IDE-JETRO Institute of Developing Economies
Japan External Trade Organization

国家信息中心
State Information Center

Compilation and Application of International Input-Output Tables: IDE-JETRO's Joint Projects

Bo MENG (IDE-JETRO, Japan)
Satoshi INOMATA (IDE-JETRO, Japan)
Yaxiong ZHANG (State Information Center, China)

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Part I
Asian International Input-Output Tables (AIIO Tables)

Part II
Transnational Interregional Input-Output Table between Japan and China (TIIO Table)

Some History of the IDE's AIIO Tables

- 1965: International IO Model
  (North America, Europe, Oceania, Latin America, Asia and Japan)
- 1966, 1971: International IO Model for ten Asian Countries
- 1973-77: Some national IO tables (IND, SGP, THA) and bilateral IO tables
- 1982: Asian International IO Table for 1975 (8 countries, 56 sectors)
- 1992: Asian International IO Table for 1985 (10 economies, 77 sectors)
  Indonesia, Malaysia, Philippines, Thailand (ASEAN4),
  Korea, Singapore, Taiwan (NIEs3),
  China, Japan, USA
- 1998: Asian International IO Table for 1990 (10 economies, 78 sectors)
- 2001: Asian International IO Table for 1995 (10 economies, 78 sectors)
- 2006: Asian International IO Table for 2000 (10 economies, 76 sectors)
- 2012: Asian International IO Table for 2005 (10 ecomomies, 76 sectors)

Project Cooperation Members

- China: State Information Center
- Indonesia: Statistics Indonesia
- Korea: The Bank of Korea
- Malaysia: Department of Statistics
- The Philippines: National Statistics Office
- Singapore: Business Research Consultants
- Taiwan: Taiwan Research Institute
- Thailand: The National Economic and Social Development Board
- Japan: Applied Research Institute, Inc.

In addition, many help from Prof. SANO Takao (Gifu Shotoku Gakuen University), METI's experts and so on.

Figure 5: Layout of Asian I-O 2000

		Intermediate Demand (A)										Final Demand (F)										Export (L)				
	code	Indonesia (AI)	Malaysia (AM)	Philippines (AP)	Singapore (AS)	Thailand (AT)	China (AC)	Taiwan (AN)	Korea (AK)	Japan (AJ)	U.S.A. (AU)	Indonesia (FI)	Malaysia (FM)	Philippines (FP)	Singapore (FS)	Thailand (FT)	China (FC)	Taiwan (FN)	Korea (FK)	Japan (FJ)	U.S.A. (FU)	Export to H.Kong (LH)	Export to EU (LO)	Export to R.O.W. (LW)	Discrepancy (QX)	Total Outputs (XX)
Indonesia	(AI)	A^{II}	A^{IM}	A^{IP}	A^{IS}	A^{IT}	A^{IC}	A^{IN}	A^{IK}	A^{IJ}	A^{IU}	F^{II}	F^{IM}	F^{IP}	F^{IS}	F^{IT}	F^{IC}	F^{IN}	F^{IK}	F^{IJ}	F^{IU}	L^{IH}	L^{IO}	L^{IW}	Q^{I}	X^{I}
Malaysia	(AM)	A^{MI}	A^{MM}	A^{MP}	A^{MS}	A^{MT}	A^{MC}	A^{MN}	A^{MK}	A^{MJ}	A^{MU}	F^{MI}	F^{MM}	F^{MP}	F^{MS}	F^{MT}	F^{MC}	F^{MN}	F^{MK}	F^{MJ}	F^{MU}	L^{MH}	L^{MO}	L^{MW}	Q^{M}	X^{M}
Philippines	(AP)	A^{PI}	A^{PM}	A^{PP}	A^{PS}	A^{PT}	A^{PC}	A^{PN}	A^{PK}	A^{PJ}	A^{PU}	F^{PI}	F^{PM}	F^{PP}	F^{PS}	F^{PT}	F^{PC}	F^{PN}	F^{PK}	F^{PJ}	F^{PU}	L^{PH}	L^{PO}	L^{PW}	Q^{P}	X^{P}
Singapore	(AS)	A^{SI}	A^{SM}	A^{SP}	A^{SS}	A^{ST}	A^{SC}	A^{SN}	A^{SK}	A^{SJ}	A^{SU}	F^{SI}	F^{SM}	F^{SP}	F^{SS}	F^{ST}	F^{SC}	F^{SN}	F^{SK}	F^{SJ}	F^{SU}	L^{SH}	L^{SO}	L^{SW}	Q^{S}	X^{S}
Thailand	(AT)	A^{TI}	A^{TM}	A^{TP}	A^{TS}	A^{TT}	A^{TC}	A^{TN}	A^{TK}	A^{TJ}	A^{TU}	F^{TI}	F^{TM}	F^{TP}	F^{TS}	F^{TT}	F^{TC}	F^{TN}	F^{TK}	F^{TJ}	F^{TU}	L^{TH}	L^{TO}	L^{TW}	Q^{T}	X^{T}
China	(AC)	A^{CI}	A^{CM}	A^{CP}	A^{CS}	A^{CT}	A^{CC}	A^{CN}	A^{CK}	A^{CJ}	A^{CU}	F^{CI}	F^{CM}	F^{CP}	F^{CS}	F^{CT}	F^{CC}	F^{CN}	F^{CK}	F^{CJ}	F^{CU}	L^{CH}	L^{CO}	L^{CW}	Q^{C}	X^{C}
Taiwan	(AN)	A^{NI}	A^{NM}	A^{NP}	A^{NS}	A^{NT}	A^{NC}	A^{NN}	A^{NK}	A^{NJ}	A^{NU}	F^{NI}	F^{NM}	F^{NP}	F^{NS}	F^{NT}	F^{NC}	F^{NN}	F^{NK}	F^{NJ}	F^{NU}	L^{NH}	L^{NO}	L^{NW}	Q^{N}	X^{N}
Korea	(AK)	A^{KI}	A^{KM}	A^{KP}	A^{KS}	A^{KT}	A^{KC}	A^{KN}	A^{KK}	A^{KJ}	A^{KU}	F^{KI}	F^{KM}	F^{KP}	F^{KS}	F^{KT}	F^{KC}	F^{KN}	F^{KK}	F^{KJ}	F^{KU}	L^{KH}	L^{KO}	L^{KW}	Q^{K}	X^{K}
Japan	(AJ)	A^{JI}	A^{JM}	A^{JP}	A^{JS}	A^{JT}	A^{JC}	A^{JN}	A^{JK}	A^{JJ}	A^{JU}	F^{JI}	F^{JM}	F^{JP}	F^{JS}	F^{JT}	F^{JC}	F^{JN}	F^{JK}	F^{JJ}	F^{JU}	L^{JH}	L^{JO}	L^{JW}	Q^{J}	X^{J}
U.S.A.	(AU)	A^{UI}	A^{UM}	A^{UP}	A^{US}	A^{UT}	A^{UC}	A^{UN}	A^{UK}	A^{UJ}	A^{UU}	F^{UI}	F^{UM}	F^{UP}	F^{US}	F^{UT}	F^{UC}	F^{UN}	F^{UK}	F^{UJ}	F^{UU}	L^{UH}	L^{UO}	L^{UW}	Q^{U}	X^{U}
Freight and Insurance	(BF)	BA^{I}	BA^{M}	BA^{P}	BA^{S}	BA^{T}	BA^{C}	BA^{N}	BA^{K}	BA^{J}	BA^{U}	BF^{I}	BF^{M}	BF^{P}	BF^{S}	BF^{T}	BF^{C}	BF^{N}	BF^{K}	BF^{J}	BF^{U}					
Import from H. Kong	(CH)	A^{HI}	A^{HM}	A^{HP}	A^{HS}	A^{HT}	A^{HC}	A^{HN}	A^{HK}	A^{HJ}	A^{HU}	F^{HI}	F^{HM}	F^{HP}	F^{HS}	F^{HT}	F^{HC}	F^{HN}	F^{HK}	F^{HJ}	F^{HU}					
Import from EU	(CO)	A^{OI}	A^{OM}	A^{OP}	A^{OS}	A^{OT}	A^{OC}	A^{ON}	A^{OK}	A^{OJ}	A^{OU}	F^{OI}	F^{OM}	F^{OP}	F^{OS}	F^{OT}	F^{OC}	F^{ON}	F^{OK}	F^{OJ}	F^{OU}					
Import from the R.O.W.	(CW)	A^{WI}	A^{WM}	A^{WP}	A^{WS}	A^{WT}	A^{WC}	A^{WN}	A^{WK}	A^{WJ}	A^{WU}	F^{WI}	F^{WM}	F^{WP}	F^{WS}	F^{WT}	F^{WC}	F^{WN}	F^{WK}	F^{WJ}	F^{WU}					
Duties & Import Taxes	(DT)	DA^{I}	DA^{M}	DA^{P}	DA^{S}	DA^{T}	DA^{C}	DA^{N}	DA^{K}	DA^{J}	DA^{U}	DF^{I}	DF^{M}	DF^{P}	DF^{S}	DF^{T}	DF^{C}	DF^{N}	DF^{K}	DF^{J}	DF^{U}					
Value Added	(VV)	V^{I}	V^{M}	V^{P}	V^{S}	V^{T}	V^{C}	V^{N}	V^{K}	V^{J}	V^{U}															
Total Inputs	(XX)	X^{I}	X^{M}	X^{P}	X^{S}	X^{T}	X^{C}	X^{N}	X^{K}	X^{J}	X^{U}															

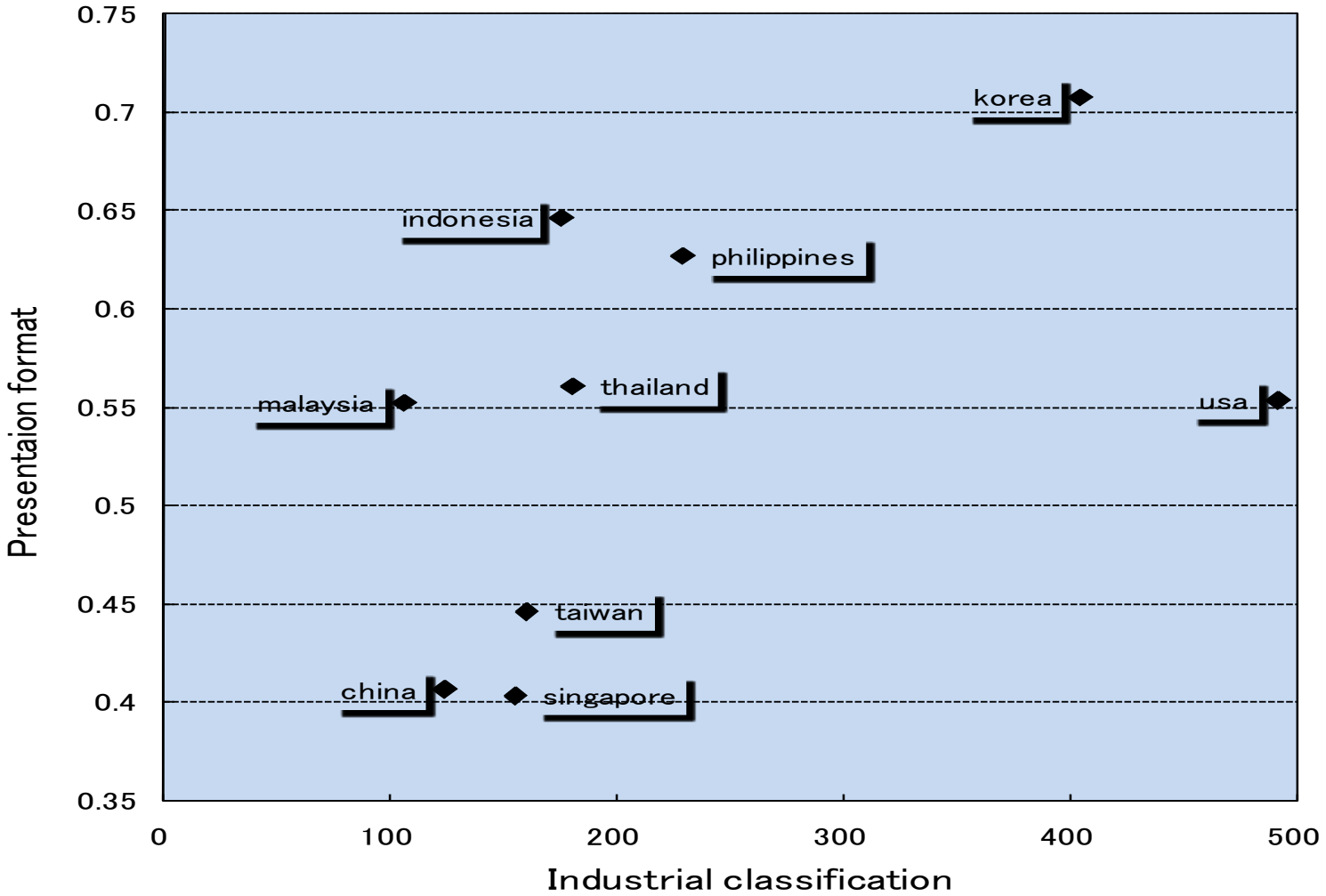
Compilation Process of the AIIO Table

- Adjustment of presentation format
- Preparation of sector concordance (HS/SITC-NIO-AIO) and supplementary data
- Linking of the tables
- Balancing work

Adjustment of Presentation Format

	CHINA	INDONESIA	JAPAN	KOREA	MALAYSIA	TAIWAN	PHILIPPINES	SINGAPORE	THAILAND	U.S.A.
1. Conversion of valuation (P.17)										
1.1 Basic price to producer's price								X		
1.2 Private Consumption Expenditure					X			X		X
1.3 Export vectors					X			X		
1.4 Import matrix/vector			X	X			X		X	X
2. Negative entries (P.25)				X						
3. Dummy sectors (P.26)	X		X	X	X			X		X
4. Machine-repair (P.37)	X		X				X			X
5. Financial intermediaries (P.40)			X		X			X	X	
6. Special treatment of import/export (P.42)										
6.1 Water transportation										X
6.2 "Pure import" of gold										X
6.3 Re-export					X					
6.4 Telecommunication				X						
7. Computer software products (P.45)						X				
8. Producers of government services (P.46)									X	X

Similarity to the Japanese I-O table



Source: Inoamta (2006)

Japanese I−O Table
Column＝405

Responsiveness to the 1993 SNA

Rank	Country	rate *
1	PHILIPPINES	0.5714
1	USA	0.5714
3	THAILAND	0.5385
4	KOREA	0.5000
4	JAPAN	0.5000
6	SINGAPORE	0.4545
7	INDONESIA	0.4286
7	MALAYSIA	0.4286
9	CHINA	0.3077
10	TAIWAN	0.2143

* The percentage rates of the number of questions in section 7 of the questionnaire to which the country gave the answer that follows the SNA recommendation .

Source: Inoamta (2006)

Special Survey on Industrial Demand of Imported Goods

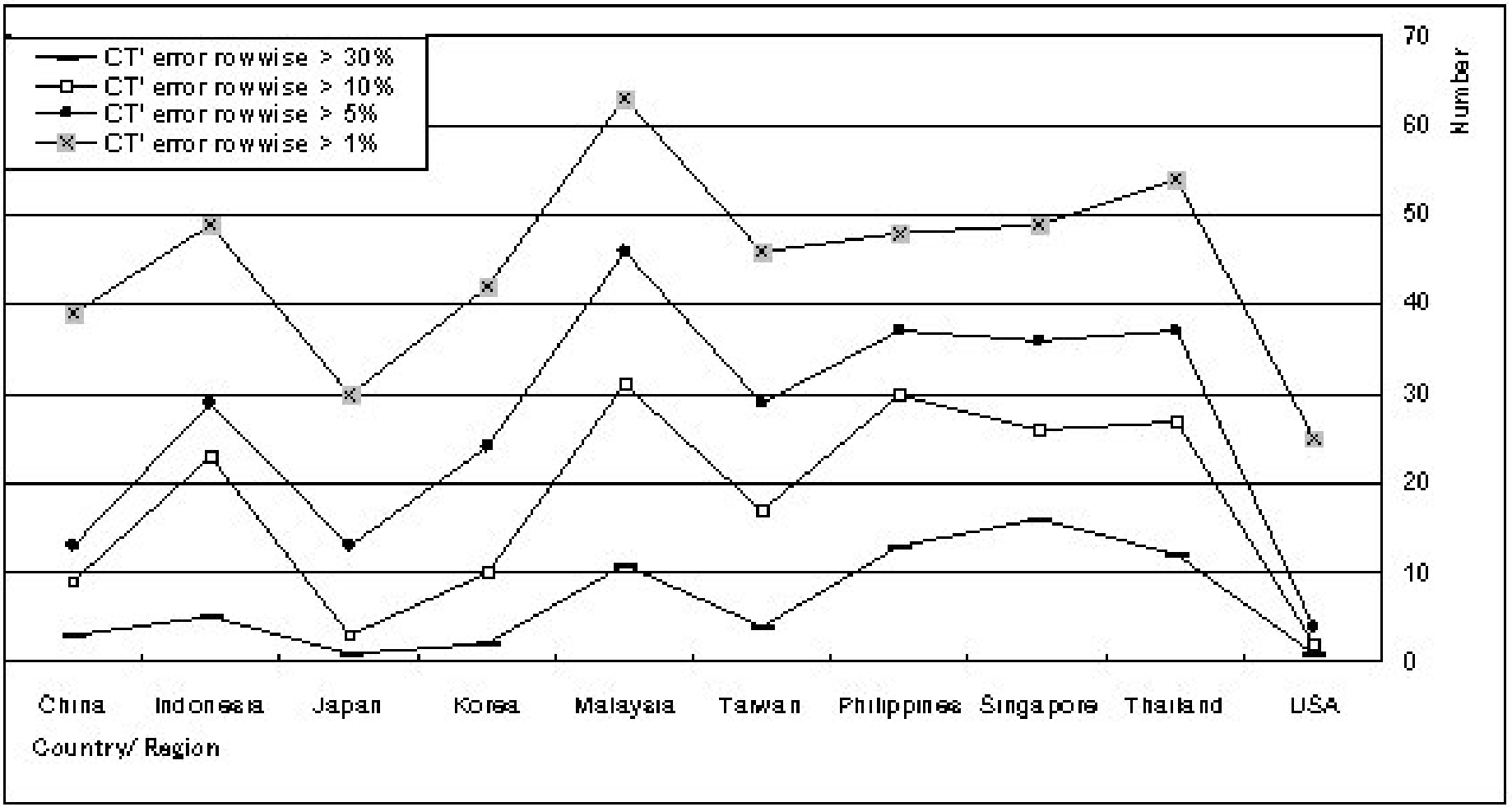
Commodity		Code of Origin Country	C.I.F. Import Value (Unit: Pesos)	Duties & Import Comm. Taxes (Unit : Pesos)	Int'l Freight & Insurance (Unit : Pesos)	Distribution of the C.I.F. Import Value (Using Sector / Destination)		
Description	SITC Code					I-O Code	Value (Unit: Pesos)	Share (%)
rice	042	1	26	5	7	022	1	3.85
						023	2	7.69
						HH	23	88.46
meat, dried, salted or smoked	012	1	203,991	1,563	5,893	019	94,737	46.44
						020	3,586	1.76
						021	5,881	2.88
						063	3,712	1.82
						HH	84,262	42.29
						OH	9,813	4.81

The total of distribution values should be the same as for the amount imported.

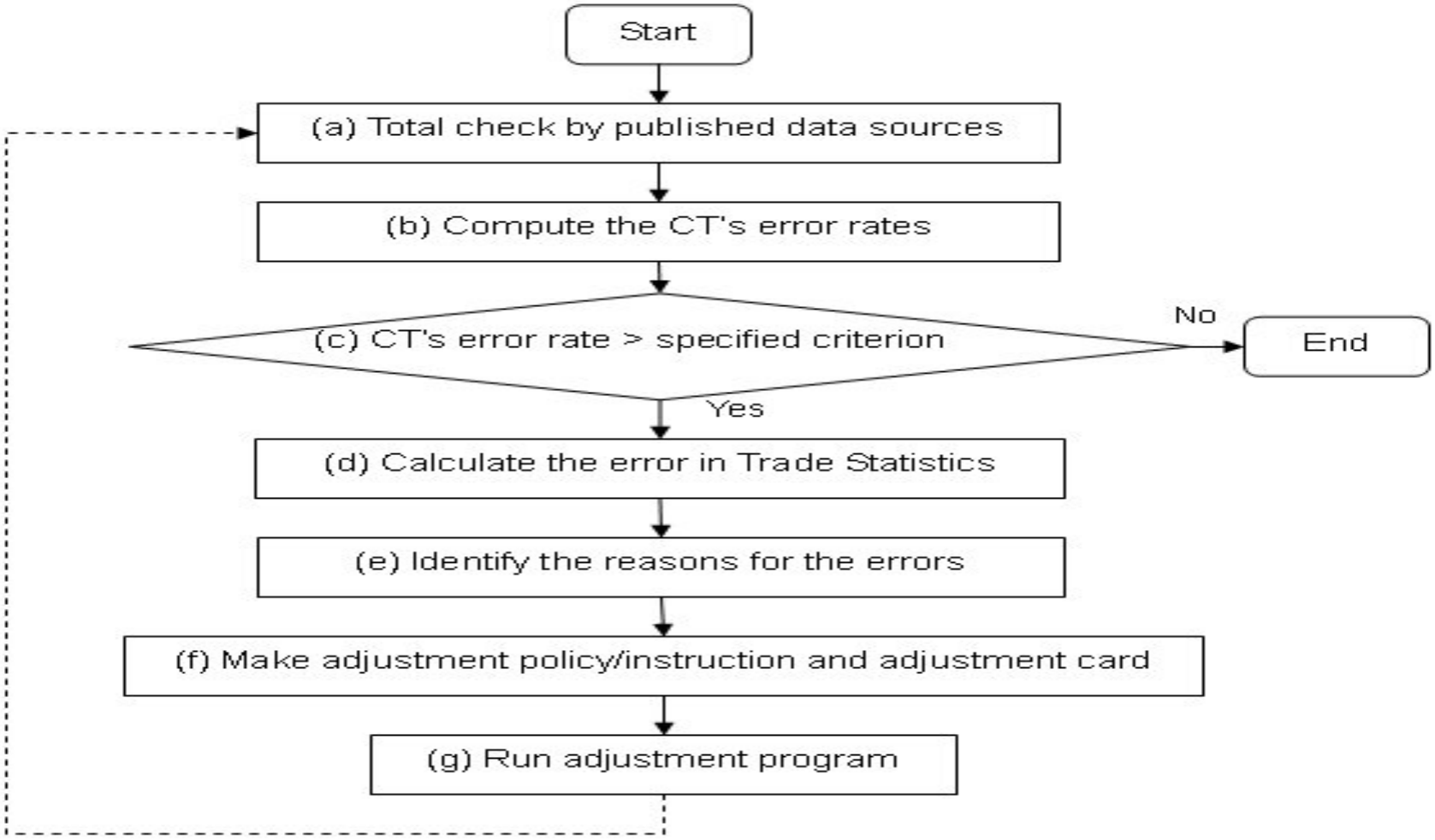
The total of the percentage share should be 100%.

Source: Kuwamori (2008), AIO Series No 70.

Balancing Work



Adjustment Procedure

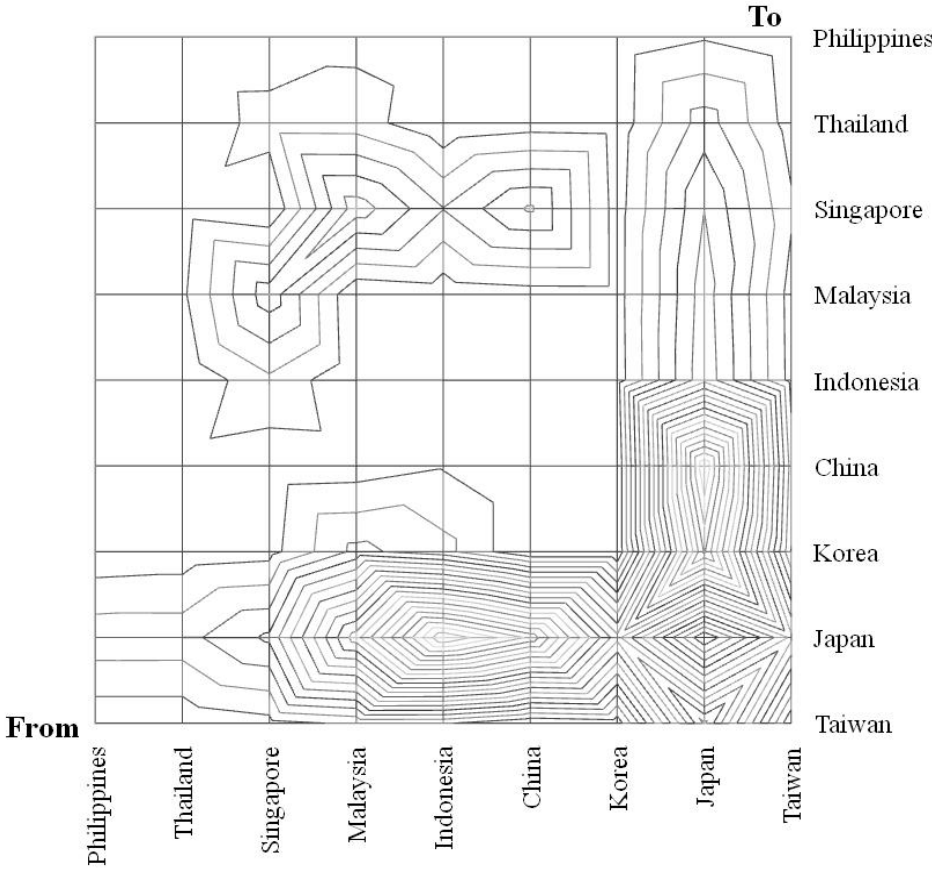


Current Limitations and Possible Extensions

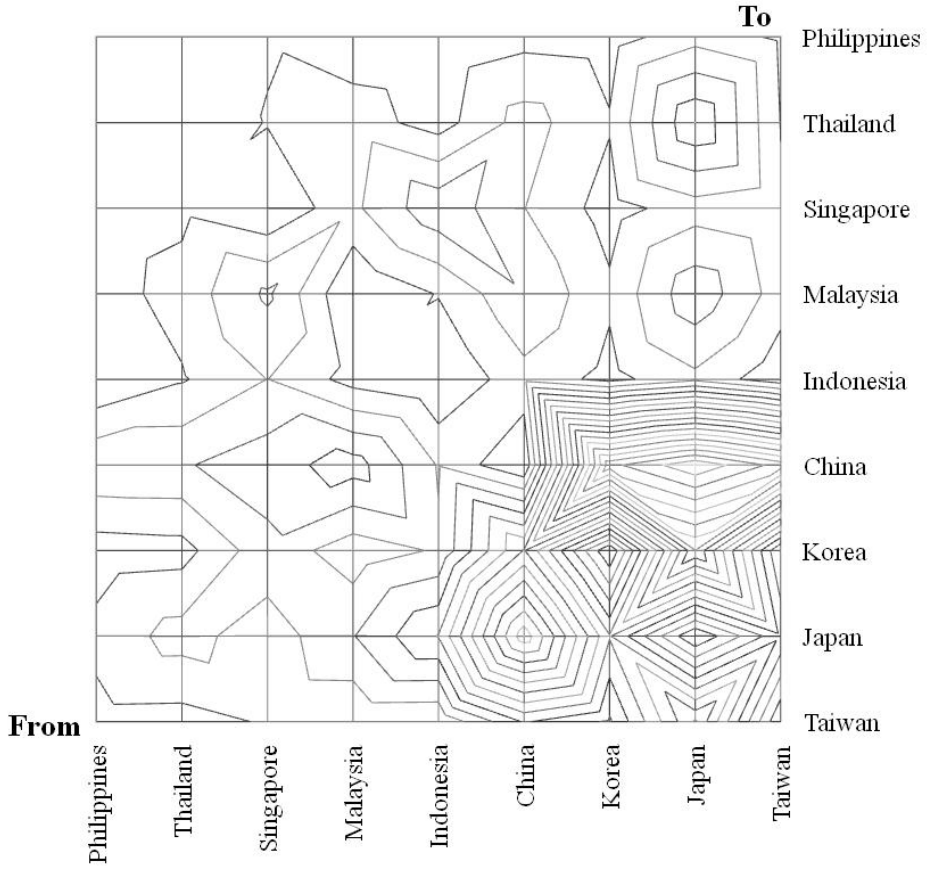
- Valuation (from producer's price to basic price)?
- Treatment of international trade in services?
- Add more Asian countries (India, Vietnam…)?
- Consider EU as an endogenous region?
- Estimate of constant price?
- Others (example: OECD's end-use trade, CEPII's BACI)

Asian Intermediate trade in goods

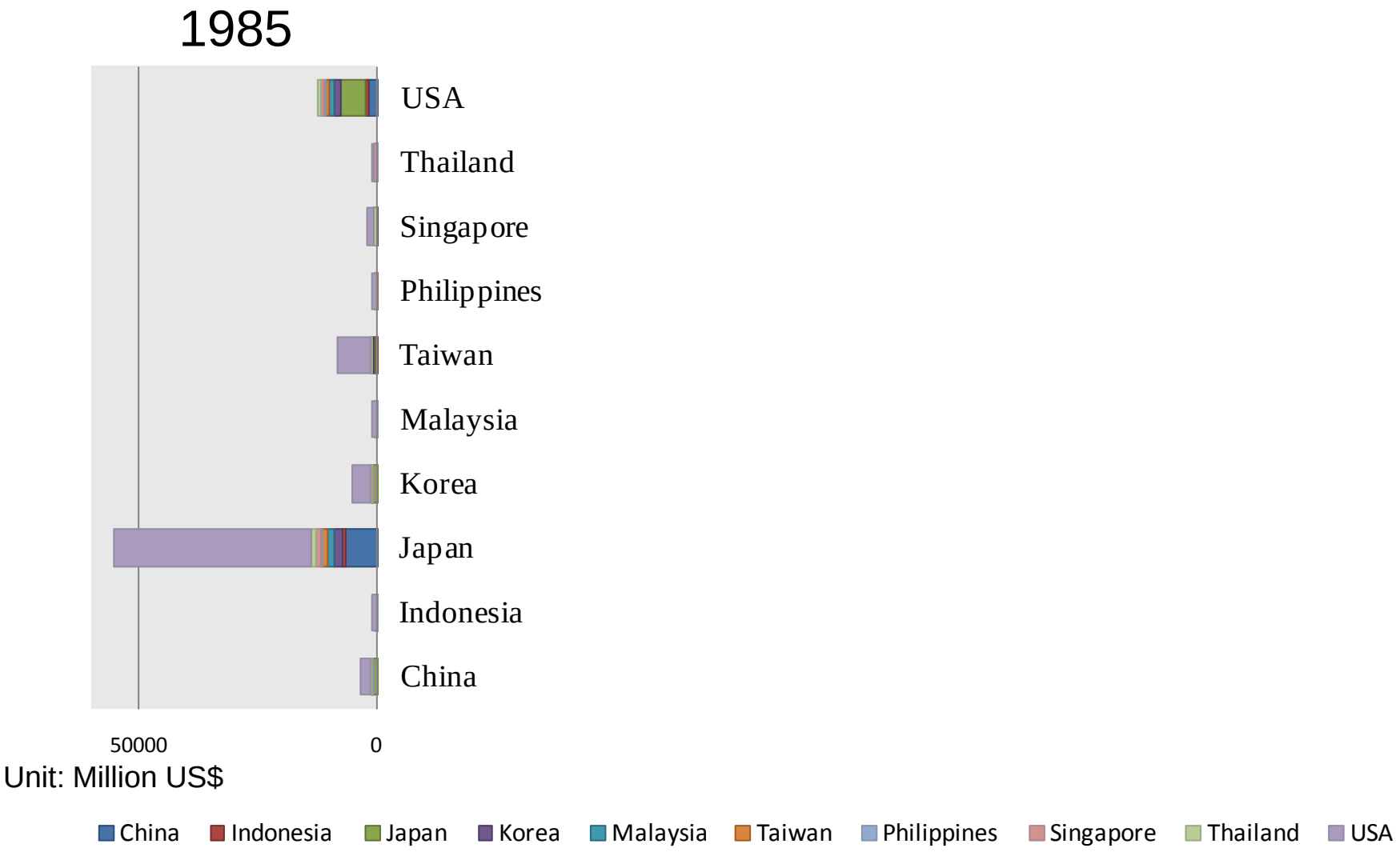
1985



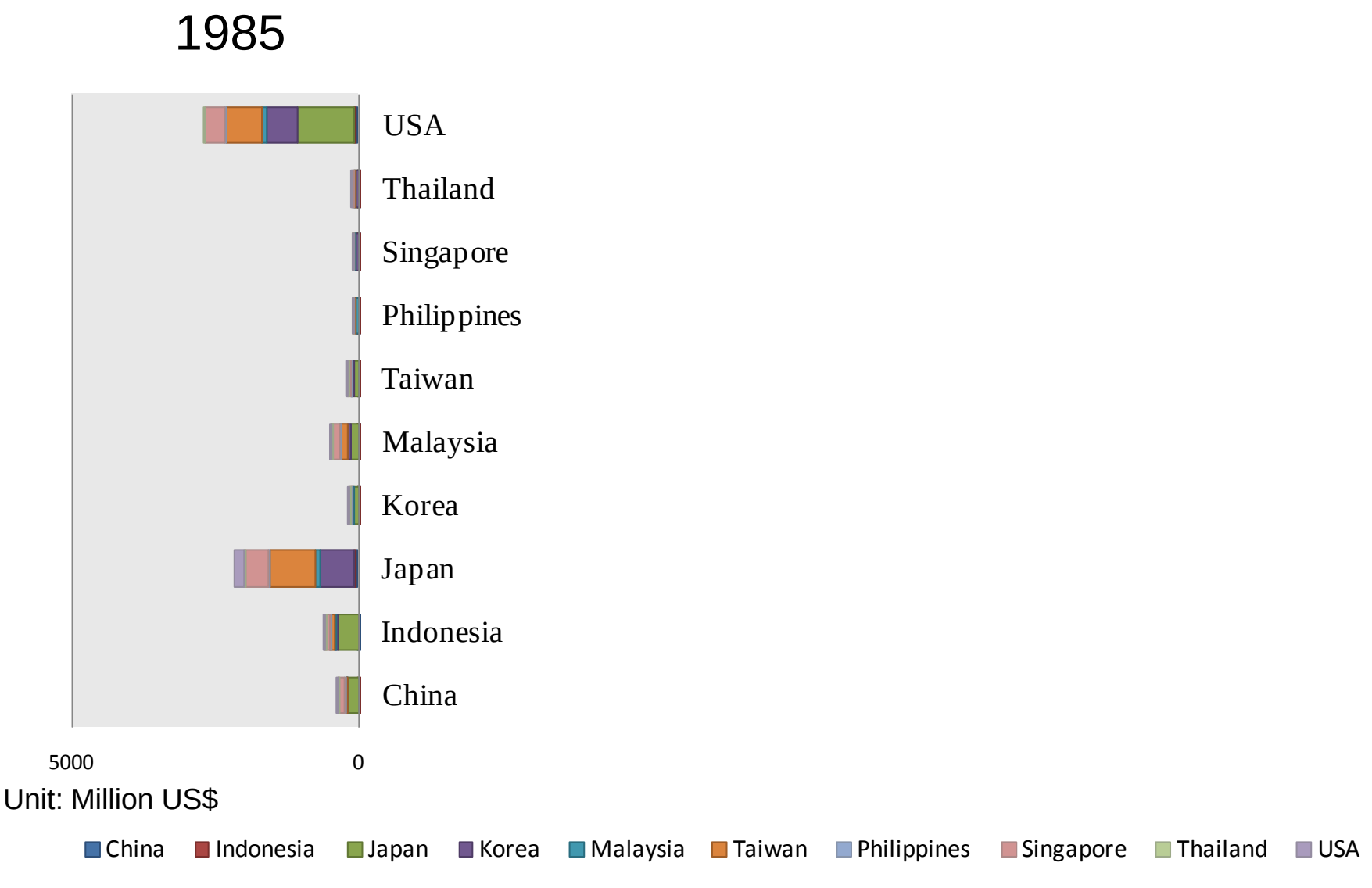
2005



Trade in Value Added induced by a country's import of final products (Consumption-base)



Trade in Value Added induced by a country's export of final products (Production-base)



Part II
Transnational Interregional Input-Output Table between Japan and China (TIIO Table)

Organizations involved in the 2000 TIIO project

- Japan: IDE-JETRO (project manager)
- Japan: Applied Research Institute, Inc. (ARI)
- China: State Information Center (SIC)
- Some experts from Japan's National Institute for Land and Infrastructure Management (NILIM), Ministry of Land, Infrastructure and Transport of Japan; Pacific Consultants Co,. LTD.

In addition, the original idea of compiling the TIIO table is from OKAMOTO Nobuhiro（a previous IDE researcher; Associate Professor, Daito Bunka University)

Data collection and estimation

- The 1997 interregional IO table of China
- The 2000 interregional IO table of Japan
- The 2000 Asian international IO table (used as Contral Total)
- The 2000 commodity flow data by port between China and Japan (NILIM)

		Intermediate Demand (A)									Final Demand (F)											
	code	ASEAN5 (AA00)	China-region 1 (AC01)	China-region n (AC0n)	China-region 7 (AC07)	Japan-region 1 (AJ01)	Japan-region n (AJ0n)	Japan-region 8 (AJ08)	East Asia (AE00)	United States (AU00)	ASEAN5 (FA00)	China-region 1 (FC01)	China-region n (FC0n)	China-region 7 (FC07)	Japan-region 1 (FJ01)	Japan-region n (FJ0n)	Japan-region 8 (FJ08)	East Asia (FE00)	United States (FU00)	Export to ROW (LW)	Discrepancies (QX)	Total Output (XX)
ASEAN5	(AA00)	A^{A00A00}	A^{A00C01}	A^{A00C0n}	A^{A00C07}	A^{A00J01}	A^{A00J0n}	A^{A00J08}	A^{A00E00}	A^{A00U00}	F^{A00A00}	F^{A00C01}	F^{A00C0n}	F^{A00C07}	F^{A00J01}	F^{A00J0n}	F^{A00J08}	F^{A00E00}	F^{A00U00}	L^{A00W}	Q^{A00}	X^{A00}
China-region 1	(AC01)	A^{C01A00}	A^{C01C01}	A^{C01C0n}	A^{C01C07}	A^{C01J01}	A^{C01J0n}	A^{C01J08}	A^{C01E00}	A^{C01U00}	F^{C01A00}	F^{C01C01}	F^{C01C0n}	F^{C01C07}	F^{C01J01}	F^{C01J0n}	F^{C01J08}	F^{C01E00}	F^{C01U00}	L^{C01W}	Q^{C01}	X^{C01}
China-region n	(AC0n)	A^{C0nA00}	A^{C0nC01}	A^{C0nC0n}	A^{C0nC07}	A^{C0nJ01}	A^{C0nJ0n}	A^{C0nJ08}	A^{C0nE00}	A^{C0nU00}	F^{C0nA00}	F^{C0nC01}	F^{C0nC0n}	F^{C0nC07}	F^{C0nJ01}	F^{C0nJ0n}	F^{C0nJ08}	F^{C0nE00}	F^{C0nU00}	L^{C0nW}	Q^{C0n}	X^{C0n}
China-region 7	(AC07)	A^{C07A00}	A^{C07C01}	A^{C07C0n}	A^{C07C07}	A^{C07J01}	A^{C07J0n}	A^{C07J08}	A^{C07E00}	A^{C07U00}	F^{C07A00}	F^{C07C01}	F^{C07C0n}	F^{C07C07}	F^{C07J01}	F^{C07J0n}	F^{C07J08}	F^{C07E00}	F^{C07U00}	L^{C07W}	Q^{C07}	X^{C07}
Japan-region 1	(AJ01)	A^{J01A00}	A^{J01C01}	A^{J01C0n}	A^{J01C07}	A^{J01J01}	A^{J01J0n}	A^{J01J08}	A^{J01E00}	A^{J01U00}	F^{J01A00}	F^{J01C01}	F^{J01C0n}	F^{J01C07}	F^{J01J01}	F^{J01J0n}	F^{J01J08}	F^{J01E00}	F^{J01U00}	L^{J01W}	Q^{J01}	X^{J01}
Japan-region n	(AJ0n)	A^{J0nA00}	A^{J0nC01}	A^{J0nC0n}	A^{J0nC07}	A^{J0nJ01}	A^{J0nJ0n}	A^{J0nJ08}	A^{J0nE00}	A^{J0nU00}	F^{J0nA00}	F^{J0nC01}	F^{J0nC0n}	F^{J0nC07}	F^{J0nJ01}	F^{J0nJ0n}	F^{J0nJ08}	F^{J0nE00}	F^{J0nU00}	L^{J0nW}	Q^{J0n}	X^{J0n}
Japan-region 8	(AJ08)	A^{J08A00}	A^{J08C01}	A^{J08C0n}	A^{J08C07}	A^{J08J01}	A^{J08J0n}	A^{J08J08}	A^{J08E00}	A^{J08U00}	F^{J08A00}	F^{J08C01}	F^{J08C0n}	F^{J08C07}	F^{J08J01}	F^{J08J0n}	F^{J08J08}	F^{J08E00}	F^{J08U00}	L^{J08W}	Q^{J08}	X^{J08}
East Asia	(AE00)	A^{E00A00}	A^{E00C01}	A^{E00C0n}	A^{E00C07}	A^{E00J01}	A^{E00J0n}	A^{E00J08}	A^{E00E00}	A^{E00U00}	F^{E00A00}	F^{E00C01}	F^{E00C0n}	F^{E00C07}	F^{E00J01}	F^{E00J0n}	F^{E00J08}	F^{E00E00}	F^{E00U00}	L^{E00W}	Q^{E00}	X^{E00}
United States	(AU00)	A^{U00A00}	A^{U00C01}	A^{U00C0n}	A^{U00C07}	A^{U00J01}	A^{U00J0n}	A^{U00J08}	A^{U00E00}	A^{U00U00}	F^{U00A00}	F^{U00C01}	F^{U00C0n}	F^{U00C07}	F^{U00J01}	F^{U00J0n}	F^{U00J08}	F^{U00E00}	F^{U00U00}	L^{U00W}	Q^{U00}	X^{U00}
International Freight and Insurance	(BF)	BA^{A00}	BA^{C01}	BA^{C0n}	BA^{C07}	BA^{J01}	BA^{J0n}	BA^{J08}	BA^{E00}	BA^{U00}	BF^{A00}	BF^{C01}	BF^{C0n}	BF^{C07}	BF^{J01}	BF^{J0n}	BF^{J08}	BF^{E00}	BF^{U00}			
Import from ROW	(CW)	A^{WA00}	A^{WC01}	A^{WC0n}	A^{WC07}	A^{WJ01}	A^{WJ0n}	A^{WJ08}	A^{WE00}	A^{WU00}	F^{WA00}	F^{WC01}	F^{WC0n}	F^{WC07}	F^{WJ01}	F^{WJ0n}	F^{WJ08}	F^{WE00}	F^{WU00}			
Duties and Import Tax	(DT)	DA^{A00}	DA^{C01}	DA^{C0n}	DA^{C07}	DA^{J01}	DA^{J0n}	DA^{J08}	DA^{E00}	DA^{U00}	DF^{A00}	DF^{C01}	DF^{C0n}	DF^{C07}	DF^{J01}	DF^{J0n}	DF^{J08}	DF^{E00}	DF^{U00}			
Value Added	(VV)	V^{A00}	V^{C01}	V^{C0n}	V^{C07}	V^{J01}	V^{J0n}	V^{J08}	V^{E00}	V^{U00}												
Total Input	(XX)	X^{A00}	X^{C01}	X^{C0n}	X^{C07}	X^{J01}	X^{J0n}	X^{J08}	X^{E00}	X^{U00}												

Notes: (1) n=2,…,6 for China-region. (2) n=2,…,7 for Japan-region.

Some new movements of China's Multiregional IO table towards the next joint TIIO projects

- **IDE's next TIIO project for 2005: China+Japan+Korea**
- **SIC: Construction of the 2002, 2007 CMRIO tables**

1) The entire development is based on 30 provinces
2) The estimation of interregional trade flow is mainly based on entropy and gravity models.
3) In cooperation with NBS, the basic survey data reflecting inter-province inflow and outflow in "National Input-Output Survey 2007" is fully utilized in the estimation of interregional transaction matrix.
4) When conducting balance adjustment, each province's table are fully used in total control that the sum of all provinces' parts equals national table.

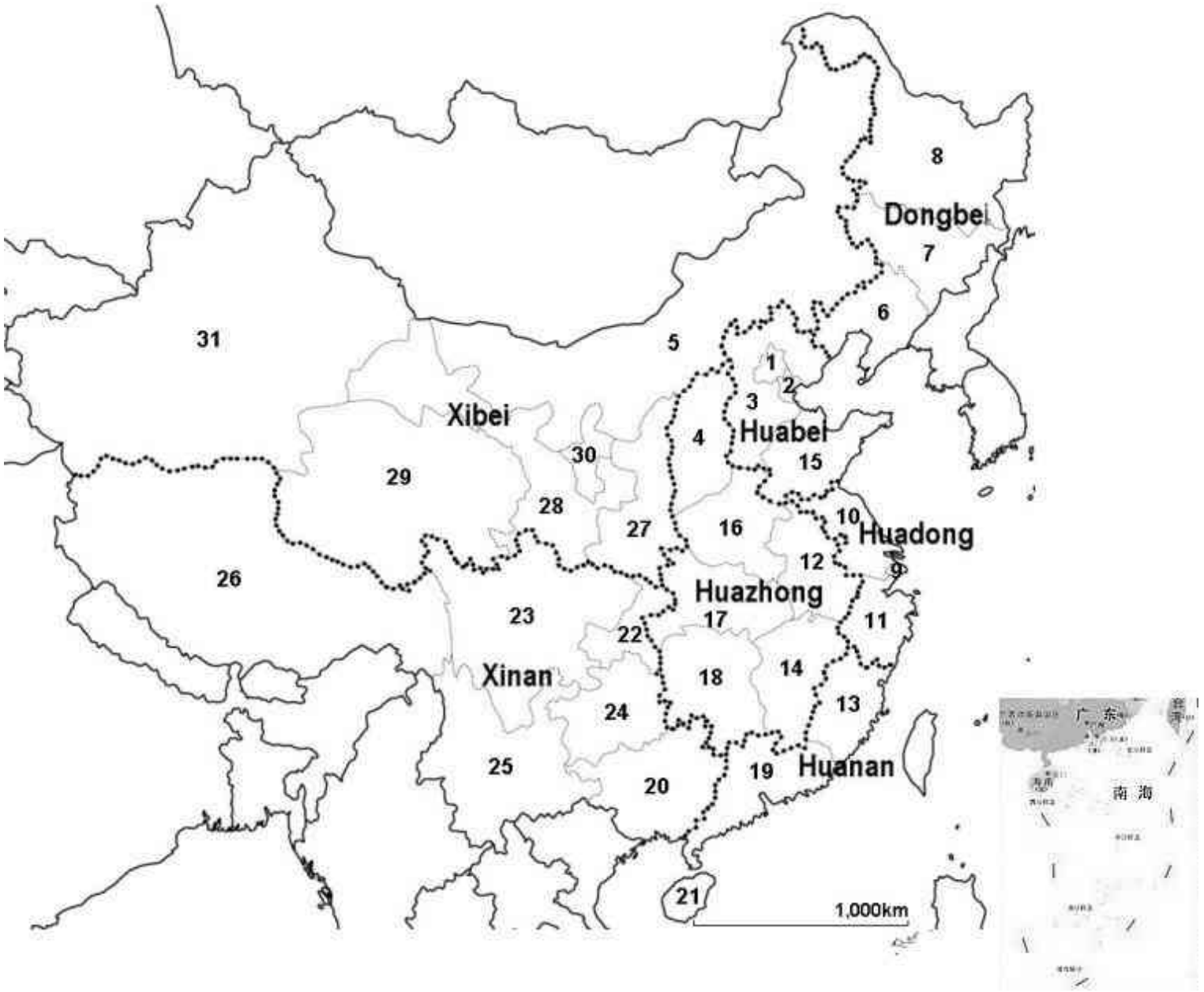
Some difficulties and challenges during the compilation of CMRIO tables

- Inconsistence between the trade data in national IO table and customs trade data
- Adjustment to provincial processing trade and “re-export” data
- Balance adjustment

(1) Converting provincial tables to "four-column" tables
(2) Calculation of control totals of industries of provinces
(3) Balance between national and province’s table
(4) Original errors in provincial input-output tables

Compilation of China's regional employment matrix

- **Agricultural labors:** who are engaged in agriculture
- **Rural non-agricultural labors**: who hold rural residential status and engage in activities in the secondary industry and services in rural areas
- **Urban lowly educated labors in the secondary industry and services**: who hold residential status and work in unskilled occupations in urban industries, and their education levels include no schooling, elementary, junior middle and senior middle school
- **Urban highly educated labors in the secondary industry and services**: who hold residential status and work in skilled occupations in urban industries, and their education levels include college, university, graduate and over.


8
Dongbei
7
6
31
5
1
2
3
Xibei
Huabei
4
30
15
29
28
10
Huadong
27
16
12
26
Huazhong
23
17
11
22
Xinan
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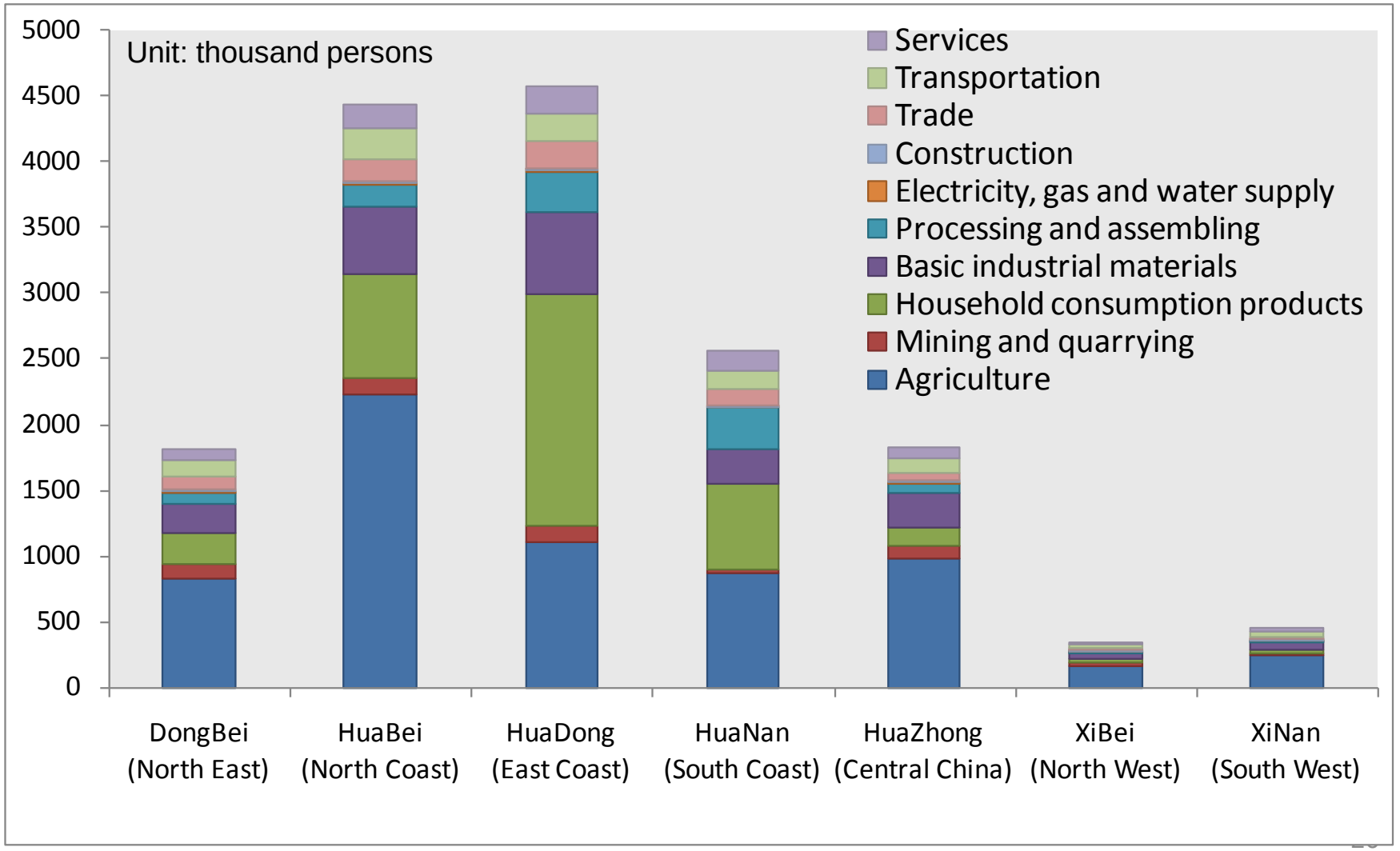
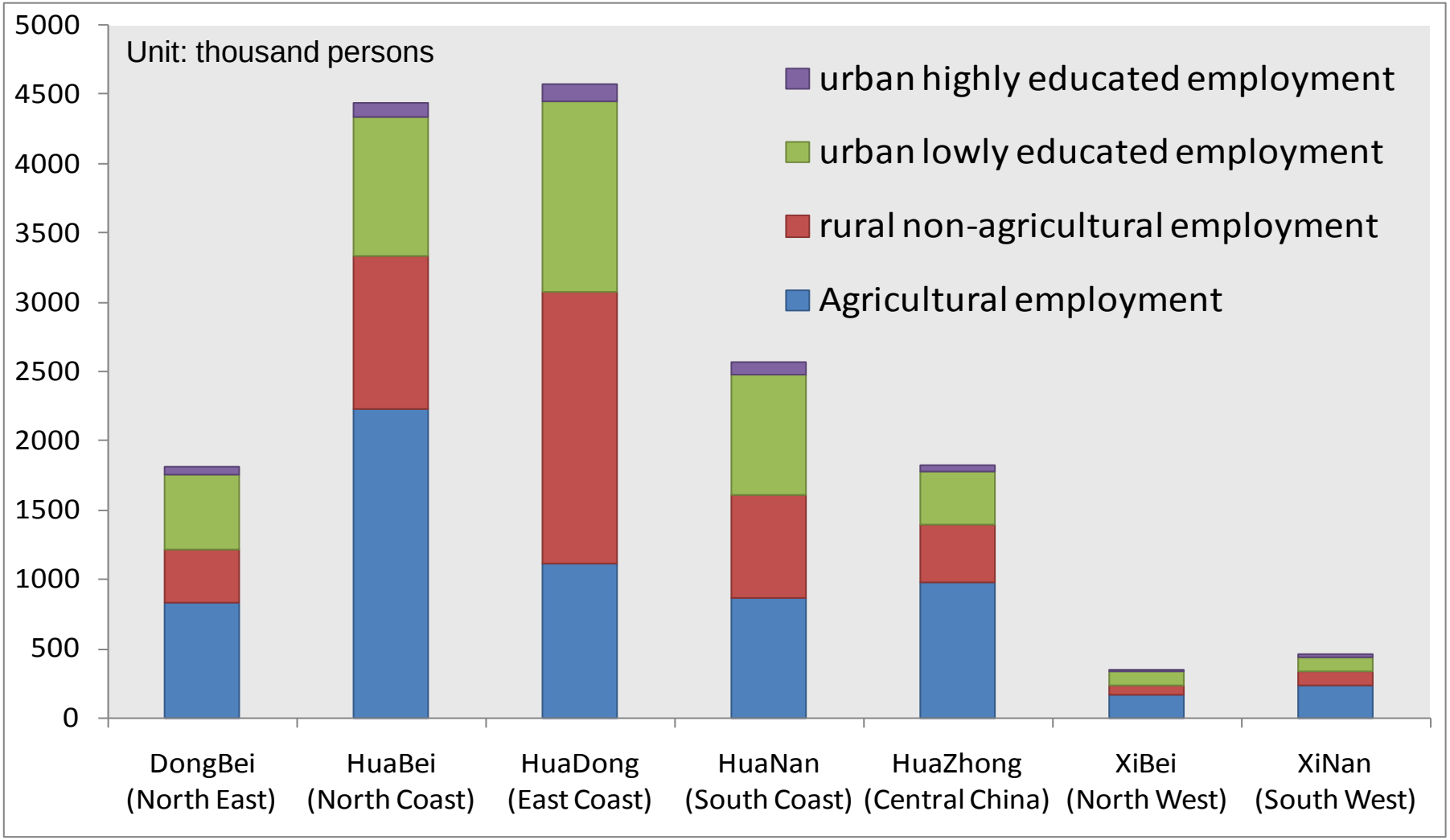
21
1,000km
南海

Transnational impacts of Japan's final demand on China's regional employment



Transnational impacts of Japan's final demand on China's regional employment



Thank you for your attention!