

## I. GENERAL OUTLINE

The projects on "the Technological Change and International Inter-industrial Inter-dependencies for Asian countries" were launched in 1993 and terminated in 1996, during which eight bilateral international input-output tables of 1990 were produced between Japan and Korea, Thailand, Indonesia, the Philippines, China, Taiwan, Singapore and Malaysia. The projects were initiated for the purpose of providing a general public with comprehensive statistical data on the inter-industrial relationships between Japan and Asian countries.

In 1997, a new project started in order for integrating these previous works into a single mode of presentation, covering not only the nine countries listed above but also the United States of America, who continues to demonstrate her significant economic power in Asian-Pacific region. *The 1990 Asian International Input-Output Table* is designed as such as to depict the industrial network extended over the ten countries and gives a minute picture of input composition and output distribution of each domestic industry vis-à-vis home as well as foreign countries' industries. On the assumption of stable (or linear) technical correlation between input and output, the table also serves as an effective analytical tool for the study of economic repercussion and forward & backward linkages among the countries of concern. Since Asian International Input-Output Table was already made available for the year of 1985, the 1990 table is expected to contribute to the studies on the technological changes that took place among these countries in the last decade or so.

## II. SCHEMATIC IMAGE OF ASIAN INTERNATIONAL INPUT-OUTPUT TABLE

The whole picture of Asian International Input-Output Table, 1990, is given in Figure 1. As seen column-wise, each cell in the table shows input compositions of the industries of respective countries.  $A^I$ , for example, shows the input compositions of Indonesian industries vis-à-vis domestically produced goods and services.  $A^{MI}$ , on the other hand, shows input compositions of Indonesian industries for the imported goods and services from Malaysia. The cells  $A^{PI}$ ,  $A^{SI}$ ,  $A^{TI}$ ,  $A^{CI}$ ,  $A^{NI}$ ,  $A^{KI}$ ,  $A^{JI}$  and  $A^{UI}$  allow the same interpretation for the imports from other countries.

The transaction values thus tabulated are all given at producers' prices of the countries of origin. International freight and insurance paid by Indonesian industries for these import transactions are all recorded in the row vector  $BA^I$ .  $HA^I$  and  $WA^I$  are input compositions of Indonesian industries vis-à-vis imported goods and services from Hong Kong and those from the Rest of the World, and they are given in CIF value. Import duties and import sales taxes levied on all Indonesia's imports are recorded in the row vector  $DA^I$ .

The Value Added items of Indonesian industries are shown in  $V^I$ . The bottom of the column gives  $X^I$ , the Gross Inputs of Indonesian industries.

Turning to the 11<sup>th</sup> column from the left side of the table, it shows the compositions of goods and services that have gone to final demand sectors of Indonesia.  $F^{II}$  and  $F^{MI}$ , for example, maps the inflow into Indonesian final demand sectors, of goods and services domestically produced and of those imported from Malaysia, respectively. The rest of the column is read in the same manner as is done for the 1<sup>st</sup> column of the table.

Seen in row-wise direction, the table shows the output distributions of the commodities produced in each country.  $A^{II}$ ,  $A^{IM}$ ,  $A^{IP}$  etc. now turn to be the output distributions of Indonesian industries, to domestic industries, to Malaysian industries, to the Philippines' industries, and so on.  $F^{II}$  is the distribution of Indonesian goods and services to final demand sectors of Indonesia, and  $F^{IM}$  is to the final demand sectors of Malaysia...., and so on.

$LH^I$ ,  $LE^I$ ,  $LF^I$ ,  $LG^I$ ,  $LL^I$  and  $LW^I$  are Indonesia's export to Hong Kong, the UK, France, West Germany, East Germany and the Rest of the World.  $Q^I$  is the statistical discrepancies and  $X^I$  shows the Gross Outputs of Indonesian industries.

The columns and rows for the other nine countries can be read in the same manner.

Figure 1. Layout Of Asian International Input-Output Table, 1990

code	Intermediate Demand (A)										Final Demand (F)										Export (L)						(XX) Total Outputs					
	(AI)	(AM)	(AP)	(AS)	(AT)	(AS)	(AT)	(AC)	(AN)	(AK)	(AJ)	(AU)	(AI)	(AM)	(AP)	(AS)	(AT)	(AS)	(AT)	(AC)	(AN)	(AK)	(AJ)	(AU)	(FH)	(LE)		(LF)	(LG)	(LH)	(LW)	(QX)
Indonesia	A <sup>II</sup>	A <sup>IM</sup>	A <sup>IP</sup>	A <sup>IS</sup>	A <sup>IT</sup>	A <sup>IC</sup>	A <sup>IN</sup>	A <sup>IK</sup>	A <sup>IU</sup>	A <sup>IU</sup>	A <sup>IU</sup>	F <sup>II</sup>	F <sup>IM</sup>	F <sup>IP</sup>	F <sup>IS</sup>	F <sup>IT</sup>	F <sup>IC</sup>	F <sup>IN</sup>	F <sup>IK</sup>	F <sup>IU</sup>	F <sup>IU</sup>	F <sup>IU</sup>	LH <sup>I</sup>	LE <sup>I</sup>	LF <sup>I</sup>	LG <sup>I</sup>	LH <sup>I</sup>	LW <sup>I</sup>	Q <sup>I</sup>	X <sup>I</sup>		
Malaysia	A <sup>MI</sup>	A <sup>MM</sup>	A <sup>MP</sup>	A <sup>MS</sup>	A <sup>MT</sup>	A <sup>MC</sup>	A <sup>MN</sup>	A <sup>MK</sup>	A <sup>MU</sup>	A <sup>MU</sup>	A <sup>MU</sup>	F <sup>MI</sup>	F <sup>MM</sup>	F <sup>MP</sup>	F <sup>MS</sup>	F <sup>MT</sup>	F <sup>MC</sup>	F <sup>MN</sup>	F <sup>MK</sup>	F <sup>MU</sup>	F <sup>MU</sup>	F <sup>MU</sup>	LH <sup>M</sup>	LE <sup>M</sup>	LF <sup>M</sup>	LG <sup>M</sup>	LH <sup>M</sup>	LW <sup>M</sup>	Q <sup>M</sup>	X <sup>M</sup>		
Philippines	A <sup>PI</sup>	A <sup>PM</sup>	A <sup>PP</sup>	A <sup>PS</sup>	A <sup>PT</sup>	A <sup>PC</sup>	A <sup>PN</sup>	A <sup>PK</sup>	A <sup>PU</sup>	A <sup>PU</sup>	A <sup>PU</sup>	F <sup>PI</sup>	F <sup>PM</sup>	F <sup>PP</sup>	F <sup>PS</sup>	F <sup>PT</sup>	F <sup>PC</sup>	F <sup>PN</sup>	F <sup>PK</sup>	F <sup>PU</sup>	F <sup>PU</sup>	F <sup>PU</sup>	LH <sup>P</sup>	LE <sup>P</sup>	LF <sup>P</sup>	LG <sup>P</sup>	LH <sup>P</sup>	LW <sup>P</sup>	Q <sup>P</sup>	X <sup>P</sup>		
Singapore	A <sup>SI</sup>	A <sup>SM</sup>	A <sup>SP</sup>	A <sup>SS</sup>	A <sup>ST</sup>	A <sup>SC</sup>	A <sup>SN</sup>	A <sup>SK</sup>	A <sup>SU</sup>	A <sup>SU</sup>	A <sup>SU</sup>	F <sup>SI</sup>	F <sup>SM</sup>	F <sup>SP</sup>	F <sup>SS</sup>	F <sup>ST</sup>	F <sup>SC</sup>	F <sup>SN</sup>	F <sup>SK</sup>	F <sup>SU</sup>	F <sup>SU</sup>	F <sup>SU</sup>	LH <sup>S</sup>	LE <sup>S</sup>	LF <sup>S</sup>	LG <sup>S</sup>	LH <sup>S</sup>	LW <sup>S</sup>	Q <sup>S</sup>	X <sup>S</sup>		
Thailand	A <sup>TI</sup>	A <sup>TM</sup>	A <sup>TP</sup>	A <sup>TS</sup>	A <sup>TT</sup>	A <sup>TC</sup>	A <sup>TN</sup>	A <sup>TK</sup>	A <sup>TU</sup>	A <sup>TU</sup>	A <sup>TU</sup>	F <sup>TI</sup>	F <sup>TM</sup>	F <sup>TP</sup>	F <sup>TS</sup>	F <sup>TT</sup>	F <sup>TC</sup>	F <sup>TN</sup>	F <sup>TK</sup>	F <sup>TU</sup>	F <sup>TU</sup>	F <sup>TU</sup>	LH <sup>T</sup>	LE <sup>T</sup>	LF <sup>T</sup>	LG <sup>T</sup>	LH <sup>T</sup>	LW <sup>T</sup>	Q <sup>T</sup>	X <sup>T</sup>		
China	A <sup>CI</sup>	A <sup>CM</sup>	A <sup>CP</sup>	A <sup>CS</sup>	A <sup>CT</sup>	A <sup>CC</sup>	A <sup>CN</sup>	A <sup>CK</sup>	A <sup>CU</sup>	A <sup>CU</sup>	A <sup>CU</sup>	F <sup>CI</sup>	F <sup>CM</sup>	F <sup>CP</sup>	F <sup>CS</sup>	F <sup>CT</sup>	F <sup>CC</sup>	F <sup>CN</sup>	F <sup>CK</sup>	F <sup>CU</sup>	F <sup>CU</sup>	F <sup>CU</sup>	LH <sup>C</sup>	LE <sup>C</sup>	LF <sup>C</sup>	LG <sup>C</sup>	LH <sup>C</sup>	LW <sup>C</sup>	Q <sup>C</sup>	X <sup>C</sup>		
Taiwan	A <sup>NI</sup>	A <sup>NM</sup>	A <sup>NP</sup>	A <sup>NS</sup>	A <sup>NT</sup>	A <sup>NC</sup>	A <sup>NN</sup>	A <sup>NK</sup>	A <sup>NU</sup>	A <sup>NU</sup>	A <sup>NU</sup>	F <sup>NI</sup>	F <sup>NM</sup>	F <sup>NP</sup>	F <sup>NS</sup>	F <sup>NT</sup>	F <sup>NC</sup>	F <sup>NN</sup>	F <sup>NK</sup>	F <sup>NU</sup>	F <sup>NU</sup>	F <sup>NU</sup>	LH <sup>N</sup>	LE <sup>N</sup>	LF <sup>N</sup>	LG <sup>N</sup>	LH <sup>N</sup>	LW <sup>N</sup>	Q <sup>N</sup>	X <sup>N</sup>		
Korea	A <sup>KI</sup>	A <sup>KM</sup>	A <sup>KP</sup>	A <sup>KS</sup>	A <sup>KT</sup>	A <sup>KC</sup>	A <sup>KN</sup>	A <sup>KK</sup>	A <sup>KU</sup>	A <sup>KU</sup>	A <sup>KU</sup>	F <sup>KI</sup>	F <sup>KM</sup>	F <sup>KP</sup>	F <sup>KS</sup>	F <sup>KT</sup>	F <sup>KC</sup>	F <sup>KN</sup>	F <sup>KK</sup>	F <sup>KU</sup>	F <sup>KU</sup>	F <sup>KU</sup>	LH <sup>K</sup>	LE <sup>K</sup>	LF <sup>K</sup>	LG <sup>K</sup>	LH <sup>K</sup>	LW <sup>K</sup>	Q <sup>K</sup>	X <sup>K</sup>		
Japan	A <sup>JI</sup>	A <sup>JM</sup>	A <sup>JP</sup>	A <sup>JS</sup>	A <sup>JT</sup>	A <sup>JC</sup>	A <sup>JN</sup>	A <sup>JK</sup>	A <sup>JU</sup>	A <sup>JU</sup>	A <sup>JU</sup>	F <sup>JI</sup>	F <sup>JM</sup>	F <sup>JP</sup>	F <sup>JS</sup>	F <sup>JT</sup>	F <sup>JC</sup>	F <sup>JN</sup>	F <sup>JK</sup>	F <sup>JU</sup>	F <sup>JU</sup>	F <sup>JU</sup>	LH <sup>J</sup>	LE <sup>J</sup>	LF <sup>J</sup>	LG <sup>J</sup>	LH <sup>J</sup>	LW <sup>J</sup>	Q <sup>J</sup>	X <sup>J</sup>		
U.S.A.	A <sup>UI</sup>	A <sup>UM</sup>	A <sup>UP</sup>	A <sup>US</sup>	A <sup>UT</sup>	A <sup>UC</sup>	A <sup>UN</sup>	A <sup>UK</sup>	A <sup>UU</sup>	A <sup>UU</sup>	A <sup>UU</sup>	F <sup>UI</sup>	F <sup>UM</sup>	F <sup>UP</sup>	F <sup>US</sup>	F <sup>UT</sup>	F <sup>UC</sup>	F <sup>UN</sup>	F <sup>UK</sup>	F <sup>UU</sup>	F <sup>UU</sup>	F <sup>UU</sup>	LH <sup>U</sup>	LE <sup>U</sup>	LF <sup>U</sup>	LG <sup>U</sup>	LH <sup>U</sup>	LW <sup>U</sup>	Q <sup>U</sup>	X <sup>U</sup>		
Freight and Insurance	BA <sup>I</sup>	BA <sup>M</sup>	BA <sup>P</sup>	BA <sup>S</sup>	BA <sup>T</sup>	BA <sup>C</sup>	BA <sup>N</sup>	BA <sup>K</sup>	BA <sup>J</sup>	BA <sup>U</sup>	BA <sup>U</sup>	BF <sup>I</sup>	BF <sup>M</sup>	BF <sup>P</sup>	BF <sup>S</sup>	BF <sup>T</sup>	BF <sup>C</sup>	BF <sup>N</sup>	BF <sup>K</sup>	BF <sup>J</sup>	BF <sup>U</sup>	BF <sup>U</sup>										
Import from Hong Kong	HA <sup>I</sup>	HA <sup>M</sup>	HA <sup>P</sup>	HA <sup>S</sup>	HA <sup>T</sup>	HA <sup>C</sup>	HA <sup>N</sup>	HA <sup>K</sup>	HA <sup>J</sup>	HA <sup>U</sup>	HA <sup>U</sup>	HF <sup>I</sup>	HF <sup>M</sup>	HF <sup>P</sup>	HF <sup>S</sup>	HF <sup>T</sup>	HF <sup>C</sup>	HF <sup>N</sup>	HF <sup>K</sup>	HF <sup>J</sup>	HF <sup>U</sup>	HF <sup>U</sup>										
Import from the R.O.W.	WA <sup>I</sup>	WA <sup>M</sup>	WA <sup>P</sup>	WA <sup>S</sup>	WA <sup>T</sup>	WA <sup>C</sup>	WA <sup>N</sup>	WA <sup>K</sup>	WA <sup>J</sup>	WA <sup>U</sup>	WA <sup>U</sup>	WF <sup>I</sup>	WF <sup>M</sup>	WF <sup>P</sup>	WF <sup>S</sup>	WF <sup>T</sup>	WF <sup>C</sup>	WF <sup>N</sup>	WF <sup>K</sup>	WF <sup>J</sup>	WF <sup>U</sup>	WF <sup>U</sup>										
Import Duty and Sales Tax	DA <sup>I</sup>	DA <sup>M</sup>	DA <sup>P</sup>	DA <sup>S</sup>	DA <sup>T</sup>	DA <sup>C</sup>	DA <sup>N</sup>	DA <sup>K</sup>	DA <sup>J</sup>	DA <sup>U</sup>	DA <sup>U</sup>	DF <sup>I</sup>	DF <sup>M</sup>	DF <sup>P</sup>	DF <sup>S</sup>	DF <sup>T</sup>	DF <sup>C</sup>	DF <sup>N</sup>	DF <sup>K</sup>	DF <sup>J</sup>	DF <sup>U</sup>	DF <sup>U</sup>										
Value Added	V <sup>I</sup>	V <sup>M</sup>	V <sup>P</sup>	V <sup>S</sup>	V <sup>T</sup>	V <sup>C</sup>	V <sup>N</sup>	V <sup>K</sup>	V <sup>J</sup>	V <sup>U</sup>	V <sup>U</sup>																					
Total Inputs	X <sup>I</sup>	X <sup>M</sup>	X <sup>P</sup>	X <sup>S</sup>	X <sup>T</sup>	X <sup>C</sup>	X <sup>N</sup>	X <sup>K</sup>	X <sup>J</sup>	X <sup>U</sup>	X <sup>U</sup>																					

### III. CODING SYSTEM AND TECHNICAL NOTES

#### 1. Coding system

Row	Column	Description	Row	Column	Description
AI001	AI001		CH001		
		Intermediate sectors, Indonesia			Intermediate input from Hong Kong (valued at CIF)
AI056	AI056		CH056		
AI900	AI900	Sub-total (AI001 to AI056)	CH900		Sub-total (CH001 to CH056)
AM001	AM001		CW001		
		Intermediate sectors, Malaysia			Intermediate input from Rest of the World (valued at CIF)
AM056	AM056		CW056		
AM900	AM900	Sub-total (AM001 to AM056)	CW900		Sub-total (CW001 to CW056)
AP001	AP001		DT001		Import duties & import sales tax
		Intermediate sectors, Philippines			
AP056	AP056		ET900	ET900	Total intermediate input or total intermediate output
AP900	AP900	Sub-total (AP001 to AP056)			
AS001	AS001		VV001*2		Wages and salary
		Intermediate sectors, Singapore	VV002*3		Operating surplus
AS056	AS056		VV003		Depreciation of fixed capital
AS900	AS900	Sub-total (AS001 to AS056)	VV004		Indirect taxes less subsidies
			VV900		Sub-total (VV001 to VV004)
AT001	AT001			FI001*4	
		Intermediate sectors, Thailand			Final demands, Indonesia
AT056	AT056			FI004	
AT900	AT900	Sub-total (AT001 to AT056)		FI900	Sub-total (FI001 to FI004)
AC001	AC001			FM001	
		Intermediate sectors, China*1			Final demands, Malaysia
AC056	AC056			FM004	
AC900	AC900	Sub-total (AC001 to AC056)		FM900	Sub-total (FM001 to FM004)
AN001	AN001			FP001	
		Intermediate sectors, Taiwan			Final demands, Philippines
AN056	AN056			FP004	
AN900	AN900	Sub-total (AN001 to AN056)		FP900	Sub-total (FP001 to FP004)
AK001	AK001			FS001	
		Intermediate sectors, Korea			Final demands, Singapore
AK056	AK056			FS004	
AK900	AK900	Sub-total (AK001 to AK056)		FS900	Sub-total (FS001 to FS004)
AJ001	AJ001			FT001	
		Intermediate sectors, Japan			Final demands, Thailand
AJ056	AJ056			FT004	
AJ900	AJ900	Sub-total (AJ001 to AJ056)		FT900	Sub-total (FT001 to FT004)
AU001	AU001			FC001	
		Intermediate sectors, the U.S.A.			Final demands, China
AU056	AU056			FC004	
AU900	AU900	Sub-total (AU001 to AU056)		FC900	Sub-total (FC001 to FC004)
BF001		International Freight & Insurance			

Row	Column	Description	Row	Column	Description
FN001		Final demands, Taiwan	FU001*5		Final demands, the U.S.A.
FN004			FU004		
FN900		Sub-total (FN001 to FN004)	FU900		Sub-total (FU001 to FU004)
FK001		Final demands, Korea	LH001		Export to Hong Kong
FK004			LE001		Export to the United Kingdom
FK900		Sub-total (FK001 to FK004)	LF001		Export to France
FJ001		Final demands, Japan	LG001		Export to West Germany
FJ004			LL001		Export to East Germany
FJ900		Sub-total (FJ001 to FJ004)	LW001		Export to the Rest of the World
			QX001*6		Statistical discrepancies
			XX600	XX600	Total input, Total output

- \*1 In China part, many row-wise cells of AC053A (Wholesale and retail trade) show negative figures because in China, F.O.B. prices of some export commodities are lower than producer's prices, which is mainly caused from the Chinese preferential policies to exporting enterprises (tax concessions, subsidies and other privileges).
- \*2 In Malaysian part, VV001 includes wages and salary, operating surplus, depreciation of fixed capital, and indirect taxes less subsidies.
- \*3 In U.S.A. part, VV002 includes operating surplus and depreciation of fixed capital less subsidies and VV004 includes only indirect taxes.
- \*4 Common final demand items are as follows:
- 001 Private consumption
  - 002 Government consumption
  - 003 Gross domestic fixed capital formation
  - 004 Increase in stocks.
- \*5 In U.S.A. part, FU002 includes government consumption and government gross domestic fixed capital formation, and FU003 includes only private gross domestic fixed capital formation.
- \*6 For Singaporean industries' output distribution, most of the large discrepancies are accounted for by the prominence of re-export.

## 2. Sector Classification (Intermediate Sectors)

7 Sector classification		24 Sector classification		Basic classification	
Code	Description	Code	Description	Code	Description
001	Agriculture, livestock, forestry and fishery	001	Paddy	001	Paddy
		002	Other agricultural products*	002	Cassava
				004	Sugar cane and beet
				005	Oil palm and coconuts
				006	Fiber crops
007A	Other grain				
007B	Other food crops				
008	Other commercial crops				
003	Livestock	009	Livestock and poultry		
004	Forestry	010	Forestry		
005	Fishery	011	Fishery		
002	Mining and quarrying	006	Crude petroleum and natural gas	012	Crude petroleum and natural gas
		007	Other mining	013	Copper ore
				014	Tin ore
				015A	Iron ore
				015B	Other metallic ore
016	Non-metallic ore and quarrying				
003	Manufacturing	008	Food, beverage and tobacco	017	Oil and fats
				018	Milled rice
				019	Other milled grain and flour
				020	Sugar
				021A	Fish products
				021B	Slaughtering, meat products and dairy products
				021C	Other food products
				022A	Beverage
		022B	Tobacco		
		009	Textile, leather, and the products thereof	023	Spinning
				024	Weaving and dyeing
				025	Knitting
				026	Wearing apparel
		027	Other made-up textile products		
		028	Leather and leather products		
		010	Timber and wooden products	029	Timber
030A	Wooden furniture				
030B	Other wooden products				
011	Pulp, paper and printing	031	Pulp and paper		
		032	Printing and publishing		
012	Chemical products	033A	Synthetic resins and fiber		
		033B	Other basic industrial chemicals		
		034	Chemical fertilizers and pesticides		
		035A	Drugs and medicine		
035B	Other chemical products				
013	Petroleum and petro products	036	Refined petroleum and its products		
014	Rubber products	003	Natural rubber		
		037	Tires and tubes		
		038	Other rubber products		
015	Non-metallic mineral products	039	Cement and cement products		
		040	Glass and glass products		
		041	Other non-metallic mineral products		
016	Metal products	042	Iron and steel		

## 2. Sector Classification (Continued)

7 Sector classification		24 Sector classification		Basic classification	
Code	Description	Code	Description	Code	Description
				043	Non-ferrous metal
				044	Metal products
		017	Machinery	045A	Agricultural machinery and equipment
				045B	Specialized industrial machinery
				045C	Ordinary industrial machinery
				045D	Heavy electric machinery
				045E	Engines and turbines
				046A	Electronics and electronic products
				046B	Other electric machinery and appliance
		018	Transport equipment	047A	Motor vehicles
				047B	Motor cycles and bicycles
				048A	Aircrafts
				048B	Shipbuilding
				048C	Other transport equipment
		019	Other manufacturing products	049	Precision machines
				050A	Plastic products
				050B	Other manufacturing products
004	Electricity, gas, and water supply	020	Electricity, gas, and water supply	051	Electricity, gas and water supply
005	Construction	021	Construction	052A	Building construction
				052B	Other construction
006	Trade and transport	022	Trade and transport	053A	Wholesale and retail trade
				053B	Transportation
007	Services	023	Services	054A	Telephone and telecommunication
				054B	Finance and insurance
				054C	Education and research
				054D	Other services
				056	Unclassified
		024	Public administration	055	Public administration

\* In Malaysia and the U.S.A. part, "paddy" is included in this sector.

3. Converter table between Uniform I-O classification and National I-O classifications

UIO	Description	National I-O Code									
		Indonesia	Malaysia	The Philippines	Singapore	Thailand	China	Taiwan	Korea	Japan	U.S.A. <sup>1</sup>
<b>&lt;Intermediate transaction&gt;</b>											
001	Paddy	001	001A 005A	001		001	001A	1001	001	011101	
002	Cassava	003	001B 005B	003		004	001B				
003	Natural rubber	011 096	002	014		016	002A 004A		014	0116091	
004	Sugar cane and beet	012	001C 005C	010		009	001C	1003		011501	013
005	Oil palm and coconuts	013 014	003 004	009		010 011	001D				
006	Fiber crops	015	001D 005D	012		012 013	001E	1004A	010	0116092	005
007A	Other grain	002 010A	001E 005E	002 015		002 003	001F	1002A	002 003 004	011102 011103	006
007B	Other food crops	004 005 006 007 008 009 019 020 049A	001F 005F	003A 004 005 006 007 008 013		005 006 007 008 015	001G	1002B 1004B 1005 1006 1007A	005 006 007 008 009	011201 011202 0113001 011301 011302 011401 011502 011509	010 011 012 013 014 015
008	Other commercial crops	016 017 018 021 057A	001G 005G	011 056 015A	002 003	014 017	001H	1002C 1004C 1007B 1033A	011 012 013 015 016	011601 011602 011603 011604 0116093	007 008 009 017
009	Livestock and poultry	022 023 024 025	001H 005H 006	016 017 018 019 020	001	018 019 020 021 022 023	003	1008 1009A	017 018 019 020 021 022 023	012101 012102 012103 012104 012105 012109 012201	001 002 003 004
010	Forestry	026 027 028	007	024		025 026 027	002B 004B	1007C 1011	025 026 027 028 029	022101 022101 022101	016 018 169
011	Fishery	029 030	008	022 023	004 005	028 029	005	1012	030 031 032 033 034	0311001 0311002 031101 031102 031103 031104 0312001 031201 031202	019
012	Crude petroleum and natural gas	033 034 095	009	031		031	007	1014	037 038	072101 073101	026 027
013	Copper ore	038	010A	026			009A		040	0612011	023
014	Tin ore	035	010B	029		033	009B				
015A	Iron ore	040A	010C	029A		032	008	1015A	039	061101	022
015B	Other metallic ore	036 037 039 040B	010D	025 027 028 029		034 035	009C	1015B	041 042 043	0612012 0612019	024
016	Non-metallic ore and quarrying	032 041 042 043	011	030 032 034	006	030 036 037 038 039 040 041	006 010 011	1013 1017	035 036 044 045 046 047 048 049 050	062101 062109 062201 062909 071101	025 028 029 030 031 032
017	Oil and fats	049B	016	040 041	012	047 048	004C 014A	1018A 1019	072 073	111203 111305 111704	130 131 132 133
018	Milled rice	050	017A	042		049	004D 014B	1021	062	1114011	114
019	Other milled grain and flour	010B 051 052	017B	043	013	050 051 052	004E 014C	1020A	063 064	1114019 111402	109
020	Sugar	055	020A 021A	045	017	055	018	1022	065 066	111701	119
021A	Fish products	031	015	039	011	046	017	1025	057	111301	101

3. Converter table between Uniform I-O classification and National I-O classifications (continued)

UIO	Description	National I-O Code									
		Indonesia	Malaysia	The Philippines	Singapore	Thailand	China	Taiwan	Korea	Japan	U.S.A. <sup>1</sup>
		048						1030A	058 059 060 061	111302 111303 111304 111309	106
021B	Slaughtering, meat products and dairy products	044 045 046	012 013	035 036 037	007 008 009	042 043 044	004F 015 016 021A	1018B 1024A 1028	051 052 053 054 055 056	111101 111201 111202 111204	093 094 095 096 097 098 099 100
021C	Other food products	047 053 054 056 059 060 061 063A	014 018 019 020B 021B 022	033 038 044 046 047 049 050	010 014 015 016 018 020 021 022 023	045 053 054 056 057 058 060 061	019 023	1009B 1016 1023 1024B 1026 1027 1029 1030B 1031A	067 068 069 070 071 074 075 076 077 078 079 081 083 084 085 092	111501 111502 111503 111601 111602 111702 111703 111705 111706 111901 111902 111903 111909 112903 113101	102 103 104 105 107 108 110 111 112 113 115 116 117 118 120 121 122 123 129 135 136 137 138 139
022A	Beverage	057B 058 062 063B	023 024	048 051 052 053	019 024 025	059 062 063 064	020 021B	1030C 1031B 1032	080 082 086 087 088 089 090 091	112101 112102 112103 112104 112109 112901 112902	124 125 126 127 128 134
022B	Tobacco	064 065	025	054 055	026	065 066	022	1033B	093	114101	140 141 142 143
023	Spinning	066	026A	057	027	067	024A 025A 027A	1034A 1035A 1036A 1040A	094 095 096 097 098 099 100	151101 151102 151103 151104 151109	146 147
024	Weaving and dyeing	067	026B	057A	028	068 069	024B 025B 027B	1034B 1035B 1036B 1039 1040B	101 102 103 104 105 106 107 109	151201 151202 151203 151209 151401	144 145 150
025	Knitting	069	027	058	029	071	026	1037 1038	108 110 111 112	151301	154 155 156 157 158 159
026	Wearing apparel	070	029	064 065	030 031 033	072	004G 028A	1035 1041	116	152101	160
027	Other made-up textile products	068 071	028	059 060 061 062 063 066	032 034	070 073 074	004H 028B	1040C 1042 1045A	113 114 115 118	1519013 151902 151903 151909 152201 152901 152909	148 149 151 152 153 161 162 163 164 165



3. Converter table between Uniform I-O classification and National I-O classifications (continued)

UIO	Description	National I-O Code									U.S.A. <sup>1</sup>
		Indonesia	Malaysia	The Philippines	Singapore	Thailand	China	Taiwan	Korea	Japan	
											166 167 168
028	Leather and leather products	072 073	030 031	067 068	035 036	075 076 077	029	1043 1044 1045B	117 119 120 121 123 124	241101 241201 241202	256 257 258 259 260 261 262 263 264
029	Timber	074	032	069	037	078	012 030A	1046 1047A	125	161101	170
030A	Wooden furniture	077	034	076	042	080	004I 031A	1049	131	171101	174 184 185 186 187 189 190
030B	Other wooden products	075 076 078 079	033	070 071 072 073 074 075	038 039 040 041	079	004J 030B 031B	1047B 1048	126 127 128 129 130	161102 161103 161909 171102	171 172 173 175 176 177 179 180 181 182 183 193
031	Pulp and paper	080 081 082	035	077 078 079	043 044	081 082	032	1050 1051	132 133 134 135 136 137 138 139 140 141 142	181101 181201 181301 181302 181303 182101 182109 182901 182909	197 198 199 200 201 202 204 205 206 207
032	Printing and publishing	083	036	080 081 082	045 046 047 048	083	033 102A	1052 1053	143 144 145	191101 191102 191103	208 209 210 211 212 213 216 217 218 219
033A	Synthetic resins and fiber	087	037A 038A 039A 040A 041A 046A	085	064	086	043A 045	1057A 1058 1059	153 154 160 161	204101 204102 204103 204109 205101 205102	234 236 237
033B	Other basic industrial chemicals	084	037B 038B 039B 040B 041B 046B	083	049 050	084	039 041 043B	1054A 1055A 1056A 1060A	146 147 148 149 150 152 155 156 158 159	202101 202901 202903 202909 203101 203102 203201 203202 203301 203902 203903 203904 203909	220 221 222 223 224 225
034	Chemical fertilizers and pesticides	085 086	037C 038C 039C 040C 041C 046C	084 086		085	040	1054B 1056B 1063	157 162 163 164 165	113102 201101 201102 201103 207401	225 226 227
035A	Drugs and medicine	089 090	037D 038D 039D 040D 041D	088	052	088	044	1062	166	206101	238

3. Converter table between Uniform I-O classification and National I-O classifications (continued)

UIO	Description	National I-O Code										
		Indonesia	Malaysia	The Philippines	Singapore	Thailand	China	Taiwan	Korea	Japan	U.S.A. <sup>1</sup>	
035B	Other chemical products		046D									
		088	037E	087	051	087	042	1055B	167	202902	088	
		091	038E	089	053	089		1060B	168	203905	091	
		092	039E	090	054	090		1061	169	207101	228	
		093	040E		055	091		1064	170	207102	229	
			041E		056	092		1065	171	207201	230	
			046E		057				172	207202	231	
					061					173	207301	232
										175	207901	233
										176	207902	239
											207909	240
											241	
											242	
									243			
036	Refined petroleum and its products	040C	042	091	058	093	036	1066	151	203901	244	
		094		092	059	094	037	1067	177	211101	245	
		104A					038A		178	212101	246	
									179	212102	247	
									180		248	
									181		249	
									182			
									183			
									184			
									185			
037	Tires and tubes	097	043A	093	062	096	046A	1068A	188	231101	250	
			044A									
038	Other rubber products	098	043B	094	060	095	046B	1060C	122	231901	251	
			044B	095	063	097	047	1068B	189	231909	252	
									190		255	
039	Cement and cement products	103	048	099	071	102	050	1073	200	252101	267	
		104B				103	051	1074	201	252201	277	
									202	252301	278	
											279	
040	Glass and glass products	101	047A	098	069	100	053A	1072	194	251101	265	
			049A		070				195	251201	266	
									196	251909		
									197			
041	Other non-metallic mineral products	100	047B	097	068	099	052	1057B	198	253101	268	
		102	049B	100	072	101	054	1071	199	259901	269	
		104		101	073	104	055	1075	203	259902	270	
				102	074		056		204	259903	271	
									205	259904	272	
									206	259909	273	
									207		274	
									208		275	
									209		276	
											280	
											281	
											282	
										283		
										284		
								285				
								286				
								287				
								288				
								289				
								386				
042	Iron and steel	105	050	103	075	105	057	1076	210	261101	289	
		106			076	106		1077	211	261102	290	
									212	261103	291	
									213	261104	292	
									214	2612011	293	
									215	262101	294	
									216	262201	295	
									217	262301	296	
									218	262302	297	
									219	263101		
									220	263102		
									221	263103		
									222	264901		
										264909		
		043	Non-ferrous metal	107	051	104	077	107	058	1079	223	271101
108					110			1083A	224	271102	299	
								1085	225	271103	300	
								1093A	226	271104	301	
									227	271109	302	
									228	2712011	303	
									229	272101	304	
									230	272201	305	
									231	272202	306	
									272	272203	307	
										272204	308	
										272209	309	

3. Converter table between Uniform I-O classification and National I-O classifications (continued)

UIO	Description	National I-O Code									
		Indonesia	Malaysia	The Philippines	Singapore	Thailand	China	Taiwan	Korea	Japan	U.S.A. <sup>1</sup>
044	Metal products	109	052	105	078	108	059	1078	232	171103	188
		110	053	106	079	109	060	1080	233	281101	191
		111	054	107	080	110		1081A	234	281201	192
		112		108	081	111		1082A	235	289101	194
				109	082			1083B	236	289901	195
				110	083			1084	237	289902	196
				130	084				238	289903	310
					085				239	289909	311
					086				240		312
					087				241		313
					088				242		314
					089				243		315
					119				244		316
									245		317
											318
											319
											320
											321
											322
											323
											324
									325		
									326		
									327		
									328		
									329		
									330		
									331		
									332		
									333		
									334		
									335		
									336		
045A	Agricultural machinery and equipment	114A	055A	111		113	064	1089A	257	302901	339
		114B	056A								340
		114C									
045B	Specialized industrial machinery	114A	055B	112	094	114	062	1087A	254	302101	341
		114B	056B		095	115	063	1088A	255	302201	342
		114C					066	1089B	256	302301	343
									258	302401	348
									259	302402	349
									261	302902	356
									262	302903	357
									263	302909	358
									264	311201	359
											360
											361
									377		
									378		
									381		
045C	Ordinary industrial machinery	114A	055C	114	092		065C	1081B	248	301201	344
		114B	056C	115	093		067	1082B	249	301301	345
		114C			096			1086A	250	301901	346
								1087B	252	301902	350
								1088B	253	301903	351
								1089C	260	301909	352
								1090		303101	354
								1091		303102	355
										303109	362
											363
											364
									365		
									366		
									367		
									368		
									369		
									370		
									372		
									379		
									380		
045D	Heavy electric machinery	115	057A	115A	097	117	072	1093B	268	341101	353
		116	058A		098		074A	1097A	269	341102	382
			059A		099				270	341103	383
									271	341109	384
									275		385
045E	Engines and turbines	113	057B	114A		112	061	1086B	246	301101	337
			058B	106A					247	301102	338
			059B							301103	
046A	Electronics and electronic products	117	057C	113	090	116	073	1089D	174	311101	373
			058C	116	091	118	075	1094	265	311109	374
			059C	119	100	119	076	1095	266	321101	375
					101		077	1096	267	321102	376
					102			1097B	281	321103	397
					103					321201	398
								1103A	282		

3. Converter table between Uniform I-O classification and National I-O classifications (continued)

UIO	Description	National I-O Code									
		Indonesia	Malaysia	The Philippines	Singapore	Thailand	China	Taiwan	Korea	Japan	U.S.A. <sup>1</sup>
					104 105 106 107				283 284 285 286 287 288 289 290 291 292 293	321209 331101 331102 332101 332102 332109 333101 333201 334101 335901 335909	399 400 401 402 403 407 431 432
046B	Other electric machinery and appliance	118 119 120	057D 058D 059D	117 118 120	108 109 111	120 121 122	074B	1092	273 274 276 277 278 279 280	321109 342101 342102 342103 342104 342105 342109	387 388 389 390 391 392 393 394 395 396 404 405 406 408
047A	Motor vehicles	123 159A	061	122 123 124	171 112 113	125 127	069	1099 1146A	298 299 300 301 302	351101 352101 354101 354102 354103 851510	347 409 410 411 412
047B	Motor cycles and bicycles	124 125	062A	125	114	126	065A 071A	1100 1101 1147A	309 310	353101 362901	419
048A	Aircraft	126	062B	126A	120	128	071B	1102A	308	362201 362210	413 414 415
048B	Shipbuilding	121	060	121	115 116 117 118	123	070	1098	303 304 305	361101 361102 361103 361110	416 417
048C	Other transport equipment	122	063	126		124	068 071C	1102B	306 307 311	362101 362110 362909	418 420 421 422
049	Precision machines	127	064	127 128 129 134	121 122 123	129 130 131	065B 078 053B	1103B	294 295 296 297	371101 371109 371201 371901 371902 371903	371 423 424 425 426 427 428 429 430 433 434 435 436
050A	Plastic products	099	045	096	065 066 067	098	048 049	1069 1070	191 192 193	221101 231902	253 254
050B	Other manufacturing products	128 129 130 131	065	131 132 133 135 136 137	124 125 126 127 128	132 133 134	004K 034 080 081	1104	251 312 313 314 315 316 317	391101 391102 391901 391902 391903 391904 391905 391906 391909	087 089 090 092 178 203 214 215 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451

3. Converter table between Uniform I-O classification and National I-O classifications (continued)

UIO	Description	National I-O Code									
		Indonesia	Malaysia	The Philippines	Singapore	Thailand	China	Taiwan	Korea	Japan	U.S.A. <sup>1</sup>
											452 453 454
051	Electricity, gas, and water supply	132 133	066 067	139 140	129 130 131	135 136 137	013 035 038B	1105 1106 1107	318 319 320 321 322 323 324	5111001 511101 511102 511103 511104 512101 512201 521101 521102 521103	465 466 467 468 528 531
052A	Building construction	134	068A	138	132	138 139	082A 095	1108 1109	325 326 327 328 329	411101 411102 411201 411202 412101	033 034 035 036 037 038 039 040 041 042 043 044 045 046 047 048 049 050 051 061 070 071 072 073 074 075 076 077 078 079 080 081 082 083 084 085 086
052B	Other construction	135 136 137 138	068B	138A	133	140 141 142 143 144	082B	1110 1111	330 331 332 333 334 335 336 337 338 339 340 341	413101 413102 413103 413201 413202 413203 413209	052 053 054 055 056 057 058 059 060 062 063 064 065 066 067 068 069
053A	Wholesale and retail trade	139	069	141	134	145 146	093	1112 1113 1114	342 343	611101 611201	469 470
053B	Transportation	142 143 144 145 146 147	071	142 143 144 145 146 147	137 138 139 140 141 142 143 144	149 150 151 152 153 154 155 156 157 158	083 084 085 086 089 090 091 092	1116 1117 1118 1119 1120 1121 1146B	346 347 348 349 350 351 352 353 354 355 356 357 358	711101 711201 712101 712102 712201 712202 714101 714201 714301 715101 716101 717101 717901 717902	455 456 457 458 459 460 461 462 530

3. Converter table between Uniform I-O classification and National I-O classifications (continued)

UIO	Description	National I-O Code									
		Indonesia	Malaysia	The Philippines	Singapore	Thailand	China	Taiwan	Korea	Japan	U.S.A. <sup>1</sup>
										717903 717904 717905 717909	
054A	Telephone and telecommunication	148	072	148 149 150	145	159	088	1122 1123	359 360	731101 731201 731202 731909	463 527
054B	Finance and insurance	149 150	073 074 075	151 152 153 154	146 147 148 149 150	160 161 162	105	1124 1125 1126A	361 362 363 364 365	621101 621201 621202	471 472 473 474 475
054C	Education and research	154	079 092	163 175	163	167 168	101 103	1138 1139	378 379 380 381 382	821101 821102 821301 821302 821303 821304 822101 822102 822103 822104 822105 822106	516 517 518 523 524
054D	Other services	140 141 151 152 155 156 157 158 159B 160	070 076 077 078 080 081 082 083 084 085 086 087 088 093 094	021 155 156 157 158 159 160 161 162 164 165 166 167 168 169 170 171 172 173 174 176	135 136 151 152 153 154 155 156 157 158 159 160 161 162 164 165 166 167 168 169 170 171 172 173	024 147 148 163 164 166 169 170 171 172 173 174 175 176 177 178	094 096 097 098 099 100 102B 104	1010 1115 1126B 1127 1128 1129 1130 1131 1132 1133 1134 1135 1137 1140 1141 1142 1143 1144 1145 1147B 1148 1149	024 344 345 366 367 368 369 370 371 372 373 374 375 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402	013101 013102 521201 521202 641101 641102 642101 732101 732102 732103 831101 831102 831103 831201 831202 831203 831301 831302 831303 831304 841101 841102 851101 851201 851202 851301 851401 851901 851902 851903 851904 851909 861101 861102 861103 861104 861105 861106 861107 861109 861201 861202 861203 861301 861901 861902 861903 861904 861905 861906 861907 861908 861909	020 021 464 476 477 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 519 520 521 522 525 526 529 532 538
055	Public administration	153	089 090 091 095 096	177	161	165	106	1136	376 377	811101 811201	536
056	Unclassified	161			174	180	087	1150	405	900000	478

3. Converter table between Uniform I-O classification and National I-O classifications (continued)

UIO	Description	National I-O Code									
		Indonesia	Malaysia	The Philippines	Singapore	Thailand	China	Taiwan	Korea	Japan	U.S.A. <sup>*1</sup>
											533 534 535 539 540 541 537
<b>&lt;Value Added&gt;</b>											
VV001	Wages and salaries	201	098 100 104	C	3178	201	202 203 205 <sup>*2</sup>	4001	407	9311000 9312000 9313000	551
VV002	Operating surplus	202		OS	3179	202	204A	4002	408	9412000	553
VV003	Depreciation of fixed capital	203		D	3180	203	201	4008	409	9420000	
VV004	Indirect Taxes less subsidies	204 205		IT-S	3177 3181	204	204B	4009	410 411	9430000 9440000	552
<b>&lt;Final Demand&gt;</b>											
FX001	Private consumption	301	101	PCE	4177	301	301	4001	407	912100 912200	561
FX002	Government consumption	302	102 103 104	GCE	4178	302	302B <sup>*3</sup>	4002	408	913010 913020	567 568 569 570 571 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590
FX003	Gross domestic fixed capital formation	303	106	GFCF	4179	303	303	4003	409 410	914100 914200	562
FX004	Changes in stock	304	105	CS	4180	304	304 402	4004	411	915010 915020 915030 915040 915050	563
	Sectors for special treatment						302A <sup>*4</sup>			<sup>*5</sup> 921110 921120 921200 921300 <sup>*6</sup> 713101 713201 851610 890000 911000 9110010 9110020 9110030	

\*1 1990 U.S. updated table is compiled by the Interindustry Economic Research Fund, Inc., University of Maryland (INFORUM).

\*2 Same amount of 302A is deducted from this item to fulfill the requirement of the System of National Accounts (SNA).

\*3 This sector is separated from the '302 Social consumption' in the Chinese national table, which consists of 'Government consumption(302B)' and 'Business consumption (302A)'.

\*4 This item is distributed to intermediate sectors. As a result of this treatment, the total of final demand (GNE) and of value added (GNP) in China part are smaller by 3.9 percent than that in the Chinese national table.

\*5 Export to Rest of the World

\*6 Unallocated Japanese sectors

#### 4. Technical Notes on Analytical Tables

In this publication, some appendant tables are presented for analytical purpose. The definitions and calculation formulae for these tables are given as follows.

##### (1) Input Coefficient Matrix and Inverse Matrix

Taking up the intermediate transaction segment given in Figure 1, set

$$\mathbf{X} = (x_i^{\alpha \beta}) = \begin{pmatrix} A^{II} & A^{IM} & A^{IP} & A^{IS} & A^{IT} & A^{IC} & A^{IN} & A^{IK} & A^{IJ} & A^{IU} \\ A^{MI} & A^{MM} & A^{MP} & A^{MS} & A^{MT} & A^{MC} & A^{MN} & A^{MK} & A^{MJ} & A^{MU} \\ A^{PI} & A^{PM} & A^{PP} & A^{PS} & A^{PT} & A^{PC} & A^{PN} & A^{PK} & A^{PJ} & A^{PU} \\ A^{SI} & A^{SM} & A^{SP} & A^{SS} & A^{ST} & A^{SC} & A^{SN} & A^{SK} & A^{SJ} & A^{SU} \\ A^{TI} & A^{TM} & A^{TP} & A^{TS} & A^{TT} & A^{TC} & A^{TN} & A^{TK} & A^{TJ} & A^{TU} \\ A^{CI} & A^{CM} & A^{CP} & A^{CS} & A^{CT} & A^{CC} & A^{CN} & A^{CK} & A^{CJ} & A^{CU} \\ A^{NI} & A^{NM} & A^{NP} & A^{NS} & A^{NT} & A^{NC} & A^{NN} & A^{NK} & A^{NJ} & A^{NU} \\ A^{KI} & A^{KM} & A^{KP} & A^{KS} & A^{KT} & A^{KC} & A^{KN} & A^{KK} & A^{KJ} & A^{KU} \\ A^{JI} & A^{JM} & A^{JP} & A^{JS} & A^{JT} & A^{JC} & A^{JN} & A^{JK} & A^{JJ} & A^{JU} \\ A^{UI} & A^{UM} & A^{UP} & A^{US} & A^{UT} & A^{UC} & A^{UN} & A^{UK} & A^{UJ} & A^{UU} \end{pmatrix}$$

where  $\alpha$  denotes a code of the country to supply goods and services;  
 $\beta$  denotes a code of the country to demand goods and services;  
 $i$  denotes the  $i$ -th industry of country  $\alpha$ , given  $1 \leq i \leq n$ ;  
 $j$  denotes the  $j$ -th industry of country  $\beta$ , given  $1 \leq j \leq n$ ;  
and  $n$  is the number of industries.

Then,  $\mathbf{X}$  is a square matrix with the size of  $(10 * n) \times (10 * n)$ .

Let  $\mathbf{x}'$  be the transposed vector of the gross output  $\mathbf{x}$ , also shown at the bottom of Figure 1; that is,

$$\mathbf{x}' = (x_1^I \cdots x_n^I, x_1^M \cdots x_n^M, \cdots, x_1^\beta \cdots x_n^\beta, \cdots, x_1^J \cdots x_n^J, x_1^U \cdots x_n^U).$$

The "Input Coefficient Matrix" is defined as

$$\mathbf{A} = (a_i^{\alpha \beta})$$

where  $a_i^{\alpha \beta} = x_i^{\alpha \beta} / x_j^\beta$

Then, "Inverse Matrix"  $\mathbf{B}$ , known as "Leontief Inverse", is defined as

$$\mathbf{B} = (b_i^{\alpha \beta}) = (\mathbf{I} - \mathbf{A})^{-1} = \begin{pmatrix} B^{II} & B^{IM} & B^{IP} & B^{IS} & B^{IT} & B^{IC} & B^{IN} & B^{IK} & B^{IJ} & B^{IU} \\ B^{MI} & B^{MM} & B^{MP} & B^{MS} & B^{MT} & B^{MC} & B^{MN} & B^{MK} & B^{MJ} & B^{MU} \\ B^{PI} & B^{PM} & B^{PP} & B^{PS} & B^{PT} & B^{PC} & B^{PN} & B^{PK} & B^{PJ} & B^{PU} \\ B^{SI} & B^{SM} & B^{SP} & B^{SS} & B^{ST} & B^{SC} & B^{SN} & B^{SK} & B^{SJ} & B^{SU} \\ B^{TI} & B^{TM} & B^{TP} & B^{TS} & B^{TT} & B^{TC} & B^{TN} & B^{TK} & B^{TJ} & B^{TU} \\ B^{CI} & B^{CM} & B^{CP} & B^{CS} & B^{CT} & B^{CC} & B^{CN} & B^{CK} & B^{CJ} & B^{CU} \\ B^{NI} & B^{NM} & B^{NP} & B^{NS} & B^{NT} & B^{NC} & B^{NN} & B^{NK} & B^{NJ} & B^{NU} \\ B^{KI} & B^{KM} & B^{KP} & B^{KS} & B^{KT} & B^{KC} & B^{KN} & B^{KK} & B^{KJ} & B^{KU} \\ B^{JI} & B^{JM} & B^{JP} & B^{JS} & B^{JT} & B^{JC} & B^{JN} & B^{JK} & B^{JJ} & B^{JU} \\ B^{UI} & B^{UM} & B^{UP} & B^{US} & B^{UT} & B^{UC} & B^{UN} & B^{UK} & B^{UJ} & B^{UU} \end{pmatrix}$$



(2) Forward and Backward Linkages Effects

(i) Forward Linkages Effects (  $\mathbf{FE}_i^\alpha$  )

Firstly, the row-totals vector  $\mathbf{b}_i^\alpha$  is calculated from the inverse matrix  $\mathbf{B} = ( b_{ij}^{\alpha\beta} )$  as

$$\mathbf{b}_i^\alpha = \sum_{\beta} \sum_{j=1}^n b_{ij}^{\alpha\beta}$$

Then, "Forward Linkages Effects" of the i-th industry of the country  $\alpha$  is defined as

$$\mathbf{FE}_i^\alpha = \mathbf{b}_i^\alpha / \frac{\sum_{\alpha} \sum_i \mathbf{b}_i^\alpha}{10 * n}$$

(ii) Backward Linkages Effects(  $\mathbf{BE}_j^\beta$  )

Similarly, the column-totals vector  $\mathbf{b}_j^\beta$  is calculated by

$$\mathbf{b}_j^\beta = \sum_{\alpha} \sum_{i=1}^n b_{ij}^{\alpha\beta}$$

Then, "Backward Linkages Effects" of the j-th industry of the country  $\beta$  is defined as

$$\mathbf{BE}_j^\beta = \mathbf{b}_j^\beta / \frac{\sum_{\beta} \sum_j \mathbf{b}_j^\beta}{10 * n}$$

(3) Impact of Final Demand on Gross Output

Let  $\mathbf{f}^\alpha$  be a column vector of final demand sub-totals of, or an export vector to, a country  $\alpha$ , or the vector of statistical discrepancies, with the column length of  $10 * n$ . Then, "Impact of Final Demand on Gross Output" is defined as

$$\mathbf{IFx}^\alpha = \mathbf{B} \cdot \mathbf{f}^\alpha$$

where  $\mathbf{B}$  is the "Inverse Matrix" as defined in the section (1).

(4) Impact of Final Demand on Gross Value Added

Let  $\mathbf{v}$  be a vector of total value added by sector, that is,

$$\mathbf{v} = (v_1^I \cdots v_n^I, v_1^M \cdots v_n^M, \dots, v_1^\beta \cdots v_n^\beta, \dots, v_1^J \cdots v_n^J, v_1^U \cdots v_n^U)$$

where the superscript of each element denotes "country" and the subscript denotes "industry". Then, the vector of value added ratios  $\mathbf{v}$  is defined as

$$\mathbf{v} = (v_1^I \cdots v_n^I, v_1^M \cdots v_n^M, \dots, v_1^\beta \cdots v_n^\beta, \dots, v_1^J \cdots v_n^J, v_1^U \cdots v_n^U)$$

and  $v_i^\beta = v_i^\beta / x_i^\beta$ ,

where  $x_i^\beta$  is an element in  $\mathbf{x}'$  (= the transpose of gross output vector  $\mathbf{x}$ ) for the i-th industry of the country  $\beta$ .

