How to construct international input-output tables

(with the smallest effort)

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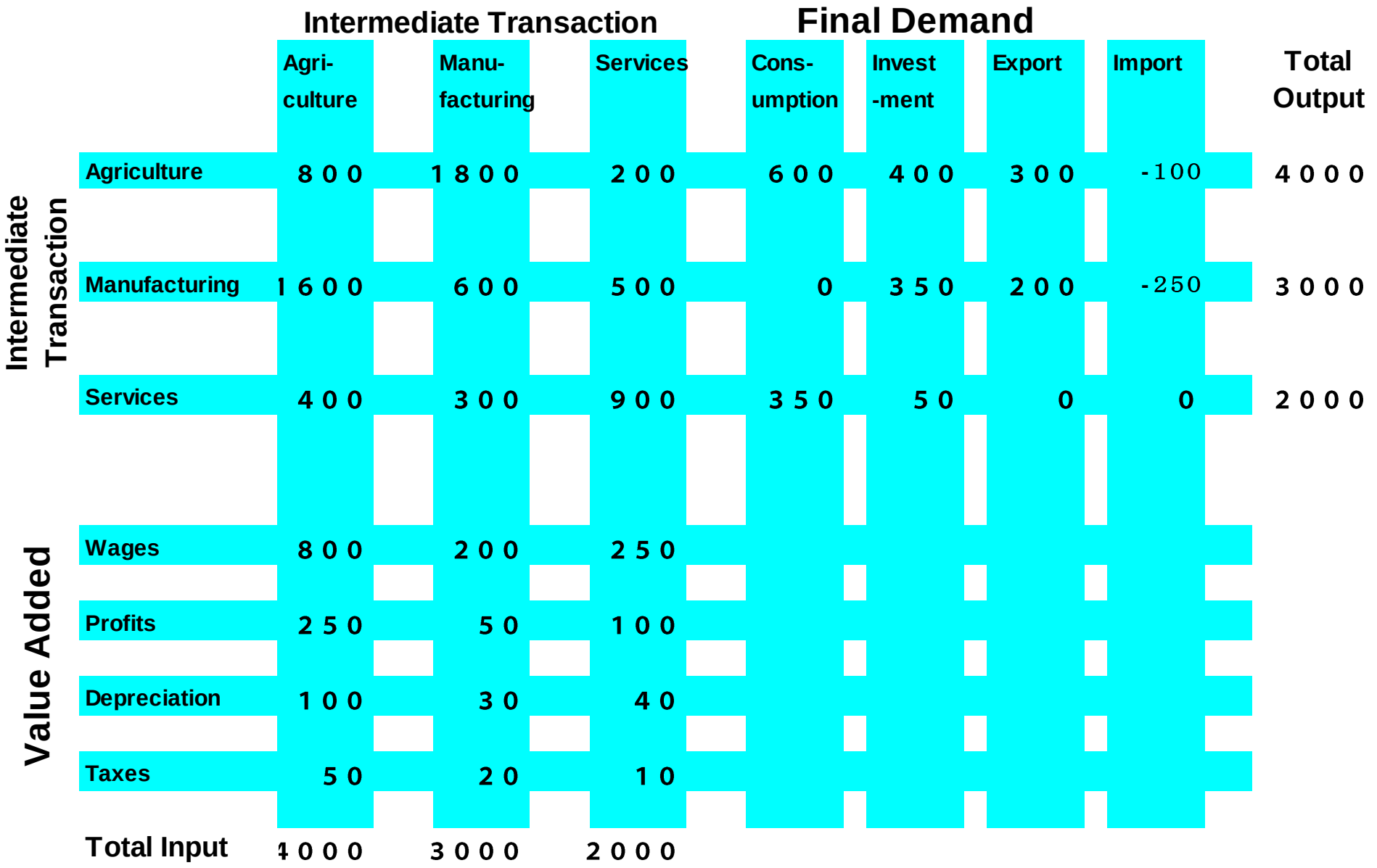
OVERVIEW

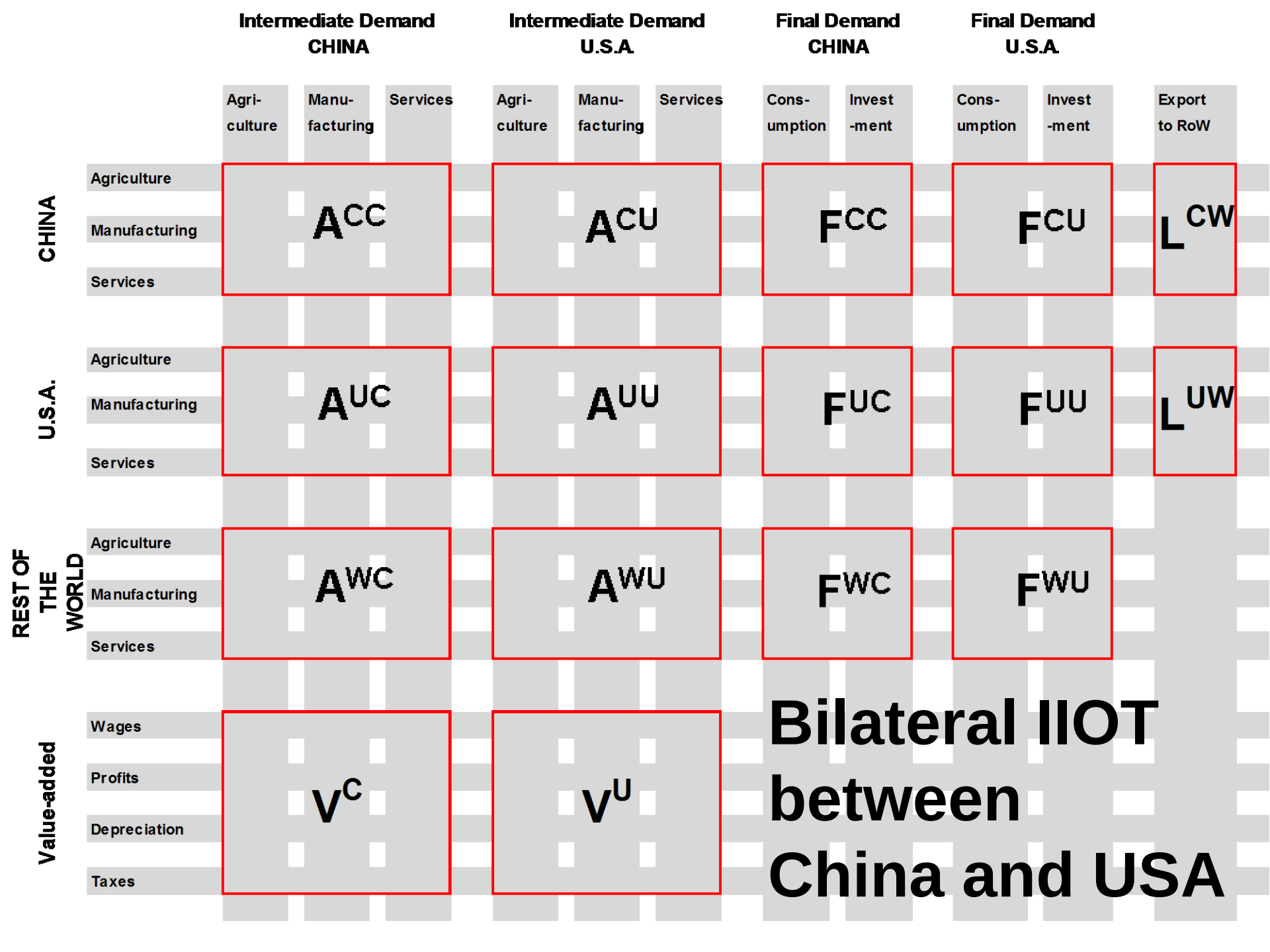
(1) Basic picture of an international input-output table (IIOT)

(2) Construction steps of IIOT
- A brief sketch

(3) The minimum data requirement for constructing IIOT

Schematic image of an I-O table




Intermediate Demand CHINA
Intermediate Demand U.S.A.
Final Demand CHINA
Final Demand U.S.A.
Agri-culture
Manu-facturing
Services
Agri-culture
Manu-facturing
Services
Cons-umption
Invest-ment
Cons-umption
Invest-ment
Export to RoW
CHINA
Agriculture
Manufacturing
Services
A^{CC}
A^{CU}
F^{CC}
F^{CU}
L^{CW}
U.S.A.
Agriculture
Manufacturing
Services
A^{UC}
A^{UU}
F^{UC}
F^{UU}
L^{UW}
REST OF THE WORLD
Agriculture
Manufacturing
Services
A^{WC}
A^{WU}
F^{WC}
F^{WU}
Value-added
Wages
Profits
Depreciation
Taxes
V^{C}
V^{U}
Bilateral IIOT between China and USA

BRICs International I-O table

			Intermediate Demand (A)							Final Demand (F)									
		code	Brazil (AB)	Russia (AR)	India (AG)	China (AC)	Japan (AJ)	U.S.A. (AU)	EU (AO)	Brazil (FB)	Russia (FR)	India (FG)	China (FC)	Japan (FJ)	U.S.A. (FU)	EU (FO)	Export to R.O.W. (LW)	Statistical Discrepancy (QX)	Total Outputs (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}										
Total Inputs		(XX)	X^{B}	X^{R}	X^{G}	X^{C}	X^{J}	X^{U}	X^{O}										

CONSTRUCTION STEPS

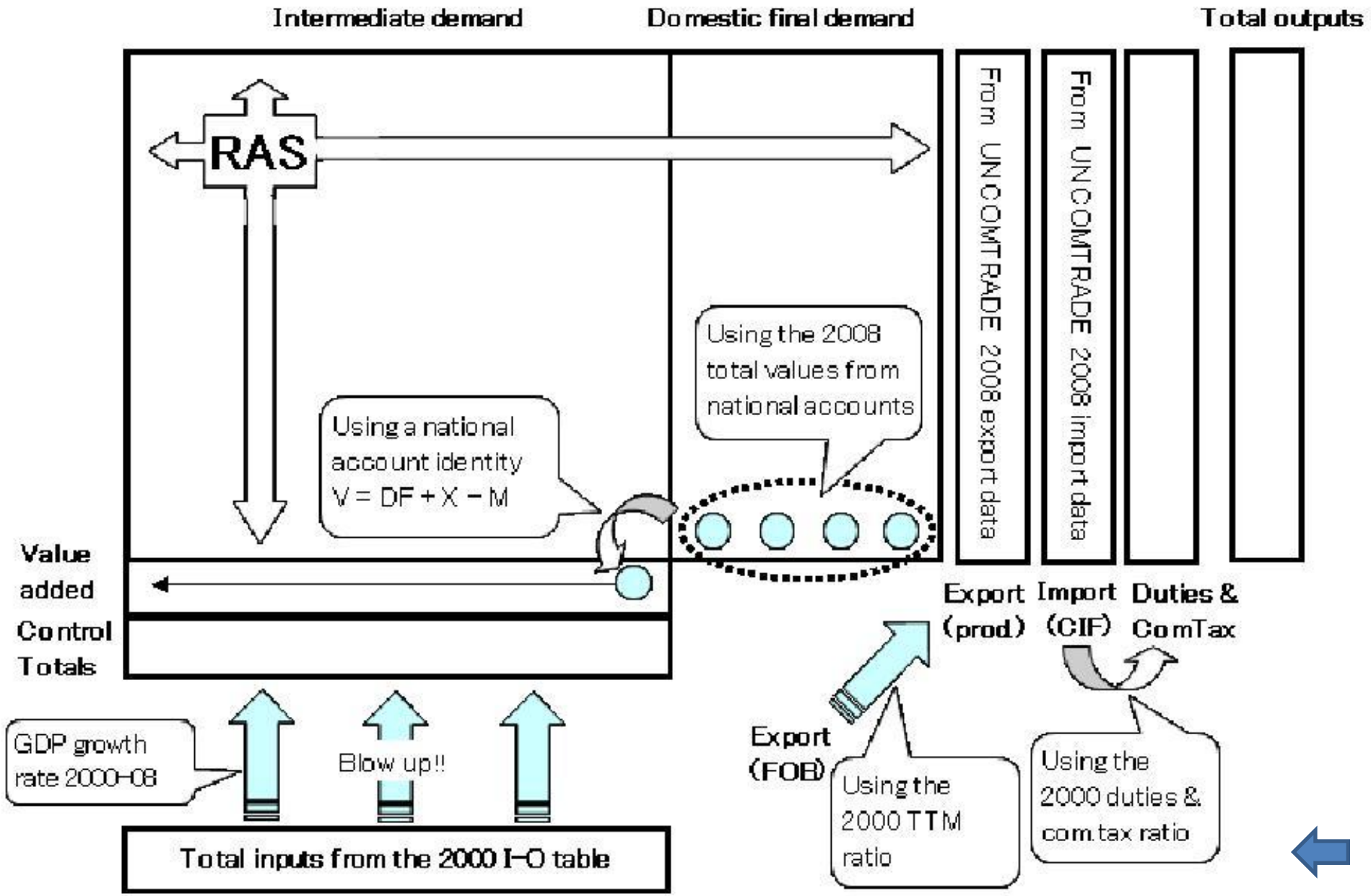
Step 1: Harmonization of data

Step 2: Construction of import matrices by country of origin

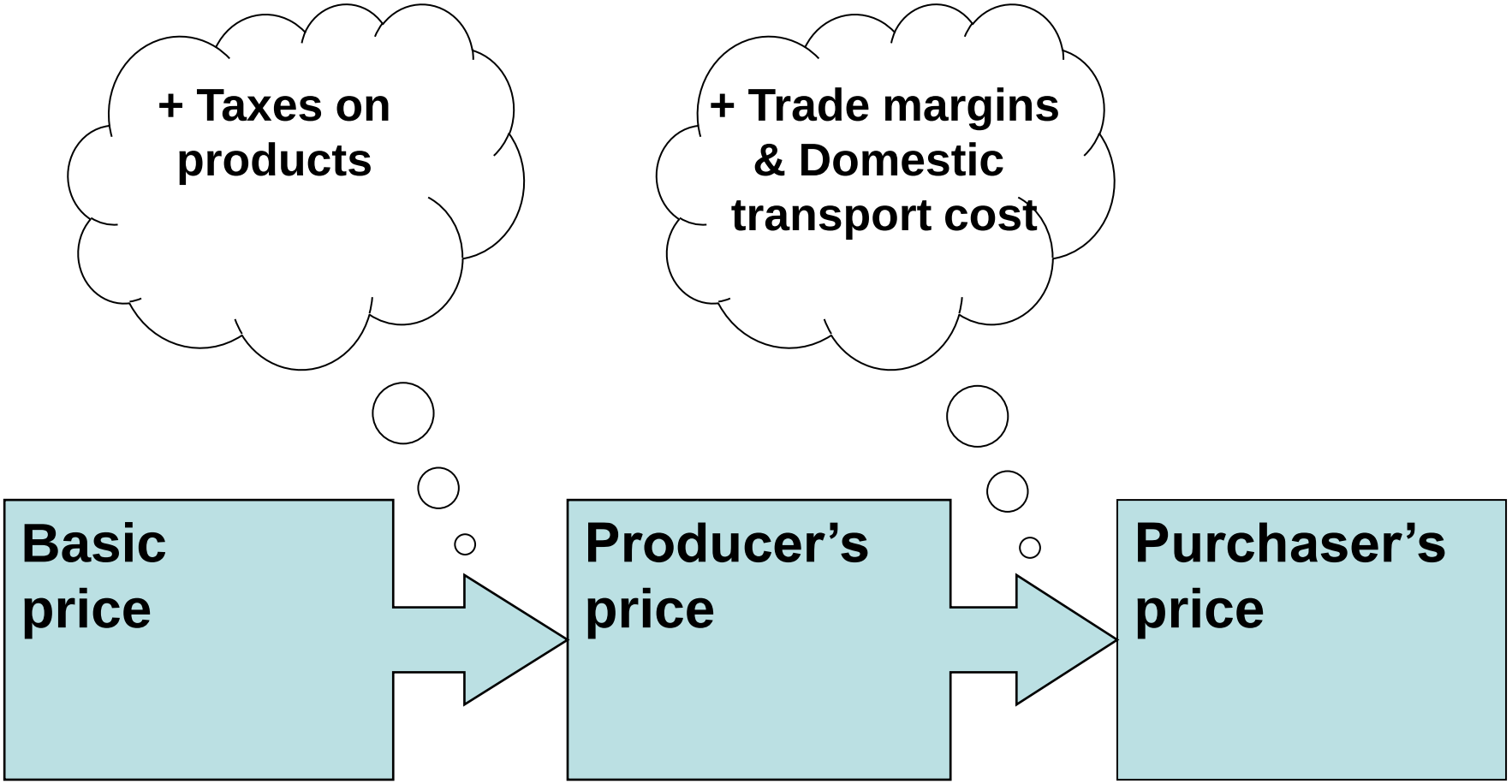
Step 3: Linking and balancing

1.1 The year of reference: update (or backdate) the table using the information from the national accounts of the reference year.
1.2 Valuation: transform the table into the uniform valuation scheme, either in basic price or producer's price, using the relevant information from the supply table such as the matrix of taxes on products, of trade and transport margins.
1.3 Presentation format: adjust the table for special statistical treatments, such as FISIM, scraps and by-products, dummy sectors.
1.4 Product classification: aggregate/disaggregate the product sectors in the original table, and redefine them into the common classification.

Updating a national I-O table



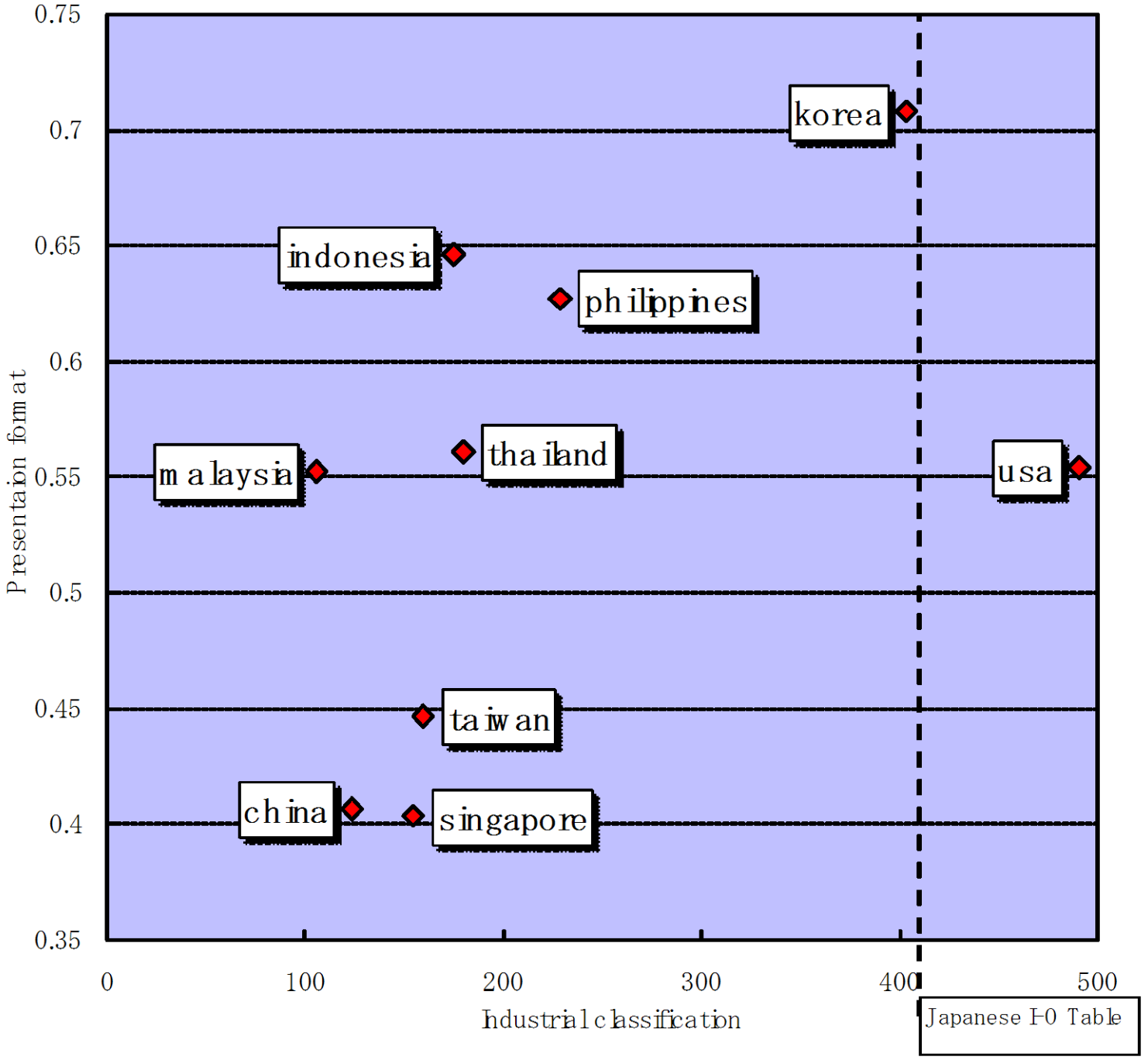
Valuation schemes



Adjustment of presentation format

	CHINA	INDONESIA	JAPAN	KOREA	MALAYSIA	TAIWAN	PHILIPPINES	SINGAPORE	THAILAND	U.S.A.
1. Conversion of valuation (P.7)										
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.15)				X						
3. Dummy sectors (P.16)	X		X	X	X			X		X
4. Machine-repair (P.27)	X		X				X			X
5. Financial intermediaries (P.30)			X		X			X	X	
6. Special treatment of import/export (P.32)										
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.35)						X				
8. Producers of government services (P.36)									X	X

Similarity to the Japanese I-O table

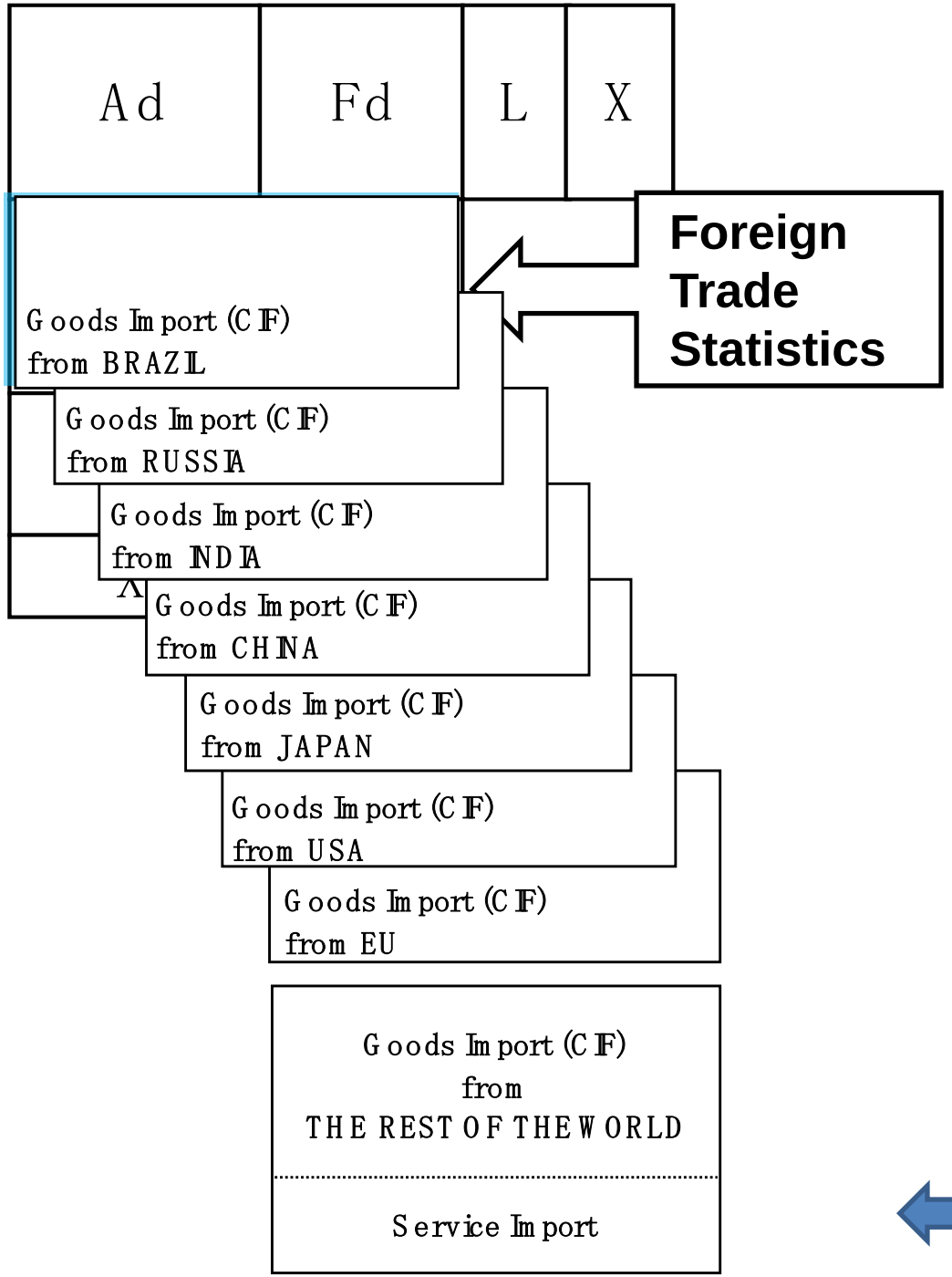


2.1 Construct a CIF import matrix: use survey information to determine the input-output structure of imported products. Harmonise the treatment of CIF/FOB adjustment, margins on imported goods, re-export/re-import. Need to match the row-totals of the matrix with the import data from foreign trade statistics (both for goods and services).

2.2 Split the CIF import matrix into matrices by country of origins: use foreign trade statistics and, ideally, the survey information on the distribution of imported items by domestic users.

2.3 Convert the matrices from CIF to basic price/producer's price: use the relevant information on taxes and margins of partner countries.

Splitting the import matrix



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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}
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Total Inputs	(XX)	X^{B}	X^{R}	X^{G}	X^{C}	X^{J}	X^{U}	X^{O}										

3.1 Redefine the concordance between the uniform I-O classification and national I-O classification, or even HS coding.
3.2 Apply RAS algorithm to establish row-column balances.
3.3 Consistency check with other statistical sources

And …that's it !!

Level 4

- **Supply and Use tables**
- **Matrix of taxes on products**
- **Matrix of trade margins and transport costs**
- **Foreign trade statistics**

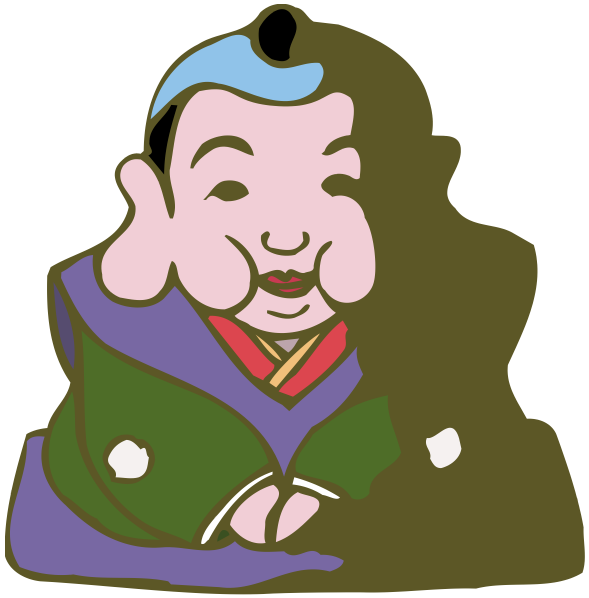
Level 1 (minimum requirement)

☺ National symmetric input-output table

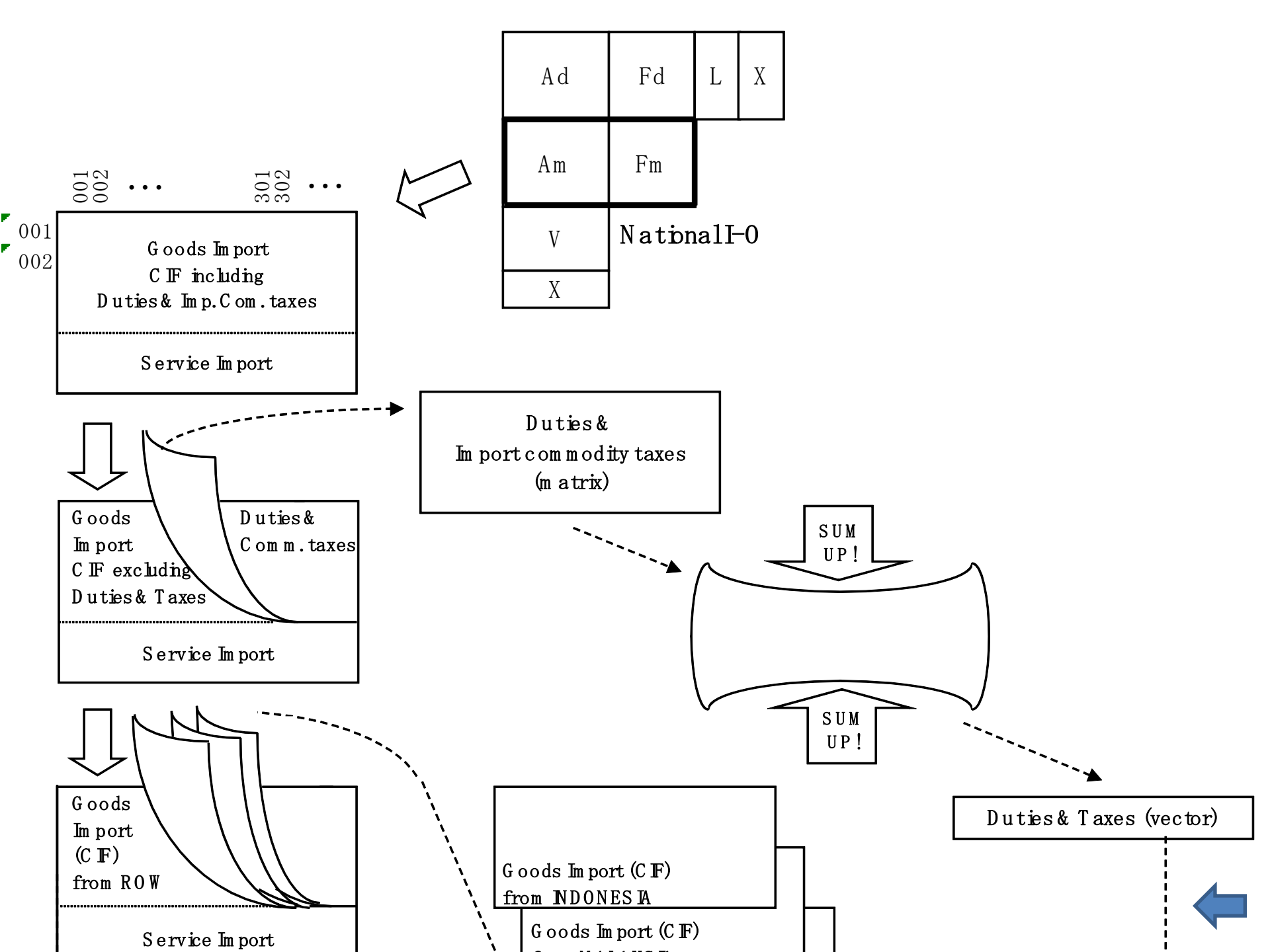
☺ Matrix of taxes on products

☺ Matrix of trade margins and transport costs

☺ Foreign trade statistics



Thank you !!


Ad
Fd
L
X
Am
Fm
V
X
NationalI-O
001
002
...
301
302
...
001
002
Goods Import
CIF including
Duties& Imp.Com.taxes
Service Import
Duties&
Import commodity taxes
(matrix)
Goods
Import
CIF excluding
Duties& Taxes
Duties&
Comm.taxes
Service Import
SUM
UP!
SUM
UP!
Duties& Taxes (vector)
Goods
Import
(CIF)
from ROW
Service Import
Goods Import (CIF)
from INDONESIA
Goods Import (CIF)