論　説

Demand-Supply Direction of the Textile-Clothing Industry of Asian Newly Industrialized Economy South Korea and Bangladesh

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Abstract

In this paper, we attempt to analyze the growth path of the textile-clothing industry of South Korea, one of the most powerful newly industrialized countries in Asia, and Bangladesh. We applied a structural decomposition analysis to the input-output tables of the economies. The result shows that the technical change in the early 1960s in Korea prevailed in the textile industry of Bangladesh in the early 1980s, although the export share was very small in Bangladesh comparatively. A further decomposition of the output reveals that export expansion has played a greater role for the growth of the clothing industry of Bangladesh than it has played for that of Korea. After 2000, Korea's firms started to concentrate on branding and retailing, moving away from order-based manufacturing, whereas the industry in Bangladesh is still concentrated on order-based manufacturing. The contribution of technical change and final demand change in the industry in recent times in Bangladesh corresponds to that of the 1980s in Korea. The supply side, including backward and forward linkages, of the TCI of Korea is stronger than that of Bangladesh. Because the export structure of Bangladesh is not as diversified as Korea is with heavy industries, Bangladesh should nurture the TCI by using Korea's export strategy for light manufacturing industries.

Keywords: Demand-supply direction, Textile-clothing industry, Structural decomposition analysis, Korea, Bangladesh.

1．Introduction

The history of global textile-clothing industry（TCI）evolution shows distinct patterns of industry migration across countries and of the industry development of a single country

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（Ha-Brookshire & Lee, 2010）. The industry gradually shifted from Europe to America to East Asia to South and Southeast Asian countries.[1] The history of the Asian textile industry shows that Japan in the 1950s and 1960s, newly industrialized countries[2] （NICs） during the 1970s and 1980s, and China in the 1990s became world-class exporters primarily by mastering the dynamics of buyer-driven labor-intensive commodity chains. The key to success in East Asia's buyer-driven chains was to move from the mere assembly of imported inputs （traditionally associated with export-processing zones） to a more domestically integrated and higher value-added form of exporting, known alternatively as full-package supply or original equipment manufacturing （OEM） production. Subsequently, Japan and some firms in the NICs pushed beyond the OEM's export role to original brand manufacturing （OBM） by joining their production expertise with the design and sale of their own branded merchandise in domestic and overseas markets （Gereffi, 2002）. The NICs have been fueled by textile and apparel exports, which have experienced a decreasing trend due to increasing labor costs and opting for offshore sourcing （Jin, 2004）.

South Korea （we use the name "Korea or KOR" also）, such an NIC with export-led growth, was fueled by the TCI during the late 1960s until the early 1990s. The TCI was considered one of the most important industries after the World War II and the Korean War. In the 1950s, domestic production met 50% local demand, and in the 1960s, Korea was considered a global sourcing destination for apparel manufacturing with low labor costs. By the 1970s, the overall export of textile-clothing products exceeded 30% of all national products, and in the 1980s, the industry slowly started to decline with increasing labor costs. However, in the early 2000s, the industry began to concentrate on the demand side, including branding, marketing, and designing （Ha-Brookshire & Lee, 2010）. In the middle of the 1970s, the country moved to heavy industries, giving less importance to light industries, including the TCI （Kim, 1991）.

However, the clothing industry of Bangladesh has grown with the lively support of Korea's FDI. Daewoo of Korea initiated the journey of the export-oriented industry in a joint venture with Desh Garments Limited in 1977, which also trained 130 Bangladeshi people in Korea.[3] The journey was expedited by Youngones Bangladesh Limited in 1980, another Korean firm （Yunus & Yamagata, 2012）. Korea has the largest investment in textiles among East Asian countries, and it accounted for one fourth of the total FDI in textiles and apparels （Moazzem & Nessa, 2014）. This is why South Korea's experience is important for the sustainable development of the TCI in Bangladesh.

The economy of Bangladesh is very dependent on the TCI in terms of employment generation for illiterate people, contribution to the GDP, women empowerment, and most importantly, foreign currency earnings （Baumann-Pauly & Banerjee, 2015; Berg, Saskia, Sebastian, & Tochtermann, 2011; Gereffi & Memedovic, 2003; Labowitz & Baumann-Pauly, 2015; Masum, 2016; Mather, 2004; Oxfam International, 2016; Padmanabhan, Baumann-Pau-

ly, & Labowitz, 2015; Rashid, 2006; Saxena & Salze-Lozac'h, 2010). The growth of the Bangladesh economy is export led, with spectacular growth in both exports and output in recent years (Paul, 2011). Bangladesh is ranked the second largest among the clothing exporters in the world (Masum & Islam, 2014). The export contribution of the TCI accounts for 80% of the country's total export earnings (Masum & Inaba, 2015). Historically, the TCI has shifted from being high-wage to low-wage countries. However, the shifting allowed the countries to develop, or the countries managed to shift to other capital-intensive industries like the United Kingdom, the United States, Japan, and most recently, the Asian NICs. However, the Bangladesh case is complicated because the TCI has been the sole contributor in the export basket during the last three decades. No other industry in Bangladesh is growing to help develop the country after the decline of the TCI except manpower exports. Thus, sustainable growth strategy is very important for the TCI in Bangladesh.

As the economies of Asian NICs are export led and shifted from being labor to capital intensive, we will study the life cycle of the clothing industry in Korea, the strongest member of NICs, to infer the demand-supply direction of the clothing industry of Bangladesh. Thus, the research questions for this study are as follows:

1) What is the demand-supply direction of the TCI of newly industrialized Asian giant South Korea, and Bangladesh?

2) What are the lessons and strategies for the sustainable growth of Bangladesh's TCI?

The rest of the paper is organized as follows. Section 2 illustrates the role of the TCI in the economy of Bangladesh and Korea, Section 3 gives a brief history of industrialization in Korea, Section 4 describes the methodology applied for analyzing the data, Section 5 provides the overall economic direction of the economies, Section 6 examines the input-output structure, Section 7 analyzes the demand direction of the TCI in Bangladesh and Korea, Section 8 emphasizes the supply-side of the industry with respect to Bangladesh and Korea, and finally, Section 9 concludes the paper.

2. The TCI in the Economy of Bangladesh and Korea

A comparative picture of the economy of Bangladesh and Korea shows that the GDP figures of the countries up to the 1960s are almost equivalent. Afterward, Korea showed the miracle of development with less than half of the population of Bangladesh (Table 1B in Appendix B gives more details about the GDP and population statistics). The GDP composition analysis indicates that the Korea's economy has shifted from an agricultural to a service and manufacturing industry orientation. Table 1 below presents the data of GDP composition. The growth analysis reveals that the agriculture sector in Korea has declined by

Table 1: GDP Composition of Bangladesh and Korea

		1965	1975	1985	1995	2005	2015	Growth*
Korea	Agriculture（% of GDP）	39	25	13	6	3	2	−51%
	Industry（% of GDP）	21	27	36	38	37	38	16%
	Services（% of GDP）	39	47	51	56	59	60	11%
Bangladesh	Agriculture（% of GDP）	53	62	35	26	20	16	−26%
	Industry（% of GDP）	11	12	21	25	25	28	27%
	Services（% of GDP）	36	26	44	49	56	56	11%

Source: World Development Indicators（WDI）, World Bank
＊ Average Growth Rate from 1965 to 2015

Table 2: Share of Manufacturing to GDP and TCI to Manufacturing

|		1965	1975	1985	1995	2005	2015
Korea	Manufacturing（% of GDP）	14	20	25	25	28	29
	Textiles and clothing（% of manufacturing）	20	23	16	10	5	4
Bangladesh	Manufacturing（% of GDP）	5	7	14	15	16	18
	Textiles and clothing（% of manufacturing）	36	37	30	44	40	51

Source: WDI, World Bank

51%, and the rate of decline, which is the main driver of development in Korea, is almost double than that of Bangladesh. From 1965 to 1975, dependency on agriculture increased in Bangladesh.

The manufacturing share of GDP was below one digit until 1985 in Bangladesh, as shown in Table 2 below. This is also a critical factor for the growth trend of Bangladesh's economy. Over the past four decades, Bangladesh has experienced sustained overall economic expansion of more than 5% per annum. The growth dynamism in Bangladesh during this period was largely contributed to by the industry and service sectors. However, the economy is yet to have a strong manufacturing base, as the share of manufacturing in GDP reached only 18% by 2015 and 29% for Korea（Table 2）.

Korea's manufacturing base has been strong since 1975（20%）, and in the same year, the contribution of Bangladesh was only 7%. The merchandise export of the countries from the mid-1960s is given in Figure 1. It is evident that before the mid-1960s, the contribution of merchandise exports was insignificant in both of these economies. South Korea's growth trend of merchandise exports is significantly higher than that of Bangladesh. The share of textile-clothing exports among the merchandise exports was very important in both of these economies. Many industries contributed to the total merchandise exports of Korea, but the merchandise exports of Bangladesh are TCI dependent.
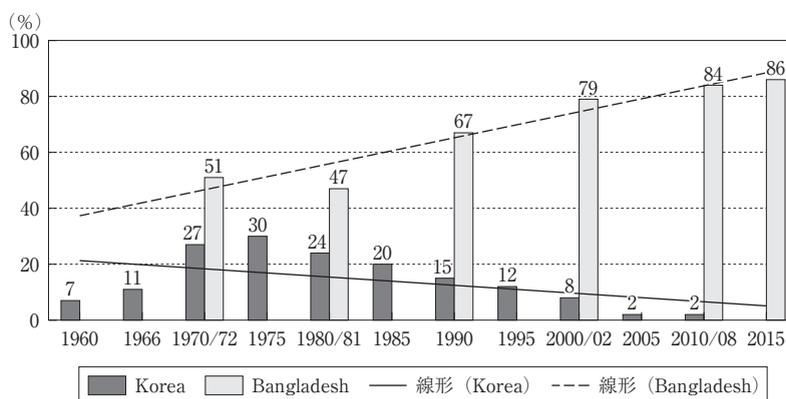
The TCI was the leading export contributor holding the first position from the mid-1960s to the early 1980s（see Figure 2 below and Table 2B in Appendix B）in Korea. The indus-

Figure 1: Merchandise Export Statistics of Bangladesh and South Korea.
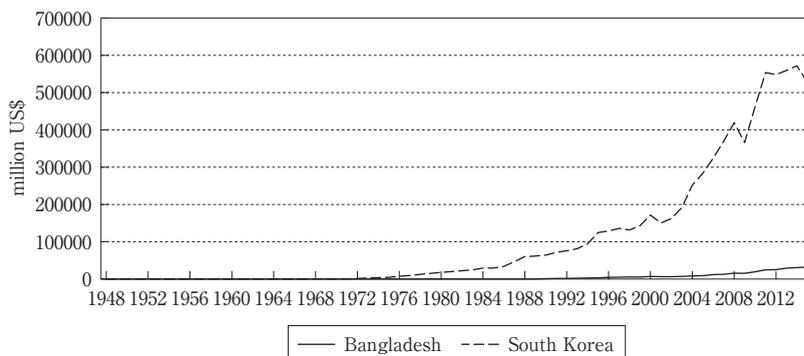
Source: UNCTAD

Figure 2: The Export Share of TCI in Bangladesh and Korea

Source of Korea data: Input-Output Tables. Source of Bangladesh data:（Sultan, 2008）from
1972 to 2003（summarized）and Export Promotion Bureau of Bangladesh for the Rest Data.

try was ranked one of the top 5 export oriented industries in Korea from the 1960s to the
1990s. In recent times, Korea's TCI contributed only 2% of total exports. A maximum of 2
% of these exports is primary textiles（other than clothing production）. In 1990, for exam-
ple, the industry's 81% output was primary textiles, and 19% was clothing. Also, the ex-
port record shows that 71% of the industry's export was textiles, and 29% was clothing
products during the same period. However, apart from the TCI, in 1960, agriculture domi-
nated the export structure, which has recently transformed into a manufacturing-dominated
export structure in Korea. Currently, the export basket is dominated by iron and steel,
machinery and equipment, chemicals, and so on.

On the other hand, the export composition of Bangladesh is full with textile-clothing
products with limited contribution from leather and food industries. All the agriculture
products exported in 1972-73 fiscal year were raw jute and all the textile products were
jute goods like sacks, ropes, etc., which reduced to less than 1% in 2015-16 fiscal year. At
present, agriculture sector and textile sector are not contributing in the export earnings of

Table 3: Export Structure of Bangladesh from 1972 to 2016

	Agriculture (jute)	Leather	Foods	Chemical	Textile	Clothing[4]	Others
1972–73	38.5%	4.6%	3.8%	0.9%	51.4%	0.0%	0.8%
1981–82	16.3%	10.1%	14.6%	1.1%	45.5%	1.1%	11.3%
1990–91	6.1%	7.8%	10.8%	2.6%	16.9%	50.4%	5.4%
2002–03	1.3%	2.9%	5.1%	1.5%	3.9%	75.1%	10.2%
2008–09	0.0%	2.4%	4.5%	1.3%	1.4%	83.0%	7.4%
2015–16	0.0%	4.0%	3.3%	0.4%	0.6%	85.0%	6.7%

Source: As Figure 2

Figure 3: Share of Textile-clothing Export to Total Export after 1980 in Bangladesh and Korea
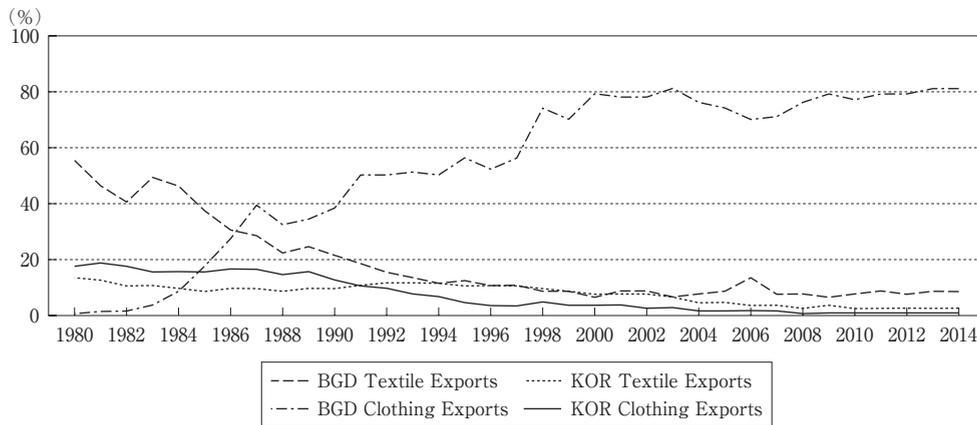
Note: Statistics sourced from WTO database

the country. Leather and food sectors remain contributing in the same pace since 1972–73 period, shown in Table 3 below. The major changes are there in the clothing industry, which increased from 0% in 1972–73 to 85% in 2015–16. So, the major structural shifts are in the agriculture sector（declining）and clothing sector（growing）.

TCI of Bangladesh has become significant since the 1970s in the export basket. Since the evolution of clothing industry,[4] the textile industry plays the role of backward linkage. After the 1980s, the export volume of textile products（jute and spinning）has reduced and export volume of clothing products has increased continuously. The following Figure 3 shows the trend. In 1980 the share of clothing export to total export was nearly 1% which is 85% in 2016. On the other hand, the share of textile industry（described as a backward linkage to the clothing industry）in the 1970s and 1980s was approximately 50%, but in 2016, it was less than 1%.

However, there has been a production shift in the South Korean TCI. Bangladesh's textile industry is backing the clothing industry, but in the Korean case, both the textile and clothing industry has been declining since the 1980s. The share of clothing exports in 1980

was 17% and is now （2014） less than 1% （shown in Figure 3）. The textile industry
shares this fate, as exports have fallen from 13% to 2% during the same period. However,
the textile industry is stronger than the clothing industry in Korea. Although textile ex-
ports have declined in South Korea, exports of textile outputs in Bangladesh has shifted to
domestic consumption.[5]

The TCI was very important for Korea's economy to grow faster, but after the 1980s,
the role of the industry declined. In the 1970s, textile-clothing exports accounted for 30%
of the total exports of Korea, which fell to less than 10% by 2002 with the shift in elec-
tronics and technology manufacturing （Kim, 2002）. Due to wage hikes and competition
with other countries, the industry started to decline in the late 1980s （Hoon, 2004）. Cloth-
ing exports have increased in Bangladesh but decreased in Korea, so studying structures
of the life-cycle stages of the TCI of one of the most powerful NICs, South Korea, will re-
veal ways to set a strategy for the sustainable growth of the TCI in Bangladesh.

3. Korea's Industrial Success

Late industrialization with borrowed technology and learning was the key to success in
productive structures in the twentieth century, such as South Korea （Amsden, 1989）. It is
considered that from the mid-1960s on, the Korean miracle began and continued. During
the period from 1953 to 1960, exports of goods and services ranged from 1.1% to 2.4% of
GNP （Frank Jr., Kim, & Westphal, 1975）. After the Korean War, the country pursued an
import-substitution strategy in which the United States financed 70% of its total fixed capi-
tal （Mayreddy, 2005）. The first two 5-year plans, beginning in 1962, encouraged a labor-in-
tensive industry, and the third plan concentrated on the heavy-chemical industry （Tcha,
Lee, & Suh, 2003）.

The economic growth of Korea is export led and steered by active state intervention
and import substitution. Korea has achieved rapid growth through an export-oriented poli-
cy, and the period from 1963 to 1985 is characterized by the expansion of the manufactur-
ing sector （Kuang-hui & Fujikawa, 1992）. Korea reached a turning point in 1963 under the
5-year economic development program from 1962-1966 toward export orientation （Park,
1994）.

Within a single generation, the country transformed from being heavily dependent upon
foreign aid in the early 1960s to becoming self-sufficient in terms of its own funding re-
quirements by the end of 1986. The rapid transformation to high economic growth was
primarily initiated by an expansion of exports （Lee, 1996; Song, 1990; Smith, 2000）.

The basic philosophy of the government in the 1960s was "exports first" or "nation build-
ing through export promotion." Attaining ambitious government-set export targets and

then exceeding these targets was regarded as the height of achievement for businessmen and public officials in charge of export promotion. Larger Korean firms were assigned annual export targets by officials in the Ministry of Trade and Industry and were seen by these firms as virtual orders or assigned missions. If they succeeded in fulfilling their export goals, they obtained numerous benefits reserved for exporters, including preferential credit and loans, administrative support, tax, and other benefits. Thus, Korean exporters saw the over fulfillment of their export targets-usually determined jointly with the government-as the keystone of their business strategy. By the 1970s, however, increased focus was given to the development of imports, substituting strategic heavy and chemical industries（HCIs）and maintaining the export growth of light manufactured industries, including the TCI and the development of new heavy-goods exports. The 1980s saw a refocus on trade liberalization, including an opening of domestic markets and a reduction in export subsidies, causing pressure from trading partners. The expansion of industrial capacity in Korea was achieved through the expansion of existing firms rather than through the creation of new firms. This pattern persisted for over two decades and resulted in the growth of a small number of very large firms and business conglomerates（Harvie & Lee, 2003）.

4．Data and Methods

This paper applies a structural decomposition analysis（SDA）to determine the demand-supply direction of the TCI, including the effect of technical change, final demand change, domestic demand expansion, export expansion, and import substitution. The input-output tables（IOTs）of the concerned economies are used as the base data. The Asian Development Bank（ADB）Multi-Regional Input-Output（MRIO）tables from 2000, 2005, and 2011 and Eora [6] IOTs from 1971 to 1995 are used for the TCI analysis of Bangladesh. We converted the MRIO tables of ADB into IOTs following the methodology specified in Appendix A.

The IOTs compiled by the Bank of Korea from 1960 to 2010 are used for the Korean case. The tables have different sector classifications for different benchmark years, ranging from 43 to 85 sectors. We consolidated [7] the different sectors into 25 sectors for ease of comparison, as we have some 25-sector tables（sector classification and consolidation is provided in Appendix C）.

Demand-side analysis: For the demand-side analysis, we used the SDA technique, or growth accounting. Solow（1957）put growth economics into growth accounting（Crafts, 2009）. Afterward, Kendrick（1961）, Denison（1962, 1967, 1974, 1979）, Jorgenson and Griliches（1967）, and others extended this technique. Growth accounting breaks down economic growth into components associated with changes in factor inputs and the Solow residual,

which reflects technological progress and other elements (Barro, 1999). In an input-output environment, this growth accounting technique is called SDA. Many authors have worked with SDA to analyze the growth of the economy and industry, for example, Sholka (1989), Rose and Chen (1991), Vaccara and Simon (1968), Miller and Shao (1994), among others. However, the best fitted SDA for technical and final demand changes was proposed by Dietzenbacher and Los (Miller & Blair, 2009). Dietzenbacher and Los's (1998) SDA gives the following:

Technical change[8] = $(1/2)(\Delta L)(f^0 + f^1)$

Final demand change = $(1/2)(L^0 + L^1)(\Delta f)$

where L is the Leontief inverse[9], L_0 is the base year L matrix, L_1 is the Leontief inverse for the subsequent year, ΔL is the difference between L_0 and L_1, f_0 is the final demand for the base year, f_1 is the final demand for the subsequent year, and Δf is the difference between f_0 and f_1. The sum of the two changes is equivalent to the total changes in output.

Beyond the technical changes and final demand changes, we again decompose the output change to determine i) the contribution of domestic demand expansion, ii) the contribution of export expansion, and iii) the contribution of import substitution as used in measuring the export growth of the South Korean economy (Frank, Kim, & Westphal, 1975). The methodology used by Frank, Kim, & Westphal (1975) is as follows:

$\Delta X = (1 - m_0). \Delta D + \Delta E - \Delta m. D_1$[10]

Here, m_0 is the ratio of imports to domestic demand (M/F), ΔD is the difference between F_0 and F_1, ΔE is the difference between E_0 and E_1, Δm is the difference between m_0 and m_1, $(1 - m_0). \Delta D$ represents the contribution of domestic demand expansion (DE), ΔE represents the contribution of export expansion (EE), and $\Delta m. D_1$ represents the contribution of import substitution (IS).

Supply-side analysis: For supply-side analysis, we use backward linkage (BL) and forward linkage (FL) measures. Early works on BL and FL and key sector measures include Rassmussen (1957), Hirschman (1958), Jones (1976), and Cella (1984), among others. Chenery and Watanabe (1958) proposed the definition of BL in input-output analysis. This method is used widely. They indicated that the column sum of the Leontief inverse (l) matrix is the total BL linkage measure as follows:

Total BL of sector j = $\sum_{i=1}^{n} lij$

Row sums of the Leontief inverse matrix are considered as the early measure of the total FL measure. But due to some skepticism, row sums of the Ghosh model[11] are considered as appropriate measures of FL (Miller & Blair, 2009). To measure FL, the Ghosh inverse (g) was applied by Beyers (1976), Jones (1976), and Chenery and Watanabe (1958),

among others. So,

   Total FL of sector i $= \sum_{j=1}^{n} gij$

 To identify key sectors of the economies, we calculated the index of the power of dispersion（IPD）and the index of the sensitivity of dispersion（ISD）using the following methods used by the Ministry of Internal Affairs and Communication, Japan:

   IPD $= a_{*j}/\mu$ and ISD $= a_{j*}/\mu^*$

 where a_{*j} is the vertical（column）sum of the sector and μ is the average of the total vertical（column）sum of the sector and a_{j*} is the horizontal（row）sum of the Ghosh model and μ^* is the average of the total horizontal（row）sum of the Ghosh model.

5．Overall Economic Direction

 In the 1960s, the major output supplying sectors of Korea's economy were agriculture, food, and the TCI; in the 1980s, the total demand composition was represented by machinery, chemicals, and iron-steel in addition to agriculture, food, and the TCI; in the periods of the 2000s and 2010s, the economy left behind agriculture and the TCI, instead concentrating on machinery, chemicals, iron, transportation, and others. Table 4 below shows that the agricultural-and light-manufacturing-dependent economy shifted to an industrialized economy with diversification of output composition. The economy is not dependent on a single sector. The nature of intermediate demand is almost the same, which is given in Table 3B in Appendix B.

 The export structure of Korea's economy has also changed over time, as shown in Table 3B in Appendix B. In the year 1960, the agriculture, mining, TCI, and food industries dominated the export composition with 18%, 12%, 7%, and 7% of shares, respectively. The export composition was the TCI（24%）, transport equipment（13%）, iron-steel（12%）, and machinery（12%）after two decades in 1980. In the year 2000, the export basket was dominated by machinery（36%）, transport equipment（13%）, chemicals（12%）, the TCI（8%）, and iron-steel（6%）. In recent times（2010）, the composition of exports has included iron-steel, machinery, nonmetallic minerals, pulp-paper, lumber-wood, rubber, and food, with an export share of 26%, 20%, 11%, 7%, 7%, 6%, and 4%, respectively.

 In the early periods of development, the economy of Korea was import dependent on agriculture, the TCI, food, iron-steel, petroleum, chemicals, and machinery with 29%, 12%, 9%, 6%, 6%, 4%, and 4% shares of the total imports, respectively. In the year 1980, the economy had become import dependent on mining（25%）, machinery（21%）, agriculture（11%）, chemicals（9%）, iron-steel（8%）, food（5%）, the TCI（3%）, and others. In 2000, the most

Table 4: Output Share of the Major Sectors in the Korea's Economy from 1960 to 2010

Sector	1960	Sector	1980	Sector	2000	Sector	2010
Agriculture	27.0%	Food	9.9%	Machinery	16.7%	Machinery	12.5%
Education	12.3%	Agriculture	8.8%	Telecom	13.0%	Iron-Steel	9.2%
Food	9.8%	Machinery	7.8%	Chemicals	8.3%	Transport	8.8%
TCI	7.3%	TCI	7.6%	Construction	6.1%	Non-metallic	8.7%
Public Admin	7.2%	Construction	6.8%	Iron-Steel	5.9%	Telecom	6.2%
Hotel	5.8%	Iron-Steel	6.6%	Transport	5.1%	Rubber	5.2%
Telecom	4.6%	Chemicals	6.4%	Education	4.6%	Lumber	4.6%
Utility	4.1%	Trade	6.1%	Trade	4.4%	Food	4.6%
Iron-Steel	2.3%	Petroleum	5.4%	Food	4.2%	Mining	4.4%
Mining	1.9%	Transport	4.9%	Other	3.9%	Other	3.8%

Source: Input-Output Tables

Table 5: Output Share of the Major Sectors in Bangladesh's Economy from 2000 to 2010

Sector	2000	Sector	2005	Sector	2011
Agriculture	18.7%	TCI	14.8%	Agriculture	18.7%
TCI	13.9%	Agriculture	14.4%	TCI	13.7%
Construction	10.9%	Construction	11.3%	Construction	9.5%
Trade	8.2%	Trade	8.8%	Trade	8.8%
Food	7.7%	Transport Service	8.5%	Food	7.2%
Finance	7.4%	Food	8.1%	Transport Service	7.0%
Transport Service	7.1%	Other	6.9%	Other	6.7%
Others	6.3%	Finance	6.6%	Finance	5.2%
Education	3.4%	Education	3.3%	Metal	4.1%
Public Admin	2.7%	Public Admin	2.7%	Education	3.7%

Source: Input-Output Tables

import-dependent sectors were machinery （33%）, mining （17%）, and chemicals （9%）. In recent times （2010）, the economy has become dependent on mining （23%）, nonmetallic minerals （11%）, iron-steel （11%）, food （6%）, and others. More details of the sectoral information on output, exports, imports, value added, and others are given in Appendix B, Table 3B.

century, the lion's share of output was from agriculture in Bangladesh, followed by the TCI, construction, food, trade, and transport services, as summarized in Table 5. Among the manufacturing sectors, only the TCI is mentionable. In contrast, Korea's economy in the 20th century was represented by heavy industries, as shown in Figure 4 below. The export composition in recent times, as mentioned earlier, is fully represented by the TCI in

Figure 4: Shares of Output to Total Industry Output of Bangladesh and Korea
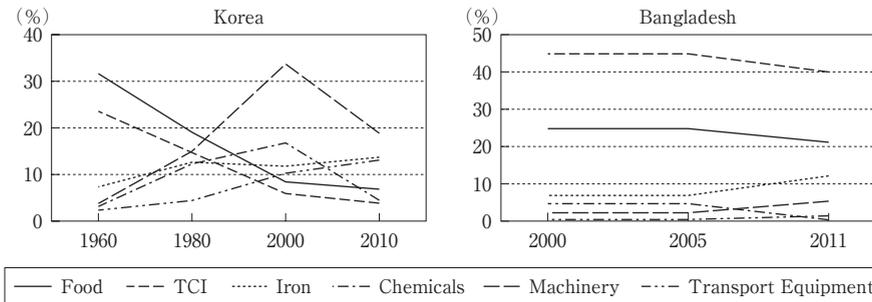
Source: Input-Output Tables

Bangladesh. The other export contributors within the 3% to 6% export range are leather, trading, and agriculture in Bangladesh.

The import-dependent sectors in Bangladesh are the TCI with 22%, 28%, and 14% shares; construction with 18%, 18%, and 12% shares; food with 12%, 10%, and 12% shares; and metal with 8%, 7%, and 6% shares for the years 2000, 2005, and 2011, respectively. So, the economic structure and transition of Bangladesh and Korea are quite different. Table 3B and Table 4B in Appendix B provide some more details of the economic direction of Korea and Bangladesh over several periods.

An analysis on the industrial output concludes that the pattern of output transition of the economies is not same. The food industry and the TCI have declined sharply in Korea. On the other hand, there has been no significant transition in the industry composition of Bangladesh. Above, Figure 8 shows that the TCI and the food industry are the representatives of the economy of Bangladesh, but no specific industry is representative of Korea's economy; rather, many industries contribute to the GDP. The contribution of the TCI in the Korea's economy, on average from 1960 to 2010, is 12%, in comparison to 43% of Bangladesh's economy from 2000 to 2011. The contribution of transport equipment and machinery is significant in Korea's economy but is very insignificant in Bangladesh. The contribution of the food industry of Bangladesh in recent times is comparable with the same industry in Korea from 1960 to 1980. The average output of the food industry is 23% from 2000 to 2011 is only 8% for Korea in the same time period. More detail information is given in the Appendix B, Table 3B and 4B（we consider serial no. 3-15 as industry to differentiate with agriculture and services）.

6．Input-Output Structure of the TCI

The intermediate total coefficients of the industry in Bangladesh have increased from the beginning of the industry's life cycle. The coefficient from 1971 to 1995 was 0.11 on aver-

Figure 5: Supply-side Coefficients of TCI of Bangladesh
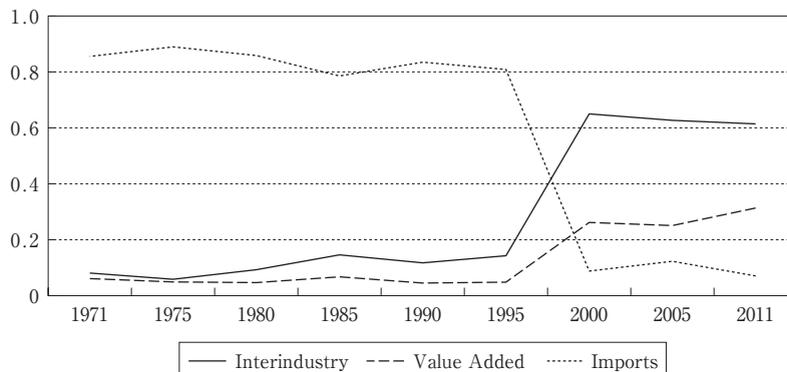
Source: Input-Output Tables

age. But there was a shift in 1995, as shown in Figure 5 below, when the industry became more independent with the development of related and support industries in the country. After 1995, the intermediate coefficient became 0.63 on average. The imported supply coefficient supports the shift because the import coefficient till 1995 was 0.84 on average, which reduced to 0.094 from 2000 to 2011. The value added of the industry also increased after 1995. The detailed supply-side coefficients of Bangladesh are given in Table 5B in Appendix B.

The reasons behind the shift in import dependency, increased value added, and more collaboration among the local industries in the 20th century include the impact of reform initiatives instituted in the 1990s,[12] the strict rules of origin in the 1990s, adaptation of technology, and the end of the quota system, among other reasons. The significant historical issues related to the TCI of Bangladesh are i）the early period of growth in the 1970s, ii）quota restriction in the 1980s, iii）the child labor problem in the 1990s, and iv）withdrawal of the quota restriction in the 20th century （Ahamed, 2014）. Because of the resolution of the child labor problem and the withdrawal of the quota restriction, the TCI gained significant growth in the 20th century. The WTO initiated a multilateral trading system in 1995 for textile-clothing trading through the Agreement on Textile and Clothing （ATC）, replacing the Multi-Fibre Agreement （MFA）.[13] The positive impact of the new initiative on the growth of the TCI in Bangladesh has been reflected in the 21stth century. There have been significant changes with regard to the new technology introduced in the Bangladesh garment industry to increase efficiency, which immensely helps them to cope with the post-MFA competition （Alam, 2012）. Some studies, such as Abras （2011） and Saheed （2008）, also supported this finding. Many garment firms in Bangladesh have invested in new computerized cutting, sewing, and inventory management systems, which facilitated sustaining and continuing its export growth （Abras, 2011）. Technology upgrading played a very crucial role for fostering the garment export growth of Bangladesh in the post-MFA

Table 6: Demand-side Coefficients of TCI of Bangladesh

Year	Intermediate Demand Coefficient	Domestic Final Demand Coefficient	Export Coefficient
1971	0.0736	0.0152	0.9112
1975	0.0374	0.0403	0.9223
1980	0.0222	0.0986	0.8792
1985	0.0305	0.1657	0.8038
1990	0.0177	0.1300	0.8523
1995	0.0188	0.1564	0.8249
2000	0.3523	0.2316	0.4161
2005	0.3300	0.2359	0.4340
2011	0.3151	0.1581	0.5267

Source: Input-Output Tables

period（Saheed, 2008）. Bangladesh was the number one importer of hand-knitting and semiautomatic flat-knitting machinery in the early 2000s and was second in 2008; it was also fourth in 2009 in the purchasing of single-and double-jersey circular-knitting machinery.

The import value of textiles in Bangladesh was about 60% of the export value of clothing in 1991 but had declined to about 40% by 2001, indicating that backward linkages have developed over time（Keane & Velde, 2008）. The TCI of Bangladesh benefits from a bonded warehouse facility,[14] which reduces the import cost（World Bank, 2009）. This facility was not available during the 1990s and earlier. The Rules of Origin（RoO）system in Bangladesh has been able to build strong backward linkages over the years and thereby contribute to textile makers' development and industrialization. Investors were encouraged to invest in backward linkages in textiles in order to receive duty-free market access in the EU（Rahman, 2014）. Rahman（2004）also stated that before 2004, Bangladesh was required to produce yarn, fabric, and apparel to enjoy duty-free access to the EU market. This strict RoO system enhanced the process of self-sufficiency in the supply of raw materials. Now yarn firms can satisfy 70% of the local demand, fabric firms can produce 90% of knit-fabric demand, dyeing-printing-washing firms can serve 100% of the local demand, and accessories firms can also meet up to 90% of the domestic demand（Masum, 2016）.

The intermediate demand-side coefficient from 1971 to 1995 remained almost the same. After 1995, the output contributed as much as backward linkage. The domestic final demand coefficient has increased gradually with the increasing volume of output. But from the very beginning, the major share of output has been exporting. In the early periods （1971 to 1990）, the textile share in the output was much greater than the clothing share, which was reversed in the later periods（1990 to 2011）. Table 6 below gives the output coefficients.

Korea's input coefficients show that the import and value-added coefficients have declined

Table 7: Supply-Demand Coefficients of the TCI of South Korea

Year	Supply-Side Coefficients			Demand-Side Coefficients		
	Intermediate Input Coefficient	Value Added Coefficient	Import Coefficient	Intermediate Output Coefficient	Final Demand Coefficient	Export Coefficient
1960	0.5833	0.2597	0.1569	0.4560	0.5194	0.0246
1966	0.4976	0.3080	0.1944	0.4872	0.4057	0.1071
1970	0.6804	0.2467	0.0729	0.4085	0.3465	0.2450
1975	0.7101	0.2275	0.0624	0.4113	0.2416	0.3471
1980	0.7255	0.2178	0.0567	0.4263	0.2180	0.3557
1985	0.7332	0.2090	0.0578	0.4517	0.1312	0.4172
1990	0.7048	0.2060	0.0891	0.4746	0.1505	0.3748
1995	0.5995	0.2626	0.1379	0.3468	0.2545	0.3987
2000	0.6020	0.2593	0.1387	0.3815	0.2004	0.4181
2005	0.6126	0.2692	0.1182	0.8693	0.0346	0.0961
2010	0.6274	0.2228	0.1498	0.8674	0.0253	0.1074

Source: Input-Output Tables

after 1966, returning to the numbers in the beginning stage after 1995. During the boom period of the TCI (1970 to 1990) in Korea, import coefficients were very marginal. Table 7 below summarizes the coefficients. The intermediate input coefficients present a very strong backward linkage of the industry. The average intermediate input coefficient is 0.64. Even today, Korea exports textile products (a backward industry to clothing production) more than clothing products.

The export coefficient of the TCI of South Korea increased from 1960 to 2000 and then declined. The TCI has been replaced with other export-oriented industries, including heavy industries. The domestic final demand coefficient has also decreased since the beginning. The intermediate demand coefficient was stable till 2000 but increased afterward, replacing the export reduction. More details of the demand-supply coefficients of Korea are given in the Table 6B.

Figure 6 below depicts the TCI input coefficients of Bangladesh and Korea, providing a comparative picture. The TCI input coefficient[15] of Bangladesh was around 0.02 from 1971 to 1995. The input coefficient has increased drastically since 2000, a trend that still prevails in the industry of Bangladesh. The coefficient from 2000 to 2011 was 0.30, which is 14 times higher than the previous period. On the other hand, the input coefficient of Korea from 1960 to 1980 was 0.33 and from 1990 to 2010 was 0.27. In the early stage, the coefficient in Korea was higher than in the latter stage. Thus, we can conclude that the input coefficient of the latter period in Bangladesh is comparable to the input coefficients of early periods of Korea.

Figure 6: Intermediate Demand Coefficients of the TCI of Bangladesh and Korea
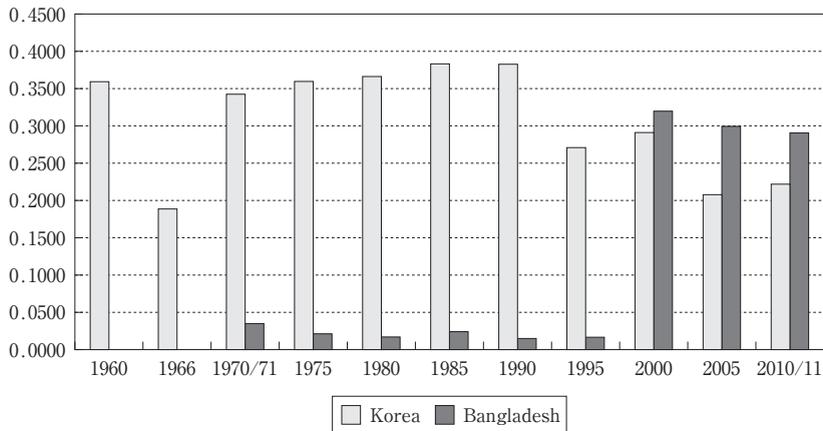
Source: Input-Output Tables

7．Structural Direction of the Demand Side

　　Under the demand-side analysis, we analyze the technical change effect, final demand change effect, export expansion effect, import substitution effect, and domestic demand expansion effect on the output change over the periods.

　　Technical Change Effect: Figure 7 demonstrates the first-stage decomposition of the output changes of the TCI of Bangladesh and Korea into a technical change effect. The decomposition analysis on the output change of the TCI of Korea from 1960 to 2010 shows that the contributions of technical change for over three decades do not follow any similar direction. The technical change effects were −4%, 13%, −1%, 0%, 11%, and 4% in 1966, 1970, 1980, 1990, 2000, and 2010, respectively. These statistics provide evidence that the TCI is ineffective for technical development. The application of technology is not fruitful, as the industry is labor intensive. Though the TCI was a good contributor, the economy of Korea has shifted to other technology-sensitive and capital-intensive industries from labor-intensive, light manufacturing industries. The 5-year plans, beginning in 1962‒1966, emphasize the export of light industries in the 1960s, the development of heavy-chemical industries and capital goods industries in the 1970s, and institutional capacity building and trade liberalization in the 1980s and later（Park, 1994）.

　　The effect of technical change in the industry of Bangladesh has been almost negative since 1971. The result does not indicate any linkage between technical change and growth of the industry. The technical effect in the TCI of Bangladesh was −2%, 0%, and −2% in 1980, 1990, and 2011, respectively.

　　Final Demand Effect: The contribution of final demand change is significant in the econo-

Figure 7: Technical Change Contribution to the Output Change of the TCI of
Korea and Bangladesh
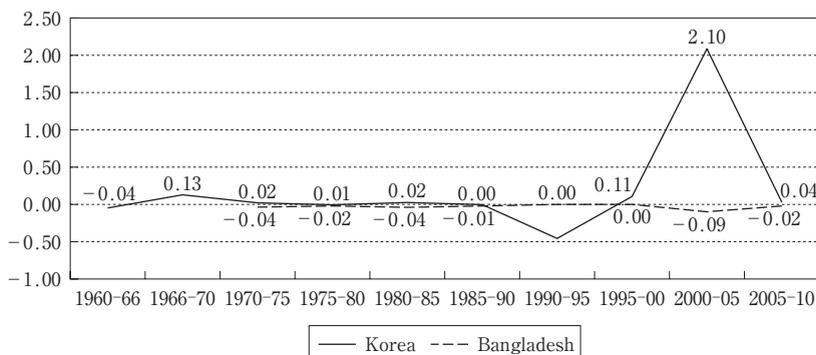
Source: Input-Output Tables. Tables for Bangladesh from 1960 to 1971 are not available

Table 8: Final demand contribution to the growth of the industry

Period	Korea	Bangladesh
1960-66	1.04	n/a
1966-70	0.87	n/a
1970/71-75	0.98	1.04
1975-80	1.01	1.02
1980-85	0.98	1.04
1985-90	1.00	1.01
1990-95	1.46	1.00
1995-00	0.89	n/a
2000-05	−1.10	1.09
2005-10/11	0.96	1.02

Source: Input-Output Tables

mies. Final demand causes the industry of the economies to flourish. The contribution of fi-
nal demand change to the industry is given in the following Table 8. In the case of Ban-
gladesh, the growth of the industry mainly contributed to the final demand. The final
demand effect is more than 100% in each period. In both countries, final demand is the
driver of output change in the TCI.

　Domestic Demand, Export, and Import Effect: Table 9 summarizes the results of final
demand decomposition into the effects of domestic demand expansion （DE）, export expan-
sion （EE）, and import substitution （IS） of the TCI of Bangladesh and Korea. A further in-
vestigation into the output change of Korea from 1960 to 2010 shows that domestic de-
mand expansion, import substitution, and export expansion have played large roles in
output changes. During the last two decades, the economy of Korea has diversified its ex-
port basket, reducing dependency on textile-clothing exports. So, the TCI lost its contribu-

Table 9: The Coefficients of DE, EE and IS of the TCI of Korea and Bangladesh

	Korea			Bangladesh		
	DE	EE	IS	DE	EE	IS
1960-66	0.62	0.19	−0.19	＊	＊	＊
1966-70	0.77	0.22	−0.01	＊	＊	＊
1970/71-75	0.52	0.45	−0.02	−6.83	10.44	2.61
1975-80	0.79	0.23	0.03	−9.64	5.21	−5.43
1980-85	2.19	0.59	1.77	−7.37	−7.16	−15.54
1985-90	0.26	0.65	−0.08	−2.62	6.86	3.24
1990-95	−0.04	1.83	0.79	−4.36	3.02	−2.34
1995-00	−0.67	2.06	0.39	n/a	n/a	n/a
2000-05	0.55	−0.08	−0.54	0.56	0.61	0.17
2005-10/11	0.62	0.42	0.04	0.33	0.61	−0.05

Source: Input-Output Tables
＊data not available

Table 10: Development Stage in Bangladesh with Corresponding Stage of TCI in Korea

Indicators	Korea 1960s	Bangladesh 1980s
Final Demand Contribution（TCI）	1.04	1.02
Technical Change（TCI）	−0.04	−0.02

Source: Input-Output Tables

tion to the export basket. Import substitution also follows the same path of export expansion. Domestic demand expansion in recent times has contributed to the growth of the TCI in Korea. In 2010, the contribution of domestic demand was 62%, that of export expansion was 42%, and that of import substitution was only 4%. The contribution of export expansion in 2005 was −8%, which indicates that the direction of the demand side has changed significantly.

On the other hand, the contribution of exports is the main driver of TCI growth in Bangladesh（Table 9）. Beginning from the initial stage, the contribution of export expansion was significant. The contribution of domestic demand expansion was negative since the 1970s. After 1995, the industry concentrated a little bit on the domestic market（33% in 2011）. In the early period of independence, import substitution was also a fact, but afterward, the rate of import substitution was negative or very near to negative. So, the growth of the TCI in Bangladesh is completely export led.

Comparison: A comparison between Bangladesh's early-stage development of the TCI and the corresponding stage of Korea is given in Table 10 based on the SDA. The SDA shows that the final demand contribution and technical change contribution in the 1960–1966 period in Korea and the 1980-1985 period in Bangladesh were very close. Subsequent

Table 11: Prevailing Demand-side Direction of TCI of Bangladesh with that of Korean TCI

SDA Indicators	Korea 1975–1980	Bangladesh 2005–2011
Technical Change	-0.01	-0.02
Final Demand Change	1.01	1.02
Domestic Demand Expansion	0.79	0.33
Export Expansion	0.23	0.61
Import Substitution	0.03	-0.05

Source: Input-Output Tables

growth accounting on the final demand change reveals that the contribution of export expansion in Bangladesh was significantly higher than in Korea. Korea's export structure was not so dependent on clothing exports as Bangladesh's. The export share to total exports in Korea ranges between 7% and 30% from the years 1960 to 2000. But in Bangladesh, it is 50% to 85% after 1990.

A comparison of the current stage of the TCI of Bangladesh with the corresponding stage of Korea is shown in Table 11 below. The result of the SDA shows that the direction of the TCI of Korea in 1975–1980 was almost same as the direction of Bangladesh's industry in 2011. The decomposition analysis also reveals the same direction of the demand side of the industry. The technical change and final demand change contribution coefficients are very similar, but further decomposition on the output change provides a different explanation. The Korean industry in 1980 was directed toward domestic demand expansion, whereas Bangladesh's industry in 2011[16] was directed toward export expansion at 61% with -5% import substitution and some domestic demand expansion.

So, the current demand-side direction of the TCI of Bangladesh corresponds with the demand-side direction of Korea in the 1980s, with some differences in final demand decomposition results.

8．Structural Direction of the Supply Side

Following the input-output analysis framework of Miller and Blair （2009）, we analyze the backward and forward linkages and key sectors under the supply-side direction of the TCI.

Key Sector Analysis: The key sector analysis reveals that the TCI of Bangladesh has become a key industry for backward linkage since 2000 and continues to be, although the industry was very significant since 1985, as the coefficient was above 0.9. The industry is also a key industry for forward linkage, but the coefficient has been near 1.0 since 2000 （Table 12）. The growth rate of the ISD[17] indicates that the industry will soon become a key sector for the economy of Bangladesh. The graduation of the IPD is much more significant

Table 12: Ranking of the TCI as a Key Sector in Bangladesh and Korea

Year	IPD				ISD			
	Korea		Bangladesh		Korea		Bangladesh	
	Rank**	Coefficient	Rank	Coefficient	Rank	Coefficient	Rank	Coefficient
1960	4th	1.22	*	*	9th	1.02	*	*
1966	9th	1.11	*	*	12th	0.97	*	*
1970/1971	1st	1.33	16th	0.84	14th	0.91	15th	0.83
1975	1st	1.35	16th	0.85	14th	0.90	17th	0.82
1980	1st	1.37	12th	0.89	15th	0.88	18th	0.80
1985	1st	1.37	12th	0.91	14th	0.89	19th	0.78
1990	1st	1.33	11th	0.90	15th	0.89	20th	0.79
1995	5th	1.18	10th	0.94	19th	0.77	20th	0.80
2000	6th	1.16	1st	1.39	19th	0.82	13th	0.97
2005	3rd	1.20	1st	1.33	5th	1.27	16th	0.93
2010/2011	4th	1.20	7th	1.16	3rd	1.27	8th	0.98

Source: Input-Output Tables
　＊Data are not available. ＊＊Rank means the position of the TCI among the industries in the economy.

than the ISD because backward strength helps invigorate other industries.

IPD analysis on the whole economy of Bangladesh shows that during the period of 1971 to 1995 the key backward sectors were agriculture, food, metals, chemicals, machinery, wood, hotels, and construction, whereas leather and plastic also have become key backward sectors since 2000 (Table 7B in Appendix B presents more details). On the other hand, ISD analysis reveals that the key forward sectors of Bangladesh's economy are almost the same as the backward sectors except for financial services, which has been a key forward sector at all times.

The IPD analysis on the Korean economy shows that the TCI has been the key industry since 1960 and continues to be to this date. The coefficient increased from the mid-1960s and decreased after 1990. From 1970 to 1990, the TCI was the topmost key sector in the economy of Korea, which downgraded in the later decades and was replaced by machinery-equipment, chemicals, iron-steel, and others (details are given in Table 8B in Appendix B). The ISD analysis also gives us the information that in the year 1960 and during recent times, the TCI has had a significant role for forward linkage. The major forward-linking key sectors in the economy in recent times are mining, petroleum, iron-steel, pulp-paper, chemicals, rubber-plastic, and others.

Linkage Analysis: The backward linkage coefficient indicates the power of the industry to accept inputs from other industries. The backward linkage of the TCI in Bangladesh rose significantly in 1995. Before 1995, the backward linkage was steadily increasing in line with the export expansion.

Figure 8: Backward and Forward Linkage Direction of the TCI in Bangladesh and Korea
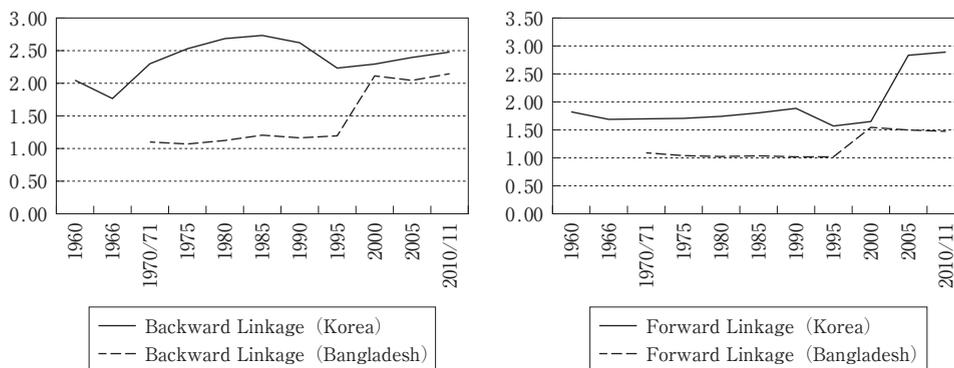
Source: Input-Output Tables

Table 13: Import Share of Input to Total Output of the TCI

	1960	1970/72	1980	1990	2000	2010
Korea	15.7%	7.3%	5.7%	8.9%	13.9%	15.0%
Bangladesh	n/a	85.7%	85.8%	83.5%	8.8%	7.1%

Source: Input-Output Tables

The forward linkage coefficient, which indicates the power of the sector to provide inputs to other sectors, is also increasing with the upward growth of backward linkage, supporting export expansion and ancillary services in Bangladesh. However, Korea's backward and forward linkages are better than Bangladesh's （Figure 8）.

Although the linkages of the TCI of Korea have been stronger than those of Bangladesh since 1970, import dependency has increased over time. The statistics in Table 13 show that, in Korea, the import share of input compared to the total output has increased during the last few decades, but in the case of Bangladesh, the scenario is quite the opposite. Bangladesh's growth of the TCI is becoming sustainable in respect of linkage reducing the dependency on imported inputs. In 1972, the percentage of imports was 86%, which was reduced to 7% in 2010, whereas it was 7% for Korea in 1970, which has increased to 15% in 2010.

Since independence in 1971, the Bangladesh economy has been heavily dependent on agriculture. The topmost input-accepting sector was agriculture until 1995. Other sectors were food, wood, metals, machinery, hotels, and others. In recent times, the most important input-accepting sector has been identified as the TCI in the manufacturing sector and the hotel-restaurant industry in the service sector, shifting from agriculture （the top 10 important industries list is given in Table 7B in Appendix B）. On the other hand, the top input-supplying sectors in Bangladesh （forward-linkage sectors） have been identified as agriculture, wood, metals, machinery, and others up to the 1990s, which continued until 2011 except for agriculture. In the 2000s, the importance of chemicals and mining as a forward-

Table 14: Supply-side Coefficient of the TCI of Bangladesh and Korea

Supply-side Indicator	Korea 1980	Bangladesh 2011
Key Sector Coefficient	1.37	1.16
Backward Linkage Coefficient	2.69	2.15
Forward Linkage Coefficient	1.74	1.47

Source: Input-Output Tables

linking sector increased.

Other than the TCI, the important backward-linking sectors in the Korean economy for the last five decades have been pulp-paper, rubber-plastic, iron and steel, chemicals, leather, and food in the 1960s; leather, lumber-wood, chemicals, rubber-plastic, iron-steel, and others. in the 1970s; leather, pulp-paper, rubber-plastic, iron-steel, and lumber in the 1980s; leather, rubber-plastic, iron-steel, and transport equipment in the 1990s; and petroleum, transport equipment, machinery, and others in the 2000s (more details are given in Table 8B).

Comparison: Table 14 summarizes the supply-side direction of the TCIs of Bangladesh and Korea corresponding to the period of demand-side direction. It indicates that in 1980, the TCI was one of the key sectors in South Korea. The other key sectors of the country were food, leather, pulp-paper, chemicals, rubber-plastic, iron-steel, and others. In the same period, the major exporting sectors were the TCI (24%), transportation-warehousing (13 %), iron-steel (12%), machinery-equipment (12%), chemicals (5%), rubber-plastic (5%), and others. On the other hand, the other significant key sectors of Bangladesh in 2011 were food, leather, metal, hotels, wood, and others. But the mentionable export contributors were the TCI (79%), agriculture (3%), and leather (3%). Though some key sectors are common in both economies, the contribution of the key sectors to the export earnings is not same. The export structure of Bangladesh is fully dependent on the TCI. Other supply indicators such as backward and forward linkage coefficients also coincide with a gap of 30 years between Bangladesh and Korea.

9. Conclusion

The technical effect in the TCIs of Bangladesh and Korea is very limited, and final demand contributed to the output growth. Growth accounting concludes that export expansion contributed greatly to the growth of the TCI in both economies. A comparison between the economies shows that the direction of the technical effect and final demand effect of Korea in the 1960s corresponds to the same direction in the 1980s in Bangladesh. At the same time, the current state of the TCI in Bangladesh corresponds to the TCI of Korea during the 1980s. Thus, Bangladesh can learn lessons for life-cycle management of

the current state of the industry from the Korean industrial policy during the 1980s and earlier.

The contribution of the TCI in Bangladesh is much higher than in Korea. The manufacturing value added of the TCI in Bangladesh was 51% in 2015, whereas the maximum value added of the industry was 23% in 1975 in Korea. The export share was 85% in the 2015–2016 fiscal year in Bangladesh, but the maximum export share in Korea was 30% in 1975. However, the SDA tells us that the demand direction of the TCI of Korea in 1975–1980 was comparable with that of Bangladesh's TCI during 2005–2011. The technical coefficient and final demand coefficient were −0.02 and 1.02 for Korea during the 1975–1980 period; the same coefficients for Bangladesh during the 2005–2011 period were −0.02 and 1.02, respectively. Though final demand decomposition shows that the Korean TCI in 1980 was directed toward domestic demand expansion, the TCI of Bangladesh in 2011 [18] was still directed toward export expansion at 61% with −5% import substitution.

The export structure analysis indicates that the Korean strategy during the 1980s was diversification of exports, reducing dependency on the TCI. The statistics show that textile-clothing exports in 1975 were 30% of total exports, which gradually reduced to 2% in 2010, but these exports are increasing in Bangladesh. The SDA also shows that output changes of the TCI in Korea are shifting the direction toward domestic demand expansion. Technical contribution is still as usual, but Korea's exports are diversified toward other industries. Korea is now concentrating on a capital-intensive export basket, leaving behind labor-intensive light industries. The direction of Bangladesh is still incorporating labor-intensive industries, and the export basket is full of clothing products.

The supply-side analysis indicates that the Korean TCI was the key industry from 1970 to 1990, but the TCI of Bangladesh has become the key sector since 2000. On the other hand, the backward linkage and forward linkage coefficients of Korea have always been larger than those of Bangladesh.

The economy of Korea was dependent on the TCI in the early stage of development but diversified over time. But the sole export dependency on the TCI is increasing year after year in Bangladesh. Korean diversification of exports was characterized by light industries in the 1960s and 1970s and heavy industries in the late 1970s and 1980s followed by institutionalization. Most of the firms after 1980 were engaged in value-added activities, such as retailing and product development, with an emphasis on brand, quality, and customer service in the life cycle of the industry （Ha-Brookshire & Lee, 2010）. On the other hand, the TCI of Bangladesh is still at the order-based manufacturing stage in the life cycle of the industry （Masum, 2016）. Bangladesh is still dependent on light industries and especially the TCI. As no export-based heavy and chemical industry has grown in Bangladesh like in Korea, Bangladesh should follow the Korean slogan "export first" for the TCI with numerous special benefits for exporters, such as preferential loans, administrative support, tax

benefits, and other benefits.

　Further research scopes created from the current study include i）a comparative study on the role of the institutions and governments in the development of the TCI in Korea and Bangladesh, ii）an empirical analysis on factors affecting the demand-supply of the TCI, iii）a life cycle study on the TCI of Bangladesh and Korea, and iv）the role of FDI in the development of the TCI in the developing countries.

　We would also analyze the demand-supply direction of the textile-clothing industry of Bangladesh as compared to the major competitors in Asia and would include an empirical analysis on factors affecting the growth of the TCI.

Notes:

1）　There were mainly three shifts after the revolution of the TCI in the late 18th century in Britain. The first shift（1950s and early 1960s）was from North America and Western Europe to Japan. The second shift（1970s to early 1980s）was from Japan to NICs. The third shift（1980s and 1990s）was from NICs to South Asian countries（Australia and New Zealand Banking Corporation Limited, 2012）.

2）　The newly industrialized East Asian countries are South Korea, Singapore, Hong Kong, and Taiwan.

3）　A total of 115 out of 130 initial workers of the Desh-Daewoo joint venture left to set up either new firms or joined newly set-up local firms（UNCTAD, 1999）.

4）　The final product of the textile-clothing industry is "clothing," which is also known as apparel. The rest of the textile-clothing industry is "textiles," which comprises backward linkages, including fiber, yarn, fabric, and wet processing.

5）　The Bangladesh clothing industry consumes almost all textile outputs（yarn, fabric, etc.）as backward linkage/raw materials.

6）　For more details about Eora, please see（Lenzen, Moran, Kanemoto, & Geschke, 2013）.

7）　Please see（Chenery & Watanabe, 1958）for the detailed IOT consolidation process.

8）　Please see Miller and Blair（2009）and Dietzenbacher and Los（1998）for detailed mathematical deviation.

9）　The Leontief inverse formula is $(I-A)^{-1}$ where I is the identity matrix and A is the technical coefficient matrix. This inverse ensures $X=(I-A)^{-1}f$, where f is the final demand vector.

10）　Please see Frank, Kim, and Westphal（1975）for detailed methmetical derivation.

11）　This approach is made operational by essentially "rotating" or transposing the vertical（column）view of the model to a horizontal（row）one. Instead of dividing each column of the intermediate transaction matrix by the gross output of the sector associated with that column, the suggestion is to divide each row of the intermediate transaction matrix by the gross output of the sector associated with that row（Millar & Blair, 2009）. This is the difference between the Leontief and Ghosh models.

12）　Bangladesh launched comprehensive trade reforms in the early 1990s that included substantial reduction of tariffs, removal of quantitative restrictions, and moves from multiple to a unified exchange rate and from a fixed to freely floating exchange rate system to increase its export performance（http://www.wto.aoyama.ac.jp/file/090126laila_paper.pdf）.

13）　Since 1 January 1995, international textiles and clothing trade has been going through funda-

mental changes under the 10-year transitional program of the WTO's Agreement on Textiles and Clothing (ATC). Before the agreement took effect, a large portion of textile and clothing exports from developing countries to industrial countries was subject to quotas under a special regime outside normal GATT rules. Under the agreement, WTO members committed to remove the quotas by 1 January 2005 by integrating the sector fully into GATT rules. The MFA was effective from 1974 to 1994 (World Trade Organization, 2016).

14) Bonded warehousing means the facility was provided to export-oriented industries for importing input/raw materials and packaging materials without paying any duty or taxes.

15) The input coefficient indicates the power of the sector to accept inputs from the other sectors. Here, economies of scale in production are ignored and operate under what is known as constant returns to scale (Miller & Blair, 2009).

16) The export data analysis indicates that the same direction as in 2011 prevailed in 2016 in Bangladesh because in the 2015–2016 fiscal year, the contribution of TCI exports was 85% compared to the total exports of Bangladesh.

17) The index of the power of dispersion (IPD) indicates the relative magnitudes of production repercussions. The index of the sensitivity of dispersion (ISD) indicates the relative influences of one unit of final demand for a row sector, which can exert the greatest production repercussions on entire industries. These are the first category/primary measures of IPD and ISD. An industry with a coefficient of more than 1 is considered a key sector.

18) The export data analysis indicates that the same direction as in 2011 prevailed in 2016 in Bangladesh because in the 2015–2016 fiscal year, the contribution of TCI exports was 85% of the total exports of Bangladesh.

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Appendix A

Developing IOTs of Bangladesh from MRIO

Output integration for country A: The following equation (1) is the representation of output in the MRIO tables. Where 'iA + iB + ⋯ + iN' is the intermediate output for countries A, B⋯N, respectively and 'fA + fB + ⋯ + fN' is the final output of the countries A, B⋯N respectively.

$$X_i(MRIO) = iA + iB + \cdots\cdots + iN + fA + fB + \cdots + fN \quad \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots(1)$$

We develop output for national input-output tables (IOT), for country A, from the MRIO tables using the equation (2) below. Where, 'iA' is the intermediate output of the country A, 'fA' is the final output of the country A, 'E' is export (Summation of all intermediate and final outputs from country A to other countries)

$$X_i(IOT) = iA + fA + E(iB + \cdots\cdots + iN + fB + \cdots + fN) \quad \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots(2)$$

Here, subscript 'i' indicates output sectors or row vectors.

Input integration for country A: The following equation (3) is the representation of input in the MRIO tables. Where 'kA + kB + ⋯ + kN' is the intermediate input for countries A, B ⋯N, respectively and 'vA + vB + ⋯ + vN' is the final input of the countries A, B⋯N respectively.

$$X_j(MRIO) = kA + kB + \cdots + kN + vA + vB + \cdots + vN \quad \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots(3)$$

We develop input for national input-output tables, for country A, from the MRIO tables using the equation (4) below. Where, 'kA' is the intermediate input of the country A, 'vA' is the value-added input of the country A, 'M' is import (Summation of all intermediate inputs and value added to country A from other countries)

$$X_j(IOT) = kA + vA + M(kB + \cdots + kN + vB + \cdots + vN) \quad \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots(4)$$

Here, subscript 'j' indicates input sectors or column vectors.

Appendix B

Table 1B: GDP, Per Capita GDP and Population Statistics of Bangladesh and Korea from 1950 to 2008

	1950	1960	1970	1980	1990	2000	2008
GDP in Billion GK$ (Korea)	17.80	30.40	69.88	156.85	373.15	673.29	948.91
GDP in Billion GK$ (Bangladesh)	24.63	29.73	42.40	48.24	70.32	112.37	176.45
Per capita GDP GK$ (Korea)	853.9	1,226.4	2,167.3	4,114.1	8,704.4	14,374.6	19,613.8
Per capita GDP GK$ (Bangladesh)	539.5	544.6	629.8	548.6	631.0	822.1	1,145.5
Population in million (Korea)	20.85	24.78	32.24	38.12	42.87	46.84	48.38
Population in million (Bangladesh)	45.65	54.59	67.33	87.94	111.44	136.68	154.04

Source: Maddison Dataset

Table 2B: Export Share to Total Export of Top Ten Industries in Korea from 1960 to 2010

I	1960	I	1970	I	1980	I	1990	I	2000	I	2010
Ag	18%	TC	27%	TC	24%	ME	24%	ME	36%	IS	26%
Me	13%	TW	11%	TW	13%	TC	15%	TE	13%	ME	20%
Mi	12%	LW	8%	IS	12%	Le	10%	Ch	12%	NM	11%
Fi	10%	Ag	7%	ME	12%	IS	9%	TW	9%	PP	7%
TC	7%	WR	5%	WR	7%	TW	8%	TC	8%	EW	7%
FB	7%	FB	4%	Ch	5%	WR	6%	IS	6%	LW	7%
Co	5%	ME	4%	RP	5%	TE	6%	WR	3%	RP	6%
Te	2%	IS	3%	TE	4%	Ch	4%	Fi	2%	FB	4%
RP	2%	Mi	3%	Ag	3%	RP	2%	RH	2%	TE	3%
WR	2%	PC	2%	FB	3%	FB	2%	Le	1%	Ch	2%

Source: Result of Input-Output Analysis
Note for Codes (Part of Table 2B): I = Industry, Ag = Agriculture, Ch = Chemicals, Co = Construction, EW = Electricity, Gas and Water, FB = Food and Beverages, Fi = Finance and Related, IS = Iron and Steel, Le = Leather, LW = Lumber and Wood, Me = Mechanical Repair, ME = Machinery and Equipment, Mi = Mining and Quarrying, NM = Nonmetallic Minerals, PC = Petroleum and Coal, PP = Paper and Printing, RH = Restaurant and Hotel, RP = Rubber and Plastic, TC = Textile and Clothing, Te = Telecommunication, TE = Transportation Equipment, TW = Transportation and Warehousing, WR = Wholesale and Retail)

Table 3B: Sectoral Demand-Supply and its Segregation of Import, Export, Value Added of Korea's Economy from 1960 to 2010

Figures are in billion US$

Sectors	1960							1980						
	Intermediate Demand	Domestic Demand	Export	Total Demand Supply	Intermediate Supply	Value Added	Import	Intermediate Demand	Domestic Demand	Export	Total Demand Supply	Intermediate Supply	Value Added	Import
1	26.5	71.8	1.8	100.1	15.7	74.0	10.4	7,030.3	2,173.8	433.2	9,637.3	2,356.4	5,440.8	1,840.1
2	4.7	1.3	1.2	7.2	1.6	5.4	0.2	4,751.9	(28.5)	41.1	4,764.4	231.3	506.4	4,026.7
3	9.0	26.8	0.7	36.4	20.3	12.8	3.2	2,738.0	7,854.1	319.3	10,911.4	7,788.1	2,284.4	838.9
4	12.4	14.1	0.7	27.1	15.8	7.0	4.3	3,566.2	1,823.9	2,976.1	8,366.1	6,069.4	1,822.2	474.5
5	3.9	0.1	0.0	4.0	2.4	0.7	0.9	672.9	62.9	274.1	1,009.9	832.6	150.9	26.4
6	2.8	1.2	0.2	4.2	2.1	1.0	1.1	—	—	—	—	—	—	—
7	2.5	3.5	0.1	6.1	3.7	2.2	0.2	1,452.6	209.5	92.0	1,754.1	1,076.0	402.0	276.1
8	1.2	2.3	0.2	3.7	1.5	0.7	1.5	5,718.2	672.2	587.7	6,978.2	4,184.3	1,386.2	1,407.6
9	2.9	2.9	0.1	5.9	2.4	1.5	2.0	5,264.4	601.2	68.3	5,933.9	4,457.3	826.6	650.0
10	1.7	2.2	—	3.9	3.0	0.8	0.1	293.8	159.9	575.4	1,029.1	729.0	270.1	29.9
11	3.6	0.6	0.1	4.3	1.8	1.6	0.9	1,595.7	24.6	240.1	1,860.4	1,228.3	534.4	97.7
12	7.0	1.5	0.1	8.6	4.8	1.6	2.2	5,679.3	31.9	1,541.0	7,252.2	5,026.8	940.2	1,285.1
13	1.5	2.6	0.2	4.3	1.9	1.0	1.4	3,415.9	3,682.0	1,504.1	8,601.9	3,656.8	1,511.0	3,434.2
14	1.3	1.4	0.1	2.8	1.4	1.1	0.3	804.5	1,249.6	493.5	2,547.5	1,213.0	461.2	873.3
15	1.3	2.2	0.2	3.7	1.3	1.1	1.2	261.7	243.9	490.9	996.6	622.7	296.2	77.7
16	3.4	11.2	0.5	15.1	9.9	5.1	0.1	1,641.0	362.0	13.2	2,016.3	1,160.7	855.4	0.2
17	—	5.8	0.2	6.0	3.1	2.7	0.2	735.4	6,734.6	23.0	7,492.9	4,424.5	3,067.9	0.5
18	3.2	1.5	0.2	5.0	2.0	2.2	0.8	2,865.1	3,022.0	817.9	6,705.0	2,095.2	4,532.6	77.1
19	1.5	19.9	0.1	21.5	2.8	18.6	0.1	396.0	575.1	111.6	1,082.7	407.8	595.9	79.0
20	1.4	1.4	0.2	3.0	0.6	2.3	0.1	1,747.2	1,952.5	1,652.1	5,351.9	2,649.7	2,260.0	442.3
21	7.2	8.7	1.3	17.2	5.1	9.9	2.2	461.1	153.4	39.4	653.8	73.3	554.2	26.4
22	9.3	16.4	1.0	26.8	4.6	22.2	0.0	2,454.8	1,777.3	69.0	4,301.1	1,023.2	3,245.1	32.8
23	10.7	34.5	0.4	45.6	15.5	28.6	1.6	44.8	3,418.5	4.7	3,467.9	1,691.1	1,725.5	51.3
24	2.8	0.0	0.0	2.8	0.4	2.3	0.1	135.2	2,512.2	0.1	2,647.5	749.2	1,888.8	9.5
25	4.8	0.3	0.2	5.3	2.7	1.6	1.0	2,795.6	1,624.4	99.5	4,519.4	2,774.7	1,558.1	186.7

Second part of Table 3B

Sectors	2000							2010						
	Intermediate Demand	Domestic Demand	Export	Total Demand Supply	Intermediate Supply	Value Added	Import	Intermediate Demand	Domestic Demand	Export	Output	Intermediate Supply	Value Added	Import
1	30,449	12,681	703	43,833	14,386	23,900	5,546	43,858	18,677	754	63,289	24,209	27,343	11,737
2	42,405	213	69	42,686	969	1,679	40,038	150,685	12,632	241	163,559	20,134	4,719	138,707
3	27,177	37,732	3,058	67,966	43,124	15,962	8,880	75,012	71,941	24,092	171,046	96,425	39,536	35,085
4	18,241	9,583	19,989	47,812	28,783	12,400	6,629	83,140	2,422	10,290	95,851	60,136	21,357	14,359
5	1,949	2,045	3,070	7,065	4,162	1,527	1,376	9,006	198	4,695	13,899	8,402	4,226	1,271
6	6,233	3,314	373	9,920	5,619	2,641	1,660	108,141	21,885	41,037	171,063	108,107	28,138	34,818
7	21,756	2,772	2,339	26,867	16,700	6,636	3,531	94,299	(3,616)	44,786	135,470	94,591	15,034	25,844
8	93,539	14,495	27,754	135,789	82,437	31,064	22,288	88,940	10,704	13,179	112,823	61,242	23,845	27,736
9	6,928	(35)	1,240	8,133	6,002	1,400	730	82,537	(2,187)	2,558	82,908	56,350	12,458	14,101
10	20,770	4,280	3,021	28,071	14,118	6,753	7,200	155,496	876	38,897	195,269	131,151	24,405	39,714
11	17,694	212	1,041	18,946	11,341	5,832	1,773	188,148	65,470	69,307	322,925	185,423	67,715	69,786
12	81,866	552	13,137	95,555	59,289	19,407	16,859	139,250	43,415	159,264	341,929	218,697	55,910	67,322
13	113,143	75,042	84,242	272,427	138,464	53,900	80,064	171,361	176,087	120,822	468,270	297,286	126,849	44,135
14	29,242	22,630	30,736	82,608	56,738	17,876	7,994	116,354	191,500	20,848	328,703	166,392	150,403	11,907
15	1,998	2,337	2,712	7,047	3,473	1,696	1,879	32,345	19,225	613	52,182	25,850	24,997	1,335
16	21,212	10,291	53	31,556	17,129	14,359	68	39,913	4,546	41,905	86,364	48,591	17,115	20,658
17	9,036	90,061	222	99,319	55,630	43,639	50	37,780	22,858	1,312	61,951	33,084	26,299	2,568
18	28,766	34,673	7,811	71,249	25,833	44,011	1,405	85,788	44,991	7,047	137,825	57,041	75,947	4,837
19	16,496	26,561	4,148	47,204	24,486	16,658	6,061	33,938	88,547	503	122,988	29,389	91,546	2,053
20	22,728	15,772	22,026	60,526	29,816	21,345	9,365	38,219	4,171	2,358	44,749	12,740	24,474	7,535
21	20,153	14,140	553	34,846	14,076	19,815	956	67,359	20,454	5,814	93,628	36,253	43,475	13,899
22	113,048	93,540	5,269	211,857	59,304	141,565	10,988	39,930	185,515	6,253	231,698	62,515	154,004	15,179
23	—	43,601	—	43,601	13,869	29,732	—	5,824	68,252	40	74,116	34,087	39,816	213
24	13,660	60,577	99	74,336	23,976	48,831	1,528	6,623	13,948	44	20,615	7,777	12,784	53
25	34,793	25,399	3,303	63,495	43,556	17,018	2,921	77,511	60,553	1,955	140,018	95,584	40,186	4,248

Source: Input-Output Tables

Note for sector column (Part of Table 3B) : 1＝Agriculture, 2＝Mining, 3＝Food, 4＝TCI, 5＝Leather, 6＝Lumber, 7＝Pulp, 8＝Chemicals, 9＝Petroleum, 10＝Rubber, 11＝Nonmetallic Minerals, 12＝Iron, 13＝Machinery, 14＝Transport, 15＝Other Manu., 16＝Utility, 17＝Construction, 18＝Trade, 19＝Hotel, 20＝Transport, 21＝Communication, 22＝Finance, 23＝Public admin., 24＝Education, 25＝Others

Table 4B: Sectoral Demand-Supply and its Segregation of Import, Export, Value Added of Bangladesh's Economy from 2000 to 2011

Figures are in billion US$

Sectors	2000							2005							2011						
	Interme-diate Demand	Domestic Demand	Exports	Total Demand Supply	Interme-diate Supply	Value Added	Import	Interme-diate Demand	Domestic Demand	Export	Total Demand Supply	Interme-diate Supply	Value Added	Import	Interme-diate Demand	Domestic Demand	Export	Total Demand Supply	Interme-diate Supply	Value Added	Import
1	4.4	9.2	0.4	14.0	2.5	11.2	0.3	4.5	9.0	0.4	14.0	2.3	11.2	0.4	28.7	17.3	0.6	46.6	26.3	18.2	2.2
2	0.5	(0.0)	0.0	0.5	0.1	0.5	0.0	0.7	0.1	0.0	0.7	0.1	0.6	0.0	2.2	0.3	0.0	2.5	1.1	1.3	0.1
3	1.7	4.0	0.1	5.7	3.5	1.7	0.5	2.5	5.3	0.1	7.9	4.8	2.4	0.6	2.9	15.0	0.1	18.1	12.6	3.3	2.2
4	3.7	2.4	4.3	10.4	6.8	2.7	0.9	4.7	3.4	6.2	14.3	9.0	3.6	1.7	10.8	5.4	18.1	34.3	21.1	10.8	2.4
5	0.2	0.1	0.3	0.6	0.4	0.1	0.1	0.1	0.1	0.6	0.8	0.5	0.2	0.1	0.7	1.0	0.6	2.4	1.6	0.7	0.1
6	0.6	0.2	0.0	0.8	0.5	0.2	0.1	0.8	0.3	0.0	1.1	0.7	0.3	0.1	0.5	0.8	0.0	1.3	0.8	0.5	0.1
7	0.4	0.1	0.0	0.5	0.2	0.3	0.1	0.5	0.2	0.0	0.8	0.3	0.4	0.1	1.5	0.4	0.0	1.9	1.1	0.6	0.3
8	0.5	0.4	0.0	1.0	0.4	0.5	0.1	0.8	0.5	0.0	1.4	0.6	0.6	0.1	0.0	0.1	0.0	0.2	0.0	0.1	0.0
9	0.7	0.5	0.0	1.2	0.6	0.6	0.1	1.0	0.6	0.0	1.7	0.8	0.8	0.1	3.4	1.7	0.1	5.1	3.3	1.2	0.6
10	0.1	0.1	0.0	0.2	0.1	0.1	0.0	0.1	0.1	0.0	0.3	0.1	0.1	0.0	0.2	0.6	0.1	0.9	0.4	0.4	0.1
11	0.3	0.2	0.0	0.5	0.2	0.2	0.1	0.4	0.3	0.0	0.7	0.3	0.3	0.1	3.5	0.6	0.1	4.1	2.9	1.0	0.3
12	0.7	0.9	0.0	1.6	0.7	0.6	0.4	1.1	1.1	0.0	2.2	1.0	0.8	0.5	8.3	2.0	0.1	10.3	7.0	2.3	1.1
13	0.2	0.4	0.0	0.5	0.2	0.2	0.1	0.3	0.4	0.0	0.7	0.3	0.3	0.1	1.8	2.7	0.1	4.6	1.3	1.7	1.5
14	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.5	0.5	0.1	1.2	0.3	0.3	0.5
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.5	0.1	0.6	1.2	0.3	0.3	0.6
16	0.3	0.5	0.0	0.8	0.1	0.6	0.1	0.4	0.6	0.0	1.0	0.2	0.8	0.1	1.0	0.8	—	1.8	0.6	1.1	0.1
17	1.2	6.9	0.0	8.1	3.5	3.9	0.7	1.8	9.0	0.0	10.9	4.9	4.9	1.1	1.9	21.8	0.0	23.7	12.8	8.8	2.1
18	2.4	3.3	0.4	6.1	0.4	5.7	0.0	3.5	4.6	0.5	8.5	0.6	7.9	0.1	20.7	1.4	0.0	22.1	5.4	16.1	0.5
19	0.1	1.1	0.0	1.2	0.8	0.3	0.1	0.2	1.5	0.0	1.7	1.1	0.5	0.1	0.5	2.2	—	2.7	1.9	0.8	0.1
20	1.8	3.4	0.1	5.3	1.4	3.7	0.2	2.9	5.1	0.2	8.2	2.3	5.6	0.4	11.7	5.1	0.6	17.4	6.5	9.8	1.0
21	0.1	0.5	0.0	0.6	0.2	0.3	0.0	0.2	0.8	0.0	1.0	0.4	0.5	0.0	1.9	0.0	0.6	2.6	0.9	1.6	0.0
22	2.2	3.1	0.1	5.5	0.6	4.8	0.1	2.8	3.5	0.2	6.4	0.8	5.5	0.1	7.3	5.7	0.1	13.1	4.0	8.9	0.2
23	0.4	1.4	0.2	2.0	0.7	1.2	0.1	0.4	2.0	0.2	2.6	0.9	1.6	0.1	1.0	4.7	0.2	5.9	2.4	3.0	0.5
24	0.2	2.3	0.0	2.5	0.3	2.1	0.1	0.3	3.0	0.0	3.2	0.4	2.7	0.1	1.3	8.0	—	9.3	3.7	5.3	0.2
25	2.4	2.0	0.3	4.7	0.7	4.0	0.1	3.4	2.8	0.3	6.6	1.0	5.6	0.1	10.9	5.2	0.6	16.7	5.7	10.5	0.5

Source: Input-Output Tables

Note for sector column (Part of Table 4B): Period1971-1995: 1 = Agriculture, 2 = Fishing, 3 = Mining, 4 = Food, 5 = TCI, 6 = Wood, 7 = Petroleum, 8 = Metal, 9 = Machinery, 10 = Transport, 11 = Other Manu, 12 = Recycling, 13 = Utility, 14 = Construction, 15 = Maintenance, 16 = Trade (Wholesale), 17 = Trade (Retail), 18 = Hotel, 19 = Transport, 20 = Communication, 21 = Finance, 22 = Public Admin, 23 = Education, 24 = Household, 25 = Others. Codes 1-11 are concerned with manufacturing and codes 12-25 are concerned with services. Period 2000-2011:1 = Agriculture, 2 = Mining, 3 = Food, 4 = TCI, 5 = Leather, 6 = Wood, 7 = Pulp-Paper, 8 = Petroleum, 9 = Chemicals, 10 = Rubber, 11 = Other Nonmetallic Minerals, 12 = Metal, 13 = Machinery, 14 = Transport, 15 = Other Manu, 16 = Utility, 17 = Construction, 18 = Trade, 19 = Hotel, 20 = Transport, 21 = Communication, 22 = Finance, 23 = Public Admin, 24 = Education, 25 = Others. Codes 3-15 are concerned with manufacturing and codes 16-25 are concerned with services.

Table 5B: Input Coefficients of TCI of Bangladesh

Sector/Year	1971	1975	1980	1985	1990	1995	2000	2005	2011
1	0.0046	0.0033	0.0054	0.0077	0.0061	0.0071	0.0289	0.0222	0.0400
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0005	0.0005	0.0067
3	0.0000	0.0000	0.0001	0.0001	0.0002	0.0003	0.0116	0.0126	0.0003
4	0.0007	0.0006	0.0012	0.0018	0.0016	0.0019	0.3197	0.2994	0.2906
5	0.0349	0.0212	0.0170	0.0241	0.0149	0.0167	0.0187	0.0059	0.0000
6	0.0021	0.0020	0.0043	0.0067	0.0059	0.0075	0.0084	0.0079	—
7	0.0118	0.0108	0.0223	0.0353	0.0304	0.0371	0.0057	0.0068	0.0024
8	0.0008	0.0007	0.0015	0.0024	0.0021	0.0027	0.0061	0.0072	0.0000
9	0.0007	0.0007	0.0013	0.0020	0.0018	0.0021	0.0076	0.0098	0.0024
10	0.0000	0.0000	0.0001	0.0001	0.0001	0.0002	0.0030	0.0031	—
11	0.0013	0.0012	0.0027	0.0043	0.0038	0.0049	0.0030	0.0023	—
12	0.0000	0.0000	0.0001	0.0001	0.0001	0.0001	0.0037	0.0036	0.0039
13	0.0008	0.0009	0.0024	0.0049	0.0052	0.0069	0.0009	0.0023	0.0017
14	0.0006	0.0005	0.0009	0.0014	0.0012	0.0014	0.0000	0.0000	—
15	0.0001	0.0001	0.0003	0.0005	0.0004	0.0006	0.0003	0.0002	0.0005
16	0.0061	0.0051	0.0098	0.0155	0.0131	0.0159	0.0028	0.0026	0.0098
17	0.0003	0.0003	0.0006	0.0010	0.0009	0.0012	0.0063	0.0070	0.0008
18	0.0001	0.0001	0.0003	0.0005	0.0004	0.0005	0.0509	0.0555	0.1011
19	0.0032	0.0028	0.0057	0.0091	0.0078	0.0095	—	—	—
20	0.0007	0.0006	0.0014	0.0021	0.0018	0.0024	0.0482	0.0603	0.1186
21	0.0121	0.0100	0.0152	0.0237	0.0183	0.0205	0.0035	0.0044	0.0027
22	0.0000	0.0000	0.0001	0.0001	0.0001	0.0001	0.0560	0.0503	0.0139
23	0.0003	0.0002	0.0004	0.0007	0.0005	0.0007	0.0073	0.0053	0.0023
24	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0012	0.0010	—
25	0.0005	0.0005	0.0013	0.0020	0.0018	0.0025	0.0560	0.0571	0.0176
Intermediate Total	0.0816	0.0617	0.0943	0.1461	0.1186	0.1428	0.6502	0.6271	0.6154
Value Added	0.0609	0.0488	0.0474	0.0677	0.0464	0.0492	0.2615	0.2510	0.3133
Imports	0.8574	0.8895	0.8583	0.7862	0.8351	0.8080	0.0882	0.1220	0.0713

Source: Results of Input-Output Analysis. *Note*: Sector coding is same as Table 4B

Table 6B: Input Coefficients of TCI of South Korea

Sector/Year	1960	1966	1970	1975	1980	1985	1990	1995	2000	2005	2010
1	0.1238	0.1019	0.0813	0.0718	0.0610	0.0486	0.0350	0.0237	0.0128	0.0127	0.0111
2	0.0052	0.0045	0.0002	0.0004	0.0001	0.0002	0.0002	0.0001	0.0000	0.0012	0.0007
3	0.0004	0.0033	0.0009	0.0113	0.0129	0.0014	0.0021	0.0004	0.0007	0.0063	0.0066
4	0.3592	0.1886	0.3425	0.3596	0.3663	0.3832	0.3827	0.2709	0.2911	0.2078	0.2219
5	0.0007	0.0011	0.0021	0.0005	0.0003	0.0243	0.0009	0.0244	0.0109	0.0016	0.0016
6	0.0014	0.0025	0.0003	0.0003	0.0000	0.0003	0.0003	0.0002	0.0003	0.0149	0.0125
7	0.0028	0.0128	0.0053	0.0050	0.0055	0.0078	0.0079	0.0085	0.0080	0.1576	0.1671
8	0.0010	0.0008	0.0009	0.1298	0.1403	0.1386	0.1268	0.1088	0.0411	0.0455	0.0503
9	0.0001	0.0892	0.1092	0.0161	0.0142	0.0130	0.0073	0.0094	0.0808	0.0013	0.0012
10	0.0020	0.0035	0.0065	0.0028	0.0029	0.0018	0.0068	0.0101	0.0186	0.0023	0.0027
11	0.0006	0.0013	0.0002	0.0004	0.0002	0.0005	0.0005	0.0003	0.0003	0.0223	0.0231
12	0.0024	0.0022	0.0024	0.0036	0.0029	0.0018	0.0018	0.0019	0.0020	0.0006	0.0006
13	0.0040	0.0042	0.0048	0.0064	0.0073	0.0058	0.0108	0.0097	0.0050	0.0219	0.0202
14	0.0002	0.0003	0.0004	0.0000	0.0009	0.0009	0.0013	0.0008	0.0004	0.0300	0.0288
15	0.0020	0.0119	0.0014	0.0029	0.0063	0.0055	0.0046	0.0046	0.0035	0.0219	0.0189
16	0.0090	0.0004	0.0004	0.0004	0.0234	0.0265	0.0175	0.0124	0.0134	0.0061	0.0054
17	0.0000	0.0131	0.0119	0.0141	0.0010	0.0019	0.0005	0.0005	0.0006	0.0037	0.0032
18	0.0163	0.0066	0.0012	0.0479	0.0299	0.0247	0.0250	0.0209	0.0244	0.0114	0.0112
19	0.0052	0.0011	0.0024	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0046	0.0034
20	0.0023	0.0018	0.0133	0.0063	0.0073	0.0071	0.0084	0.0098	0.0115	0.0013	0.0019
21	0.0104	0.0069	0.0064	0.0017	0.0025	0.0030	0.0021	0.0019	0.0046	0.0115	0.0120
22	0.0250	0.0311	0.0654	0.0138	0.0251	0.0238	0.0443	0.0548	0.0461	0.0072	0.0064
23	0.0055	0.0060	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0012
24	0.0002	0.0009	0.0162	0.0118	0.0010	0.0011	0.0009	0.0027	0.0028	0.0016	0.0015
25	0.0035	0.0017	0.0047	0.0031	0.0140	0.0115	0.0170	0.0225	0.0229	0.0165	0.0139
Intermediate Total	0.5833	0.4976	0.6804	0.7101	0.7255	0.7332	0.7048	0.5995	0.6020	0.6126	0.6274
Value Added	0.2597	0.308	0.2467	0.2275	0.2178	0.21	0.206	0.2626	0.2593	0.2692	0.2228
Imports	0.1569	0.1944	0.0729	0.0624	0.0567	0.06	0.0891	0.1379	0.1387	0.1182	0.1498

Source: Results of Input-Output Analysis. *Note*: Sector coding is same as Table 3B

Table 7B: Backward Linkage, Forward Linkage, Index of the Power of Dispersion and Index of the Sensitivity of Dispersion coefficients of the Top Ten Sectors of the Economy of Bangladesh

Backward Linkage Coefficient																	
Sector	1971	Sector	1975	Sector	1980	Sector	1985	Sector	1990	Sector	1995	Sector	2000	Sector	2005	Sector	2011
1	2.46	1	2.7	1	3.12	1	3.35	1	3.48	1	3.22	3	1.84	3	1.85	3	2.33
4	2.13	4	1.97	4	1.98	4	2.18	4	2.01	4	1.95	4	2.12	4	2.05	4	2.15
6	1.52	6	1.37	6	1.35	6	1.48	5	1.17	5	1.21	5	1.81	5	1.81	5	2.29
7	1.94	7	1.82	7	1.81	7	1.9	6	1.34	6	1.34	6	2.01	6	2.01	6	2.15
8	1.41	8	1.29	8	1.28	8	1.4	7	1.83	7	1.91	7	1.6	9	1.64	7	2.03
9	1.52	9	1.37	9	1.34	9	1.45	8	1.28	8	1.3	9	1.63	10	1.67	9	2.27
10	1.24	10	1.17	10	1.16	10	1.26	9	1.32	9	1.35	10	1.64	12	1.6	11	2.26
14	1.36	14	1.26	14	1.27	14	1.37	14	1.26	14	1.25	13	1.69	13	1.71	12	2.24
18	1.53	18	1.47	18	1.49	18	1.54	18	1.49	18	1.47	17	1.61	17	1.65	17	2.08
23	1.31	23	1.26	23	1.24	23	1.27	23	1.23	23	1.22	19	1.98	19	2	19	2.38
Forward Linkage Coefficient																	
Sector	1971	Sector	1975	Sector	1980	Sector	1985	Sector	1990	Sector	1995	Sector	2000	Sector	2005	Sector	2011
1	3.28	1	3.43	1	3.69	1	3.86	1	3.88	1	3.55	2	2.53	2	2.41	2	2.45
4	1.29	4	1.24	4	1.28	4	1.33	4	1.29	4	1.31	6	2.15	6	2.2	7	2.53
6	1.72	6	1.55	6	1.52	6	1.69	6	1.49	6	1.49	7	2.15	7	2.18	9	2.36
7	2.2	7	2.07	7	2.12	7	2.22	7	2.12	7	2.19	8	1.77	8	1.88	11	2.2
8	1.72	8	1.52	8	1.48	8	1.69	8	1.46	8	1.48	9	1.79	9	1.86	12	2.51
9	1.5	9	1.36	9	1.32	9	1.43	9	1.31	9	1.33	10	1.71	10	1.73	14	2.11
16	1.18	16	1.12	16	1.12	16	1.18	16	1.12	16	1.12	11	1.77	11	1.81	18	2.81
19	1.3	19	1.2	19	1.19	19	1.26	19	1.18	19	1.17	12	1.6	12	1.76	20	2.23
20	1.25	20	1.17	20	1.15	20	1.2	20	1.13	20	1.13	18	1.57	13	1.65	21	2.43
21	1.38	21	1.34	21	1.38	21	1.42	21	1.4	21	1.41	22	1.62	22	1.67	22	2.15
IPD Coefficient																	
Sector	1971	Sector	1975	Sector	1980	Sector	1985	Sector	1990	Sector	1995	Sector	2000	Sector	2005	Sector	2011
1	1.87	1	2.13	1	2.44	1	2.5	1	2.69	1	2.5	3	1.21	3	1.21	3	1.27
4	1.62	4	1.56	4	1.55	4	1.62	4	1.55	4	1.51	4	1.39	4	1.33	4	1.16
6	1.15	6	1.08	6	1.06	6	1.1	5	0.9	5	0.94	5	1.19	5	1.18	5	1.24
7	1.48	7	1.43	7	1.41	7	1.41	6	1.04	6	1.04	6	1.32	6	1.31	6	1.16
8	1.07	8	1.02	8	1	8	1.04	7	1.41	7	1.48	7	1.05	9	1.07	7	1.1
9	1.16	9	1.08	9	1.05	9	1.08	8	0.99	8	1.01	9	1.07	10	1.09	9	1.23
10	0.95	10	0.92	10	0.91	10	0.94	9	1.02	9	1.05	10	1.07	12	1.04	11	1.22
14	1.04	14	0.99	14	0.99	14	1.02	14	0.98	14	0.97	13	1.11	13	1.11	12	1.22
18	1.16	18	1.16	18	1.16	18	1.15	18	1.15	18	1.15	17	1.06	17	1.08	17	1.13
23	1	23	0.99	23	0.97	23	0.95	23	0.95	23	0.95	19	1.3	19	1.3	19	1.29
ISD Coefficient																	
Sector	1971	Sector	1975	Sector	1980	Sector	1985	Sector	1990	Sector	1995	Sector	2000	Sector	2005	Sector	2011
1	2.49	1	2.7	1	2.89	1	2.9	1	3.02	1	2.78	2	1.59	2	1.49	2	1.31
4	0.98	4	0.98	4	1	4	1	4	1.01	4	1.03	6	1.36	6	1.37	7	1.67
6	1.31	6	1.22	6	1.19	6	1.27	6	1.16	6	1.17	7	1.35	7	1.35	9	1.05
7	1.67	7	1.63	7	1.66	7	1.67	7	1.65	7	1.72	8	1.11	8	1.17	11	0.95
8	1.31	8	1.2	8	1.16	8	1.27	8	1.14	8	1.16	9	1.13	9	1.16	12	1.31
9	1.14	9	1.07	9	1.04	9	1.07	9	1.02	9	1.04	10	1.08	10	1.07	14	0.89
16	0.89	16	0.88	16	0.88	16	0.89	16	0.87	16	0.88	11	1.12	11	1.13	18	2.49
19	0.99	19	0.95	19	0.93	19	0.95	19	0.92	19	0.92	12	1.01	12	1.09	20	0.98
20	0.95	20	0.92	20	0.9	20	0.9	20	0.88	20	0.89	18	0.99	13	1.03	21	1.14
21	1.05	21	1.05	21	1.08	21	1.07	21	1.09	21	1.11	22	1.02	22	1.03	22	0.93

Source: Results of Input-Output Analysis
Note: Sector coding is same as Table 4B

Table 8B: Backward Linkage, Forward Linkage, Index of the Power of Dispersion and Index of the Sensitivity of Dispersion coefficients of the Top Ten Sectors of the Economy of Korea

Backward Linkage Coefficient																					
sec	1960	sec	1966	sec	1970	sec	1975	sec	1980	sec	1985	sec	1990	sec	1995	sec	2000	sec	2005	sec	2010
3	1.79	3	1.88	3	1.91	4	2.53	3	2.21	3	2.24	3	2.22	3	2.12	3	2.14	3	2.18	3	2.17
4	2.04	4	1.77	4	2.31	5	2.22	4	2.69	4	2.73	4	2.62	4	2.23	4	2.3	4	2.4	4	2.48
5	1.79	5	2.12	5	2.22	6	2.33	5	2.42	5	2.29	5	2.54	5	2.16	5	2.22	5	2.35	5	2.35
6	1.79	7	1.88	6	2.11	7	2.16	7	2.34	6	2.37	6	2.22	6	2.07	6	2.12	7	2.56	7	2.58
7	2.07	8	2.15	7	2.03	8	2.07	8	2.25	7	2.34	7	2.26	7	2.14	7	2.31	80	2.16	8	2.19
10	2.11	11	1.87	8	2.22	10	2.49	10	2.52	8	2.17	8	2.08	8	2.06	9	2.45	9	2.36	9	2.42
12	1.92	12	1.78	10	2	11	2.02	11	2.27	10	2.41	10	2.33	10	2.28	11	2.08	10	2.49	10	2.59
14	1.85	14	1.56	12	1.93	12	2.36	12	2.61	12	2.52	12	2.44	12	2.33	12	2.34	11	2.3	11	2.35
16	2.08	16	1.9	16	2.05	16	2.26	16	2.08	14	2.28	14	2.34	14	2.32	14	2.52	12	2.29	12	2.5
17	1.84	19	1.69	18	1.88	17	2.15	17	2.26	17	2.22	17	2.08	17	2.14	17	2.1	13	2.34	13	2.4

Forward Linkage Coefficient																					
sec	1960	sec	1966	sec	1970	sec	1975	sec	1980	sec	1985	sec	1990	sec	1995	sec	2000	sec	2005	sec	2010
2	2.16	2	2.28	2	2.7	2	3.36	1	2.16	1	2.12	1	2.29	2	3.47	1	2.23	1	2.53	1	2.61
4	1.82	6	1.78	7	2.67	6	1.77	2	3.77	2	3.65	2	3.72	7	2.83	2	3.47	2	3.14	2	3.26
5	2.42	7	2.25	8	1.84	7	2.75	7	2.92	6	2.19	7	3.08	8	2.57	7	2.86	4	2.84	4	2.89
6	2.07	9	2.12	9	2.42	8	2.56	8	2.82	7	3.06	8	2.78	9	2.46	8	2.47	6	2.54	6	2.55
9	1.79	10	2.42	10	2.21	9	2.61	9	2.91	8	2.77	9	2.7	10	2.41	9	2.64	7	2.96	7	2.87
11	2.21	11	1.79	11	2.59	11	2.12	11	2.28	9	2.69	10	2.38	11	2.51	10	2.33	8	2.52	8	2.54
12	2.48	12	2.39	12	2.65	12	2.83	12	2.74	11	2.45	11	2.54	12	2.86	11	2.55	9	4.36	9	4.17
14	1.78	17	2.27	17	2.49	17	2.53	16	2.77	12	2.82	12	2.93	16	2.68	12	2.91	10	2.87	10	2.78
18	2.1	19	1.79	18	2.08	18	1.79	21	2.27	16	2.74	16	2.82	21	2.19	16	2.44	20	2.57	20	2.69
20	1.72	20	1.94	19	2.04	21	2.09	22	2.1	21	2.32	21	2.28	22	2.16	21	2.11	21	2.34	21	2.46

IPD Coefficient																					
sec	1960	sec	1966	sec	1970	sec	1975	sec	1980	sec	1985	sec	1990	sec	1995	sec	2000	sec	2005	sec	2010
3	1.07	3	1.19	3	1.1	4	1.35	3	1.12	3	1.12	3	1.12	3	1.12	3	1.12	3	1.09	3	1.05
4	1.22	4	1.11	4	1.33	5	1.18	4	1.37	4	1.37	4	1.33	4	1.18	4	1.17	4	1.2	4	1.2
5	1.07	5	1.33	5	1.27	6	1.24	5	1.23	5	1.15	5	1.29	5	1.14	5	1.16	5	1.17	5	1.14
6	1.07	7	1.18	6	1.21	7	1.15	7	1.19	6	1.19	6	1.12	6	1.09	6	1.08	7	1.27	7	1.25
7	1.24	8	1.35	7	1.17	8	1.1	8	1.15	7	1.17	7	1.14	7	1.13	7	1.18	8	1.08	8	1.06
10	1.26	11	1.18	8	1.27	10	1.33	10	1.28	8	1.08	8	1.05	8	1.09	9	1.24	9	1.18	9	1.17
12	1.15	12	1.12	10	1.14	11	1.07	11	1.16	10	1.2	10	1.18	10	1.2	11	1.06	10	1.24	10	1.25
14	1.11	14	0.98	12	1.11	12	1.26	12	1.33	12	1.26	12	1.23	12	1.23	12		11	1.15	11	1.14
16	1.25	16	1.19	16	1.18	16	1.2	16	1.06	14	1.14	14	1.18	14	1.22	14	1.27	12	1.14	12	1.21
17	1.1	19	1.06	18	1.08	17	1.15	17	1.15	17	1.11	17	1.05	17	1.13	17	1.07	13	1.17	13	1.16

ISD Coefficient																					
sec	1960	sec	1966	sec	1970	sec	1975	sec	1980	sec	1985	sec	1990	sec	1995	sec	2000	sec	2005	sec	2010
2	1.21	2	1.32	2	1.45	2	1.77	1	1.09	1	1.049	1	1.09	2	1.72	1	1.11	1	1.13	1	1.15
4	1.02	6	1.03	7	1.43	6	0.94	2	1.91	2	1.804	2	1.77	7	1.4	2	1.72	2	1.41	2	1.44
5	1.36	7	1.3	8	0.99	7	1.45	7	1.48	6	1.08	7	1.47	8	1.27	7	1.42	4	1.27	4	1.27
6	1.16	9	1.22	9	1.3	8	1.35	8	1.42	7	1.512	8	1.32	9	1.21	8	1.23	6	1.14	6	1.13
9	1.01	10	1.39	10	1.19	9	1.38	9	1.47	8	1.37	9	1.29	10	1.19	9	1.31	7	1.33	7	1.27
11	1.24	11	1.03	11	1.39	11	1.12	11	1.15	9	1.331	10	1.13	11	1.24	10	1.16	8	1.13	8	1.12
12	1.39	12	1.38	12	1.42	12	1.5	12	1.38	11	1.212	11	1.21	12	1.41	11	1.27	9	1.95	9	1.84
14	1	17	1.31	17	1.33	17	1.34	16	1.4	12	1.394	12	1.39	16	1.32	12	1.45	10	1.29	10	1.23
18	1.18	19	1.03	18	1.12	18	0.95	21	1.14	16	1.355	16	1.34	21	1.08	16	1.21	20	1.15	20	1.19
20	0.97	20	1.12	19	1.09	21	1.11	22	1.06	21	1.145	21	1.08	22	1.07	21	1.05	21	1.05	21	1.09

Source: Results of Input-Output Analysis
Note: Sector coding is same as Table 3B

Appendix C

Table 1C: Sector Classification and Consolidation of IOTs of Bangladesh from 1971 to 2011

1971–1995	2000–2011	
Original Sector Classification	Consolidated Sectors	Original Sectors
Agriculture	Agriculture, Forestry and Fishing	Agriculture, Forestry and Fishing
Fishing	Mining and Quarrying	Mining and Quarrying
Mining and Quarrying	Food, Beverages and Tobacco	Food, Beverages and Tobacco
Food & Beverages	Textiles and Textile Products	Textiles and Textile Products
Textiles and Wearing Apparel	Leather, Leather and Footwear	Leather, Leather and Footwear
Wood and Paper	Wood and Products of Wood and Cork	Wood and Products of Wood and Cork
Petroleum, Chemical and Non-Metallic Products	Pulp, Paper, Paper, Publishing	Pulp, Paper, Paper, Publishing
Metal Products	Coke, Refined Petroleum and Fuel	Coke, Refined Petroleum and Fuel
Electrical and Machinery	Chemicals and Chemical Products	Chemicals and Chemical Products
Transport Equipment	Rubber and Plastics	Rubber and Plastics
Other Manufacturing	Other Non-Metallic Mineral	Other Non-Metallic Mineral
Recycling	Basic Metals and Fabricated Metal	Basic Metals and Fabricated Metal
Electricity, Gas and Water	Machinery and Equipment	Machinery, Nec
Construction		Electrical and Optical Equipment
Maintenance and Repair	Transport Equipment	Transport Equipment
Wholesale Trade	Manufacturing, Nec; Recycling	Manufacturing, Nec; Recycling
Retail Trade	Electricity, Gas and Water Supply	Electricity, Gas and Water Supply
Hotels and Restaurants	Construction	Construction
Transport	Wholesale and Retail Trade	Sale Vehicles and Fuel
Post and Telecommunications		Wholesale Trade
Financial Intermediation and Business Activities		Retail Trade
Public Administration	Hotels and Restaurants	Hotels and Restaurants
Education, Health and Other Services	Transport and warehousing	Inland Transport
Private Households		Water Transport
Others		Air Transport
		Other Transport Activities
	Post and Telecommunications	Post and Telecommunications
	Finance, Real-estate and Bus. Services	Financial Intermediation
		Real Estate Activities
		Business Activities
	Public Admin and Defence	Public Admin and Defence
	Education, Medical and Social welfare	Education
		Health and Social Work
	Other Services	Other Community Services
		Private Households

Note: Consolidation of IOTs of Bangladesh from 2000 to 2011 are featured the consolidated sector classification of Korea's IOTs. No consolidation or segregation of IOTs from 1971 to 1995.

Table 2C（Part 1）: Sector Consolidation of IOTs of Korea into 25 Sectors from 1960 to 1975

1960 and 1966, 43 0Sectors	Code	1970, 56 sectors	Code	1975, 60 sectors	Code
Grain		grain		grain	
Other agricultural		Vegetables fruits		Vegetables and fruits	
Forest product	1	Industrial crops	1	Industrial crops	1
Marine products		Animal Husbandry		Animal husbandry and sericulture	
Coal		Forest product		Forest product	
Other mining	2	Marine products		Marine products	
Grocery		coal	2	coal	
Beverages and tobacco	3	Metal ores		Metal ores	2
Fiber		Meat, dairy products		Non-metallic ore	
Fabric		Processed marine products		Slaughter, dairy, fruit processing	
Clothes	4	Milling	3	Fish processing	
Leather	5	Other food		Grain milling	3
Lumber		Beverage		Milling	
Wooden products	6	Cigarette		Other food products	
Paper making		fiber		Beverages	
Paper products	7	fabric	4	Tobacco	
Rubber product	10	clothes		Yarns	
Basic chemical products		Leather, fur	5	Fabric	4
Chemical intermediate product	8	Lumber	6	Fiber product	
Chemical fertilizer		Wooden products		Clothing and ornaments	
Chemical final product		Paper and paper products	7	Leather and leather	5
Coal product	9	Printing and publishing		Lumber and wood products	6
Cement		Rubber product	10	Pulp and Papers	
Other ceramics soil and stone	11	Inorganic chemical products		Printing & Publishing	7
Iron-making		Organic chemical products		Inorganic chemical products	
Iron and steel primary products		Chemical fertilizer	8	Organic chemical products	
Non-ferrous metal	12	Drug		Chemical fertilizer	
Metal products		Other Pharmaceuticals		Pharmaceuticals and cosmetics	8
General machinery		Petroleum products	9	Synthetic products	
Electric machine	13	Coal product		Other chemical products	
Transport machinery	14	Ceramic, stone and clay	11	Petroleum products	
Other manufacturing industries	15	Nonmetallic mineral		Coal product	9
Building		Iron-making		Rubber product	10
Other construction	17	Iron and steel primary products	12	Non-metallic mineral products	11
Power	31	Non-ferrous metal		Pig iron and crude steel	
Water and telecommunications	32	Metal products		Iron and steel primary products	
Transportation and warehousing	20	General machinery		Non-ferrous metal	12
Commerce	18	Electric machine	13	Metal products	
Mechanical repair	26	Precision machinery		General machinery	
Finance and Real Estate	22	Transport machinery	14	Electric machine	
Other Services	25	Other manufacturing industries	15	communication equipment	13
Scrap	27	building		Precision machinery	
Classification Unknown	28	Other construction	17	Transport machinery	14
		Power		Other manufacturing industries	15
		Water	16	Power and city gas	
		communication	21	Water	16
		Finance and insurance	29	Construction and building repair	
		real estate	30	other construction	17
		Transportation and warehousing	20	Commerce	18
		Commerce	18	Restaurants and Hotel	19
		Public administration	23	Transportation, warehouse	20
		Social services		communication	21
		Other Services	25	Finance, insurance	
		Office supplies		real estate	22
		Household outside consumption		Government service	23
		Classification Unknown	28	Social services	
				Additional services	
				Office supplies	25
				Household outside consumption	
				Classification Unknown	28

Table 2C （Part 2）: Sector Consolidation of IOTs of Korea into 25 Sectors from 1980 to 1990

1980, 64 sectors	Code	1985, 65 Sectors	Code	1990, 75 Sectors	Code
Grain	1	Crops	1	Crops	1
Vegetables and fruits		Livestock and sericulture		Livestock and sericulture	
Industrial crops		Agricultural services		Agricultural services	
Animal husbandry		Forestry products		Forestry products	
Forest product		Fishery products		Fishery products	
Marine products	2	Coal mining	2	Coal mining	2
coal		Metallic ores mining		Crude petroleum and natural gas	
Metal ores		Nonmetallic mining		Metal ores	
Non-metallic ore		Meat, dairy products and fruit		Nonmetallic minerals	
Slaughter, dairy, fruit	3	Processed seafood products	3	Meat and dairy products	3
Fish processing		Polished grains		Processed seafood products	
Grain milling		Flour and cereal preparations		Polished grains, flour and cereals	
milling		Sugar		Sugar	
Sugar production		Bread and noodles		Bakery and noodles	
Bread and noodle		Other food preparations		Other food preparations	
Other food products		Beverages		Beverages	
Beverages		Tobacco products		Tobacco products	
Tobacco	4	Fiber yarn	4	Fiber yarn	4
Yarns		Fiber fabrics		Fiber fabrics	
fabric		Fabricated textile products		Fabricated textile products	
Fiber product		Wearing apparels		Wearing apparels and accessories	
Clothing and ornaments		Leather and fur products	5	Leather and fur products	5
Leather and leather	5	Lumber and wood products	6	Wood and wooden products	6
	33	Pulp and paper	7	Wood furniture	
Pulp and Papers	7	Printing and publishing		Pulp and paper	7
Printing & Publishing		Industrial basic chemicals		Printing and publishing	
Chemical products	8	Chemical fibers	8	intermediate chemical products	8
Chemical fertilizer		Fertilizer chemicals		Plastic material and synthetic rubber	
Pharmaceuticals and cosmetics		Drugs and cosmetics		Inorganic chemical basic products	
Synthetic resins & rubbers		Other chemical products		Chemical fibers	
synthetic fibers		Synthetic resins products		Fertilizers and chemicals	
Other chemical products		Petroleum products	9	Drugs, cosmetics, and soap	9
Petroleum products	9	Coal products		Miscellaneous chemical products	
Coal product		Rubber products	10	Petroleum refinery products	9
Rubber product	10	Nonmetallic mineral products	11	Coal products	
Non-metallic mineral products	11	Iron and steel manufacturing		Rubber products	10
Pig iron and crude steel	12	Primary iron and steel	12	Plastics products	
Iron and steel primary products		Nonferrous metal ingots		Glass, pottery and related products	11
Non-ferrous metal ingots		Fabricated metal products		Cement and concrete products	
Metal products		General machinery		Nonmetallic mineral products	

Item	No.	Item	No.
General machinery	13	Electrical equipment	13
Electric machine		Communication equipment	
Electronic equipment		Measuring and optical instruments	
Precision machinery		Transportation equipment	14
Transport machinery	14	Other manufactured products	15
Other manufacturing industries	15	Electric power services	16
Construction and building repair	17	Gas, steam and hot water	
Civil engineering		Water supply	
Power	16	Building and maintenance	17
City gas and heat supply		Public works	
Water		Wholesale and retail trade	18
Commerce	18	Restaurants and hotels	19
Restaurants and hotel	19	Transport and warehousing	20
Transportation and warehouse	20	Communications	21
communication	21	Finance and insurance	22
Finance, insurance	22	Real-estate and rental	
real estate		Business services	
Government service	23	Public administration	23
Education and research	24	Educational and research	24
Health and social security		Medical and social welfare	
Social services	25	Social services	25
Additional services		Other services	
Office supplies		Office supplies	
Household outside consumption		Business consumption	
Classification Unknown		Unclassifiable	

Item	No.
Pig iron and crude steel	12
Primary iron and steel products	
Nonferrous metal ingots	
Fabricated metal products	14
General industrial machinery	13
Special industry machinery	
Computer and office equipment	
Electrical machinery	
Household electronic appliances	17
Communications equipment	
Electronic components	18
Precision instruments	14
Motor vehicles	
transportation equipment	
Miscellaneous manufacturing	15
Electric services	16
Gas, steam, and hot water supply	
Water supply	
Building construction and repair	17
Heavy construction	
Wholesale and retail trade	18
Restaurant and hotels	19
Transportation and warehousing	20
Communications	21
Finance and insurance	22
Real estate agencies and rental	
Business services	
Public administration and defense	23
Educational and research services	24
Medical and social security	
Social services	25
Broadcasting services	
Office supplies	
Business consumption	
Nonclassifiable activities	

Table 2C （Part 3）: Sector Consolidation of IOTs of Korea into 25 Sectors from 1995 to 2010

1995 and 2000, 77 sectors	Code	2005 and 2010, 78 sectors	Code
Crops	1	Crops	1
Livestock breeding		Animals	
Forestry products		Forest products	
Fishery products		Fishery products	
Coal mining	2	Other Agriculture	2
Crude petroleum and natural gas		Crude petroleum and natural gas	
Metal ores		Metal ores	
Nonmetallic minerals		Non-metallic minerals	
Meat and dairy products	3	Meat and dairy products	3
Processed seafood products		Processed seafood products	
Polished grains, flour and cereals		Polished grains, flour and milled cereals	
Sugar and starches		Other food products	
Bakery and noodles		Beverages	
Seasonings and fats and oils		Prepared livestock feeds	
Canned and misc. food preparations		Tobacco products	
Beverages		Fiber yarn and fabrics	4
Prepared livestock feeds		Apparels and other textiles	
Tobacco products		Leather and fur products	5
Fiber yarn	4	Furniture	6
Fiber fabrics		Wood and wooden products	
Other fabricated textile products		Pulp and paper	7
Wearing apparels		Printing and Publishing	
Leather and fur products	5	Plastic products	10
Wood and wooden products	6	Rubber products	
Furniture		Coke and hard-coal	9
Pulp and paper	7	Refined petroleum products	
Printing and publishing		Basic chemical products	8
Organic basic chemical products	8	Synthetic resins and synthetic rubber	
Inorganic basic chemical products		Chemical fibers	
Synthetic resins and synthetic rubber		Fertilizers and agricultural chemicals	
Chemical fibers		Drugs, cosmetics, and soap	
Fertilizers and agricultural chemicals		Other chemical products	
Drugs, cosmetics, and soap		Glass products	11
Other chemical products		Ceramic ware	
Coal products	9	Cement and concrete products	
Petroleum refinery products		Other nonmetallic mineral products	
Plastic products	10	Pig iron and crude steel	12
Rubber products		Primary iron and steel products	

Glass products	11	Nonferrous metal ingot	
Pottery and clay products		Fabricated metal products	
Cement and concrete products		General Machinery and equipment	13
Other nonmetallic mineral products		Special Machinery and equipment	
Pig iron and crude steel	12	Electrical equipment, and supplies	
Primary iron and steel products		Electronic components	
Nonferrous metal ingots		Communications equipment	
Fabricated metal products		Computer and office equipment	
General Machinery and equipment	13	Household electrical appliances	
Special Machinery and equipment		Precision instruments	
Electronic machinery and equipment		Motor vehicles and parts	14
Electronic components		Ship building and repairing	
Communications equipment		Other transportation equipment	
Computer and office equipment		Other manufactured products	15
Household electrical appliances		Electric utilities	16
Precision instruments		Gas and water supply	
Motor vehicles and parts	14	Building construction and repair	17
Ship building and repairing		Civil engineering	
Other transportation equipment		Wholesale and retail trade	18
Other manufacturing products	15	Accommodation and food services	19
Electric services	16	Land transport	20
Gas and water supply		Water and air transport	
Building construction and repair	17	Other activities for transportation	
Civil Engineering		Communications services	21
Wholesale and retail trade	18	Broadcasting	
Restaurant and Hotel	19	Finance and insurance	22
Transportation and warehousing	20	Real estate	
Communications and broadcasting	21	Research and development	
Finance and insurance		Business services	
Real estate agencies and rental	22	Other business services	
Business services		Public administration and defense	23
Public administration and defense	23	Education	
Educational and research services	24	Medical and health services	24
Medical and social security		Social work activities	
Culture and recreational services	25	Sanitary services	25
Other services		Publishing and cultural services	
Office supplies		Amusement and sports activities	
Business consumption expenditure		Social organizations	
Nonclassifiable activities		Other services	
		Dummy sectors	

Note for Table 2C: This is an integral part of the Table. Please read the codes as: 1 Agriculture, Forestry, Fisheries, 2 Mining and Quarrying, 3 Food and Beverages, 4 Textile and Apparel, 5 Leather and Fur Products, 6 Lumber and Wood Products, 7 Paper and Printing, 10 Rubber and Plastic, 9 Petroleum and Coal, 8 Chemicals, 11 Ceramics and Nonmetallic Mineral Products, 12 Iron and Steel, 13 Machinery and Equipment, 14 Transportation Equipment, 15 Miscellaneous Manufactured Products, 16 Electricity, Gas and Water, 17 Construction, 18 Wholesale and Retail Trade, 19 Restaurants and Hotels, 20 Transport and Warehousing, 21 Communications, 22 Finance, Real-estate and Bus. Services, 23 Public Administration and Defense, 24 Education, Medical and Social Welfare, 25 Other Services, 26 Mechanical Repair, 27 Scrap, 28 Classification Unknown, 29 Finance and Insurance, 30 Real Estate, 31 Power, 32 Water Supply and Telecommunications

N. B. There is some dissimilarity in the coding and matching with other sectors in different IOTs. This mismatch does not affect our analysis as our analysis is confined with the textile-clothing sector only.