Comments on The JIP Database 2006 ("Estimation Procedures and TFP Analysis of the JIP Database 2006 Provisional Version")

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First of All... Congratulations on accomplishment of the JIP Database 2006 (provisional version)! Comparison with the KEO Database > Input-Output Table Capital and Labor Conclusion > Next Step?

Comparison of Input-Output Table between JIP and KEO

	JIP Database	KEO Database
Period	1970, 1973-2002	1960-2000 (Now updating until 2004)
Classification	108 activities! (including OOH)	47 industries (including Household), 4 non-competitive imports, and 8 scraps & by- products
Definition of IO	X-Table (commodity * commodity Table)	System of Use-Table, Make- Table, and X-Table.
Capitalization of Software	The final version will capitalize prepackaged and own-account software.	Three kinds of software are already capitalized.

Properties of the KEO Input-Output Table

No unreasonable negative values...

- It provides more complete description about the relationship between new products and scraps & by-products. The time-series input-output table only for scraps and by-products is estimated after 1955.
- The input-output table for scrap & by-products can be completely recognized in the intermediate inputs and final demand. Thus there is no unreasonable negative values in KEO-IO.

Procedure to estimate

- The KEO-IO does not depend on the Extended Input-Output Tables (METI) since the middle of the 1990s, except the gross nominal outputs and export/imports to check our data. (in this point, there is misunderstanding in the old manual of the JIP 2003)
- In the benchmark years, the Use Tables are carefully estimated using Commodity- and Make-Tables. We estimate time-series IO as U- and V-tables. Finally, our X-Tables are simply defined.

Comparison of Capital Input between JIP and KEO (1)

	JIP Database	KEO Database
Period	1970-2002	1955-2000 for stock, 1960-2000 for service (Now updating until 2004)
Asset Boundary	Fixed asset, only	Fixed assets, land, and inventories (consumer durables)
Asset Classification	39 assets (excluding some infrastructure in measuring stock?)	102 assets (90 tangible assets, 5 intangible assets, 3 inventories, 4 types of land)
Asset Holding Sectors	108 activities (convert the industry investment to the activity- base?)	46 industries*2(private or public), household (for dwelling and consumer durables), and 23 infrastructure
Asset Price	Defined by producer's price (?)	Purchaser's price (with time-series estimates of margin rates & transportation cost by asset)

Comparison of Capital Input between JIP and KEO (2)			
	JIP Database	KEO Database	
Benchmark	1970 NWS (excluding infrastructure)	1955 NWS	
Depreciation Rates	BEA Estimates	For motor vehicle and dwellings: estimates of age-price profiles using Japan's data; For other assets: estimates using Japan's tax- lives and the Hulten-Wykoff-declining balance rates	
User cost of capital	 (a) Exogenous RoR (Longterm prime rate) (?) (b) Ex-post asset price changes (?) (c) Tax: only corporate income tax (?) 	 (a) Endogenous RoR by industry (Estimate an asset-specific, after-tax real rate of return for each asset in each industry) (b) Ex-post asset price changes (c) Tax system: capital consumption allowances, income allowances and reserves, special depreciation, corporate income tax, business income tax, property taxes, acquisition taxes, debt/equity financing, capital gain taxes, and dividend tax. 	

Difference of Benchmark Year

Aggregate Net Capital Stock (Fixed Assets, Only: at Constant Prices)

Asset Boundary	Benchmark	Av G	erage Ann rowth Rate	ual es
		1960-70	1970-75	1975-90
1968 SNA	1970 Benchmark		15.3%	5.9%
1993 JSNA	1970 Benchmark		12.7%	5.7%
1968 SNA	1955 and 1970 Double Benchmarks	7.9%	11.6%	5.1%
1993 JSNA	1955 Single Benchmark	10.2%	8.9%	5.3%
1993 SNA (packaged and own software)	1955 Single Benchmark	9.8%	8.7%	5.1%
	Asset Boundary 1968 SNA 1993 JSNA 1968 SNA 1968 SNA 1993 JSNA 1993 SNA (packaged and own software)	Asset BoundaryBenchmark1968 SNA1970 Benchmark1993 JSNA1970 Benchmark1968 SNA1970 Benchmark1968 SNA1955 and 1970 Double Benchmarks1993 JSNA1955 Single Benchmark1993 SNA (packaged and own software)1955 Single Benchmark	Asset BoundaryBenchmarkAw GBoundary1960-701968 SNA1970 Benchmark1993 JSNA1970 Benchmark1968 SNA1955 and 1970 Double Benchmarks1968 SNA1955 Single Benchmark1993 JSNA1955 Single Benchmark1993 SNA (packaged and own software)1955 Single Benchmark	Asset BoundaryBenchmarkAverage Ann Growth RateBoundary1960-701970-751968 SNA1970 Benchmark-15.3%1993 JSNA1970 Benchmark-12.7%1968 SNA1955 and 1970 Double Benchmarks7.9%11.6%1993 JSNA1955 Single Benchmark10.2%8.9%1993 SNA (packaged and own software)1955 Single Benchmark9.8%8.7%

Growth of Aggregate Net Capital Stock



JIP Database: Homepage of the JIP 2006 (http://www.rieti.go.jp/jp/database/d04.html) KEO Database: Updated estimates of Nomura (2004) (including own-account software)

Growth of Aggregate Capital Service



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Land as a Capital

Share of Land to Total Capital Stock in 2000

- 23.6 percent in the U.S. (Jorgenson and Landefeld. 2005)
- 43.5 percent in Japan (Nomura, 2004)

Impacts to TFP

- Canada: Neglecting of land and inventories leads to a decline in average TFP growth rates of 0.1 percent per year during 1963-96 (TFP Growth=0.5-0.6), Diewert and Lawrence (2000)
- Japan: Neglecting of land and inventories leads to a decline in average TFP growth rates of 0.7 percent per year during 1960-2000 (TFP Growth=1.5), Nomura (2004)

Impacts to Relative Prices (PPP for Capital Inputs) in 1990 (Nomura, 2004)

- Relative Price of Capital Stock between the U.S. and Japan
 1.31 for fixed assets
 3.05 for total assets
- Relative Price of Capital Services between the U.S. and Japan 1.36 for fixed assets 1.70 for total assets

Comparison of Labor Input between JIP and KEO

	JIP Database	KEO Database
Period	1970-2002	1960-2000 (Now updating until 2004)
Gender	1. male, 2. female	
Employment Status	1.self-employed & unpaid family workers2.full-time salary workers3.part-time salary workers	1.employees2.self-employed3.unpaid family workers
Age	11 classes	
Education	4 classes	
Industry	107 activities (excluding OOH) (convert the industry data to the activity-base data?)	43 industries (expanding to 46 industries, excluding household)

Growth of Aggregate Labor Service



Data (Tornqvist Index of Labor Services): JIP Database: Homepage of the JIP 2006 (http://www.rieti.go.jp/jp/database/d04.html) KEO Database: Nomura (2004)

Conclusion (1) Is There Proper Industry Classification for Productivity Analysis?

Production and Price Data

Roughly speaking, it is possible to estimate the time-series production data with 300-400 industries after 1970 using the Benchmark IO Tables and other production data. The METI's Extended IO Tables gives an example. It is an estimate using between-years production data without any direct investigation for the internal structure.

Capital and Labor Data

The key obstacle to expand industry classification may be lack of the detail facts for capital and labor. Very roughly, we may have only one-digit or twodigit "industry" data.

What size of classification can satisfy both of economists and statisticians?

- Economists require more detail classification, but statisticians may hesitate to expand industry without any observation...
- At the KEO Database, we have basically two strategies: the first is KLEM productivity database with 40-50 industries and the second is time-series production database with more than 300 industries (and more commodities).
- However, I agree with that the JIP's challenging work is very valuable for the NA. Obviously, the JIP is pioneering in this field in Japan. Although we have to examine whether the 108 industry data can provide a good picture for each industry, the challenge should be continued.

Conclusion (2) What is the Next Step?

Role of productivity database on the National Accounts

- It may have a role as an anchor to sustain consistency among accounts in the NA.
- The JIP 2006 will not only provide a better picture to understand the Japanese economy, but also illuminate the hidden problems in the Japanese NA.
- At the ESRI, Cabinet Office, we started the Capital Project to sweepingly revise the official statistics for capital stock, and newly provide capital service statistics.
- I believe, The Time Has Come to consider how our knowledge and experience in the JIP and KEO databases could contribute to improve the official national accounts and construct the Japan's "official" productivity database in the future!