

*Beyond Product Lifecycle and Flying Geese:
International Competitiveness of East Asian Region
and the Japanese Position within*

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1. The first difficulty in international competitiveness research: the existence of black box

The first difficulty we have to face with when we try to analyze the international competitiveness is we couldn't find out finally what is the recourse of international competitiveness through the active analyses based on labor productivity and TFP (Total Factor Productivity) in economics field only. Not to put too fine a point on it, rate of increase of labor productivity and TFP (Total Factor Productivity) just show the "result" but not the "reason" of international competitiveness.

The main current of economics has mapped labor productivity as the central reason deciding international competitiveness of industry beginning from D. Ricard. And about the industry in which field several countries compete with each other, people concern greatly about which country can raise its labor productivity comparatively and keep the competitive advantage. But actually we can not find out what changes international competitiveness by watching variation process of the rate of increase of labor productivity.

The same issue can be pointed out not only in the analysis based on labor productivity but also in the analysis based on TFP (Total Factor Productivity). TFP is "an index, residue of deducting the contribution of

growth in quantity of labor inputs and capital stock from the growth of overall production itself, shows the overall efficiency of the productive structure”¹. Recently, in economics field, TFP is used as analysis standard of international competitiveness together with labor productivity because in long term, the rise of TFP reflects the technological progress and of productive organization efficiency, in short term, it reflects the rise of equipment operation ratio and labor technical level. But the different industrial TFP level between several countries and regions can not clarify what brings the competitive advantage to each country and region.

That means we can not find out the resource of international competitiveness finally however hard we work on the analysis of labor productivity and TFP only. The resource of international competitiveness still remains in the black box, and now we need to work on the analysis of international competitiveness through new approach by shedding light on the inside of black box.

2. The second difficulty in international competitiveness research: the coexistence of three different levels

The second difficulty we are facing with is the confusion coming from discussion based on three different levels of international competitiveness. The three levels are country level, industry level and company level.

Of course, companies take part in the international competition directly, but there is a big problem here, that is, it is difficult to set the point at issue on company level directly when we deal with the international competitiveness.

Why? That’s because many companies with international competitiveness

¹ cf. MITI (Ministry of International Trade and Industry) ed., *Tsusho Hakusho, Heisei 12 nenban* (White Paper on International Trade 2000), 2000, Tokyo.

diversify their business. When the object of analysis is a diversified company, high risk of treating all their business activities in multi-fields, namely their competitive activities in several markets in a lump exist. Competition is expanded individually in different markets concerning certain wealth or certain service, we can not uncover the realness of competition if we ‘analyze’ multi-markets in a lump. That is the reason why we can not deal with the international competitiveness starting from company level, even if it is the companies that take part in the international competitiveness.

It is difficult to set the point at issue concerning international competitiveness and the same can be said about country’s competitiveness, because it is extremely difficult to design objective standard and method to judge the international competitiveness of countries.

If it is true that it is difficult to start the research on international competitiveness from company level and country level, choice remained is to start from industry level. When we deal with the international competitiveness from industry level, it is very important where the competition is expanded. So it comes to be necessary to specify the market where competitiveness is expanded actually before we start to deal with, for example by specifying “the international competitiveness of ○○ industry in ×× country (or region)”, “the international competitiveness of ○○ industry in △△ segment”.

Considering all the matters up to here, we could say that for now we should start research by grasping the realness of international competitiveness on specified industry in specified market. And then go to the next step, the light should be shed on company’s business activities in the said industry to see how the competitiveness realness is being brought forth. In order to arriving the final goal of international competitiveness research by making the resource clear up through analysis activities of companies taking part in international competition, we are requested to

follow such a little detoured procedure.

3. Contribution of business history to international competitiveness research

In section 1 and section 2, we have been dealing with the two difficulties we are facing with in international competitiveness analysis. Base on above contents, we would dissertate the significance of business history research concerning international competitiveness.

In order to overcome the 1st difficulty and go forward to clarify the real resource of international competitiveness which is still remained in black box, new approach of shedding light on the inside of black box is essential. And this new approach is nothing else but the research on business history concerning international competitiveness.

The basic stance of business history review regards process as important and emphasizes on analysis of certain event not in ex-post but ex-ante sight. This stance is also effective to clarify the resource of international competitiveness. To shed light on the inside of black box, the said business historic approach exerts its strength by choosing suitable case, observing and analyzing the long term expansion of the international competitiveness there deeply basing on reliable historic materials. We could say that, as the result, in order to clarify why the international competitiveness presented by the labor productivity rising ratio and TFP rising ratio come to change, approach from business history review is essential and it is just the meaning of business history review concerning international competitiveness.

In order to overcome the 2nd difficulty, we should grasp the realness of international competitiveness on certain industry in certain market for now, go to the next step by digging into activities of company taking part in the competition, and at last educe the resource of international competitiveness

then, such a detoured procedure is requested. On this occasion, when we work on our final goal, educating the resource of international competitiveness on company level, the prevailing opinion of A.D. Chandler Jr., the business history review scientist, who focused on economy of scale and economy of scope², will be one of the guidepost we should follow.

4. Focus on international competitiveness of region

Here I would like to mention a book named “A Business History on International Competitiveness” by T. Yuzawa, T. Suzuki, T. Kikkawa, and S. Sasaki³ as the result of recent research following the procedure I pointed out in previous section. Base on the book, I want to stress the meaning of raising “region” as “the 4th stage” to deal with international competitiveness coming after company, industry and nation in this article.

According to the research of H. Shioji and the others in 2008⁴, many manufacturing companies with headquarters located in East Asia composed of Japan, Korea, Taiwan and China keep high international competitiveness. See from industrial angle, the total value of global market share occupied by companies from East Asia reach 91% of motorcycle, 88% of shipbuilding, 75% of digital still camera, 75% of bicycle, 46% of steel, 43% of automobile and 41% of semiconductor.

Shioji and the others work on clarifying “why industries with competitiveness advantages center upon East Asia” through industrial

² cf. Chandler, Alfred D., *Scale and Scope: The Dynamics of Industrial Capitalism*, 1990, Cambridge, Mass.: Belknap Press of Harvard University Press.

³ Yuzawa, T., T. Suzuki, T. Kikkawa, and S. Sasaki eds., “*Kokusai Kyosoryoku no Keieishi*” (A Business History on International Competitiveness), 2009, Tokyo: Yuhikaku.

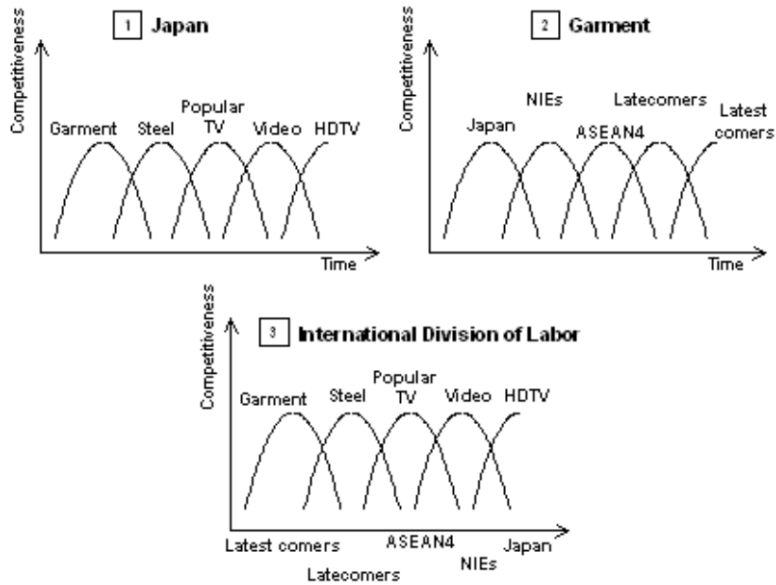
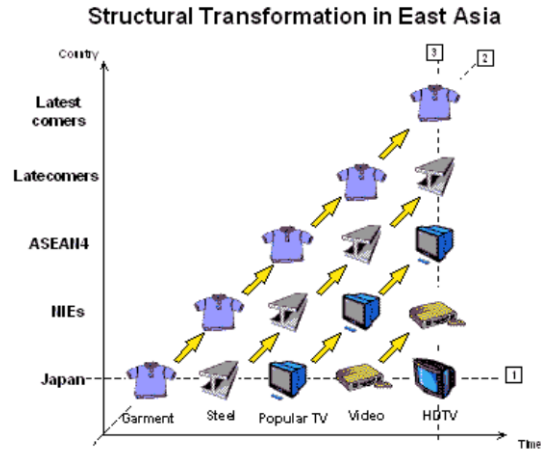
⁴ Shioji, Hiromi ed., “*Higashi Ajia Yui Sangyo no Kyosoryoku*” (Competitive Advantage of East Asian Industries), 2008, Kyoto: Minerva Shobo.

analysis of competitiveness and specification structure of the above 7 industries. And Shioji supposes following 4 kinds of occasions basing on whether innovative changes happened on either side when industry spreads from nations starting early to nations starting later: ① only happened in nations starting early, ② happened on neither side, ③ happened only in nations starting later, and ④ happened on both sides, and reach the above result by deploying his tentative assumption of great interest as ① nations starting early keep their advantages, ② advantage transmits from nations starting early to nations starting later, ③ overwhelming advantage of nations starting later is built up, and ④ coexistence of the advantages by compartmentalization. Through the consecutive analysis, it comes to be clear that steel (high grade), shipbuilding (middle ship), automobile and digital still camera belong to ①, steel (low grade), shipbuilding (large ship), bicycle belong to ②, motorcycle is ③ and semiconductor is ④. According to this, in East Asia, (a) industrial transmission was carried smoothly to nations starting later by spread of Japanese Model. Furthermore, (b) innovative transmission happened actively in both nations after that. So we can find the answer to “why manufacturing industries with competitiveness advantage center upon East Asia” from the fact that (a) and (b) continuously happened.

In contrast with that the common view on industry development theory, the flying geese theory, just consider occasion ②, Shioji and the others shed light on the occasions ①③④ either by bringing up the concept of the innovative transmission after industrial spread. This is their biggest advantage. It is a pity that just as Shioji said himself, the generalization of overall analysis result was omitted in the said research. So the relativization of the flying geese theory is just half finished. We must work on digging down the international competitiveness of region further basing on the research result of Shioji and the others.

5. A case of chemical industry: beyond product life-cycle and flying gees

The flying gees theory of K. Akamatsu dealing with industrial development pattern of nations starting later, it described the gees bevy is formed gradually during the long term of import⇒national production (instead of import)⇒export⇒regress (catch up of new nations which started later). It can be displaced by putting the participant of the international competitiveness on some commodity into the flow as developed country⇒middle developed country⇒developing country. It can also be compared as the gees bevy in this case. And the flying gees theory supports each other with the product life-cycle theory of R. Vernon who tried to explain the procedure of production lifecycle introduction⇒growth⇒maturity⇒decline.



(Note) The above charts on the flying gees theory are cited from Okita, 1985.

But the recent pattern of industry development shows complexity neither the flying geese theory nor the production lifecycle theory can explain. I would like to pick up a case of Japanese chemical industry elaborately below to confirm that.

● The age of the chemical industry

It has already been 20 years since Japan's economic bubble burst. For a while the 1990s were being called the “lost decade,” but lately I have started to come across the expression “last two decades,” which is to include the 2000s. Japan's economic slump continues even now.

To break out of this rut and regain its vitality, the Japanese economy needs to see a new leading industry emerge to drive the economy as a whole, as the automotive and electronics industries did in the past. Then, which industry could become the next leading industry? I believe it is the chemical industry, and I recently issued a book entitled *The Age of the Chemical Industry: Why Japan Can Overtake the World* with So Hirano⁵, full-time lecturer at Seijo University. In this article I will present the main ideas discussed in the book.

● The strengths of Japan's chemical industry

Up to now, Japan's chemical industry has been considered a moderately “weak industry” lacking in international competitiveness. However, examining the facts reveals a different picture. In terms of high value-added functional chemical materials——such as protective films for LCD (liquid crystal display) polarizer, compound semiconductors, carbon fibers, cathode and anode materials for lithium batteries, and silicon wafers——Japanese products have a far larger global market share than automobiles,

⁵ Kikkawa, T. and S. Hirano, *Kagaku Sangyo no Jidai: Nippon wa Naze Sekai wo Oinukeru noka*, (The Age of the Chemical Industry: Why Japan Can Overtake the World), 2011, Tokyo: Kagaku Kogyo Nipposha.

electronic devices, and electronic parts. If we focus on this point, we can see that there is substantial potential for the chemical industry to be a leading industry.

On March 11, 2011, the Great East Japan Earthquake drove Japan into an even worse situation to aggravate the "lost two decades". This earthquake was an additional blow to Japan's economy. However, what I would like to focus on here is that the earthquake resulted in a bottleneck in the supply of functional chemical materials, which impacted the production of assembly manufacturers not just in Japan, but all around the world. This occurrence underscored the "strength" of Japan's chemical industry.

● **Two challenges to be overcome**

Japan's chemical industry is of course dealing with several challenges, and it will not be capable of becoming the next leading industry and overtaking the world unless these issues are overcome. The following two challenges are the major ones deserving particular mention.

First, Japan's chemical manufacturers trail the top manufacturers in the United States and Europe in terms of business scale. This is in contrast with the automotive and electronics industries, which achieve sales on par with or greater than manufacturers in the west. In order to become the leading industry, the chemical industry will have to successfully expand the scale of its operations.

Second, even as Japan's chemical manufacturers supply high valued-added materials to Japan's assembly manufacturers (automakers, electronics manufacturers, and others), the assembly manufacturers have often held the reins within the supply chain. It is an undisputed fact that Japan's chemical industry has honed the competitive edge of its products through detailed "back-and-forth" processes with assembly manufacturers. However, recently the international competitiveness of Japan's assembly manufacturers in itself has been falling, due to reasons such as: (1) It is not

always only high-quality products that are being demanded anymore, (2) high-quality products are also being produced as commodities in other Asian countries with low costs, (3) cases are starting to crop up of Japanese assembly manufacturers that got their start in domestic production and later expanded internationally and have fallen behind overseas assembly manufacturers that have been developing products to reflect the needs of emerging markets from the beginning, and (4) they are being outstripped by companies in the United States and Europe in terms of standardization and business models. To become the leading industry, the chemical industry must additionally secure the leading role within the supply chain, gain independence from assembly manufacturers, and turn the fruits of its move to high value-added products into revenue.

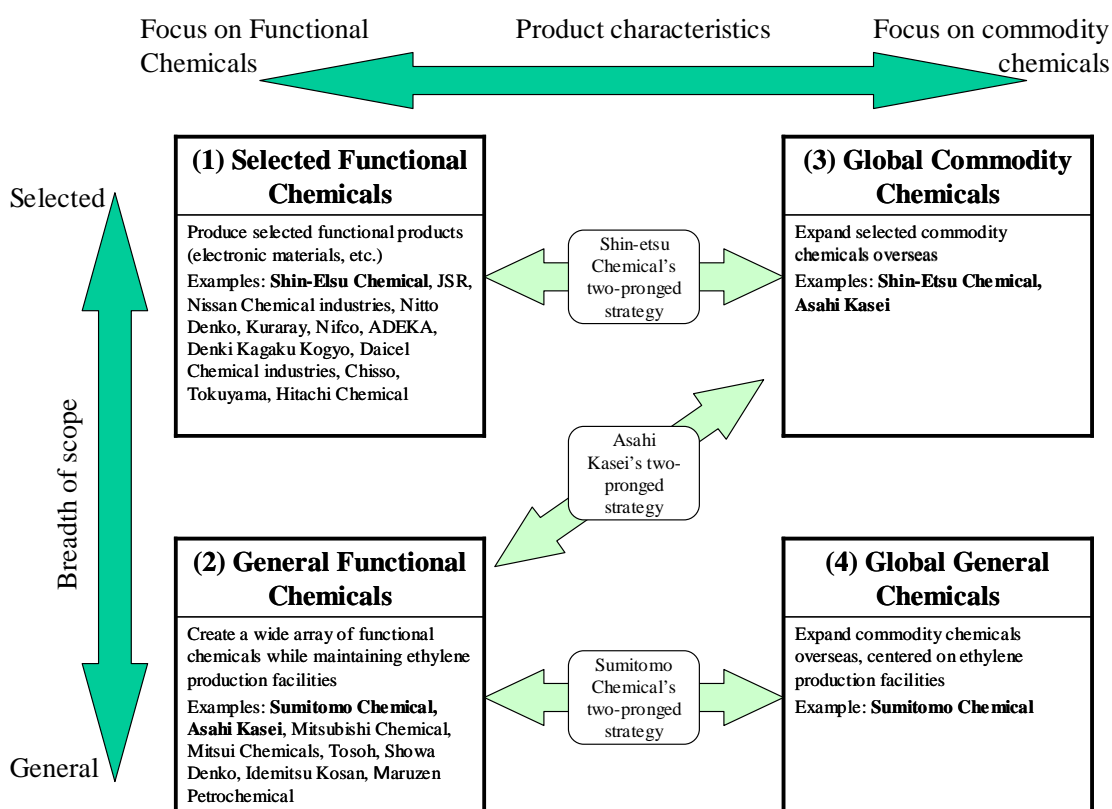
● **High-revenue scenarios for chemical manufacturers**

The diagram summarizes the results of analysis of the abovementioned “the Age of the Chemical Industry”. As shown in the diagram, the high-revenue scenarios that Japan's chemical manufacturers could adopt can be divided into four types:

- (1) “Selected functional chemicals,” concentrating on the high-performance product business in specific,
- (2) “General functional chemicals,” where the high-performance product business is transitioned to the center while maintaining ethylene production facilities,
- (3) “Global commodity chemicals,” expanding selected commodity chemical businesses globally, and (4) “Global general chemicals,” expanding the ethylene production business globally.

From the diagram it is clear that the basic strategy of Japan's chemical manufacturers is to transition to high value-added products. The majority of the manufacturers are pursuing scenarios (1) or (2). However, Shin-Etsu Chemical, the world's top polyvinyl chloride supplier, and Asahi Kasei,

which is the No.2 global acrylonitrile supplier, are both tackling scenario (3) as well. Moreover, Sumitomo Chemical, which is advancing the Rabigh Project in Saudi Arabia, can also be said to be executing scenario (4) at the same time. In effect, Shin-Etsu Chemical is pursuing (1) and (3), Asahi Kasei is pursuing (2) and (3), and Sumitomo Chemical is pursuing (2) and (4), so that they are each taking on two-pronged strategies.



(Source) Kikkawa and Hirano, 2011.

● The importance of two-pronged strategies

In order for Japan's chemical industry to become the next leading industry, a two-pronged strategy that addresses both the high-end and low-end market is indispensable. The reason is that following the strategies for scenarios (1) and (2) in the high-end market means rising to the second challenge mentioned above of turning the fruits of the switch to high

value-added products into revenues, and approaching the low-end market with scenarios (3) and (4) is an unavoidable hurdle to be passed in order to meet the first challenge of expanding business scale. If Japan's chemical industry can deploy a two-pronged strategy to overcome these two challenges at the same time, it can become the next leading industry and overtake the rest of the world.

We can make it clear from the above analysis that Japanese chemical industry is on its way of avoiding the “decline” both flying geese theory and production lifecycle theory affirmed successfully by carrying “a two-pronged strategy”. And the fact makes the “a two-pronged strategy” possible that Japan is a nation of Asia. For example, Asahi Kasei keeps its global strategy factory of acrylonitrile in Korea and Thailand.

6. The importance of comparison between regions

In order to dig down the business management view research clarifying the resource of international competitiveness deeply, we are considering working on analysis of “international competitiveness of region” target at East Asia region. It is also a challenge aiming at constructing a new theory frame work which will go forward beyond the flying geese theory and product lifecycle theory.

One of the most important reasons for shifts to which the flying geese theory and product lifecycle theory pay attention is a raise in wages with the development of economy. We can safely say that the essence of competitive advantage of regions is to overcome ill effects of a wage raise on international competition⁶.

⁶ On this point at issue, I received significant suggestions from comments on my presentation by Harm G. Schröter and Takeshi Abe in EBHA (European Business History Association) 15th Annual Conference, Session No. 20a: Competitive Advantage of Regions, NTUA (National Technology University of Athens), Athens, Greece, August 25, 2011.

In advancing this research, it is ultra significantly meaningful to compare East Asia with Europe concerning how “competitive advantage of regions” is formed. We will work on it earnestly.

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