Changing bilateral trade between China and India

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Abstract

Bilateral trade between China and India, the world’s two most populous countries, have expanded substantially in recent years. Few studies have however focused on the understanding of this trade relationship. This paper attempts to fill the void of the literature. Its objective is to examine and compare international trade in and between the two economies and to draw implications for trade and economic cooperation between China and India in the future. Especially, this paper investigates the major trends of and changes in the bilateral trade between the two countries, and explores issues associated with trade intensity, intra-industry trade and comparative advantages in the two countries. The findings are used to draw policy implications for future trade and economic cooperation between the two Asian developing giants.

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1. Introduction

China and India have for a long time been popular comparators in the field of economic research. This is not only because of the two countries being the most populous ones in the world but also due to their adoption of different development models since the 1950s. Earlier studies comparing the economies of India and China focused on development in the 1950s and 1960s. Examples include Chen and Uppal (1971), Swamy (1973), Harris (1974) and Bergmann (1977). Recently economists have again become interested in the comparison of the two giant developing economies largely due to their spectacular growth performance in the 1980s and 1990s, and
subsequently their rising significance in the world economy and political affairs. Some authors are interested in the institutional settings and hence their impacts on economic performance in the two countries (Huang & Khanna, 2003). Others are keen to compare China and India’s performance in specific areas such as the steel industry (Etienne, Astier, Bhushan, & Zhong, 1992), the grain marketing systems (Zhou, 1997), the textile and clothing trade (Balasubramanyam & Wei, 2005a), electricity reforms (Xu, 2004), foreign direct investment (Balasubramanyam & Wei, 2005b; Negandhi & Schran, 1990), the service sector (Wu, 2006a) and technology and science (Baark & Sigurdson, 1981). There are also studies that deal with more general economic issues in the two countries. For example, Swamy (1989) and Wu (2006b) compared economic growth, Rosen (1992) contrasted models of industrial reforms, Bhalla (1995) discussed uneven development, Dzever and Jaussaud (1999) reported a series of studies of business strategies of firms and Srinivasan (2004) shed light on macroeconomic performance.

The objective of this paper is to examine the trends in bilateral trade between the two nations in recent years and to draw possible implications for future trade and economic cooperation between the two economies. This paper thus adds to the growing literature on the comparison of the Chinese and Indian economies. The rest of the paper begins with a brief overview of the two economies. This is followed by an analysis of the major trends in bilateral trade between China and India. Subsequently, issues related to comparative advantage of the two economies are explored. Finally, summary and concluding remarks are presented.

2. Background

Recent high growth in the two Asian giants was triggered by their economic reform programs initiated first in China in the late 1970s and then in India in the early 1990s. In 1979 when China’s economic reforms began, China and India were at the similar stage of development with relatively high per capita GDP in India (Fig. 1). Due to an earlier start and subsequently sustained growth, the Chinese economy has raced ahead of the Indian economy since the early 1990s when economic liberalization commenced in India.

Though still small on a per capita basis, the Chinese and Indian economies are ranked the second and fourth largest economies in the world in terms of purchasing power parity according to Maddison (2001). The economies of the two countries combined account for 20.1% of world GDP in 2004, which is close to the size of the American economy (see Table 1).

A common feature associated with recent growth in China and India is the adoption of protrade policies in both countries. The result is that both economies have achieved impressive growth in international trade in the past decade. According to the Economic Survey (2004), during 1995–2003, the value of exports from China and India grew by 16 and 10%, respectively. While economic reform in India began in about a decade later than in China, India has shown rapid catch-up. The total value of India’s trade of about US$188 billion in 2004 approaches China’s trade volume a decade ago (Fig. 2). China is now the world’s third largest trader with total trade amounting to US$1422 billion in 2005 (NBS, 2006). China’s export and import activities affect price movements in many industries. It is anticipated that Indian exports will have the same impact on world commodity trade if current growth momentum is maintained. Thus, trade developments in and between the two developing giants may have important implications for the world economy and a thorough understanding of these developments is warranted.

Table 1
World’s five largest economies: GDP shares (%)

<table>
<thead>
<tr>
<th>Countries</th>
<th>1950</th>
<th>1973</th>
<th>1998</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>27.3</td>
<td>22.0</td>
<td>21.9</td>
<td>20.7</td>
</tr>
<tr>
<td>China</td>
<td>4.5</td>
<td>4.6</td>
<td>11.5</td>
<td>14.6</td>
</tr>
<tr>
<td>Japan</td>
<td>3.0</td>
<td>7.7</td>
<td>7.7</td>
<td>6.7</td>
</tr>
<tr>
<td>India</td>
<td>4.2</td>
<td>3.1</td>
<td>5.0</td>
<td>5.5</td>
</tr>
<tr>
<td>Germany</td>
<td>5.0</td>
<td>5.9</td>
<td>4.3</td>
<td>3.7</td>
</tr>
</tbody>
</table>


Fig. 2. Total trade volume in China and India in selected years. Source: Data are extracted from United Nations Comtrade database SITC Revision III (http://unstats.un.org/unsd/comtrade, accessed April 2006).
3. China–India bilateral trade

Associated with economic reform and rapid growth is the increasing trade and economic cooperation between the two countries. This has particularly been evident in the 1990s when many Indian entrepreneurs viewed the huge and growing Chinese market as commercial opportunity and, in the meantime, Chinese companies like Huawei have seen the advantage of lower labour costs and a well-developed IT sector in India (Economist, 2005). As a result, bilateral trade between China and India has increased dramatically in the past decade, rising from about US$300 million in 1992 to about US$2 billion in 1997 and about US$12 billion in 2004 (Fig. 3).1 China has been the second largest market for Indian exports since 2003.2 To gain more insight into this growth in bilateral trade between the two countries, the following sections in turns investigate the composition of trade, trade intensity and intra-industry trade.

3.1. Composition of Trade

According to the Standard International Trade Classification (SITC revision 3) system, trade in four commodity groups has dominated bilateral trade between China and India (Table 2). These are SITC 2 (crude materials, inedible etc, except fuels), SITC 5 (chemicals and related products, n.e.s.), SITC 6 (manufactured goods classified chiefly by material) and SITC 7 (machinery and transport equipment). These groups together accounted for 84.3% of China’s exports to India and 96.2% of China’s imports from India.3 The statistics in Table 2 also show

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3 It is noted that there are minor discrepancies if statistics reported by India are used.
considerable change in the pattern of bilateral trade between the two countries in the past decade. Trade in crude materials (SITC 2) used to have the largest share, amounting to 37.18% of China’s exports to India and 61.73% of China’s imports from India in 1992. By 2003, these shares have shrunk substantially. Instead trade in manufactured goods and transport equipment has become more important, though China’s imports of Indian crude materials still have the largest share according to Table 2.

### 3.2. Intensity of trade

Several statistical indices can be used to measure trade between the two nations. One such index is the trade intensity index (Brown, 1949; Kojima, 1964). The latter appears in two forms, i.e. the export intensity index (XII) and import intensity index (MII). They can be defined as follows:

\[
\text{XII}_i = \frac{x_{ij}/X_{iw}}{M_{jw}/(M_w - M_{iw})} \tag{1}
\]

and

\[
\text{MII}_i = \frac{m_{ij}/M_{iw}}{X_{jw}/(X_w - X_{iw})} \tag{2}
\]

where XII, is the country i’s export intensity index, MII, the country i’s import intensity index, xij the country i’s exports to country j, X_{iw} the country i’s total exports to the world, M_{jw} the country j’s total imports from the world, M_w the world total imports, M_{iw} the country i’s total imports from the world, m_{ij} the country i’s imports from country j, X_{jw} the country j’s total exports to the world, X_w the world total exports, and i and j represent China and India, respectively.

Export and import intensity indices reflect the ratio of the share of country i’s trade with country j relative to the share of world trade destined for country j. An index of greater (less) than unity has been interpreted as an indication of larger (smaller) than expected trade flow between two parties concerned. Table 3 demonstrates that all export and import intensity indices with one

<table>
<thead>
<tr>
<th>SITC code</th>
<th>Description</th>
<th>Exports to India</th>
<th>Imports from India</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Food and live animals</td>
<td>3.17</td>
<td>9.62</td>
</tr>
<tr>
<td>1</td>
<td>Beverages and tobacco</td>
<td>0.00</td>
<td>0.86</td>
</tr>
<tr>
<td>2</td>
<td>Crude materials, inedible, except fuels</td>
<td>37.18</td>
<td>61.73</td>
</tr>
<tr>
<td>3</td>
<td>Mineral fuels, lubricants and related materials</td>
<td>11.23</td>
<td>2.14</td>
</tr>
<tr>
<td>4</td>
<td>Animal and vegetable oils, fats and waxes</td>
<td>0.18</td>
<td>0.18</td>
</tr>
<tr>
<td>5</td>
<td>Chemicals and related products, n.e.s.</td>
<td>27.53</td>
<td>6.04</td>
</tr>
<tr>
<td>6</td>
<td>Manufactured goods classified chiefly by material</td>
<td>10.62</td>
<td>17.38</td>
</tr>
<tr>
<td>7</td>
<td>Machinery and transport equipment</td>
<td>6.94</td>
<td>0.91</td>
</tr>
<tr>
<td>8</td>
<td>Miscellaneous manufactured articles</td>
<td>3.16</td>
<td>0.90</td>
</tr>
<tr>
<td>9</td>
<td>Not classified elsewhere</td>
<td>0.00</td>
<td>0.23</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: The statistics are derived using data from UN Comtrade database SITC Revision III (http://unstats.un.org/unsd/comtrade, accessed December 2004) and based on China’s reported export and import values.
exception are smaller than unity, implying that China and India are trading less than they should. Thus there is great scope to expand trade between the two countries. Table 3 however shows substantial increases in the bilateral trade between the two countries in the past decade. In particular, China imported relatively more from India by 2003.

3.3. Intra-industry trade

Another important feature associated with trade is the dramatic increase in intra-industry trade (IIT). To provide an assessment, the following conventional IIT index proposed by Grubel and Lloyd (1975) is computed:

\[ \text{IIT}_{i}^{c} = \frac{x_{ic} + m_{ic} - |x_{ic} - m_{ic}|}{x_{ic} + m_{ic}} \]  

(3)

where IIT\(_{i}^{c}\) is the index of intra-industry trade in commodity group \(c\) for country \(i\), \(x_{ic}\) the value of exports of commodity group \(c\) by country \(i\), and \(m_{ic}\) is the value of imports of commodity group \(c\) by country \(i\).

IIT index defined in Eq. (3) has a value range between 0 and 1 or 0 and 100 in percentage form.\(^4\) A large value implies greater trade between firms in the same industry. Table 4 demonstrates that most intra-industry trade (with an IIT index greater than 0.5) has occurred in the commodities groups of SITCs 5, 6 and 7 at the two-digit level. Other five groups (SITCs 23, 29, 33, 84 and 89) are also recorded with high IIT scores calculated using 2003 trade statistics.

4. Are China and India competitors?

To compare the competitiveness of each country in trade of a particular commodity group, the revealed comparative advantage (RCA) index is often computed using the following formulae:

\[ \text{RCA}_{i}^{c} = \frac{x_{ic}/X_{iwc}}{x_{cw}/X_{w}} \]  

(4)

\(^4\) It is noted that alternative forms of IIT index have been proposed by Hamilton and Kniest (1991), Greenaway, Hine, Milner, and Elliott (1994) and Brulhart (1994).
where $RCA_{ic}$ is the revealed comparative advantage index of commodity group $c$ for country $i$, $x_{ic}$ the value of exports of commodity group $c$ by country $i$, $X_{iw}$ the value of total exports by country $i$, $x_{cw}$ the value of world exports of commodity group $c$, and $X_w$ is the value of total world exports.

Country $i$ has comparative advantage in exporting commodity group $c$ when $RCA_{ic}$ has a value greater than unity, that is, when country $i$’s export share of commodity group $c$ is larger than the world export share of the same commodity group. On the contrary, if $RCA_{ic}$ is less than unity, country $i$ has comparative disadvantage.

According to Table 5, China has shown comparative advantage mainly in manufactured goods (SITCs 6 and 8) and machinery and transport equipment (SITC 7). The same table also reveals that Indian comparative advantage lies in commodity groups SITCs 0, 2, 5, 6 and 8. Apparently, both China and India have shown comparative advantage in manufactured goods (SITCs 6 and 8). There must be some competition in these areas. However, this conclusion is based on calculations at a highly aggregate level. At a more disaggregate level, the two countries may have comparative advantage in different commodity groups as shown by Balasubramanyam and Wei (2005a). In

\footnote{It should be pointed out that this $RCA$ index is asymmetric in the sense that it ranges from one to infinity for products in which a country has comparative advantage but only from zero to one for the case of comparative disadvantage. To correct this skewed distribution, several symmetric $RCA$ indices have been proposed (e.g. Dulum, Laursen, & Villumsen, 1998; Laursen, 1998).}
addition, the intra-industry trade indices presented in Table 4 show that there may be more IIT in commodities in which both countries have comparative advantage (e.g. SITCs 66, 68, 84 and 89). Finally, Table 5 also demonstrates that there are areas where there is no overlap in the two countries’ comparative advantage and thus the two countries do not compete with each other. These areas include SITCs 0, 2, 5 and 7 according to Table 5.

5. Summary and concluding remarks

To sum up, China and India have enjoyed unprecedented economic growth in the past decade. This growth has substantially lifted the status of the two countries in the world economy. Associated with this growth is the rapid expansion in bilateral trade between the two largest developing economies. It is reported that, in 2004, total volume of bilateral trade between China and India reached US$12 billion, an increase of 58% over the 2003 level (see Fig. 3). As economic reforms deepen in the two economies, high economic growth is expected to sustain for some time. This growth will generate more trade between the two neighbouring economies. In addition, a further increase in bilateral trade is also determined by several other factors.

First, the estimated trade intensity indices in this paper have shown that China and India are not trading at a level as high as it should be. Thus there is potential for growth in bilateral trade between the two economies. The Chinese and Indian policy makers are now working together to improve trade and economic cooperation. Diplomatic relations between the two countries are better than at any time since the 1960s (Economist, 2005). In particular, since Atal Behari Vajpayee, then India’s Prime Minister, visited China in June 2003, the two countries have reduced tariffs on each other’s export products substantially.

Second, growth in bilateral trade is also possible if each country exploits its own comparative advantage. There is overlap in their comparative advantage in some commodities according to the estimates in this paper. However, the two countries can still expand trade in areas where there is no overlap in their comparative advantage. There is also scope for an increase in intra-industry trade in some areas where the two are competing with each other.

Third, the two economies complement each other in some areas. While China has a dominant industrial sector in the economy, India has a strong service sector (Table 6). The two countries

<table>
<thead>
<tr>
<th>SITC code</th>
<th>Description</th>
<th>China</th>
<th>India</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Food and live animals</td>
<td>0.904</td>
<td>0.696</td>
</tr>
<tr>
<td>1</td>
<td>Beverages and tobacco</td>
<td>0.576</td>
<td>0.254</td>
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<tr>
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<td>Crude materials, inedible, except fuels</td>
<td>0.551</td>
<td>0.339</td>
</tr>
<tr>
<td>3</td>
<td>Mineral fuels, lubricants and related materials</td>
<td>0.446</td>
<td>0.247</td>
</tr>
<tr>
<td>4</td>
<td>Animal and vegetable oils, fats and waxes</td>
<td>0.777</td>
<td>0.064</td>
</tr>
<tr>
<td>5</td>
<td>Chemicals and related products, n.e.s.</td>
<td>0.583</td>
<td>0.405</td>
</tr>
<tr>
<td>6</td>
<td>Manufactured goods classified chiefly by material</td>
<td>1.266</td>
<td>1.176</td>
</tr>
<tr>
<td>7</td>
<td>Machinery and transport equipment</td>
<td>0.619</td>
<td>1.092</td>
</tr>
<tr>
<td>8</td>
<td>Miscellaneous manufactured articles</td>
<td>2.950</td>
<td>2.225</td>
</tr>
<tr>
<td>9</td>
<td>Not classified elsewhere</td>
<td>0.065</td>
<td>0.081</td>
</tr>
</tbody>
</table>

can offer each other valuable experience and lessons. China can learn from India to develop a strong service sector. India has to expand its manufacturing sector and in particular improve the sector’s competitiveness. In terms of manufacturing development, China may offer a model for India to follow.

Finally, the existing practice has shown that bilateral free trade agreements (FTAs) offer a second best solution to world free trade. Research findings demonstrate that FTAs have boosted bilateral trade between partners (Wu, 2006c). In particular, neighbouring economies could potentially benefit more from an FTA. China and India should explore the possibility of signing a free trade agreement sooner.

Acknowledgements

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References


Table 6
Structure of the Chinese and Indian economies (% of GDP)

<table>
<thead>
<tr>
<th></th>
<th>China</th>
<th></th>
<th>India</th>
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<tbody>
<tr>
<td></td>
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<td>Services</td>
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<tr>
<td>1986</td>
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<td>2004</td>
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