacturing and the services sectors is natural as the legal and regulatory requirements are more binding in the services sector compared to the manufacturing sector.

Using Novy (2013)'s methodology to decompose growth in bilateral trade in services for India and China over the period 1995-2010 we find that growth in output of the trading partners mostly explains the growth in trade with their major trading partners. It is important to note from the results is that even though bilateral trade costs declined with many of their major trade partners over our sample period, increase in the economic size of these countries relative to the world played the most important role behind the growth of bilateral services trade both for India and China.

Services contribute a larger share in GDP as well as in total exports in India compared to China. But from our estimates of trade costs in services we find that like agriculture and manufacturing, the average trade costs of services are also higher in India compared to China with respect to their major trading partners. If we compare the average trade of services relative to the manufacturing sector in India and China (with respect to their common set of major trading partners), we find that trade cost in services is 1.66 times higher in China and in case of India, this is 1.42 times.Hence, we can say that even if the average trade costs in services in India is higher compared to China but relative to the manufacturing sector, trade in services are more costly in China compared to India. Therefore, in terms of trade costs of services, this gives a justification for the relative importance of services in total trade in India compared to China.

Compared to the other middle income group of countries, contribution of the service sector in GDP is significantly low in case of China. Services account for 48 percent of GDP in China. Citing Lardy (2014), Rutkowski (2015) notes that the underdevelopment of the service sector compared to other middle income countries are broadly related to two major factors: one, subsidised production (e.g., controlled interest rate, subsidised energy consumption in industry) in the industrial sector and significant regulation and government control in the services sectors. China still retains a substantial control over transportation, education and health care where the share of government investment was more than 70 percent in 2013. Rutkowski (2015) notes that recently, China's government has initiated several reform measures to accelerate growth of the service sector. Major broad reforms in this respect are: elimination of market distortions related to cost of capital, energy and resources and the other is the reduction of regulatory barriers for the private and foreign investors to enter the service sector. Therefore, we can expect that in the coming years with the increasing contribution of the service sector in China's GDP, services will contribute a larger share in total trade even if trade costs with it's major trading partner does not make a major decline.

Here we should note that if we could study the services sectors at the disaggregated level we could have shed light why these two countries specialise in different services while considering their services exports. One problem with this study is that because of the limitations of data on gross output of services we used the valued added output of services. Since, in this study we were interested in

looking at the trend in trade cost for India and China and the major player behind the growth in trade with their major trading partners we could use value added output in services as a proxy of gross output in services.

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Appendix

Table A.1. Trade costs of services, India (percent ad valorem equivalent**)**

YEAR	BEL	DEU	DNK	FIN	FRA	GBR	IRL	ITA	JPN	NLD	USA
1995		166.5		301.3	204.2	151.3		219.3		178.5	
1996		166.1		311.6	180.7	156.7		201.7	217.4	172.4	
1997		175.2		338.9	180.7	148.9		202.2	214.3	177.1	
1998		173.5		320.3	166.3	150.9		203.7	212.3	175.7	
1999		181.6	183.6	392.5	181.2	147.0		203.0	219.8	179.9	198.6
2000		180.4	173.1	358.2	181.9	146.2		206.8	220.9	182.8	196.3
2001		186.3	171.1	395.6	198.1	143.9		210.1	222.3	175.1	194.8
2002	234.7	175.6	175.5	360.6	214.2	148.4	185.8	215.4	222.3	190.5	195.6
2003	222.0	174.0	173.6	181.4	179.3	135.9	174.3	225.7	219.4	179.3	193.4
2004	229.3	172.1	176.2	191.3	187.0	139.4	184.9	216.1	220.0	183.6	198.7
2005	146.4	164.4	120.6	145.0	182.3	113.5	171.8	187.0	197.7	160.7	182.4
2006	210.7	157.3	148.4	163.6	167.7	130.7	166.7	210.4	218.7	184.5	197.3
2007	189.1	157.9	148.3	133.4	171.0	131.7	163.0	216.5	214.4	186.6	196.6
2008	158.4	124.9	140.4	119.5	171.5	120.1	125.6	195.3	199.6	170.8	181.8
2009	139.6	151.0	151.8	120.4	155.0	127.5	120.0	203.6	206.9	180.1	186.5

Year											
2010	170.8	147.0	158.2	131.3	172.3	135.4	147.2	221.6	215.0	194.8	
Average	189.0	165.9	160.1	247.8	180.8	139.2	159.9	208.6	214.7	179.5	192.9

Note: Empty cells indicate that data are not available for the specific years.

Table A.2. Trade costs of services, China (percent ad valorem equivalent**)**

Year	AUS	DEU	DNK	FRA	GBR	HKG	IND	IRL
1995		178.2		202.5	189.7			
1996		174.3		196.0	195.1			
1997		173.8		179.4	194.1			
1998		172.2		182.5	185.8			
1999	166.8	177.0	153.9	192.5	178.2			
2000	162.0	172.7	141.9	198.8	180.3	60.9		
2001	159.0	164.4	137.4	192.6	175.1	61.1		
2002	154.5	154.2	136.8	189.6	168.4	59.4		248.0
2003	152.1	152.6	136.1	169.0	167.6	59.8		233.9
2004	144.2	145.7	137.1	149.1	158.7	58.2		173.9
2005	135.3	138.0	121.6	130.8	146.6	55.6	130.0	108.2
2006	149.4	140.1	129.7	146.3	159.8			143.5
2007	147.8	138.2	127.9	146.4	159.8			119.0
2008	134.9	130.1	113.8	133.6	155.4	70.2	120.5	104.7
2009	148.2	130.3	122.6	138.3	161.4	88.2	129.2	106.4
average	150.4	149.4	132.6	162.5	164.7	64.2	126.5	154.7

Continued...

Year	ITA	JPN	KOR	RUS	SAU	SGP	THA	USA
1995	200.8	137.5						
1996	185.1	132.7						
1997	194.8	135.8						
1998	180.9	136.2						
1999	186.4	135.5	111.8					147.2
2000	184.2	137.0	108.1					141.6
2001	192.6	138.4	107.4					141.5
2002	173.5	135.6	103.9	201.8				141.2
2003	200.3	130.3	101.1	203.6				139.9
2004	195.7	121.6	95.7	205.3				133.3
2005	145.6	108.1	93.5	149.9	164.2	106.8	131.6	130.2
2006	185.8	122.9	95.9	205.6				134.9
2007	187.1	122.5	94.1					133.4
2008	151.3	119.0	97.1	162.3	146.8	99.5	118.4	156.8
2009	156.1	126.8	100.3	176.2	154.9	101.9	135.9	154.8
average	178.1	127.1	100.8	186.4	155.3	102.7	128.6	141.3

Note: Empty cells indicate that data are not available for the specific years.