Scientific Research

Analyzing the Role of Creative Industries in National Economy of Japan: 1995-2005

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Abstract

The purposes of this study are 1) to get another perspective related to the role of creative industries in national economy of Japan from 1995-2005 and 2) to know the ways to improve these sectors. This study employs Input-Output (IO) analysis as a tool of analysis. More specifically, this study uses simple output multipliers and demand-pull IO quantity model. Comparison with previous study is conducted in order to achieve the first objective. Another perspective related to above role is obtained from this study, namely creative industries, using simple output multipliers method, did not have an important role in national economy of Japan in analysis period. The results also show that the patterns of total output of creative industries of Japan on future period are not identic. Nevertheless, these sectors have one similarity, namely the modification of import will decrease their total output. This phenomenon indicates that import restriction related to these sector's products is needed.

Keywords

Creative Industries; Perspective; Input-Output Analysis; Import Restriction; Japan

1. Introduction

Nowadays, the contribution of creative industries could be perceived globally. This phenomenon clearly described by [1]:

   "*Globally, creative industries are estimated to account for more than 7 per cent of the world's gross domestic product and are forecast to grow, on average, by 10 per cent a year. While the economic and employment-generating potential of these industries is vast and many developing and transition countries have great potential in this area, most are still marginal players, despite their rich cultural heritage and an inexhaustible pool of*

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talent. That position reflects a combination of domestic policy weakness and global systemic biases. Ongoing research by the UNCTAD secretariat has emphasized the potential of these industries in developing countries."

The contribution of above industries is also perceived in macro level. Reference [2] explained this condition:

"*The creative industries are a significant contributor to the UK economy—accounting for* 7.9% *of GDP*, *and growing significantly faster than the economy as a whole.*"

Above facts indicate that creative industries are important components in society.

There are many previous studies discussing about creative industries. For example, [3] investigated the contribution of creative industries in urban economies of cities of Global South. Reference [4] examined the contribution of creative industries to the economic activity of Japan from macroscopic view while [5] investigated the case of Indonesia. These studies employed Structural Decomposition Analysis (SDA) as a tool of analysis. Besides, [6] analyzed the dynamics of total outputs of creative industries of Japan using Input-Output (IO) analysis. However, study compares the results of previous study, which the topic of discussion is the role of creative industries in national economy of specific country, is still thin. The kind of study is important because it can describe more detail about this role. This study is conducted to fulfill this gap.

The purpose of this study is to get another perspective related to the role of creative industries in national economy. This study will focus on Japan. Besides, this study also tries to know the ways to improve these sectors. The period of analysis of this study is from 1995-2005. This study employs IO analysis in order to achieve the objectives. The structure of this study is described as follows. Section 2 reviews the literatures used in this study. The methodology of this study will be explored in Section 3. Section 4 elaborates the calculation results and analysis of these results. Section 5 gives the conclusions and suggests the further researches.

2. Literature Review

2.1. Creative Industry Definition

According to [7], the definition of creative industries is:

"*Those industries which have their origin in individual creativity*, *skill and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property.*"

2.2. Creative Industries in Japan

The condition of creative industries in Japan was described by [8] as follows:

"*According to the* 2006 *Establishment and Enterprise Census*, *Japan's creative industries comprised* 250,000 *establishments and* 2.19 *million employees*, *representing* 4.4% *and* 4.0% *respectively of all industries… By number of establishments*, *the sector of* ③ *crafts*, *art*, *antiques and traditional culture boasts the largest size*, *comprising* 24.8% *of Japan's creative industries… Creative industries are most concentrated in the Tokyo 23-ku*, *which accounts for* 17.1% *of Japan's creative establishments and* 35.0% *of creative employees. Moreover*, *as a share of local industry*, *Tokyo's creative industries also lead the nation with a* 7.8% *share of all local establishments and* 11.2% *share of all local employees.*"

3. Methodology

As mentioned in introduction, the objectives of this study are 1) to get another perspective related to the role of creative industries in national economy of Japan and 2) to know the ways to improve these sectors. The period of analysis of this study is from 1995-2005. This study employs IO analysis as a tool of analysis. More specifically, this study uses simple output multipliers and demand-pull IO quantity model. IO tables of Japan for 1995, 2000, and 2005 are used as data.

Methodology of this study is described as follows. First, the aggregation process is conducted for the data. The number of Japanese industrial sectors for 1995, 2000, and 2005 was 93, 104, and 108, respectively. These sectors are reclassified into 89 sectors. The aim of this process is to get the compatibility among different periods. A detailed description of these sectors is given in an appendix.

Second, I select creative industries of Japan from aggregated sectors. This selection is based on the classification which is made by [8]. **Table 1** shows these industries. The next step is to explore the previous study which

Table 1. Japanese creative industries used in this study.

No.	Sector Number	Sector Name
1	19	Printing, plate making and book binding
2	47	Electrical appliance
3	52	Miscellaneous manufacturing products
4	76	Research
5	81	Goods rental and leasing services
6	84	Amusement and recreational services
7	87	Other personal services

(Source: [4]).

is conducted by [4]. This step is needed in achieving the first objective of this study. They analyzed the role of creative industries in economic activities of Japan from 1995-2005 using SDA, one of analysis tool in IO analysis. Their study is chosen as compared study because it has similar topic and methodology as well as the creative industries used.

The fourth step is to do the calculation using simple output multipliers method. This method is chosen because it can analyze the total production value of all sectors in economy which is needed in satisfying a monetary unit's worth of final demand for output of specific sector [9]. In other words, this method can analyze the effect of increase of one unit in particular sectors' final demand on national economy, the total production made by all industrial sectors in economy in order to fulfill the escalation. According to [9], the following equation is applied in the simple output multipliers calculation:

$$m(o)_j = \sum_{i=1}^{n} l_{ij} \tag{1}$$

where $m(o)_j$, n, and l_{ij} are simple output multiplier for sector j, the numbers of sectors, and sector-to-sector multipliers matrix, respectively.

The next step is to conduct the analysis related to the efforts in improving the Japanese creative industries. The demand-pull IO quantity model is employed in this step. Reference [9] described this model using the following equation:

$$x^1 = L^0 f^1 \tag{2}$$

where x, L, and f are matrices of total output of sectors, Leontief inverse, and final demand of sectors, respectively. 0 and 1 indicate initial and future times, respectively. Initial period in this calculation is 2005. The scenarios of final demand modification used in this study are described in **Table 2**.

In this study, "pure change" condition is considered in the calculation using Equation (2). This condition describes the situation which modifications of final demand are only addressed to Japanese creative industries. Recommendations are suggested based on the calculation results. Conclusions of this study and suggestions for further research are described on final step.

4. Results and Analysis

4.1. The Results of Previous Study

Tables 3 and **4** describe the results of previous study, namely the top five sectors influencing structural changes in the national economy of Japan from 1995-2000 and 2000-2005, respectively. More specifically, these tables show the results of calculation of Japanese industrial sector's gross output changes from 1995 through 2005 using SDA. Similar to this study, IO tables of Japan for 1995, 2000, and 2005 were used in the calculation. Based on information in the tables, one of the creative industries includes in former table while opposite phenomenon is seen in latter one. In other words, creative industries had an important role in national economy of Japan in 1995-2000 while the importance of these industries could not be observed in 2000-2005.

Table 2. The scenarios of final demand modification used in this study.

Component of final demand	Scenario		
	1	2	3
	Export modification	Import modification	Outside households consumption modification
Export	Rises 30%	Constant	Constant
Import	Constant	Rises 30%	Constant
Outside households consumption	Constant	Constant	Rises 30%

(Source: [6]).

Table 3. Top five sectors influencing structural changes in the Japanese national economy, 1995-2000.

No.	Sector Number	Sector Name	Value (100 Million Yen)
1	74	Public administration	100235.87
2	80	Advertising, survey and information services	97726.61
3	77	Medical service and health	80261.19
4	72	Communication	70072.69
5	47	Electrical appliance	37315.73

(Source: [4]).

Table 4. Top five sectors influencing structural changes in the Japanese national economy, 2000-2005.

No.	Sector Number	Sector Name	Value (100 Million Yen)
1	73	Broadcasting and information services	267081.42
2	60	Commerce	112557.90
3	48	Motor vehicles	103839.35
4	37	Steel products	53697.28
5	77	Medical service and health	50620.37

(Source: [4]).

4.2. The Calculation Using Simple Output Multipliers Method

Figures 1-3 describe the results of calculation using simple output multipliers method for Japanese industrial sectors in 1995, 2000, and 2005, respectively. On the other hand, **Tables 5-7** explain the top five Japanese industrial sectors viewed from simple output multipliers in these years. Creative industries do not appear in these tables. In other words, from the point of view of this method, these industries did not have an important role in the Japanese national economy in 1995-2005.

Table 8 shows the changes and patterns of simple output multipliers of Japanese creative industries in 1995-2005. Three patterns appear on these sectors, namely 1) increasing-decreasing, 2) increasing, and 3) decreasing-increasing. The dominant pattern is a second one. Based on this fact, I argue that the role of these industries in national economy of Japan was more important in 2005 than 1995.

Previous comparison show that the role of creative industries in Japanese national economy from 1995-2005 could be different if another method is used in analysis. This difference appears might be caused by the nature of the method. The method applied in previous study, SDA, uses the difference of gross output between two periods for each sector in calculation while simple output multipliers does not. **Table 9** describes the summary of the comparison. The next part discusses about the ways in improving Japanese creative industries.
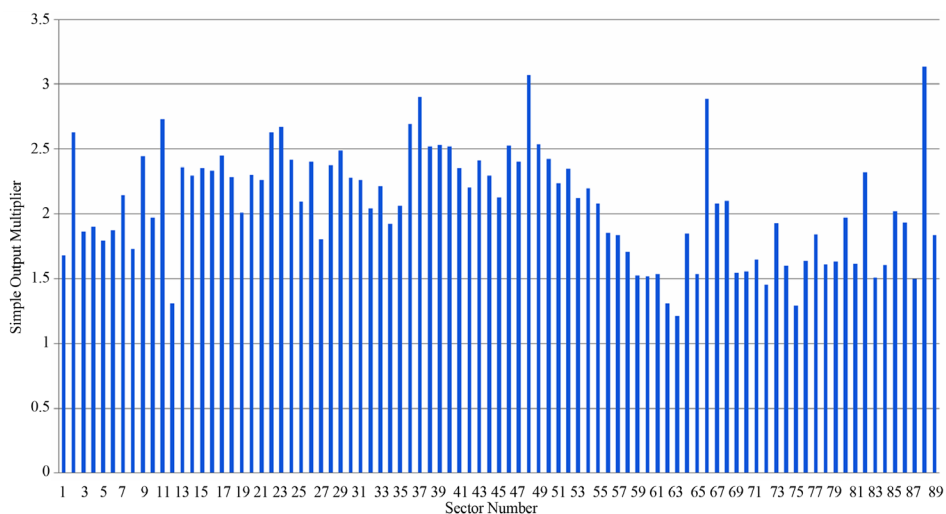
Figure 1. Simple output multiplier of Japanese industrial sectors, 1995. (Source: [10]).
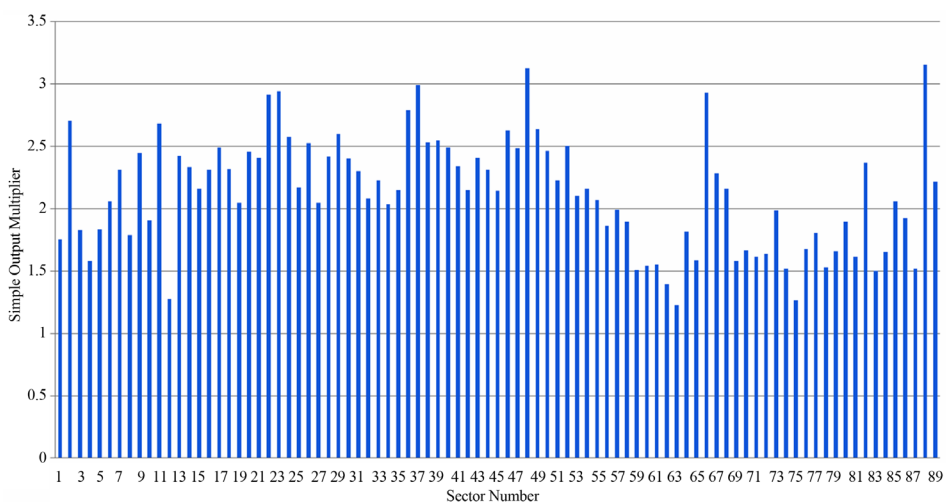

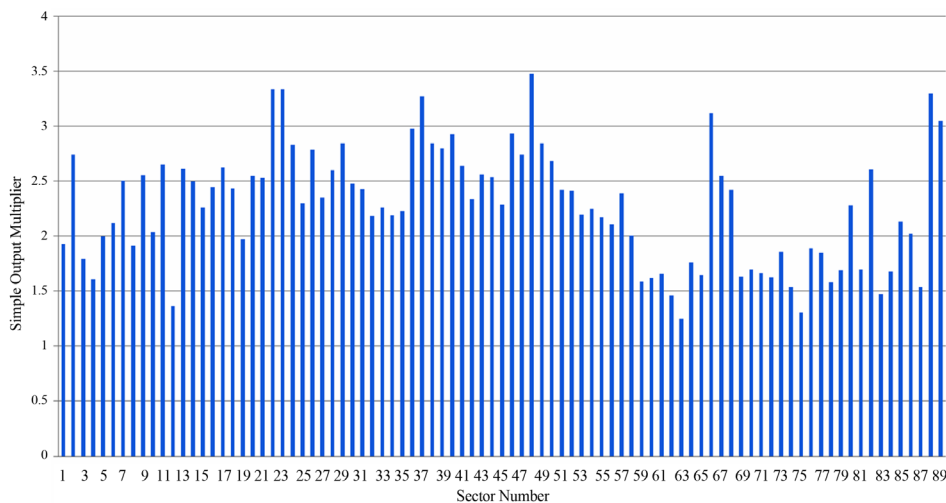**Figure 2.** Simple output multiplier of Japanese industrial sectors, 2000. (Source: [10]).

Figure 3. Simple output multiplier of Japanese industrial sectors, 2005. (Source: [10]).

Table 5. Top five Japanese industrial sectors viewed from simple output multipliers, 1995.

No.	Sector Number	Sector Name	Simple Output Multiplier
1	88	Office supplies	3.14
2	48	Motor vehicles	3.07
3	37	Steel products	2.90
4	66	Self-transport by private cars	2.88
5	11	Feeds and organic fertilizer, n.e.c.	2.73

(Source: [10]).

Table 6. Top five Japanese industrial sectors viewed from simple output multipliers, 2000.

No.	Sector Number	Sector Name	Simple Output Multiplier
1	88	Office supplies	3.15
2	48	Motor vehicles	3.12
3	37	Steel products	2.99
4	23	Synthetic resins	2.94
5	66	Self-transport by private cars	2.93

(Source: [10]).

Table 7. Top five Japanese industrial sectors viewed from simple output multipliers, 2005.

No.	Sector Number	Sector Name	Simple Output Multiplier
1	48	Motor vehicles	3.47
2	23	Synthetic resins	3.34
3	22	Petrochemical basic products and intermediate chemical products	3.34
4	88	Office supplies	3.30
5	37	Steel products	3.27

(Source: [10]).

Table 8. The changes and patterns of simple output multipliers of Japanese creative industries.

No.	Sector Number	Sector Name	Simple Output Multiplier			Pattern
			1995	2000	2005	
1	19	Printing, plate making and book binding	2.01	2.05	1.97	Increasing-decreasing
2	47	Electrical appliance	2.40	2.48	2.74	Increasing
3	52	Miscellaneous manufacturing products	2.35	2.50	2.41	Increasing-decreasing
4	76	Research	1.64	1.67	1.89	Increasing
5	81	Goods rental and leasing services	1.62	1.61	1.70	Decreasing-increasing
6	84	Amusement and recreational services	1.60	1.65	1.68	Increasing
7	87	Other personal services	1.50	1.52	1.54	Increasing

Table 9. The summary of the comparison.

No.	Attribute	Previous Study	Current Study
1	Method	SDA	Simple output multipliers
2	The definition of national economy	National economic structural changes	The total production made by all industrial sectors in economy in order to fulfill the increase of one unit in particular sectors' final demand
3	The role of Japanese creative industries in national economy, 1995-2005	Creative industries had an important role in 1995-2000	Creative industries did not have an important role

4.3. Improving the Japanese Creative Industries

4.3.1. Printing, Plate Making and Book Binding Sector

Figure 4 describes the total output of Japanese printing, plate making and book binding sector for each scenario. Based on the information in this figure, Scenario 1, the change of export, has the biggest positive impact to this sector. The positive impact is also generated by Scenario 3, the modification of consumption of outside households. On the other hand, the opposite impact is given by Scenario 2, import modification. These facts indicate that export activity has the biggest potency in increasing the total output of this sector on future period. Therefore, improvements on this activity should be focused.

Export activity, actually, has a close relationship with the term of global competition. In other words, improvements of export activity should consider the competitiveness of sector's output in global market. These improvements need to focus on three aspects, namely 1) quality, 2) price, and 3) marketing of products. These aspects, no matter who is the consumer, will show the strength of products of one sector.

Japanese printing, plate making and book binding companies, as main players in this sector, can improve the quality of this sector's output by tightening the quality control of products. Taking this action will reduce the amount of fail products. Consequently, consumers will difficult to find the defect products in the market. Improvement on price of products, on the other hand, can be conducted by making the process of production more efficient. The example of this action is to choose high ability but cheaper machine for production. This action will reduce the production cost. As a result, the price of product can be reduced without losing the profit. The example of marketing action is to make sure who are and focus on the most potential consumers, especially consumers from abroad.

4.3.2. Electrical Appliance Sector

Figure 5 shows the total output of Japanese electrical appliance sector for each scenario. Based on the information in this figure, Scenario 1, the modification of export, has the biggest positive impact to this sector. The positive impact is also generated by Scenario 3, the change of consumption of outside households. The trend of positive impact, however, does not appear in Scenario 2, the import change. In this scenario, total output of this sector on future period decreases. These explanations indicate that export activity should be prioritized in order to increase the total output of this sector.

As discussed in 4.3.1., export activity has a connection with the global competition. The aspects must be focused in order to enhance this activity are quality, price, and marketing of products. The improvement of quality, in the case of this sector, can be done by tightening the philosophy of zero-defect when conducting the production processes. Obviously, the work environment must support the application of this philosophy so it will work effectively. Decreasing of the amount of defect products is a purpose of this application.

On the other hand, the improvement in price aspect can be achieved by carefully choosing the raw materials. The purpose of this action is to reduce the production cost. Besides, employee selection is an important element in pressing the production cost. Selecting high skill but not expensive employee is an actualization of this action. Similar to the previous one, this selection will also reduce the price of product. The example of marketing action is to focus on the most potential consumers, especially consumers from abroad.

4.3.3. Miscellaneous Manufacturing Products Sector

Figure 6 describes the total output of miscellaneous manufacturing products sector of Japan for each scenario. This figure shows that the biggest positive impact to this sector is owned by Scenario 1, the export modification. Similar to this scenario, the positive impact is also given by Scenario 3, the change of consumption of outside
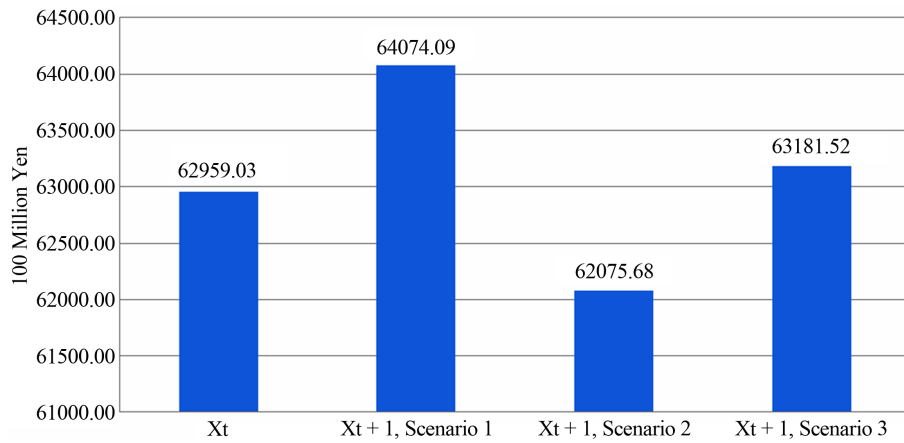
Figure 4. Total output of Japanese printing, plate making and book binding sector for each scenario. (Source: [6]).
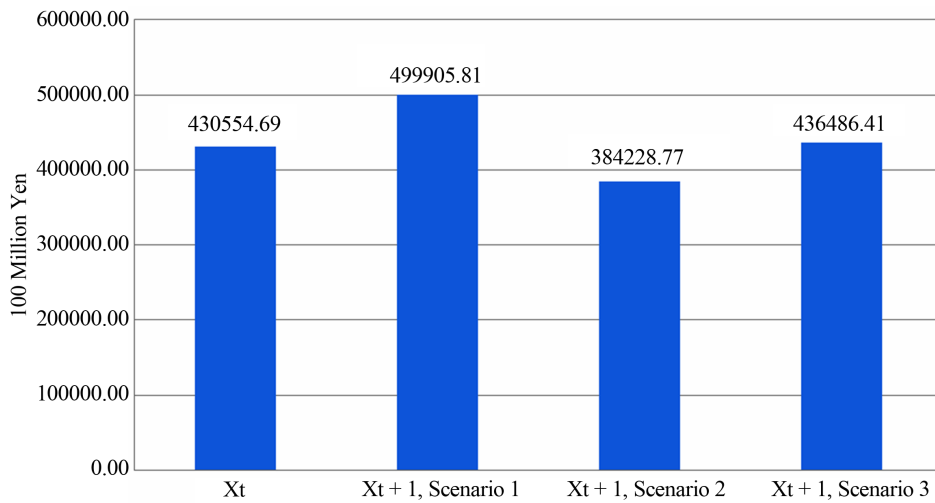

Figure 5. Total output of Japanese electrical appliance sector for each scenario. (Source: [6]).
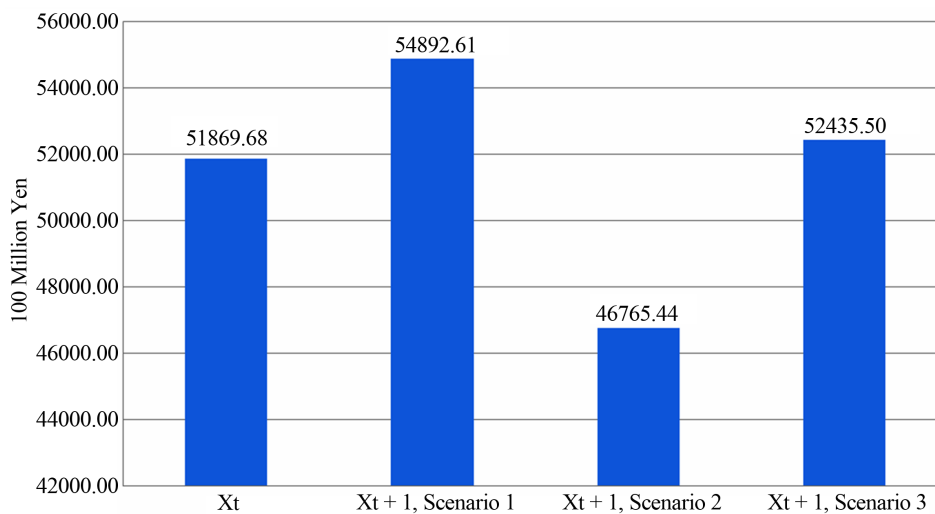

Figure 6. Total output of Japanese miscellaneous manufacturing products sector for each scenario. (Source: [6]).

households. Meanwhile, the negative impact is generated by Scenario 2, the change of import. Therefore, activity of export is the most potential thing in increasing the total output of this sector.

Similar to the discussions on previous sectors, the aspects must be considered in improving export activity are quality, price, and marketing of products. In this sector, the analysis related to the improvement on these aspects will focus on subsector of toys and games. The example of action in improving quality aspect is to know the definition of the defects of product. Another example of this action is to know how to prevent these defects. One of the prevent acts is to provide space allowance among products so the frictions, especially when grabbing one of these, can be avoided.

The price improvement, similar to the discussions on previous sectors, can be achieved by making the processes of production more efficient. In this subsector, choosing the high level but cheaper software is an example of this improvement. Besides, the selection of components of toys is also important thing in this improvement. Obviously, high quality but cheaper components are main target in this action. The production cost reduction and decreasing of production price are main targets of this improvement.

On the other hand, improvement action related to the marketing aspect is to know the most potential consumers for particular product. For example, the role playing games are suitable for teenage consumers. They like this genre because the level of difficulty is not so high. Besides, they also like the romance games. Meanwhile, the adventure games are suitable for children. This genre is fun and easy. Contrarily, the games which the difficulty is high will match with adult consumers. The examples of these games are strategic and simulation. The sport games (e.g. football and basketball) are different because it can be enjoyed by all consumers. Based on these explanations, knowing the suitable consumers for one product, especially consumers from abroad, will improve the activity of export.

4.3.4. Research Sector

Figure 7 describes the total output of research sector of Japan for each scenario. Based on the information in this figure, the biggest positive impact to this sector is generated by Scenario 1, the export modification. Positive impact is also owned by Scenario 3, the change of consumption of outside households. Contrarily, the negative impact is generated by Scenario 2, the import modification. Therefore, export activity must be focused in order to increase the total output of this sector.

This sector is chosen because it has research institutes for cultural and social science as a subsector. The analysis of this sector will focus on these institutes. More specifically, the analysis of this sector is focused on export activity of the institutes.

Usually, export activity has a similar meaning with the selling of products of one sector to abroad. For this sector, the product is a right of patent. The example of this right is a method in creating the creative products which the original culture of Japan is embedded. Based on these explanations, the way in enhancing the total output of this sector through export activity is to increase the level of selling of the right to foreign companies or organizations.
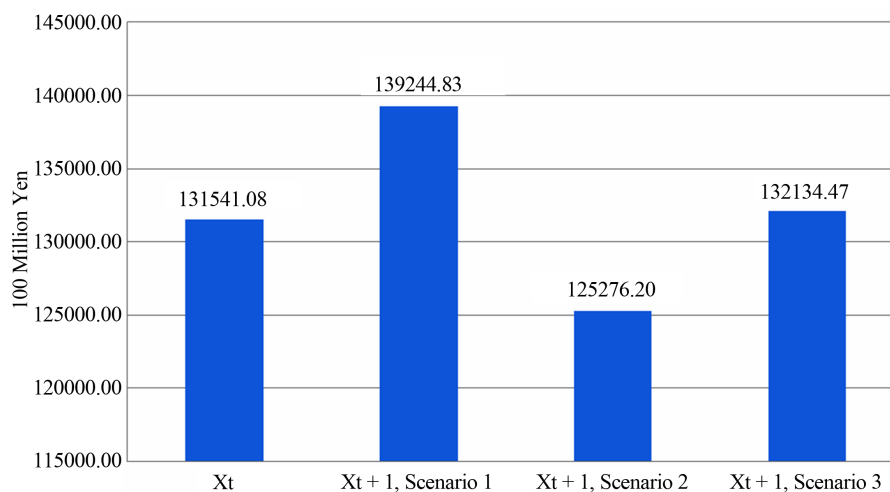

Figure 7. Total output of Japanese research sector for each scenario. (Source: [6]).

4.3.5. Goods Rental and Leasing Services Sector

Figure 8 shows the total output of Japanese goods rental and leasing services sector for each scenario. This figure explains that Scenario 1, the export change, has the biggest positive impact to the total output of this sector. Another positive impact is owned by Scenario 3, the modification of consumption of outside households. The impact of this scenario, however, is less than Scenario 1. Meanwhile, opposite impact is generated by Scenario 2, the import change. Therefore, the analysis related to this sector will focus on its export activity.

As mentioned in previous discussions, quality, price, and marketing of products are the critical aspects in export activity. This philosophy is also suitable for this sector. The quality of products of this sector can be maintained by doing the well maintenance and reparation actions while improvement in prices of products can be reached by reducing the costs of maintenance and reparation processes. Reference [11] argued that maintenance cost of industrial plants of Thailand can be reduced through increasing predictive maintenance and reducing preventive maintenance. Therefore, using this concept, the reduction of prices of products in this sector can be achieved by implementing predictive maintenance. The improvement on marketing aspect, on the other hand, can be accomplished by providing more employees who can speak English fluently. This action will distribute more information related to the sector's products to foreign consumers.

4.3.6. Amusement and Recreational Services Sector

Figure 9 shows the total output of amusement and recreational services sector of Japan for each scenario. This figure explains that Scenario 3, the change of consumption of outside households, has the biggest positive impact to this sector. The positive impact is also owned by Scenario 1, the modification of export. The impact of this scenario, however, is less than Scenario 3. On the other hand, the opposite impact appears in Scenario 2, the change of import. Therefore, the efforts in increasing the total output of this sector must be focused on above consumption.

The example of above effort is to decrease the entry fee, including the fee on weekend and holidays, of amusement and recreational places, such as movie theaters. This action will enhance the interest of consumers, especially consumers of outside households, so they will come frequently to these places. Another example is to add the attractions which the format is based on the request from these consumers. This effort is also a sign of appreciation for them. The profit of above places, using these actions, might increase because consumers will be more satisfied.

4.3.7. Other Personal Services Sector

Figure 10 describes the total output of Japanese other personal services sector for each scenario. Based on the information in this figure, the biggest positive impact to this sector is owned by Scenario 3, the modification of
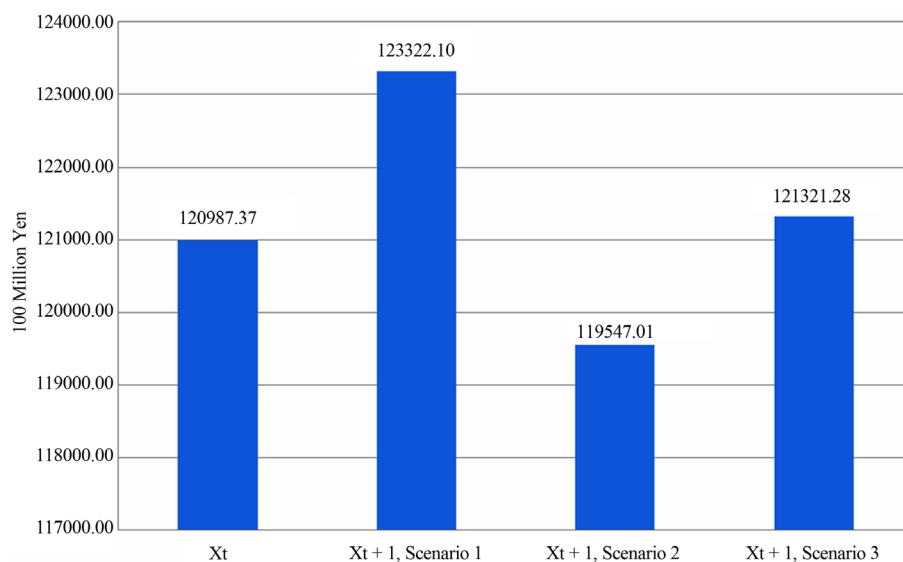

Figure 8. Total output of Japanese goods rental and leasing services sector for each scenario. (Source: [6]).
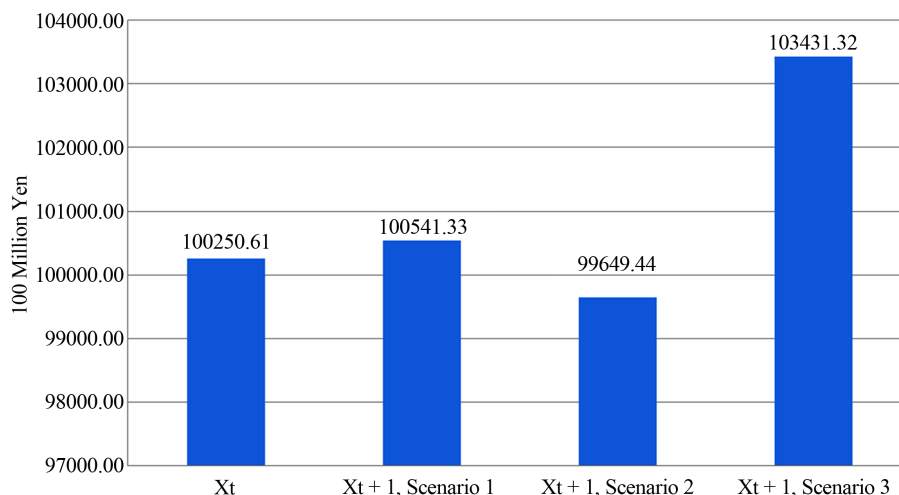
Figure 9. Total output of Japanese amusement and recreational services sector for each scenario. (Source: [6]).
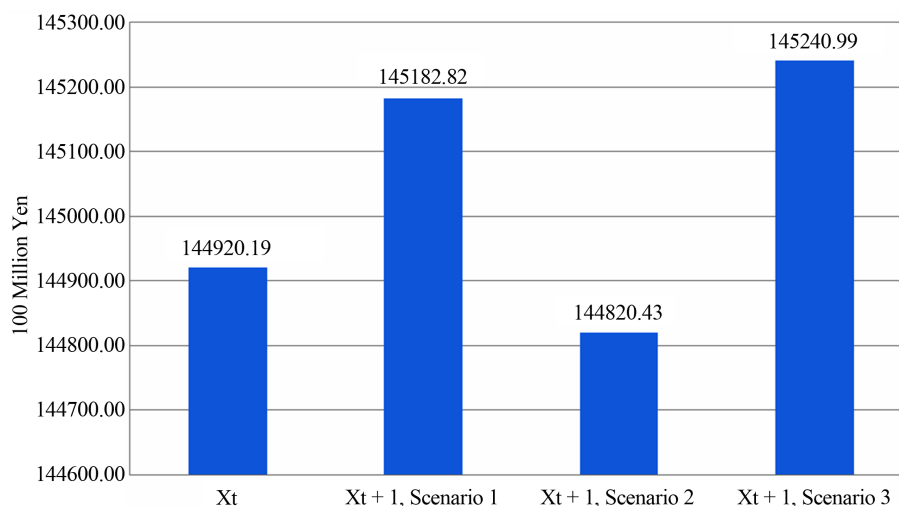

Figure 10. Total output of Japanese other personal services sector for each scenario. (Source: [6]).

consumption of outside households. Scenario 1, the modification of export, also has positive impact but it is less than Scenario 3. Conversely, the negative impact is generated by Scenario 2, the import change. Therefore, the improvement efforts in enhancing the total output of this sector must be focused on above consumption.

The example of output of this sector is an instruction service for the activities of arts and cultural. Decreasing the fee of this service is one of the attempts in increasing the interest of consumers of outside households. Besides, giving the free trial in doing arts activities will also attract their attention in trying these. As a result, the profit of this sector might increase because many consumers interested in the sector's services.

Previous analysis shows that the patterns of total outputs of creative industries of Japan on future period are different. Nevertheless, these sectors have one similarity, namely Scenario 2, the change of import, will decrease their total output. This phenomenon explains that import restriction related to these sector's products is needed.

5. Conclusions and Further Research

This study had two purposes, namely 1) to get another perspective related to the role of creative industries in national economy of Japan from 1995-2005 and 2) to know the ways to improve these sectors. Comparison with previous study was conducted in order to achieve the first objective. Previous study, using SDA, showed that

creative industries had an important role in national economy of Japan in 1995-2000 while the opposite pheno-menon could be observed in 2000-2005. Another perspective related to above role was obtained from this study, namely creative industries, using simple output multipliers method, did not have an important role in national economy of Japan in analysis period.

The results also showed that the patterns of total output of creative industries of Japan on future period were not identical. Nevertheless, these sectors had one similarity, namely Scenario 2, the modification of import, will decrease their total output. This phenomenon indicated that import restriction related to these sector's products was needed.

This study, however, only analyzed the impact of final demand changes on total output of Japanese creative industries. In other words, deeper analyses on other points, such as statistical analysis of influences of Japanese creative industries in national economy and analysis of Japanese policies related to these sectors, were not discussed in this study. These analyses are also important and must be considered in order to improve above industries. Therefore, this study suggests above deeper analyses as further researches. Another suggested further research from this study is an international comparison, especially the comparison between developed and developing countries, related to this topic. This comparison will show the difference of the characteristics of creative industries in analyzed countries, especially when final demand changes happened.

Acknowledgements

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Appendix

No.	Sector Name
	Japanese industrial sectors.
1	Crop cultivation
2	Livestock
3	Agricultural services
4	Forestry
5	Fisheries
6	Metallic ores
7	Non-metallic ores
8	Coal mining, crude petroleum and natural gas
9	Foods
10	Beverage
11	Feeds and organic fertilizer, n.e.c.
12	Tobacco
13	Textile products
14	Wearing apparel and other textile products
15	Timber and wooden products
16	Furniture and fixtures
17	Pulp, paper, paperboard, building paper
18	Paper products
19	Printing, plate making and book binding
20	Chemical fertilizer
21	Industrial inorganic chemicals
22	Petrochemical basic products and intermediate chemical products
23	Synthetic resins
24	Synthetic fibers
25	Medicaments
26	Final chemical products, n.e.c.
27	Petroleum refinery products
28	Coal products
29	Plastic products
30	Rubber products
31	Leather, fur skins and miscellaneous leather products
32	Glass and glass products
33	Cement and cement products
34	Pottery, china and earthenware

Continued

35	Other ceramic, stone and clay products
36	Pig iron and crude steel
37	Steel products
38	Steel castings and forgings and other steel products
39	Non-ferrous metals
40	Non-ferrous metal products
41	Metal products for construction and architecture
42	Other metal products
43	General industrial machinery
44	Special industrial machinery
45	Other general machines
46	Machinery for office and service industry
47	Electrical appliance
48	Motor vehicles
49	Ships and repair of ships
50	Other transportation equipment and repair of transportation equipment
51	Precision instruments
52	Miscellaneous manufacturing products
53	Building construction
54	Repair of construction
55	Civil engineering
56	Electricity
57	Gas and heat supply
58	Water supply
59	Waste management service
60	Commerce
61	Finance and insurance
62	Real estate agencies and rental services
63	House rent
64	Railway transport
65	Road transport (except transport by private cars)
66	Self-transport by private cars
67	Water transport
68	Air transport
69	Freight forwarding
70	Storage facility service

Continued

71	Services relating to transport
72	Communication
73	Broadcasting and information services
74	Public administration
75	Education
76	Research
77	Medical service and health
78	Social security
79	Other public services
80	Advertising, survey and information services
81	Goods rental and leasing services
82	Repair of motor vehicles and machine
83	Other business services
84	Amusement and recreational services
85	Eating and drinking places
86	Accommodations
87	Other personal services
88	Office supplies
89	Activities not elsewhere classified