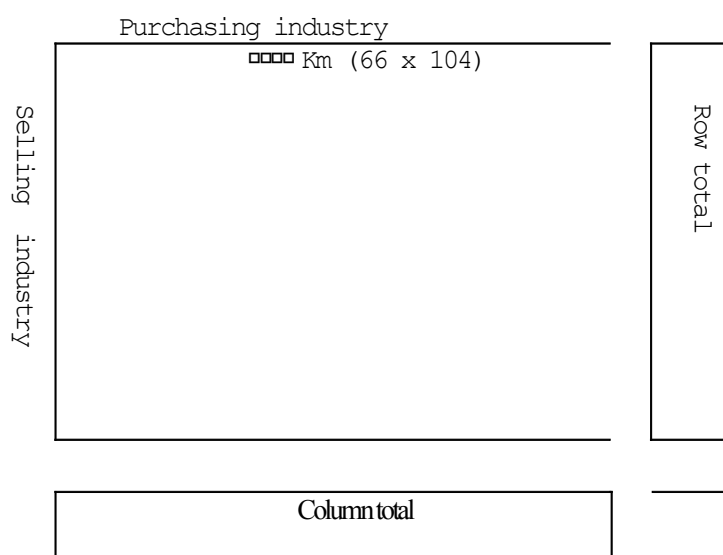# On the Capital Matrices of JIDEA 6

Yasuhiko SASAI

Every base year, Statistical Office supplies capital matrix data which is made of gross capital formation at row side and the industries which purchase the capital goods at column side. From the original data, we arranged capital matrices for JIDEA 6. The row numbers is 66 same as JIDEA 6 sectors and column number is 104. The official data are supplied as two matrices; one is for private gross capital formation and the other is for governmental gross capital formation.

We use this matrix to convert the selling industry side investment to purchasing side investment. By this conversion, we can calculate investment function by investing(purchasing) industry not by selling(producing) capital goods industry. The investment by investing industry is the general notion of investment. After the estimation of investment by investing industry, the amount of investment is get back to supplying investment goods industries to adopt I-O table definition.

Fig. 1 Capital matrix

We have 4 capital matrices on the base years 1985, 1990, 1995 and 2000. Each matrix is made into coefficient matrix dividing by row total or column total.

The 30 sectors out of 66 sectors of JIDEA model produce capital goods and 4 sectors such as Non metallic ores, Plastic products, Iron and steel and Non-ferrous metal have minus production, which mean scrappage of capital goods. Total minus production of capital goods is 0.24% of total plus production, accordingly in JIDEA model, we neglect the minus production sectors of capital goods.

Table 1. Selling side total of capital-matrix in descending % order (Billions of 1995 Yen)

	iprr	1985	1990	1995	2000	%
51	Constructi	30701	48460	34953	31281	73.8
57	Trade	4976	9462	8895	9807	23.2
53	Civil eng	5324	9000	10151	7170	16.9
35	Machine sp	5337	7674	6064	5737	13.5
63	Inform ser	1834	2432	3177	5466	12.9
39	Computer	1145	2317	3035	4453	10.5
34	Machine ge	2512	4178	3710	4287	10.1
46	Motor vehi	3308	2416	2803	3113	7.3
64	Busines serv	978	1701	2558	2878	6.8
40	Communic e	474	1493	2117	2690	6.3
44	Heavy elec	1613	2746	2622	2553	6.0
37	Mach offic	655	1487	1715	2238	5.3
41	El apld&me	1467	1970	1700	1876	4.4
47	Other vehi	8	2962	2313	1859	4.4
36	Machine ot	1341	2036	1641	1614	3.8
49	Precision	744	1224	1140	1414	3.3
48	Other tran	1690	1793	1099	1111	2.6
50	Mfg miscel	502	641	631	901	2.1
59	Transport	365	632	652	677	1.6
11	Furniture	872	1408	815	621	1.5
38	Mach hous	803	263	259	497	1.2
33	Metal othe	372	515	442	389	0.9
52	Civil eng	315	224	162	237	0.6
31	Proce Nonf	212	187	205	206	0.5
1	Agri,fishe	213	253	193	193	0.5
9	Clothing	149	243	232	188	0.4
45	Oth light	146	141	129	163	0.4
8	Textiles	110	152	143	139	0.3
32	Metal cons	28	19	18	21	0.0
10	Wood	22	19	16	16	0.0

The number of columns is 104. It is the largest number of capital matrix supplied by the statistical office. There are 5 sectors which have no data, namely Water supply, Central government service, Local government service, Road construction and Environment health service. These sectors are used by governmental investment. The government capital matrix which JIDEA model does

not include, as the government investment is exogenous variable for JIDEA model.

Table 2. The largest 25 purchasing sectors' total of capital matrix (Billions of Yen)

	invr	1985	1990	1995	2000	%
99	Dweling	11880	19066	19399	17748	18.9
90	Leasing	1878	6825	6234	6908	7.4
62	ElectricPw	3773	4731	6144	5585	6.0
79	Communicat	1457	2516	3155	5293	5.6
70	House rent	6469	9924	5893	4416	4.7
85	Med&Health	1852	2530	2959	3633	3.9
67	Retail sal	2367	3465	2544	2848	3.0
49	Automobile	2191	3860	2212	2215	2.4
66	Wholesales	2223	3195	2435	2085	2.2
93	Entertainm	1177	2523	2249	1990	2.1
68	Finance&In	867	2105	1586	1955	2.1
83	Education	1277	1452	1780	1848	2.0
45	Elect&ComE	774	1374	1121	1742	1.9
71	Railway Tr	484	2021	2272	1740	1.9
46	Semicon &	433	1127	917	1584	1.7
1	Agri crops	1555	1455	1316	1374	1.5
10	Food produ	713	1056	1162	1223	1.3
84	Research	164	905	1215	1169	1.2
72	Road Trans	1063	1723	1392	1086	1.2
94	Restaurant	1581	1067	833	1073	1.1
95	Hotels	1581	2683	1232	1034	1.1
54	Publ&Print	595	1068	862	974	1.0
44	ElectMacBu	594	1156	897	959	1.0
55	PlasticPro	982	915	794	880	0.9
89	Informatio	303	458	706	873	0.9
92	OthOfficeS	727	845	935	865	0.9

These matrices are only exist base year. That means for JIDEA model, we have four matrices on 1985, 1990, 1995 and 2000. Accordingly, the rest of the year, we linearly linked these matrices and after 2000 to2020, we supposed the matrix 2000 has no change. Each component of capital matrices as time series express several different pattern of change. We cannot say that they present the real industry tendency but after the simulation by JIDEA, we can judge if the matrices is correct or not. The figures shown as follows are some examples of components of matrices. The examples are taken from automobile purchased as capital good by investing industries.

Graph 1.

Automobil purchased by 7 Nonmet ores sector
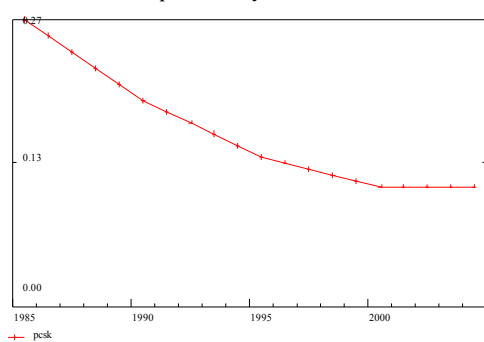
Graph 2.

Automobil purchased by 10 Food products sector
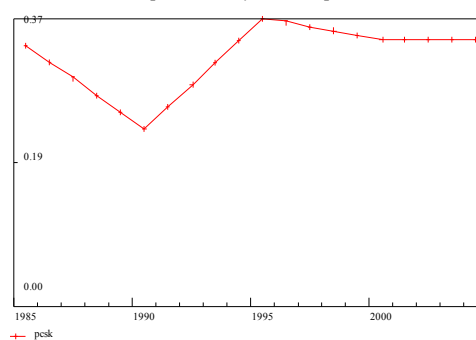
Graph 3.

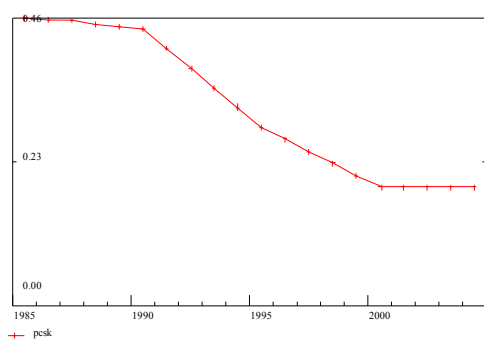Automobil purchased by 11 Beverages sector
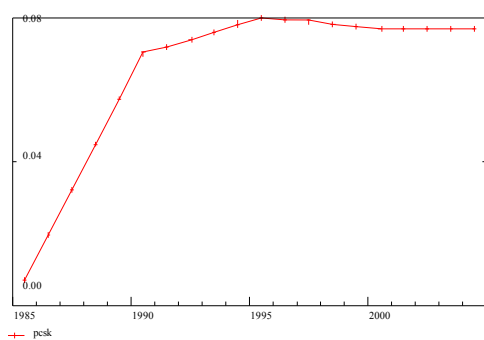
Graph 4.

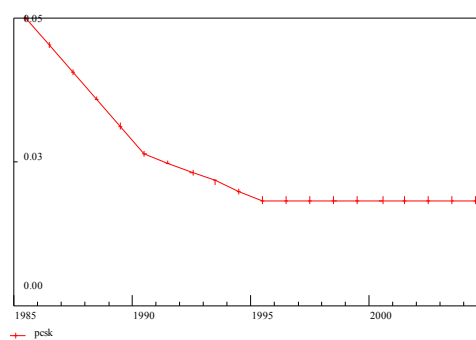Automobil purchased by 13 Tobacco sector
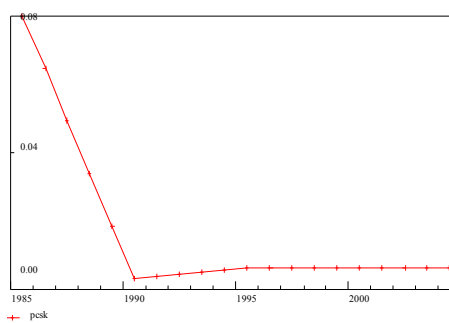
Graph 5.

Automobil purchased by 14 Spining & weaving sector
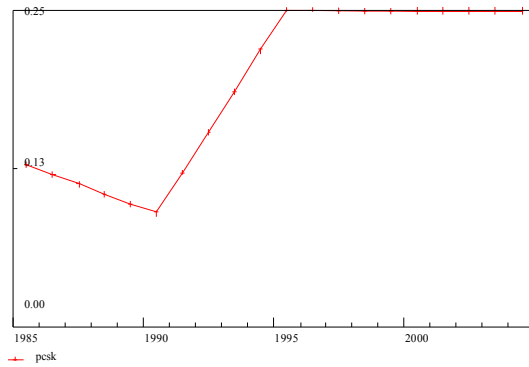

Graph 6.

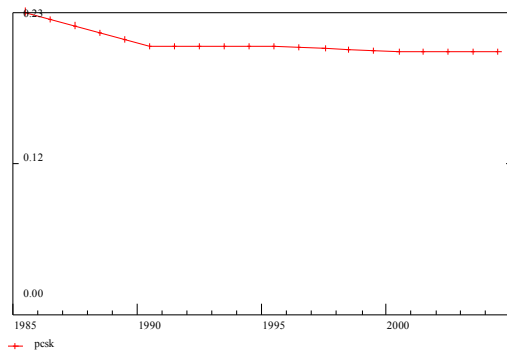Automobil purchased by 21 Inorganic chemical sector

Graph 7.

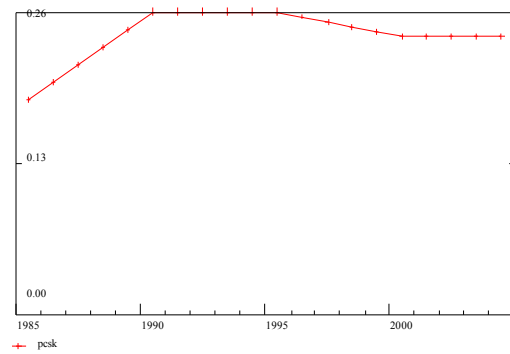Automobil purchased by 22 Organic chemical sector

Graph 8.

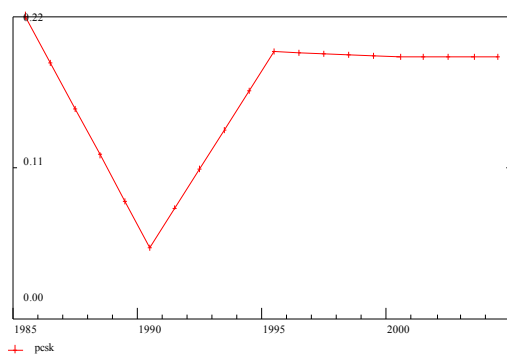Automobil purchased by 24 Chemical fibers sector

Graph 9.

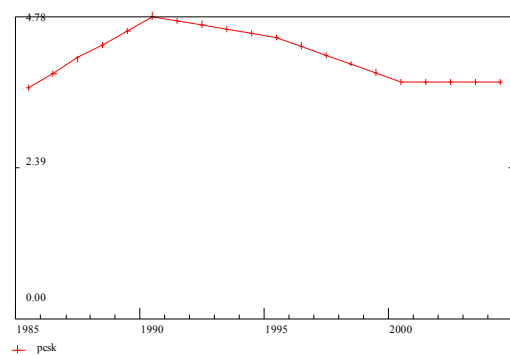Automobil purchased by 43 Machinery Business & Serv sector

Graph 10.

Automobil purchased by 40 General MachineryIndustry sector

Graph 11.

Automobil purchased by 48 Other electro equipments sector

Graph 12.

Automobil purchased by 72 Road Transportation sector

JIDEA model also prepare other matrices. One is to convert output by 66 sectors to 104 sectors. 104 sectors output is needed to estimate 104 sectors investment function.