

Features of Input-Output Tables of India*

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Abstract

This paper reviews the basic features of the India's input-output tables in order to contribute to the feasibility study of the compilation of the 2005 BRICs international input-output table. The brief review revealed that the India's table basically follows the System of National Accounts (SNA) of the United Nations but has peculiar features such as the reference year. In compiling the BRICs table, the special treatments are required especially for (1) reference year, (2) valuation of transactions, and (3) segregation of value added sectors.

Keywords: India, input-output table, BRICs

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1. Introduction

In recent years, India has attracted attentions together with Brazil, China and Russia as one of the newly emerging market economies called "BRICs". Although the annual real GDP growth of India from 2000/01 to 2002/03 is 4.7%, its pace accelerated after 2003/04 and the growth rate between 2003/04 and 2005/06 reached 8.3%. With such rapid growth, significant changes occur in the India's

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economic structure and the need for the data and the analytical tools that capture such changes is also increasing among policy makers, researchers and business practitioners. The input-output (I-O) table that describes all the transactions between the industries of an economy is one of the useful statistics in order to meet such demands.

Based on this background, this chapter reviews the basic features as well as the present condition of the compilation of the India's I-O tables. In what follows, we will firstly review the compilation history of the India's table in order to identify the availability of the tables, followed by discussions on the basic features by referring to the latest 2003/04 table that was released in November 2007.

In addition, we will briefly discuss the possibility of compiling an international input-output table for the BRICs countries that is planned by the Institute of Developing Economies (see Appendices for the basic format of the BRICs table). We will examine the similarities and differences between the India's table and the BRICs table in order to provide with the basic information for the feasibility study for compiling the BRICs table.

2. Brief History

Roughly speaking, the compilation history of India's I-O tables may be divided into three different periods. The first period is the early 1950's. During this period, individual scholars attempted to compile small I-O tables. The second period, from the late 1950's through early years of the 1970's, is the period that the Indian Statistical Institute (ISI) initiated the compilation. Lastly, the third period, after the late 1970's, is the period that the Indian government started to compile the I-O tables as an official statistics.

2.1 Backgrounds

After achieving political independence in 1948, India pursued economic independence as well.¹ To solve the problems of underdevelopment, unemployment and poverty, Jawaharlal Nehru, the first prime minister, had an idea of taking the Soviet-type development strategy where the government played a key role for industrialization and, indeed, the government adopted the policy of developing heavy manufacturing industries. First, the Industrial Policy Resolutions of 1948 and 1956 designated many manufacturing industries as the sector where the government shall play a major role in their development. Second, the Industrial (Development and Regulation) Act of 1951 obliged firms to obtain a governmental license for entry and expansion with regard to the manufacturing sector. Third, the government implemented the Economic Five Year Plans from 1951/52 which design the allocation of public investment, following the national economic planning scheme of the USSR. The Planning Commission (PC), established in 1950, has been in charge to prepare the Plans.

The Mahalanobis model, which was published in 1953, gave the theoretical basis for these policies. The model, which is a two-sector growth model, argues that the higher investment ratio

¹ For the economic history of India, see Chakravarty [1987] for example.

should be allocated to the capital-goods-producing sector in order to bring the higher economic growth rate.² Thus, it justifies the development policy of heavy industrialization. The architect of this model, Prashanta Chandra Mahalanobis, is also the founder of the ISI, where the I-O tables of India were compiled from the late 1950s to the early 1970s, as mentioned above. Therefore, it is highly likely that the compilation of IO tables in the early years is closely associated with the economic planning policy adopted by the government.

2.2 Some Pioneering Studies³

The compilation of I-O tables in India was started in the early 1950's. The early work was conducted mainly by the scholars at the ISI as it launched various studies on planning in 1954. The first table was compiled by Chowdhury [1954]. The target year of the Chowdhury's table was for 1948/49 and consisted of 23 industrial sectors. Malenbaum [1955] also estimated a small four-sector table for the same target year. Since then, several tables for 1949/50, 1950/51, 1952/53, and 1953/54 were compiled in the early 1950's by the scholars and institutions such as Datta [1954], Mukherjee [1954], Goodwin and Chowdhury [1955], Indian Institute of Public Opinion (IIPO) [1954] and Malenbaum [1955], respectively (see Table 1).

Table 1 Input-Output Tables of India Compiled by Individual Scholars

Producer(s)	Target Year	# of Sectors	Year Published	Source
Chowdhury	1948/49	23	1954	Chowdhury, T. P., "Consumption Levels in India (an Econometric Analysis)," Unpublished thesis, London University, 1954.
Malenbaum	1948/49	4	1955	Malenbaum, W., "India's Domestic Product, 1951/52-1953/54," <i>Indian Economic Journal</i> , Vol. 2, No. 3, January 1955: 247-253.
Datta	1949/50	16	1954	Datta, U., "A preliminary study of inter-industry relations in India," <i>Studies Relating to Planning for National Development</i> , Indian Statistical Institute (SPND, ISI), No. 7, December 1954.
Mukherjee	1949/50	4	1954	Mukherjee, M., "The Technique of Social Accounting in a Pre-industrial Economy," <i>Sankhya</i> , Vol. 14, Parts 1 & 2, September 1954: 1-24.
Goodwin & Chowdhury	1950/51	12	1955	Goodwin, R. R., "Transactions matrices for the Indian Union 1950-51," <i>Studies Relating to Planning for National Development</i> , Indian Statistical Institute (SPND, ISI), No. 17, January 1955.
IIPO	1952/53	19	1954	Indian Institute of Public Opinion, "The Structure of the Indian Economy: The Scope and Possibilities of Input-Output Analysis," <i>Quarterly Economic Report</i> , Vol. 1, No. 3, October 1954: 23-50.
Malenbaum	1953/54	4	1955	Malenbaum, W., "India's Domestic Product, 1951/52-1953/54," <i>Indian Economic Journal</i> , Vol. 2, No. 3, January 1955: 247-253.

Source: Compiled based on Mukherjee [1967].

² Mahalanobis [1953], also see Mukherjee [1973].

³ This part is largely based on Mukherjee [1967], pp.16-24.

2.3 Compilation by ISI⁴

Based on the pioneering contributions described above, the ISI started to compile the I-O tables in a systematic manner from the late 1950's.⁵ In 1960, the ISI released its first 1951/52 table that is valued at the market price and consists of 36 industrial sectors. The tables for 1953/54 and 1955/56 tables with the same sector classification were also released in 1961. Further, the ISI compiled the tables valued at producer's price for 1960/61 (31 sectors) and 1964/65 (144 sectors).

Table 2 Input-Output Tables of India Compiled by ISI

Reference Year	# of Industries	Year Published	Valuation	Source
1951/52	36	1960	market price	Inter-industry Unit (ISI), "Inter-industry Relations in the Indian Union, 1951-52," <i>Papers on National Income and Allied Topics</i> , Vol. I, 1960.
1953/54	36	1961	market price	Economic Commission for Asia and the Far East (UN), <i>Formulating Industrial Development Programmes -with special reference to Asia and the Far East-</i> , Bangkok, 1961.
1955/56	36	1961	market price	Inter-industry Unit (ISI), "Inter-industry Relations of the Indian Economy 1955-56 (at market prices)," <i>Studies Relating to Planning for National Development</i> , Indian Statistical Institute (SPND, ISI), No. 217, January 1961.
1960/61	31	1965	market price	Manne, A. S. and A. Rudra, "A Consistency Model of India's Fourth Plan," <i>Sanhkyā</i> , Series B, Vol. 27, Parts 1&2, September 1965, pp.57-144.
1964/65	77	1968	market price	Saluja, M. R., "Structure of Indian Economy: Inter-industry Flows and Pattern of Final Demands 1964-65," <i>Sanhkyā</i> , Series B, Vol. 30, Parts 1&2, June 1968, pp.97-122
	144	1972	market price	Saluja, M. R., "Structure of Indian Economy: 1964-65 -Input-Output Relations among 144 Sectors," <i>Sanhkyā</i> , Series B, Vol. 34, Part 4, December 1972, pp.433-462.

Source: Compiled based on Mukherjee [1967], Manne and Rudra [1965], and Saluja [1968, 1972].

2.4 Compilation by CSO⁶

The government of India started the study on input-output accounts in the late 1950's. In 1959, the Central Statistical Organization (CSO) set up a committee and it was involved in the compilation from the 1955/56 table at the ISI.⁷ As the increasing use of the I-O tables for purpose of planning, the compilation was gradually transferred from the ISI to CSO and the Planning Commission⁸ and the 1968/69 table (60 sectors) was released from the CSO and the PC in 1978, as the first official I-O table in India. Since then, the CSO has published the transaction tables on regular basis, at the interval of four to six years, with supporting tables (see Table 3). The CSO tables have been consisting of 115 sectors since the 1973/74 table, but it increased to 130 sectors in the latest 2003/04 table (see Table 4 for sector classifications).

⁴ This part is largely based on Mukherjee [1967], pp.16-24 and Pradhan *et al.* [2006], pp.25-26.

⁵ According to Ramana [1969], one of the objectives of such work is to provide the Planning Commission with input-output data of various industries. (Ramana [1969], p.15)

⁶ This part is based on Mukherjee [1967] and CSO (various years).

⁷ Mukherjee [1967], p.18.

⁸ Mukherjee [1967], p.18.

Table 3 Input-Output Tables of India Compiled by CSO

Reference Year	# of Industries	Year Published	Valuation	Supporting Tables Published
1968/69 ¹	60	1978	factor costs ²	n.a.
1973/74	115	1981	factor costs	Absorption matrix (commodity by industry) Make matrix (industry by commodity) Product mix matrix Market share matrix Comm. by comm. table under the industry technology assumption
1978/79	115	1989	factor costs	Absorption matrix (commodity by industry) Make matrix (industry by commodity) Product mix matrix Market share matrix Comm. by comm. table under the industry technology assumption
1983/84	115	1990	factor costs	Absorption matrix (commodity by industry) Make matrix (industry by commodity) Product mix matrix Market share matrix Comm. by comm. table under the industry technology assumption
1989/90	115	1997	factor costs	Absorption matrix (commodity by industry) Make matrix (industry by commodity) Product mix matrix Market share matrix Comm. by comm. table under the industry technology assumption Import matrix (commodity by industry)
1993/94	115	2000	factor costs	Absorption matrix (commodity by industry) Make matrix (industry by commodity) Product mix matrix Market share matrix Comm. by comm. table under the industry technology assumption Import matrix (commodity by industry)
1998/99	115	2005	factor costs	Absorption matrix (commodity by industry) Make matrix (industry by commodity) Product mix matrix Market share matrix Comm. by comm. table under the industry technology assumption
2003/04	130	2007	factor costs	Absorption matrix (commodity by industry) Make matrix (industry by commodity) Comm. by comm. table under the industry technology assumption

Source: Compiled by the authors.

Notes: ¹Compiled as the joint work by CSO and PC.

²The factor costs are defined as the cost excluding trade and transport charges and net indirect taxes (indirect taxes less subsidies).

3. Features of India's Input-Output Tables

India's I-O tables have been constructed following the principles of the System of National Account (SNA) that is determined by the United Nations (UN) as an international standard and thus the presentation format of the India's tables is similar to many other countries' I-O tables. However, there are some unique features in India's table, reflecting the characteristics of India's socioeconomic structures. In this section, the presentation format of India's I-O table will be discussed, mainly referring to the latest 2003/04 table.

3.1 Reference period

As seen in the compilation history, one of the most distinctive features of the India's I-O table compared with other countries' tables is the reference period. In most of the countries, the I-O tables are compiled for the period of calendar year, i.e. from January through December of the target year. However, the India's table employs the India's fiscal year as the reference period, i.e. from April through March.⁹ This treatment is probably made much of the consistency with other economic statistics in India that are commonly released at fiscal year basis.

3.2 Intermediate sectors

The sector classification of the India's table is reported in Table 4. As mentioned above, the number of sectors of the India's table increased from 115 in the previous tables (before 1998/99 table) to 130 in the latest 2003/04 table, in response to the changes of the economic structure. The service sectors account for most of the increase. Specifically, the transportation service increased from only two sectors ("103 Railway transport services" and "104 Other transport services") in 1998/99 table to five sectors in 2003/04 table and "114 Other services" in 1998/99 was split into seven sectors in 2003/04. The intermediate transactions are valued at factor costs (producer's price less indirect taxes).

Table 4 Sector Classification

2003/04 (130 sectors)		1998/99 (115 sectors)	
Code	Description	Code	Description
INTERMEDIATE SECTORS			
1	Paddy	1	Paddy
2	Wheat	2	Wheat
3	Jowar	3	Jowar
4	Bajra	4	Bajra
5	Maize	5	Maize
6	Gram	6	Gram
7	Pulses	7	Pulses
8	Sugarcane	8	Sugarcane
9	Groundnut	9	Groundnut
10	Coconut	15	Coconut
11	Other oilseeds	-	-
12	Jute	10	Jute
13	Cotton	11	Cotton
14	Tea	12	Tea
15	Coffee	13	Coffee
16	Rubber	14	Rubber
17	Tobacco	16	Tobacco
18	Fruits	-	-
19	Vegetables	-	-
20	Other crops	17	Other crops
21	Milk and milk products	18	Milk and milk products
22	Animal services (agricultural)	19	Animal services (agricultural)
23	Poultry and eggs		
24	Other livestock products and gobar gas	20	Other livestock products
25	Forestry and logging	21	Forestry and logging

⁹ Pakistan's I-O accounts are also compiled for the fiscal year.

Table 4 Sector Classification (Continued)

2003/04 (130 sectors)		1998/99 (115 sectors)	
Code	Description	Code	Description
INTERMEDIATE SECTORS			
26	Fishing	22	Fishing
27	Coal and lignite	23	Coal and lignite
28	Natural gas	24	Crude petroleum, natural gas
29	Crude petroleum	-	-
30	Iron ore	25	Iron ore
31	Manganese ore	26	Manganese ore
32	Bauxite	27	Bauxite
33	Copper ore	28	Copper ore
34	Other metallic minerals	29	Other metallic minerals
35	Lime stone	30	Lime stone
36	Mica	31	Mica
37	Other non-metallic minerals	32	Other non-metallic minerals
38	Sugar	33	Sugar
39	Khandsari, boora	34	Khandsari, boora
40	Hydrogenated oil (vanaspati)	35	Hydrogenated oil (vanaspati)
41	Edible oils other than vanaspati	36	Edible oils other than vanaspati
42	Tea and coffee processing	37	Tea and coffee processing
43	Miscellaneous food products	38	Miscellaneous food products
44	Beverages	39	Beverages
45	Tobacco products	40	Tobacco products
46	Khadi, cotton textiles in handlooms	41	Khadi, cotton textiles in handlooms
47	Cotton textiles	42	Cotton textiles
48	Woolen textiles	43	Woolen textiles
49	Silk textiles	44	Silk textiles
50	Art silk, synthetic fiber textiles	45	Art silk, synthetic fiber textiles
51	Jute, hemp, mesta textiles	46	Jute, hemp, mesta textiles
52	Carpet weaving	47	Carpet weaving
53	Readymade garments and made up textile goods	48	Readymade garments and made up textile goods
54	Miscellaneous textile products	49	Miscellaneous textile products
55	Furniture and fixtures-wooden	50	Furniture and fixtures-wooden
56	Wood and wood products	51	Wood and wood products except furniture
57	Paper, paper products and newsprint	52	Paper, paper products and newsprint
58	Printing and publishing	53	Printing, publishing and allied activities
59	Leather footwear	54	Leather footwear
60	Leather and leather products	55	Leather and leather products
61	Rubber products	56	Rubber products
62	Plastic products	57	Plastic products
63	Petroleum products	58	Petroleum products
64	Coal tar products	59	Coal tar products
65	Inorganic heavy chemicals	60	Inorganic heavy chemicals
66	Organic heavy chemicals	61	Organic heavy chemicals
67	Fertilizers	62	Fertilizers
68	Pesticides	63	Pesticides
69	Paints, varnishes and lacquers	64	Paints, varnishes and lacquers
70	Drugs and medicines	65	Drugs and medicines
71	Soaps, cosmetics and glycerine	66	Soaps, cosmetics and glycerine
72	Synthetic fibers, resin	67	Synthetic fibers, resin
73	Other chemicals	68	Other chemicals
74	Structural clay products	69	Structural clay products
75	Cement	70	Cement
76	Other non-metallic mineral products	71	Other non-metallic mineral products
77	Iron, steel and ferro alloys	72	Iron, steel and ferro alloys

Table 4 Sector Classification (Continued)

2003/04 (130 sectors)		1998/99 (115 sectors)	
Code	Description	Code	Description
INTERMEDIATE SECTORS			
86	Machine tools	81	Machine tools
-	-	82	Office computing and accounting machinery
87	Other non-electrical machinery	83	Other non-electrical machinery
88	Electrical industrial machinery	84	Electrical industrial machinery
89	Electrical cables and wires	85	Electrical cables, wires
90	Batteries	86	Batteries
91	Electrical appliances	87	Electrical appliances
92	Communication equipment	88	Communication equipment
93	Other electrical machinery	89	Other electrical machinery
94	Electronic equipment including TV	90	Electronic equipment including TV
95	Ships and boats	91	Ships and boats
96	Rail equipment	92	Rail equipment
97	Motor vehicles	93	Motor vehicles
98	Motor cycles and scooters	94	Motor cycles and scooters
99	Bicycles and cycle-rickshaw	95	Bicycles and cycle-rickshaw
100	Other transport equipment	96	Other transport equipment
101	Watches and clocks	97	Watches and clocks
102	Medical, precision and optical instruments	-	-
103	Jems and jewelry	-	-
104	Aircraft and spacecraft	-	-
105	Miscellaneous manufacturing	98	Miscellaneous manufacturing
106	Construction	99	Construction
107	Electricity	100	Electricity
-	-	101	Gas
108	Water supply	102	Water supply
109	Railway transport services	103	Railway transport services
110	Land transport including via pipeline	-	-
111	Water transport	-	-
112	Air transport	-	-
113	Supporting and auxiliary transport activities	104	Other transport services
114	Storage and warehousing	105	Storage and warehousing
115	Communication	106	Communication
116	Trade	107	Trade
117	Hotels and restaurants	108	Hotels and restaurants
118	Banking	109	Banking
119	Insurance	110	Insurance
120	Ownership of dwellings	111	Ownership of dwellings
121	Education and research	112	Education and research
122	Medical and health	113	Medical and health
123	Business services	-	-
124	Computer and related activities	-	-
125	Legal services	-	-
126	Real estate activities	-	-
127	Renting of machinery and equipment	-	-
128	Other communication, social and personal services	-	-
129	Other services	114	Other services
130	Public administration	115	Public administration

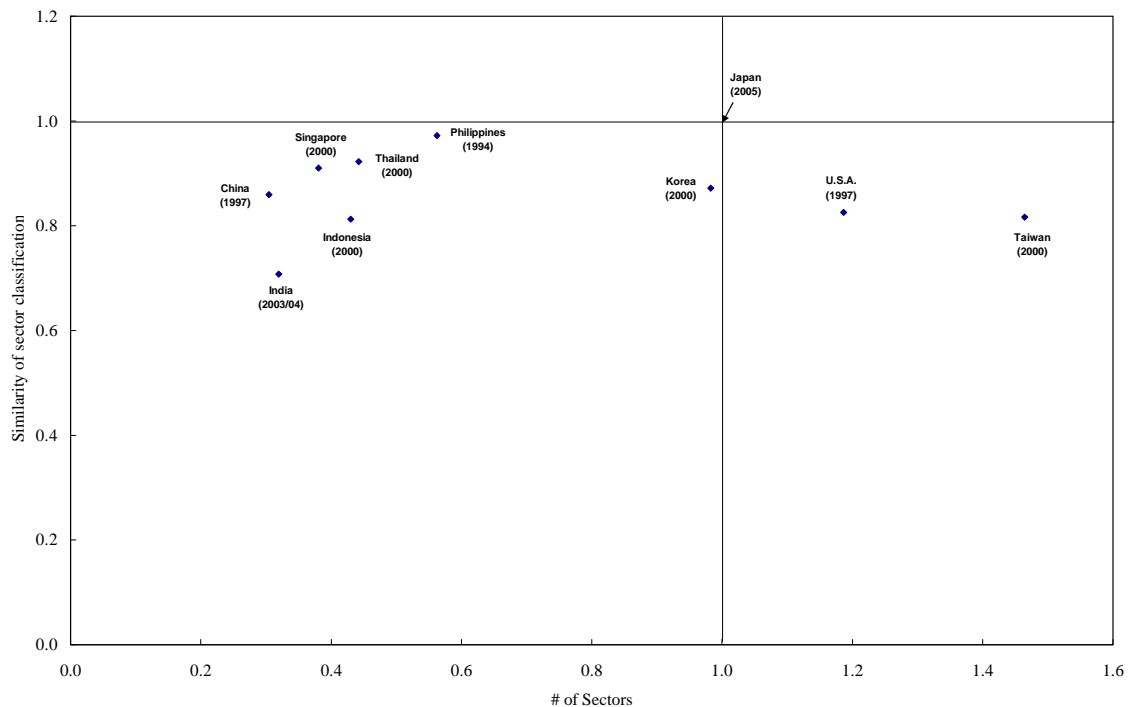
Table 4 Sector Classification (Continued)

2003/04 (130 sectors)		1998/99 (115 sectors)	
Code	Description	Code	Description
FINAL DEMAND SECTORS			
PFCE	Private final consumption expenditure	PFCE	Private final consumption expenditure
GFCE	Government final consumption expenditure	GFCE	Government final consumption expenditure
GFCF	Gross fixed capital formation	GFCF	Gross fixed capital formation
CIS	Change in stocks	CIS	Change in stocks
EXP	Exports	EXP	Exports
less IMP	Less imports	less IMP	Less imports
VALUE ADDED SECTORS			
NIT	Net indirect taxes	NIT	Net indirect taxes
GVA	Gross value added	GVA	Gross value added

Sources: CSO [2005, 2007].

In order to identify the characteristics of sector classification of intermediate transactions of the India's table, some comparisons with other countries' tables were made. Figure 1 reports the measurement results of the similarities of some countries' I-O tables with Japan's table. The horizontal axis measures the similarity of the number of intermediate sectors with Japan's table and the vertical axis measures the similarity of sector classification.¹⁰

Figure 1 Comparison of Input-Output Tables (Similarities with Japan I-O Table)



Source: Drawn by the authors.

¹⁰ The similarity index of industrial classification was calculated in the following manner. First the intermediate sectors of each country's table were classified into five industrial categories, i.e. (1) Agriculture, fishery & forestry, (2) Mining, (3) Light manufacturing, (4) Heavy & chemical manufacturing, (5) Construction & public utility, (6) Services and the share of each industrial category was calculated. Then the correlation coefficients between Japan and other countries were calculated.

As shown in Figure 1, India's table is one of the least similar tables with the Japan's table. From the results of these simple comparisons, India's table seems to be unique compared with other countries' tables in terms of number of sectors and the sector classification.

Although the quantitative comparisons described above may lead us to conclude that the India's table is quite different from other countries' I-O tables, the definitions and the concepts of industrial sectors are determined by the National Industrial Classification (NIC) that is developed based on the United Nations' International Standard Industrial Classification Revision 3 (ISIC Rev. 3) and thus they are basically comparable with many other countries' I-O tables. However, there also exist the sectors that reflect the economic structures in India. For instance, the major agricultural products like "3 Jowar (sorghum)", "4 Bajra (millet)", "6 Gram", "7 Pulses", "12 Jute" appear as independent sectors. Likewise, peculiar sectors are found in industries such as mining (Manganese ore, Limestone, Mica), textile (Hemp, Carpet weaving) and the transport equipment (cycle-rickshaw).

3.3 The final demand and the value added

The final demand and the value added sectors of India's tables have been unchanged since the first CSO table for 1968/69.

The final demand of the India' table consists of six items, i.e. (1) Private final consumption expenditure (PFCE), (2) Government final consumption expenditure (GFCE), (3) Gross fixed capital formation (GFCF), (4) Changes in stocks (CIS), (5) Exports (EXP) and (6) Imports (IMP). The exports and the imports are valued at the F.O.B. price and the C.I.F. price, respectively. One thing to be noted in the final demand is that GFCE includes the output values of the "government services" while in many countries' tables such as Japan's table, the output values of the government services are distributed to the "Public administration" sector in intermediate transactions, not to the final demand.

The value added of the India's table has only two items, i.e. (1) Net indirect taxes (NIT) and (2) Gross value added (GVA). GVA includes the compensation to employees, the operating surplus, and depreciation of fixed capital.

4. Concluding Remarks

In this paper, the basic features of the India's I-O table have been discussed. Although the India's table has some peculiar features, the definitions and the concepts of sectors are basically comparable with many other countries' tables as it is compiled based on the UN's SNA.

As mentioned above, the other purpose of this chapter is to examine the possibility for compiling the 2005 BRICs international I-O table through investigating the features of India's I-O tables. The review of the India's table in the previous sections has also revealed some issues in compiling the BRICs table from the India's table. In closing, we will mention some of those issues as concluding remarks.

First, the most remarkable feature of the India's table is the reference period. India's table is measured based on fiscal year as the reference period while the BRICs table employs the calendar year.

When compiling the BRICs table, the difference of reference period has to be manipulated.¹¹

Second problem is the valuation. The transactions of the India's table are evaluated at factor costs. However, the transactions among member countries of the BRICs table are valued at the producer's price and the conversion from the factor costs to the producer's price will be required.

Third, the segregation of value added items is also required. As seen in section 3, the value added of the India's table is divided into only two sectors while the BRICs table has four value added sectors. "Operating surplus", "Depreciation" and "Wages and salary" should be segregated from "Other value added".

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¹¹ This may not be a big problem as updating of the India's table from 2003/04 to 2005 is needed when compiling the BRICs table. As long as the mechanical method such as the RAS method is applied for updating, the difference of the reference year may not matter.

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Appendix 1 Layout of 2005 BRICs International Input-Output Table

		Intermediate Demand (A)							Final Demand (F)											
		Brazil	Russia	India	China	Japan	U.S.A.	EU	Brazil	Russia	India	China	Japan	U.S.A.	EU	Export to R.O.W.	Statistical Discrepancy	Total Outputs		
code		(AB)	(AR)	(AG)	(AC)	(AJ)	(AU)	(AO)	(FB)	(FR)	(FG)	(FC)	(FJ)	(FU)	(FO)	(LW)	(QX)	(XX)		
Brazil	(AB)	A ^{BB}	A ^{BR}	A ^{BG}	A ^{BC}	A ^{BJ}	A ^{BU}	A ^{BO}	F ^{BB}	F ^{BR}	F ^{BG}	F ^{BC}	F ^{BJ}	F ^{BU}	F ^{BO}	L ^{BW}	Q ^B	X ^B		
Russia	(AR)	A ^{RB}	A ^{RR}	A ^{RG}	A ^{RC}	A ^{RJ}	A ^{RU}	A ^{RO}	F ^{RB}	F ^{RR}	F ^{RG}	F ^{RC}	F ^{RJ}	F ^{RU}	F ^{RO}	L ^{RW}	Q ^R	X ^R		
India	(AG)	A ^{GB}	A ^{GR}	A ^{GG}	A ^{GC}	A ^{GJ}	A ^{GU}	A ^{GO}	F ^{GB}	F ^{GR}	F ^{GG}	F ^{GC}	F ^{GJ}	F ^{GU}	F ^{GO}	L ^{GW}	Q ^G	X ^G		
China	(AC)	A ^{CB}	A ^{CR}	A ^{CG}	A ^{CC}	A ^{CJ}	A ^{CU}	A ^{CO}	F ^{CB}	F ^{CR}	F ^{CG}	F ^{CC}	F ^{CJ}	F ^{CU}	F ^{CO}	L ^{CW}	Q ^C	X ^C		
Japan	(AJ)	A ^{JB}	A ^{JR}	A ^{JG}	A ^{JC}	A ^{JJ}	A ^{JU}	A ^{JO}	F ^{JB}	F ^{JR}	F ^{JG}	F ^{JC}	F ^{JJ}	F ^{JU}	F ^{JO}	L ^{JW}	Q ^J	X ^J		
U.S.A.	(AU)	A ^{UB}	A ^{UR}	A ^{UG}	A ^{UC}	A ^{UJ}	A ^{UU}	A ^{UO}	F ^{UB}	F ^{UR}	F ^{UG}	F ^{UC}	F ^{UJ}	F ^{UU}	F ^{UO}	L ^{UW}	Q ^U	X ^U		
EU	(AO)	A ^{OB}	A ^{OR}	A ^{OG}	A ^{OC}	A ^{OJ}	A ^{OU}	A ^{OO}	F ^{OB}	F ^{OR}	F ^{OG}	F ^{OC}	F ^{OJ}	F ^{OU}	F ^{OO}	L ^{OW}	Q ^O	X ^O		
Freight and Insurance	(BF)	BA ^B	BA ^R	BA ^G	BA ^C	BA ^J	BA ^U	BA ^O	BF ^B	BF ^R	BF ^G	FA ^C	FA ^J	BF ^U	BF ^O					
Import from the R.O.W.	(CW)	A ^{WB}	A ^{WR}	A ^{WG}	A ^{WC}	A ^{WJ}	A ^{WU}	A ^{WO}	F ^{WB}	F ^{WR}	F ^{WG}	F ^{WC}	F ^{WJ}	F ^{WU}	F ^{WO}					
Duties and Import Commodity Taxes	(DT)	DA ^B	DA ^R	DA ^G	DA ^C	DA ^J	DA ^U	DA ^O	DF ^B	DF ^R	DF ^G	DF ^C	DF ^J	DF ^U	DF ^O					
Value Added	(VV)	V ^B	V ^R	V ^G	V ^C	V ^J	V ^U	V ^O	* Each cell of A** and F** represents a matrix of 26 x 26 and 26 x 4 dimension, respectively.											
Total Inputs	(XX)	X ^B	X ^R	X ^G	X ^C	X ^J	X ^U	X ^O												

Source: Compiled by the authors.

Appendix 2 Sector Classification of 2005 BRICs International I-O Table

Code	Description
INTERMEDIATE SECTORS	
001	Paddy
002	Other agricultural products
003	Livestock and poultry
004	Forestry
005	Fishery
006	Crude petroleum and natural gas
007	Other mining
008	Food, beverage and tobacco
009	Textile, leather, and the products thereof
010	Timber and wooden products
011	Pulp, paper and printing
012	Chemical products
013	Petroleum and petro products
014	Rubber products
015	Non-metallic mineral products
016	Metal products
017	General machinery
018	Computers and electronic equipment
019	Other electrical equipment
020	Transport equipment
021	Other manufacturing products
022	Electricity, gas and water supply
023	Construction
024	Trade and transport
025	Services
026	Public administration
FINAL DEMAND SECTORS	
001	Private consumption
002	Government consumption
003	Gross fixed capital formation
004	Changes in stocks
VALUE ADDED SECTORS	
001	Wages and salary
002	Operating surplus
003	Depreciation
004	Indirect taxes less subsidies

Source: Compiled by the authors.