

***Japanese IT industry in a micro and a macro economic contexts:
Simulation of Japanese Macro Dynamic Input-Output analysis in JIDEA model***

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1. Growth of Information Technology Industry

In analyzing the influences of economy and employment in Information Technology, the Information Technology producing industries were defined as “producers of goods and services that support IT-enabled business practices and processes across the economy, as well as the Internet and e-commerce”, in the annual reports of Digital Economy¹ by U.S. Department of Commerce, listed as Hardware Industries, Communications Equipment Industries, Software/Service Industries and Communications Services Industries.

According to this report, the real economic growth rate had been 3.8% during 1996 -97, creating 3 millions of employment, of which the ratio of IT industries to the whole economy was 7.5%, and contributed by 15.8% to the growth of GDP. In the estimation of this report, IT related industries shared 7.9% in GDP, and contributed by 12.4% to the nominal economic growth in 1997, and the share in GDP was 8.2% and the ratio of contribution to economic growth was 14.7% in 1998.

*As far as we observed the figures in the late 1990s, IT producing industries pulled the U.S. Economy strongly. However, in the recent Digital Economy 2002, IT industries in the new economy of the United States were defined differently from the former reports, which exclude Radio and TV broadcasting industries, “considered “**content**” providers, not IT infrastructure producing sectors”.²*

The impacts of the re-defined IT industries on the U.S. economy are as follows. Although the growth rate of real outputs in IT producing industries in 2000 is reducing the speed, its 18.5% is still enough high to comparable with the rate of growth in late 1990s. Compared with the figure of growth rate of real GDI that is 4.7% in 2000, the growth speed is more than three times. Although the share of IT producing industries to the output in the whole U.S. economy is 7 – 8% only, the contributive rate in real growth observed is around 30%. Narrowed the targeted industries to the growth engine, it is worth evaluating the strong influence onto the new economy.

Table 1. Impact of IT producing industries in the United States

¹ Economics and Statistics Administration, **The Emerging Digital Economy**, U.S. Department of Commerce, 1998.

² Economics and Statistics Administration, **Digital Economy 2002**, U.S. Department of Commerce, 2002, p.24.

	1996	1997	1998	1999	2000
<i>Growth rate of real outputs in IT industries</i>	22.7	20.0	24.7	20.7	18.5
<i>Growth of real GDI</i>	3.5	4.5	5.0	4.5	4.7
<i>Contribution of IT industries</i>	1.1	1.1	1.5	1.2	1.2
<i>Contribution of Non-IT industries</i>	2.4	3.4	3.5	3.3	3.5
<i>Contribution of IT industries to economic growth</i>	32.0	25.0	29.0	28.0	26.0

Sources: Rearranged from Economics and Statistics Administration, **Digital Economy 2002**, U.S. Department of Commerce, 2002.

IT producing industries in Japan were defined as the sum of the following 10 industries in 100 sectors of JIDEA5 model. Sector 48 "Machine office", 51 "Computer", 52 "Communication equipment", 54 "IC", 55 "Electronics part", 82 "Communication", 83 "Broadcasting", 86 "Research", 91 "Information service", and 94 "Business service" are classified in IT producing industries, while Non-IT producing industries, such like 1-47,49-50,53,56-81,84-85,87-90,92-93,and 95-100, were classified to include all other except the above IT producing industries, although such industries might purchase the huge amounts of the IT related goods and services, because our analysis focuses on the IT producing industries themselves, but excludes the side of purchasing industries. Besides these criteria of classification, we included broadcasting business into IT producing industries, despite the recent U.S. classification redefined excludes this industry.

Presumably, it is the reason why the ratio of IT producing industries to GDP in Japan was indicated like 12%, higher than the U.S. figure by 3% - 4%.

2. Estimation of IT Industry growth on Japanese economy in JIDEA5 model

Under the severe economic environment such that the growth rate of GDP were 0.5% - 0.75% lower than 1% during the time period from 2003 to 2005, the growth rate of IT producing industries were 1.5% - 2.68%, the rate of growth of Non-IT producing industries in 2003-4 was 0.56%, on the other hand, the growth rate of IT producing industries was 2.68%, five times faster than Non-IT producing industries.

Table 2. Impact of IT producing industries in Japan

	2002-03	2003-04	2004-05	2005-10
<i>Growth rate of real outputs in IT industries</i>	1.289	2.683	1.502	1.121
<i>Growth rate of real outputs in Non-IT industries</i>	0.411	0.558	0.267	0.205
<i>Growth of real GDP</i>	0.854	0.751	0.509	0.408
<i>Real Output share of IT industries to Total output</i>	11.766	11.988	12.119	12.615
<i>Contribution of IT industries to growth</i>	0.130	0.242	0.093	0.058
<i>Contribution of Non-IT industries to growth</i>	0.724	0.509	0.416	0.350
<i>Rate of Contribution of IT industries to growth</i>	15.17	32.16	18.20	14.14
<i>Change of employment in IT industries</i>	0.148	1.529	0.467	0.303
<i>Change of employment in Non-IT industries</i>	-0.089	0.401	0.111	0.105
<i>Employment share of IT industries to Total employment</i>	9.04	9.14	9.12	9.20

Sources: The table was built using the simulation results of Baseline of JIDEA5 model without any exogenous shocks.

To compare the figures of employment at the same period, Non-IT producing industries grew only by 0.40%, employment in the IT producing industries grew by 1.53%, almost four times difference. Compared the estimation until 2010, without any exogenous shocks in the current industrial structure, although the employment in Non-IT producing industries was perceptible only in a tiny change, the growth rate of employment in IT producing industries was 3 times faster than one in the Non-IT industries.

3. Baseline and IT Investment Increase in JIDEA5 model

Mentioned previously, we made an extrapolative estimation until 2010 with JIDEA5 model of 100 sector inter-industry analysis based macro dynamics without any exogenous shocks. The results of simulation by sector and changes in macro economic variables are shown in **Table 3-1. Simulation Summary of Baseline in JIDEA5**. The figures of 2005-10 show the average rate of growth of this time period. The unit of output is measured in trillion Yen. Figures in right hand indicate the rate of change.

According to our simulation of Baseline, Japanese economy which GDP in 1995 price was 548.87 trillion Yen in 2003 grew to 589.15 in 2010, the average growth rate during five years from 2005 to 2010 was estimated 1.07%. Demand for Dwelling Consumption tends to be negative changing awfully in a decade of 2000s. Rate of unemployment measured in percentile, 6.42 % in 2003 is dropping down to 2.18 % in 2010 to improve

To take a look at the change of output by industry, the ratio of growth in manufacturing as a whole to the previous year was negative even in 2003, and dropping down until 2010. Among those serious industries would be 04 Textile which the average growth rate from 2005 to 2010 was simulated as the worst figure like -9.13%. Compared the reclassified industries to 32 sectors, 02 Mining sector is also an serious industry which average growth rate from 2000 to 2005 is -5.30%, 2005 to 2010 is -6.02%. In contrast to these traditional sectors, 24 Communication is the most vital sector in the economy until 2010.

As demonstrated in the previous section, IT producing industries consist of 10 sectors in 100 industries of JIDEA5 model has been continuing the driving power in the economy. Reclassified IT producing industries, we can demonstrate how IT producing industries is strong enough to drive the economy different from Non-IT producing industries in output, employment, export, and import from now on forward. These figures are depicted in **Figure 1** for output, **Figure 2** for employment, **Figure 3** for export, and **Figure 4** for Import. These figures from Figure 1 to Figure 4 were made by coupling **Table 3** of Baseline and **Table 4** of IT Investment 5% increase from 2003 to 2005.

During 2005-2010, IT shock, investment 5% increase in IT producing industries, on the output accelerates both sides of industries, but more in IT producing industries. Also, IT shock on the employment accelerates larger in IT producing industries than Non-IT producing industries, reducing the rate of unemployment from 5.48% to 5.28% in 2005. However, although the total employment in the Non-IT producing industries after IT shock would increase by 6.72 in 2010, the total employment of IT producing industries would be unchanged in 2010. It is presumed that this causes from the substitution among productive factors in IT producing industries from labor to capital. In spite of the same behavior in the IT shocked export as the export in the baseline, the import after IT shocks jumps from 7.52% change to 7.72% change during 2005-2010.

Table 3-1. Simulation Summary of Baseline in JIDEA5*JIDEA Simulation Summary**GDP Components by Expenditure Category (Trillion of Yen)*

	Value			Average growth rate				
	2003	2005	2010	85-90	90-95	95-00	00-05	05-10
<i>GDP (nominal)</i>	516.48	521.90	550.40	6.00	2.50	1.77	-0.34	1.06
<i>GDP (1995 price)</i>	548.87	558.60	589.15	4.61	1.54	1.38	0.57	1.07
<i>GDP deflator</i>	0.94	0.93	0.93	1.39	0.96	0.39	-0.91	0.00
<i>Private consumption</i>	328.66	337.20	361.15	4.66	2.82	1.46	1.47	1.37
<i>Dwelling construction</i>	19.37	17.85	16.19	8.44	-1.94	-0.91	-5.45	-1.95
<i>Private investment</i>	82.91	85.22	91.38	9.35	-2.39	2.62	-0.07	1.40
<i>Exports</i>	63.79	68.57	79.62	1.03	0.81	5.67	2.23	2.99
<i>Imports</i>	59.55	64.21	82.50	9.97	3.77	3.84	3.85	5.01
<i>Unemployment rate (%)</i>	6.42	5.48	2.18	-4.27	8.42	11.19	-0.44	-18.44
<i>Trade balance (Billion in US\$)</i>	-42.99	-57.30	-149.65	-29.56	16.00	-8.22	0.00	19.20
<i>IT industry output total</i>	117.95	123.04	133.89	8.66	3.83	5.57	1.42	1.69
<i>Other industry output total</i>	883.47	895.34	933.23	4.49	0.87	0.96	0.29	0.83
<i>IT industry employment total</i>	0.65	0.66	0.69	4.71	1.67	1.37	0.34	0.88
<i>Other industry employment total</i>	6.45	6.50	6.70	0.71	0.65	1.40	-0.02	0.62

Table 3-2. Simulation Summary of Baseline in JIDEA5

Output by sector (Trillion of 1995 Yen)

	2003	2005	2010	85-90	90-95	95-00	00-05	05-10
<i>Total output</i>	1001.42	1018.38	1067.12	4.80	1.13	1.43	0.43	0.94
<i>01 Agriculture, Forestry & Fishery</i>	13.73	13.05	11.47	-0.40	-1.47	-0.96	-2.89	-2.58
<i>02 Mining</i>	1.37	1.25	0.92	3.05	-7.24	-0.41	-5.30	-6.02
<i>Total Manufacturing</i>	341.61	347.11	353.25	4.81	-0.48	2.07	0.03	0.35
<i>03 Food & beverage, etc.</i>	39.38	39.48	39.77	1.38	0.25	0.28	0.04	0.14
<i>04 Textile</i>	7.47	6.86	4.35	1.49	-5.37	-2.84	-6.89	-9.13
<i>05 Wood products & papers</i>	16.60	16.19	15.42	3.75	-1.71	-0.07	-1.83	-0.97
<i>06 Chemical products</i>	42.89	44.05	46.18	5.40	0.65	1.99	0.39	0.94
<i>07 Petroleum & coal products</i>	11.49	11.74	12.57	2.20	3.35	1.49	0.76	1.37
<i>08 Glass & cement, etc.</i>	9.26	9.12	8.79	4.06	-1.07	0.18	-1.40	-0.74
<i>09 Iron & steel</i>	20.78	20.71	20.40	1.14	-1.98	1.71	-1.10	-0.31
<i>10 Non-ferrous metal</i>	6.97	7.09	7.11	3.61	0.65	2.45	-0.24	0.06
<i>11 Metal Products</i>	15.88	16.07	16.66	6.06	-0.77	0.60	-0.14	0.73
<i>12 General machinery</i>	26.34	26.78	27.74	5.45	-2.95	1.76	-0.09	0.70
<i>13 Electrical machinery</i>	75.22	77.69	78.25	9.52	2.55	6.18	1.01	0.14
<i>14 Transportation equipments</i>	46.07	48.32	53.71	6.55	-1.44	1.43	1.44	2.12
<i>15 Precision machinery</i>	3.68	3.53	3.02	4.35	-3.61	1.07	-2.61	-3.13
<i>16 Miscellaneous manufacturing</i>	19.57	19.47	19.28	5.45	-1.65	1.85	-1.08	-0.20
<i>17 Construction</i>	84.41	84.54	87.79	6.98	-1.19	-0.17	-0.67	0.76
<i>18 Electricity & gas</i>	21.24	21.65	23.16	4.52	2.16	1.87	0.94	1.35
<i>19 Water & waste treatment</i>	8.01	8.08	8.36	2.33	0.78	0.84	0.25	0.68
<i>20 Trade</i>	107.04	109.83	119.10	5.76	4.47	0.09	1.33	1.62
<i>21 Finance</i>	42.57	44.60	50.16	10.15	2.80	1.76	2.34	2.35
<i>22 Real estate</i>	66.76	67.43	70.98	2.48	3.37	-0.18	1.16	1.03
<i>23 Transportation</i>	46.16	46.81	49.49	3.24	1.45	1.84	0.86	1.11
<i>24 Communication</i>	22.86	24.40	30.33	6.41	7.38	7.45	2.60	4.35
<i>25 Public administration</i>	26.78	27.16	28.55	2.03	3.94	0.94	-0.24	1.00
<i>26 Education & Research</i>	36.32	37.17	39.50	4.06	1.54	1.56	0.67	1.22
<i>27 Hospital & Social securities</i>	41.11	41.75	44.28	4.18	4.33	2.26	0.58	1.18
<i>28 Other public service</i>	4.89	4.96	5.04	-6.20	1.84	-0.11	1.34	0.34
<i>29 Business service</i>	70.76	72.40	77.38	7.76	1.86	2.17	0.71	1.33
<i>30 Personal service</i>	58.40	59.09	60.99	3.82	0.64	1.54	0.20	0.63
<i>31 Office supply</i>	2.25	2.28	2.36	4.79	0.61	1.99	0.27	0.69
<i>32 N.E.C.</i>	5.15	4.82	4.00	-1.43	-3.50	1.17	-3.87	-3.72

Table 3-3. Simulation Summary of Baseline in JIDEA5

Export by sector (Trillion of 1995 Yen)

	2003	2005	2010	85-90	90-95	95-00	00-05	05-10
<i>Total Export</i>	63.79	68.57	79.62	1.03	0.81	5.67	2.23	2.99
<i>01 Agriculture, Forestry & Fishery</i>	0.09	0.09	0.10	-8.99	-6.20	13.04	2.94	2.22
<i>02 Mining</i>	0.02	0.02	0.02	-6.27	1.22	1.39	-0.68	0.36
<i>Total Manufacturing</i>	51.47	55.33	64.20	1.83	0.53	5.63	2.27	2.98
<i>03 Food & beverage, etc.</i>	0.23	0.24	0.26	-7.23	-5.57	3.95	2.46	1.66
<i>04 Textile</i>	0.47	0.43	0.31	-6.41	-5.43	0.74	-6.07	-6.51
<i>05 Wood products & papers</i>	0.40	0.44	0.55	2.42	-5.84	7.34	3.62	4.49
<i>06 Chemical products</i>	5.39	5.99	7.37	4.29	3.25	7.02	3.14	4.15
<i>07 Petroleum & coal products</i>	0.34	0.38	0.51	7.22	8.90	2.92	2.12	5.90
<i>08 Glass & cement, etc.</i>	0.53	0.54	0.58	-2.07	0.82	1.88	0.16	1.44
<i>09 Iron & steel</i>	1.56	1.60	1.67	-10.15	0.49	2.41	-0.92	0.74
<i>10 Non-ferrous metal</i>	0.94	1.04	1.22	-1.57	6.32	8.47	3.07	3.14
<i>11 Metal Products</i>	0.41	0.38	0.32	-8.48	-3.78	-0.47	-4.42	-3.56
<i>12 General machinery</i>	6.96	7.30	8.12	2.30	1.16	4.24	1.78	2.13
<i>13 Electrical machinery</i>	20.26	22.38	27.04	7.12	4.58	6.49	3.69	3.78
<i>14 Transportation equipments</i>	11.80	12.38	13.90	0.97	-4.13	5.08	1.29	2.32
<i>15 Precision machinery</i>	1.26	1.28	1.32	0.60	-3.81	4.49	-0.08	0.66
<i>16 Miscellaneous manufacturing</i>	0.92	0.95	1.05	-2.42	-8.47	15.49	-1.50	1.96
<i>17 Construction</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>18 Electricity & gas</i>	0.02	0.02	0.02	3.61	2.32	-3.97	0.80	1.00
<i>19 Water & waste treatment</i>	0.00	0.00	0.00	54.85	-0.94	-7.80	-0.20	0.00
<i>20 Trade</i>	4.67	5.12	6.17	-8.58	9.14	6.98	3.05	3.72
<i>21 Finance</i>	0.95	1.04	1.27	9.54	5.27	7.08	4.77	3.91
<i>22 Real estate</i>	0.00	0.00	0.00	28.85	2.14	-10.11	4.51	2.56
<i>23 Transportation</i>	4.76	5.04	5.65	-2.07	-0.62	5.08	0.87	2.31
<i>24 Communication</i>	0.15	0.18	0.23	22.13	5.55	19.74	6.21	5.39
<i>25 Public administration</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>26 Education & Research</i>	0.02	0.02	0.02	-5.31	13.55	-5.52	1.18	0.92
<i>27 Hospital & Social securities</i>	0.00	0.00	0.00	-11.56	-26.86	-15.74	-5.35	-6.97
<i>28 Other public service</i>	0.04	0.04	0.04	-4.63	3.14	-0.18	-1.34	0.27
<i>29 Business service</i>	0.68	0.68	0.69	5.84	9.00	-4.09	0.50	0.43
<i>30 Personal service</i>	0.84	0.95	1.18	11.94	-0.06	10.21	5.13	4.45
<i>31 Office supply</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>32 N.E.C.</i>	0.08	0.05	0.01	0.99	-53.07	29.43	-28.46	-24.64
<i>IT industry export total</i>	14.44	16.24	20.10	9.98	7.55	7.69	4.47	4.26
<i>Other industry export total</i>	49.35	52.33	59.52	-0.08	-0.50	5.16	1.58	2.57

Table 3-4. Simulation Summary of Baseline in JIDEA5

Import by sector (Trillion of 1995 Yen)

	2003	2005	2010	85-90	90-95	95-00	00-05	05-10
<i>Total Import</i>	59.55	64.21	82.50	9.97	3.77	3.84	3.85	5.01
<i>01 Agriculture, Forestry & Fishery</i>	2.17	2.11	2.00	-3.42	-0.39	-1.10	-1.32	-1.08
<i>02 Mining</i>	6.08	6.15	6.40	5.16	3.13	0.73	0.32	0.80
<i>Total Manufacturing</i>	38.74	42.70	58.59	13.07	5.24	4.42	4.96	6.33
<i>03 Food & beverage, etc.</i>	5.56	5.78	6.69	14.48	6.13	0.47	3.37	2.92
<i>04 Textile</i>	5.31	5.86	8.07	14.92	9.20	5.81	9.35	6.39
<i>05 Wood products & papers</i>	2.07	2.11	2.38	12.32	5.36	2.14	0.64	2.45
<i>06 Chemical products</i>	4.09	4.40	5.60	7.79	3.42	5.33	3.95	4.81
<i>07 Petroleum & coal products</i>	0.94	0.88	0.76	6.60	-3.31	-2.15	-3.07	-2.90
<i>08 Glass & cement, etc.</i>	0.45	0.47	0.57	10.66	-1.30	5.27	2.74	3.59
<i>09 Iron & steel</i>	0.38	0.36	0.33	10.24	2.77	-5.03	-5.37	-1.75
<i>10 Non-ferrous metal</i>	1.89	2.01	2.35	8.35	1.39	-0.09	2.35	3.07
<i>11 Metal Products</i>	0.46	0.51	0.69	16.22	3.51	4.75	5.34	5.87
<i>12 General machinery</i>	1.69	1.84	2.35	10.61	-1.92	8.29	4.10	4.81
<i>13 Electrical machinery</i>	10.25	12.63	22.03	18.64	16.49	9.99	8.67	11.13
<i>14 Transportation equipments</i>	2.06	2.15	2.59	20.02	1.36	2.97	2.04	3.69
<i>15 Precision machinery</i>	1.27	1.43	1.96	9.19	6.92	8.65	6.16	6.23
<i>16 Miscellaneous manufacturing</i>	2.31	2.26	2.25	20.69	-0.06	2.10	-0.75	-0.12
<i>17 Construction</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>18 Electricity & gas</i>	0.00	0.00	0.00	20.33	-17.93	0.11	3.81	6.26
<i>19 Water & waste treatment</i>	0.00	0.00	0.00	8.41	-9.62	-0.55	-3.84	-3.94
<i>20 Trade</i>	0.98	1.07	1.40	3.46	-20.43	33.54	4.97	5.32
<i>21 Finance</i>	1.94	2.24	3.24	12.01	5.56	7.75	7.86	7.36
<i>22 Real estate</i>	0.00	0.00	0.00	24.27	-15.79	-2.11	-6.44	-7.15
<i>23 Transportation</i>	3.82	4.06	4.74	5.01	4.32	6.39	3.24	3.09
<i>24 Communication</i>	0.22	0.24	0.36	11.05	7.96	22.69	0.69	8.02
<i>25 Public administration</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>26 Education & Research</i>	0.03	0.03	0.04	5.36	11.01	-1.99	2.24	4.73
<i>27 Hospital & Social securities</i>	0.00	0.00	0.00	3.58	-6.55	1.54	-3.28	-3.15
<i>28 Other public service</i>	0.05	0.06	0.06	-17.79	6.47	2.25	4.44	2.92
<i>29 Business service</i>	1.28	1.29	1.35	8.47	5.41	-2.44	-1.36	0.89
<i>30 Personal service</i>	3.67	3.72	3.90	20.13	-0.20	2.51	3.10	0.95
<i>31 Office supply</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>32 N.E.C.</i>	0.58	0.53	0.42	23.84	-8.13	2.89	-4.06	-4.80
<i>IT industry import total</i>	8.25	10.00	16.68	15.05	16.06	9.03	7.52	10.24
<i>Other industry import total</i>	51.30	54.21	65.82	9.72	2.78	3.17	3.24	3.88

Table 4-1. Simulation Summary of Investment Increase in JIDEA5*GDP Components by Expenditure Category (Trillion of Yen)*

	Value			Average growth rate				
	2003	2005	2010	85-90	90-95	95-00	00-05	05-10
<i>GDP (nominal)</i>	516.76	523.57	550.62	6.00	2.50	1.77	-0.28	1.01
<i>GDP (1995 price)</i>	548.34	559.21	589.90	4.61	1.54	1.38	0.59	1.07
<i>GDP deflator</i>	0.94	0.94	0.93	1.39	0.96	0.39	-0.87	-0.06
<i>Private consumption</i>	327.72	336.27	361.29	4.66	2.82	1.46	1.42	1.44
<i>Dwelling construction</i>	19.14	17.96	16.23	8.44	-1.94	-0.92	-5.34	-2.02
<i>Private investment</i>	83.98	86.82	91.42	9.35	-2.39	2.62	0.31	1.03
<i>Exports</i>	63.79	68.57	79.62	1.03	0.81	5.67	2.23	2.99
<i>Imports</i>	59.10	63.96	81.54	9.97	3.77	3.84	3.77	4.86
<i>Unemployment rate (%)</i>	6.41	5.28	1.93	-4.27	8.42	11.20	-1.19	-20.12
<i>Trade balance (Billion in US\$)</i>	-38.85	-54.85	-142.15	-29.56	16.00	-8.24	0.00	19.05
<i>IT industry output total</i>	118.40	123.77	134.04	8.66	3.83	5.57	1.54	1.60
<i>Other industry output total</i>	882.83	896.57	934.81	4.49	0.87	0.96	0.32	0.84
<i>IT industry employment total</i>	0.65	0.66	0.69	4.71	1.67	1.37	0.45	0.78
<i>Other industry employment total</i>	6.45	6.51	6.72	0.71	0.65	1.40	0.02	0.63

Table 4-2. Simulation Summary of Investment Increase in JIDEA5

Output by sector (Trillion of 1995 Yen)

	2003	2005	2010	85-90	90-95	95-00	00-05	05-10
01 Agriculture, Forestry & Fishery	13.69	13.03	11.46	-0.40	-1.47	-0.95	-2.93	-2.56
02 Mining	1.38	1.25	0.92	3.05	-7.24	-0.40	-5.23	-6.09
Total Manufacturing	342.68	348.81	354.76	4.81	-0.48	2.07	0.12	0.34
03 Food & beverage, etc.	39.21	39.38	39.74	1.38	0.25	0.28	-0.01	0.18
04 Textile	8.09	7.41	5.56	1.49	-5.37	-2.92	-5.27	-5.74
05 Wood products & papers	16.58	16.23	15.46	3.75	-1.71	-0.06	-1.78	-0.98
06 Chemical products	42.93	44.15	46.30	5.40	0.65	1.99	0.43	0.95
07 Petroleum & coal products	11.47	11.73	12.58	2.20	3.35	1.49	0.74	1.40
08 Glass & cement, etc.	9.27	9.16	8.79	4.06	-1.07	0.18	-1.32	-0.81
09 Iron & steel	20.81	20.79	20.41	1.14	-1.98	1.71	-1.02	-0.37
10 Non-ferrous metal	6.99	7.12	7.11	3.61	0.65	2.46	-0.14	-0.03
11 Metal Products	15.89	16.15	16.68	6.06	-0.77	0.60	-0.05	0.64
12 General machinery	26.42	26.92	27.76	5.45	-2.95	1.76	0.01	0.61
13 Electrical machinery	75.63	78.25	78.32	9.52	2.55	6.19	1.15	0.02
14 Transportation equipments	46.12	48.46	53.71	6.55	-1.44	1.43	1.50	2.06
15 Precision machinery	3.68	3.54	3.02	4.35	-3.61	1.07	-2.53	-3.19
16 Miscellaneous manufacturing	19.59	19.52	19.32	5.45	-1.65	1.85	-1.03	-0.20
17 Construction	84.43	85.10	87.85	6.98	-1.19	-0.17	-0.54	0.64
18 Electricity & gas	21.17	21.61	23.18	4.52	2.16	1.87	0.90	1.41
19 Water & waste treatment	7.99	8.07	8.36	2.33	0.78	0.84	0.23	0.71
20 Trade	106.84	109.81	119.15	5.76	4.47	0.09	1.32	1.63
21 Finance	42.50	44.61	50.21	10.15	2.80	1.76	2.34	2.37
22 Real estate	66.35	67.09	70.92	2.48	3.37	-0.18	1.06	1.11
23 Transportation	46.08	46.77	49.51	3.24	1.45	1.84	0.84	1.14
24 Communication	22.74	24.31	30.36	6.41	7.38	7.45	2.52	4.44
25 Public administration	26.74	27.19	28.59	2.03	3.94	0.94	-0.22	1.01
26 Education & Research	36.32	37.21	39.52	4.06	1.54	1.56	0.70	1.20
27 Hospital & Social securities	41.00	41.72	44.30	4.18	4.33	2.26	0.56	1.20
28 Other public service	4.88	4.95	5.03	-6.20	1.84	-0.11	1.32	0.34
29 Business service	70.91	72.73	77.46	7.76	1.86	2.17	0.80	1.26
30 Personal service	58.14	58.96	60.90	3.82	0.64	1.54	0.16	0.64
31 Office supply	2.25	2.29	2.37	4.79	0.61	1.99	0.31	0.69
32 N.E.C.	5.15	4.83	4.01	-1.43	-3.50	1.17	-3.83	-3.72

Table 4-3. Simulation Summary of Investment Increase in JIDEA5*Export by sector (Trillion of 1995 Yen)*

	2003	2005	2010	85-90	90-95	95-00	00-05	05-10
<i>Total Export</i>	63.79	68.57	79.62	1.03	0.81	5.67	2.23	2.99
<i>01 Agriculture, Forestry & Fishery</i>	0.09	0.09	0.10	-8.99	-6.20	13.04	2.94	2.22
<i>02 Mining</i>	0.02	0.02	0.02	-6.27	1.22	1.39	-0.68	0.37
<i>Total Manufacturing</i>	51.48	55.33	64.21	1.83	0.53	5.63	2.27	2.98
<i>03 Food & beverage, etc.</i>	0.23	0.24	0.26	-7.23	-5.57	3.95	2.47	1.66
<i>04 Textile</i>	0.47	0.43	0.31	-6.41	-5.43	0.74	-6.05	-6.42
<i>05 Wood products & papers</i>	0.40	0.44	0.55	2.42	-5.84	7.34	3.62	4.50
<i>06 Chemical products</i>	5.39	5.99	7.37	4.29	3.25	7.02	3.14	4.15
<i>07 Petroleum & coal products</i>	0.34	0.38	0.51	7.22	8.90	2.92	2.12	5.90
<i>08 Glass & cement, etc.</i>	0.53	0.54	0.58	-2.07	0.82	1.88	0.16	1.44
<i>09 Iron & steel</i>	1.56	1.60	1.67	-10.15	0.49	2.41	-0.91	0.74
<i>10 Non-ferrous metal</i>	0.94	1.04	1.22	-1.57	6.32	8.47	3.07	3.14
<i>11 Metal Products</i>	0.41	0.38	0.32	-8.48	-3.78	-0.47	-4.42	-3.56
<i>12 General machinery</i>	6.96	7.30	8.12	2.30	1.16	4.24	1.79	2.13
<i>13 Electrical machinery</i>	20.26	22.38	27.04	7.12	4.58	6.49	3.69	3.78
<i>14 Transportation equipments</i>	11.80	12.38	13.90	0.97	-4.13	5.08	1.29	2.32
<i>15 Precision machinery</i>	1.26	1.28	1.32	0.60	-3.81	4.49	-0.08	0.66
<i>16 Miscellaneous manufacturing</i>	0.92	0.95	1.05	-2.42	-8.47	15.49	-1.50	1.96
<i>17 Construction</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>18 Electricity & gas</i>	0.02	0.02	0.02	3.61	2.32	-3.97	0.80	1.00
<i>19 Water & waste treatment</i>	0.00	0.00	0.00	54.85	-0.94	-7.80	-0.20	0.00
<i>20 Trade</i>	4.67	5.12	6.17	-8.58	9.14	6.98	3.06	3.72
<i>21 Finance</i>	0.95	1.04	1.27	9.54	5.27	7.08	4.77	3.91
<i>22 Real estate</i>	0.00	0.00	0.00	28.85	2.14	-10.11	4.35	2.69
<i>23 Transportation</i>	4.76	5.04	5.65	-2.07	-0.62	5.08	0.87	2.31
<i>24 Communication</i>	0.15	0.18	0.23	22.13	5.55	19.74	6.21	5.39
<i>25 Public administration</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>26 Education & Research</i>	0.02	0.02	0.02	-5.31	13.55	-5.52	1.18	0.92
<i>27 Hospital & Social securities</i>	0.00	0.00	0.00	-11.56	-26.86	-15.74	-5.35	-6.97
<i>28 Other public service</i>	0.04	0.04	0.04	-4.63	3.14	-0.18	-1.36	0.26
<i>29 Business service</i>	0.68	0.68	0.69	5.84	9.00	-4.09	0.58	0.38
<i>30 Personal service</i>	0.84	0.95	1.18	11.94	-0.06	10.21	5.13	4.45
<i>31 Office supply</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>32 N.E.C.</i>	0.08	0.05	0.01	0.99	-53.07	29.44	-28.13	-24.68
<i>IT industry export total</i>	14.44	16.24	20.10	9.98	7.55	7.69	4.47	4.26
<i>Other industry export total</i>	49.35	52.33	59.53	-0.08	-0.50	5.16	1.58	2.58

Table 4-4. Simulation Summary of Investment Increase in JIDEA5*Import by sector (Trillion of 1995)*

	2003	2005	2010	85-90	90-95	95-00	00-05	05-10
<i>Total Import</i>	59.10	63.96	81.54	9.97	3.77	3.84	3.77	4.86
<i>01 Agriculture, Forestry & Fishery</i>	2.16	2.10	1.99	-3.42	-0.39	-1.12	-1.33	-1.06
<i>02 Mining</i>	6.07	6.15	6.41	5.16	3.13	0.72	0.32	0.82
<i>Total Manufacturing</i>	38.33	42.45	57.63	13.07	5.24	4.43	4.83	6.11
<i>03 Food & beverage, etc.</i>	5.53	5.76	6.67	14.48	6.13	0.46	3.32	2.94
<i>04 Textile</i>	4.85	5.46	7.14	14.92	9.20	5.96	7.76	5.37
<i>05 Wood products & papers</i>	2.06	2.11	2.38	12.32	5.36	2.12	0.72	2.38
<i>06 Chemical products</i>	4.10	4.42	5.61	7.79	3.42	5.31	4.03	4.79
<i>07 Petroleum & coal products</i>	0.94	0.88	0.76	6.60	-3.31	-2.16	-3.08	-2.87
<i>08 Glass & cement, etc.</i>	0.45	0.48	0.57	10.66	-1.30	5.26	2.84	3.50
<i>09 Iron & steel</i>	0.38	0.36	0.33	10.24	2.77	-5.04	-5.25	-1.87
<i>10 Non-ferrous metal</i>	1.90	2.02	2.35	8.35	1.39	-0.09	2.46	2.97
<i>11 Metal Products</i>	0.46	0.51	0.69	16.22	3.51	4.73	5.43	5.77
<i>12 General machinery</i>	1.70	1.86	2.34	10.61	-1.92	8.28	4.27	4.65
<i>13 Electrical machinery</i>	10.31	12.73	22.00	18.64	16.49	9.98	8.84	10.93
<i>14 Transportation equipments</i>	2.06	2.16	2.58	20.02	1.36	2.96	2.11	3.62
<i>15 Precision machinery</i>	1.27	1.44	1.95	9.19	6.92	8.63	6.28	6.09
<i>16 Miscellaneous manufacturing</i>	2.32	2.27	2.26	20.69	-0.06	2.09	-0.70	-0.07
<i>17 Construction</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>18 Electricity & gas</i>	0.00	0.00	0.00	20.33	-17.93	0.10	3.77	6.28
<i>19 Water & waste treatment</i>	0.00	0.00	0.00	8.41	-9.62	-0.57	-3.85	-3.91
<i>20 Trade</i>	0.98	1.07	1.40	3.46	-20.43	33.52	4.98	5.34
<i>21 Finance</i>	1.93	2.24	3.24	12.01	5.56	7.74	7.88	7.38
<i>22 Real estate</i>	0.00	0.00	0.00	24.27	-15.79	-2.12	-6.54	-7.05
<i>23 Transportation</i>	3.81	4.06	4.74	5.01	4.32	6.38	3.24	3.10
<i>24 Communication</i>	0.21	0.24	0.36	11.05	7.96	22.68	0.69	8.05
<i>25 Public administration</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>26 Education & Research</i>	0.03	0.03	0.04	5.36	11.01	-2.01	2.36	4.66
<i>27 Hospital & Social securities</i>	0.00	0.00	0.00	3.58	-6.55	1.52	-3.28	-3.13
<i>28 Other public service</i>	0.05	0.06	0.06	-17.79	6.47	2.23	4.43	2.92
<i>29 Business service</i>	1.29	1.30	1.35	8.47	5.41	-2.46	-1.21	0.78
<i>30 Personal service</i>	3.66	3.72	3.90	20.13	-0.20	2.49	3.09	0.93
<i>31 Office supply</i>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<i>32 N.E.C.</i>	0.58	0.53	0.42	23.84	-8.13	2.87	-4.00	-4.80
<i>IT industry import total</i>	8.30	10.09	16.65	15.05	16.06	9.02	7.72	10.03
<i>Other industry import total</i>	50.80	53.87	64.89	9.72	2.78	3.17	3.11	3.72

Figure 1. Output Shock

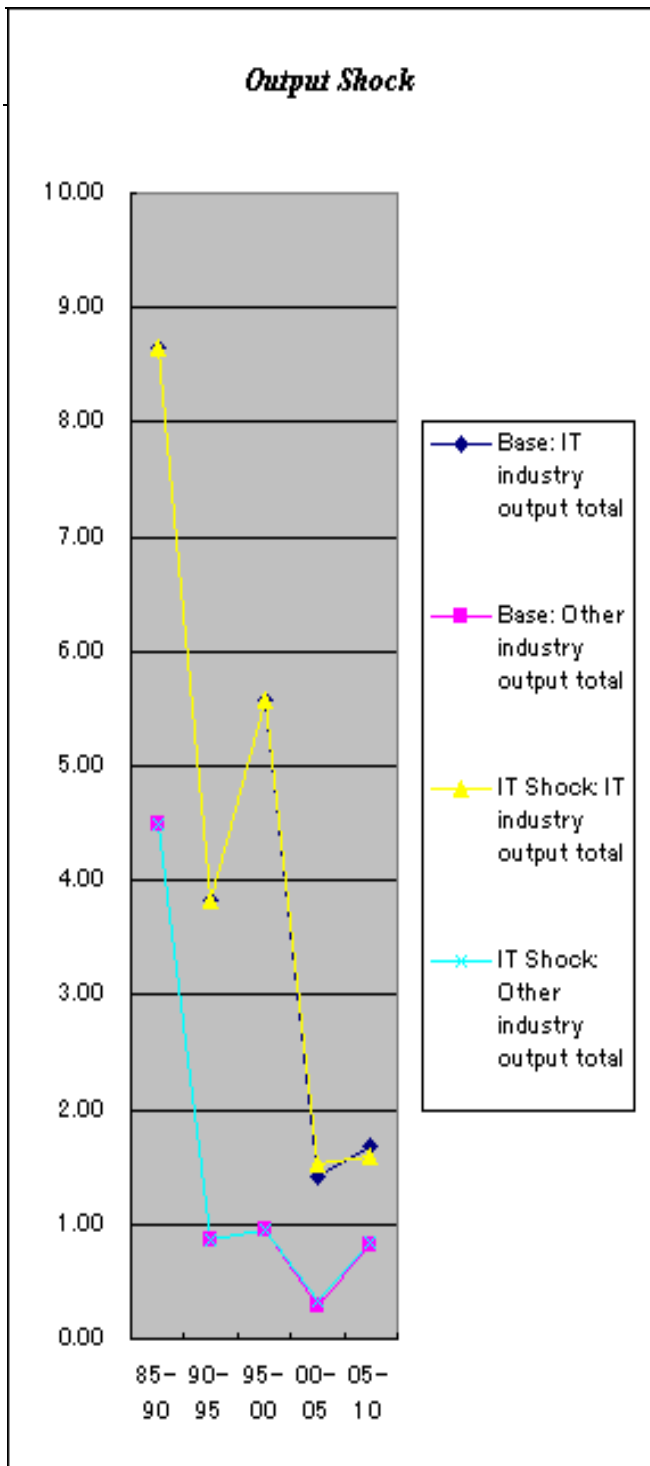


Figure 2. Employment Shock

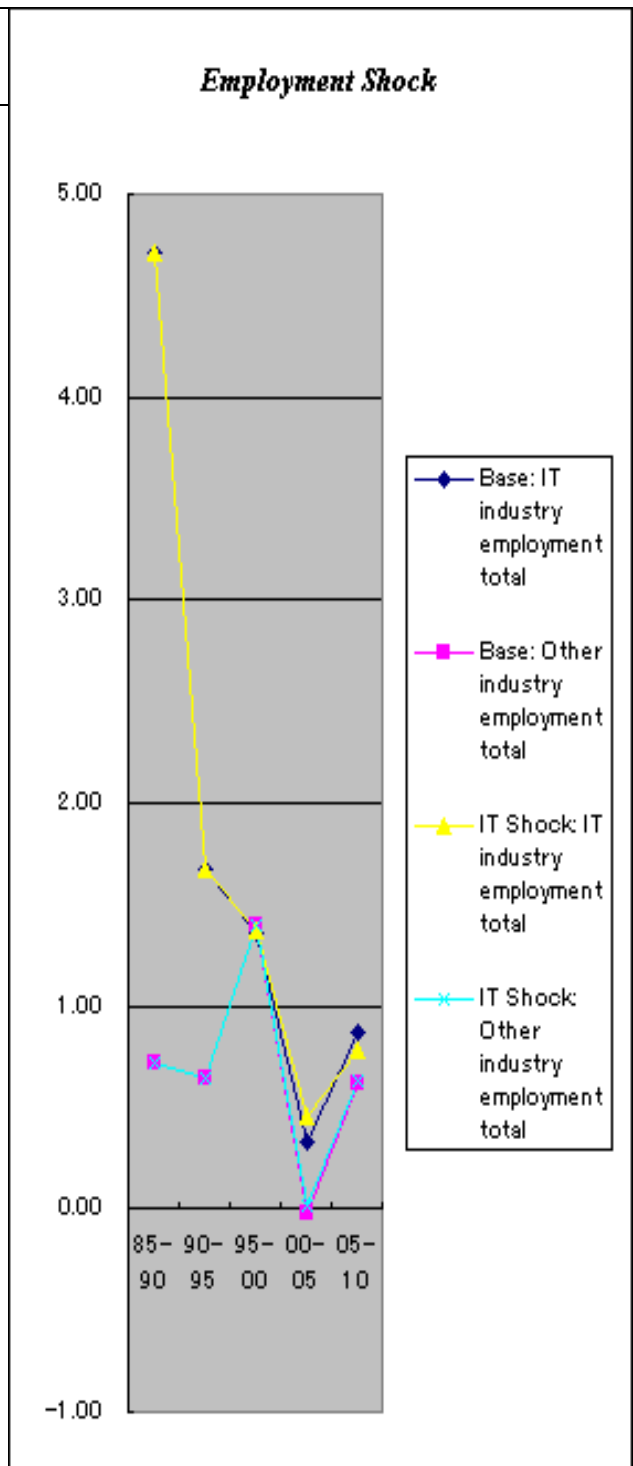


Figure 1. Export Shock

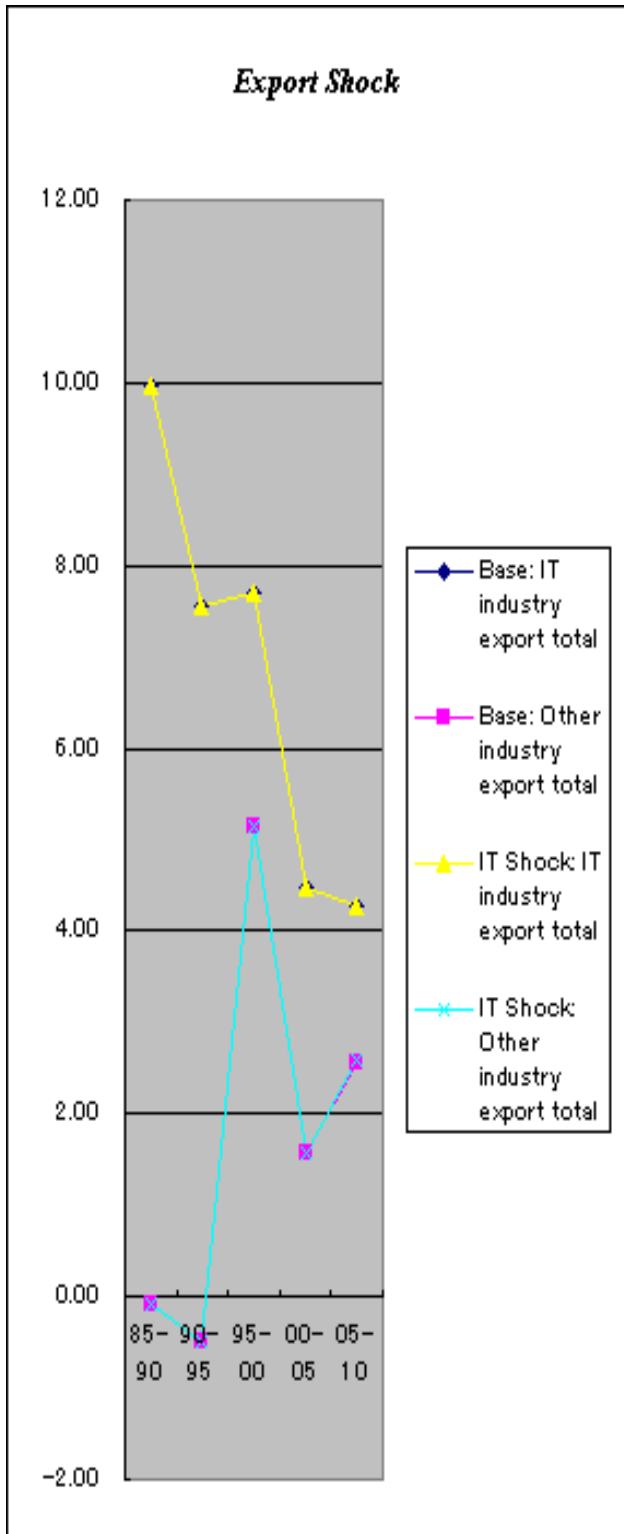


Figure 2. Import Shock

