Journal of Business and Languages
Vol. 1 No. 1 January – June 2013

Japanese Trade with Thailand over Forty Years Interdependence in the Turbulent Economic Environment

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I. Introduction

The economic integration in the East Asian region was witnessed in many occasions and their interdependence has been unquestionably strengthened and deepened since 1970s. Since the original ASEAN five nations [1] had shifted their policy stance more favorably toward export promotion from the import substitution [2], although some differences in speed and degree in commitment among those nations were acknowledged, nonetheless the regional trade performances demonstrated the rapid expansion of the volume of exports and imports. In along with this development, the foreign direct investment (FDI) has been attracted, thus many multinational corporations started intensifying their presence in the region. One of the economies to seize the opportunity of this trend was Japan. In fact, the 1970s became the beginning stage of the Japanese internationalization [3]. Large number of corporations, especially in manufacturing industries, large as well as medium, sought more business opportunities outside Japan. Learning wages getting higher and appreciating currency value of yen were the primary motives to encourage or often enforce them to cultivate any possibility abroad. Many Japanese corporations placed ASEAN nations as for their high priority destination toward their international strategic operations.

Among them, from the early stage, Thailand was regarded as an ideal destination for many Japanese corporations as for their trade partners as well as for their local production bases [4]. Since then, the economic relationship between Thailand and Japan has been strengthened, in particular by building up the interwoven network structure to capitalize many potential advantages from the foreign direct investment. Often the local commitment has helped various manufacturing sectors generate very sophisticated supply-chain networks.

This fact was reconfirmed while encountering the unwanted natural disaster of flooding in Thailand which took place all the sudden in the second half of 2011 [5]. It is widely known that Thailand's industrial cluster started within the greater Bangkok area. Then the industrial activities were rapidly expanded through the transportation network system in other provinces. The location of major industrial parks was virtually cultivated along the banks of main rivers. The wave of the Japanese FDI was in parallel with this industrial cluster development in Thailand. For example, the Japanese activities of the automobile industry, assembly as well as production of parts and components, scatter widely in various industrial parks. And hi-tech industries like computer devices or digital camera parts also wide spread in the northern outskirt of Bangkok.

When the flooded water invaded in those regions, the Japanese factories could not but simply be forced to desert until the water level would be receded. Outputs which were ready for shipment were left under the pouring water and many sophisticated machineries and instrument were inundated. Water flooded so swift and thus there were no sufficient time left to make those capital goods to be relocated or carried out in safer places. Their productive operation was virtually forced to terminate, hoping temporarily. Prior to this accident, production network has been build up in the industrial cluster or within the clusters. Thus we found impossible to sustain in a systematic way the various manufacturing activities in Thailand if this chain mechanism would not work properly as being designed. Soon we learnt that this is not the shock solely on the Thai economy, but this was becoming the vast risk factor for the worldwide smooth production activities. The popular Japanese products like PCs, Digital Cameras, Automobiles and others were dependent on made-in Thailand parts and components in addition to a large scale of assembly activities [6]. This implies with little doubt that the global supply-chain system has been organized and operated with Thailand. In this regards, Japan, U.S., China, other ASEAN nations, Brazil, even South Africa among many others were inevitably entangled due to the flooding incident in Thailand.

Shipment of many products to Japan was halted and Japanese exports of machine equipment and sophisticated parts to Thailand were disrupted. This clearly indicates that both economies rely to a greater extent on each other. Although the Thai economic growth demonstrated the impressive record so far, it is important to learn that their growth process was not simply monotonic. As long as Thai economy experienced more open economic approach, it became very likely to get easily influenced by various external shocks and disruptions apart from the domestic problems. Japanese experiences also suggest various episodes of considerable fluctuations. Those were mostly from the external sources. It is important to identify the sources and causes, once any turbulence in the international trade transactions would be detected, by carefully monitoring the available data and information. This exercise will be supplemented to the main quantitative study of the trade relationship between two countries. Besides this, the central issue is now to investigate to what extent the mutual interdependence could have been observed through the international trade activities in the past four decades between Thailand and Japan.

In the following sections, with the statistical data we will examine the degree and extent of the trade relationship between Thailand and Japan. We apply the model which has been widely used in the international trade analyses. In the econometric research of international trade, many economist use price and income variables for their estimating specifications, see for example Goldstein and Khan (1985) and Warner and Krein in (1983) [7]. We follow this tradition and standard in the following sections. In addition, we try to incorporate some measured risk factor whether trade pattern could have been affected by such a variable.

II. Brief Outline of Japanese Trade with Thailand

In the early part of the 1970s, many started to speculate a possibility that the war in Vietnam would eventually be ending whatever the outcome might be. The issue turned out therefore to foresee and more importantly to figure out the post-war economic prospects in the Southeast Asian region. Many believed that the young ASEAN member countries, as soon as no more effects of the international conflict in Vietnam would be ascertained, should certainly take bold actions to carry on their economic development and industrialization efforts.

In those days, it was understood that many Asian countries were still more or less a type of an agricultural society [8]. Nonetheless, with the aid of the Green Revolution approach as well as various foreign aids in that agricultural sector, those nations have demonstrated their productivity of the agricultural sector improving [9]. By such efforts, the income level of the overall society in each country was observed steadily upward moving. Once the social stability would be ascertained or perceived due to the society-wide economic progress, it is believed that the large number of population, urban as well as rural, would be naturally ready to demand for better or quality life. Even though the overall per capita income did not reach the level of mass consumption boom, ASEAN nations were already at or beyond the level of take-off stage [10]. According to the experience in Japan, Taiwan and South Korea, demand for many household items, apparels and durable goods like appliances would be soon expected massively increased.

With such a bright view and optimistic expectations, various Japanese corporations had started their prospective and strategic studies while seeking any business opportunity in the region. It should be noted that some of the major businesses like Panasonic, Hitachi, Toray and Toyota had already invested in the region in a bit earlier years [11]. They seemed to have a grand vision to embrace the whole regional development within their operations. This kind experience as being the front runners helped many business people in Japan get an insight with respect to the possibility of the local production in the region. Soon many other big and medium Japanese corporations followed such preceding successful giants. But this time Japanese foreign investments looked to rush vehemently into the ASEAN member countries. This was observed in some of the host countries in ASEAN as an “avalanche” phenomenon of the Japanese corporations, although such a corporate behavior is not unusual in Japan. Unfortunately, this had caused the negative perception as an over presence of Japan, especially in Indonesia and Thailand [12]. It took some years to get fully understood how desirable those Japanese investments have positively contributed to the local economic development.

Once the production base would be ready for productive operation, it was a widely shared view that materials and capital goods are needed a direct procurement by importing from Japan. The real concern over the local production by many Japanese corporations would have been around the level of “quality standard”. This seems, now and then, a commonly accepted notion in the Japanese business community. It was often told that availability in the local markets of such needed things was the main constraint through the initial and also even booming stages of Japanese foreign investment. This phenomenon lasted until the Japanese manufacturers of parts and components and also molding producers have decided genuinely to participate in making the formation of the full-fledged industrial clusters in the local market. Meantime, until such a constraint would be eased, many crucial parts and equipment were in most of the cases directly shipped from Japan.

This unique characteristic of the international trade pattern can be termed as complementary relationship between FDI and international trade in Thailand and Japan [13]. More foreign direct investment from Japan to Thailand has been implemented, as a natural consequence more exportation of industrial materials and products to Thailand was simultaneously accompanied. Naturally, the substantial trade growth was observed. Of course, at the same time, we see that many completed or semi-processed goods were exported from Thailand to other markets including Japan. This two way nexus of investment and international trade has been steadily expanding over various industrial segments and helped to strengthen the mutual industrial development and coordination both in Thailand and Japan.

Figure 1. Trend of Japanese Trade with Thailand

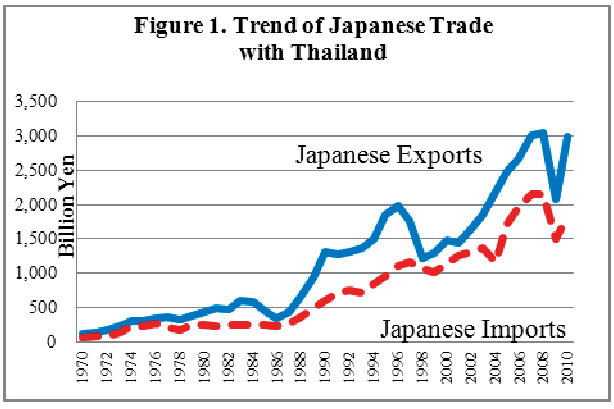
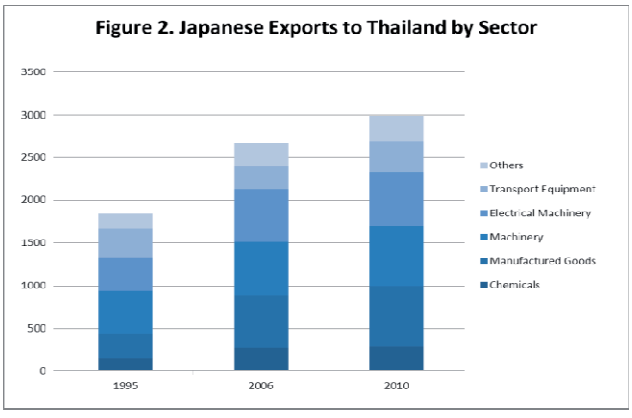


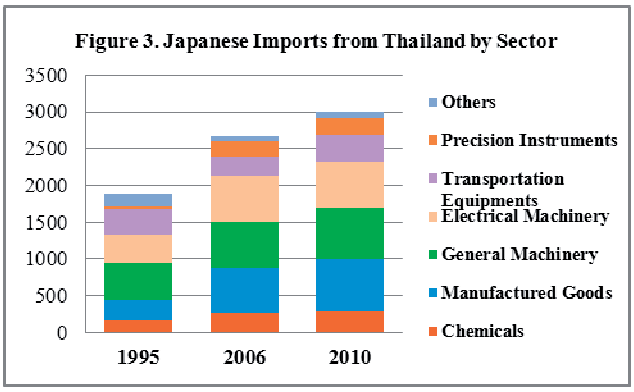
Figure 1 shows the history of the values of Japanese exports and imports with Thailand. It is very likely that international trades are subtly affected by major economic and political events. As Figure 1 shows, it can be easily identified three sharp drops in exports. Those cases were related to three major incidents experienced by Japan and Thailand. One took place around 1985 to 1986 and this was induced by the exchange realignment of the Japanese

currency yen. Second case has appeared in 1997 and 1998 and this was caused by the Asia currency crisis. This crisis enforced the Thai economy to fall into the unprecedented chaotic situation. The last case corresponded to the crisis effect in 2008 and 2009 due to the worldwide financial disarray which was initiated by the post-bubble shock in the U.S. housing market. Imports from Thailand were not much wildly volatile relative to exports, although we can identify some declined years, as seen in Figure 1.

Although some turbulent years in economic performances are recognized, the general trend of the international trade between Thailand and Japan has expanded with a remarkable pace. Japanese exports to Thailand grew 24 times during the four decade period up to 2010 and imports went up 35 times. Yearly average growth rates of exports and imports are 8.49% and 9.52%, respectively.

Exports and imports by commodities (or sectors) also reflect the pattern of the development and the process of interdependence between two countries. It can be easily found such characteristics in Figures 2 and 3. Japanese exports to Thailand are mostly related to manufactured and machinery goods. As the local productive activities in Thailand become more vigorously intensifies, those made-in Japan items have been needed to support the expansive productive operations in Thailand. We see this kind of a tendency in various industrial segments such like electrical and transport manufacturing industries. This implies that the Japanese imports are to a certain extent correlated with the export performances. It can be clearly identified from Figure 3 that imports of manufactured goods, machinery and electrical equipment were rapidly increased in the last decade in parallel with the intermediary and capital goods exports. As stated in the introductory section, the flooding in Thailand in 2011 made the assembly and production activities paralyzed even in Japan since those industrial segments are in fact dependent on the made-in Thailand goods.





III. Model for the Quantitative Examination

The basic model, which is applied to the available data, is given as follows: [14]

Export equation:

$$\ln(ex) = a_0 + a_1 \ln(yt) + a_2 \ln(fxi) + e, \quad (1)$$

Import equation:

$$\ln(im) = \beta_0 + \beta_1 \ln(yj) + \beta_2 \ln(fxi) + g, \quad (2)$$

Where the variables ex and im are the Japanese exports and imports with Thailand. All variables are used in the logarithm form since the estimated coefficients represent the proportionate change in the explained variable from a unit change in the explaining variable. The variable yt represents the level of the economic activity in Thailand like the real income or production index. Similarly the variable yj implies the level of the Japanese economic condition. The fxi represents the relative cost factor which exporters and importers pay closer attention to their profitability. In the above equations (1) and (2), the terms a_0 and β_0 are the intercept and other coefficients are the unknown population parameters which we are interested in. The residuals e and g are the normally distributed error term, assuming a mean of zero and a constant variance.

Most of the data used in this study are taken from the Japanese source [15]. Therefore the numbers of exports and imports are expressed in the Japanese yen value, unless otherwise specified. All data figures start in 1970 and end in 2010. As mentioned above, after the formation of ASEAN in 1967, the Japanese business community became genuinely focusing upon those member countries as the prospective trade and investment partners. The data suggests this approach became more certain around 1970. By this notion, we are very much interested in how well the linear equation would be able to explain the international trade relations between Thailand and Japan. First, it is hypothesized that trade performances are closely related to the economic performances in the trade partner country. Secondly, it can be tested to what extent the cost factor such as the foreign exchange rates could have served to influence the trade prospects. Also, we have already acknowledged that the trade expansion process was not so monotonic. It is very likely that various economic or political events could have affected the mutual economic activities. In this regard, a simple risk variable, if a plausible one could be specified, would be applied and tested. At the same time, if the deviation between the actual and estimated outcome would be significant, it is suspected there might have occurred some major events, economic or political. In such a case, searching exercise fora possible cause of the disruption or turbulence would be instructive for better understanding of the characteristics in the economic structure. Reasoning may not necessarily be quantitative, but qualitative.

As the first step, the prototype equations, as given in (1) and (2), are estimated with the ordinary least square method. The estimation outcomes are summarized in the following Table 1 and 2.

Table 1: Estimation of the Prototype Equation of Japanese Exports to Thailand, 1970 to 2010
Explained Variable: Log (ext)

Variables	Estimation (a)	Estimation (b)	Estimation (c)
C	3.4644 [7.767]	-0.3180 [-0.174]	-2.3720 [-2.757]
Log(yt)	1.4188 [20.240]	1.4135 [9.514]	1.9901 [13.303]
Log(bt)	-0.6386 [-3.271]		
Log(yen)		0.3328 [1.319]	
Log(bt/yen)			-0.8812 [-5.236]
Summary Statistics			
Adjusted R-Squared	0.9638	0.9556	0.9730
S.E. of regression	0.1733	0.1918	0.1495
Durbin-Watson stat.	0.7057	0.6353	0.7264

Notes: 1. the variables used in this estimation are as follows:
ext: Japanese exports to Thailand,
yt: real GDP of Thailand
bt: exchange rates of Baht per U.S. dollar,
yen: exchange rates of yen per U.S. dollar,
bt/yen: exchange rates of Baht per Japanese yen.
2. The numbers in the parenthesis [] under the estimated coefficients
represent t-statistic, respectively.

Table 2: Estimation of the Prototype Equation of the Japanese Imports from Thailand, 1970 to 2010
Explained Variable: Log(imt)

Variables	Estimation (d)	Estimation (e)	Estimation (f)
C	-5.651 [-8.447]	-3.8097 [0.866]	-0.6459 [-0.221]
Log(yj)	2.3880 [9.350]	2.5348 [4.794]	1.8225 [3.230]
Log(bt)	0.5208 [1.519]		
Log(yen) s		-0.1463 [-0.338]	
Log(bt/yen)			0.4960 [1.621]
Summary Statistics			
Adjusted R-Squared	0.8955	0.8895	0.8964
S.E. of regression	0.3239	0.3331	0.3226
Durbin-Watson stat.	0.3607	0.3335	0.4354

Notes: 1. the variables used in this estimation are as follows:
ext: Japanese imports from Thailand,
yj: real GDP of Japan,
bt: exchange rates of Baht per U.S. dollar,
yen: exchange rates of yen per U.S. dollar,
bt/yen: exchange rates of Baht per Japanese yen.
2. The numbers in the parenthesis [] under the estimated coefficients
represent t-statistic, respectively.

Table 1 shows the case of exports to Thailand. We estimated three different specifications for the exchange rates as for the cost factor. Estimated equation (a) applies the baht exchange rate. All estimated coefficients are statistically significant even at 1 percent level. The coefficient estimated on the variable yt is 1.4188, and this means the Japanese exports are elastic (i.e., sufficiently bigger than unity) with respect to the Thai income increase. In other words, the Japanese exports to Thailand have been significantly grown in along with the Thai economic growth. The estimated coefficient on the baht exchange rates (bt) is negative but statistically significant at 1 percent level. This implies that depreciation of the Thai currency value relative to the U.S. dollar served to restrain the Japanese exports. Simply, the weaker baht value brings more expensive imported products from Japan. Equation (b) used the Japanese yen value relative to the U.S. dollar as for the cost factor. Although the estimated coefficient is positive, the outcome is not statistically significant even at 5 percent level. The estimated coefficient on the income level (yt) is similar to the outcome in the equation (a). The last equation in Table 1 is given in estimation (c). The cost factor is now the relative exchange rates of Thai baht against the Japanese yen. The result is -0.8812 and statistically significant in 1 percent level. This result clearly indicates that the weaker the value of Thai baht relative the yen, the more expensive the Japanese goods in Thailand, therefore the less the Japanese exports can be observed. Generally speaking, all three estimations are fairly well explaining the data, albeit at lower Durbin-Watson statistic.

Table 2 summarizes the three estimation outcomes. Like Table 1, we attempted the three specifications as for the cost factor. All three coefficients on the Japanese income level (yj) are between 2.53 (see estimation (e) in Table 2) and 1.82 (see also estimation (f) in the same table) and those are statistically significant at 1 percent level. However, all three estimation results on the cost factor are unfortunately not statistically significant at 5 percent level, although the results possess the expected sign in all cases.

Throughout the above exercises, which are summarized in Table 1 and Table 2, two estimations (c) and (f) area bit better fit to the data than other specifications. This implies that the relative currency value of the Thai baht against the Japanese yen serves to

be a more explainable cost factor when analyzing the trade performances. With this cost factor variable, we will estimate the export and import equations by adding a set of risk variables. However, it is difficult to quantify multiple risk factors as a single risk variable. This difficulty is in fact widely acknowledged by market researchers. Therefore we adopted, instead, the following simple approach. The foreign exchange markets are known very efficient and sensible to any shock, thus it is very likely to reflect almost all news and events in the fluctuations of the exchange rates [16]. Any happening, even political as well as economic, on the Thai economy, for example, can be immediately detected in the markets. Such a message appears soon in the larger fluctuations than the ordinary level of the baht foreign exchange rates. This can be regarded as the mirror image of the risk influence.

If one can specify a certain model for the prediction of the exchange rates, then the measured discrepancy, apart from the random error, between the actual and predicted rates represents the effect of the risks or shocks, which is assumed to summarize many happenings in the society and economy. Of course, it is one of the most difficult challenges to construct such a model with a high predictive ability. In this paper, instead, we adopt a simple approach, rather than to elaborate a sophisticated model, to make a prediction for the foreign exchange rates, both baht and yen. Statistical data we use are not high frequency, but yearly figures. By knowing this data characteristic, the predicted exchange rates are obtained by using the five year moving average method. The exchange rate, which is computed by the moving average of the past five year figures, is assumed to become the predicted one. This rate at least represents the market trend appeared in the foreign exchange market. The discrepancy between this figure and the actual exchange rate therefore assumes to be caused by major unpredicted events in the economy. Such discrepancy numbers are converted into the percentage figures from the actually observed rates. We call this series BRISK in a case of Thailand. This is the variable of the risk which is detected in the baht foreign exchange market. YRISK is the similar series from the Japanese case.

The new set of the export and import equations are given as follows:

Export equation:

$$\ln(ext) = c + \gamma_1 \ln(yt) + \gamma_2 \ln(\frac{bt}{yen}) + \gamma_3 BRISK + \gamma_4 YRISK + m, \quad (3)$$

Import equation

$$\ln(imt) = c + \delta_1 \ln(yj) + \delta_2 \ln(\frac{bt}{yen}) + \delta_3 BRISK + \delta_4 YRISK + n, \quad (4)$$

As mentioned above, the variables (ext) and (imt) are the value of Japanese exports and imports with Thailand. Similarly the variables (yt) and (yj) are the real GDP figures of Thailand and Japan, respectively. The exchange rate of baht per one unit of yen is given by the ratio of $(\frac{bt}{yen})$. BRISK and YRISK are defined in the previous paragraph.

The estimated outcomes of the equations are summarized in Table 3. The coefficients on the real GDP variables are both statistically significant at 1 percent level. In both export and import cases, the estimated coefficients are 1.8152 and 1.3599. This result indicates that trade transactions are sufficiently elastic in terms of the productive activities in both countries. That is, if the Thai economy grows one percent, then the Japanese exports to Thailand would increase more than 1.8 percent. Similarly, Thai exports to Japan will grow more than 1.3 percent when the Japanese economy would expand only one percent. Estimated outcome tells that exchange rates serve to affect the exports and imports significantly. When the Thai baht depreciates against the Japanese yen, the Japanese exported goods will become more expensive in the local market, thus this would enforce less exports from Japan. In case of the imports, the depreciated baht value makes Thai products less expensive to the Japanese market. Both signs of the estimated coefficients are complying with what one has initially expected.

Table 3: Estimation of Exports and Imports with Risk Variables, 1970 to 2010

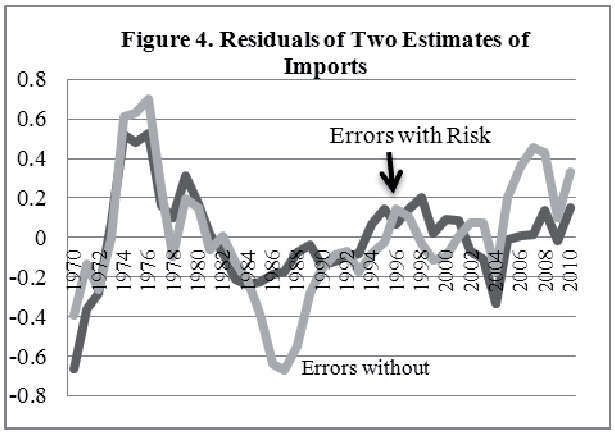
Variables	Export Eq. (3)	Variables	Import Eq. (4)
C	-1.3346	C	1.9446
	[-1.056]		[0.855]
Log(Yt)	1.8152	Log(Yj)	1.3599
	[8.3912]		[3.110]
Log(bt/yen)	-0.6866	Log(bt/yen)	0.738
	[-2.848]		[3.113]
BRISK	0.1843	BRISK	1.4143
	[0.803]		[4.764]
YRISK	-0.3632	YRISK	-1.6512
	[-1.177]		[-4.406]
Summary Statistics		Summary Statistics	
Adjusted R-Squared	0.9726	Adjusted R-Squared	0.9401
S.E. of regression	0.1507	S.E. of regression	0.2452
Durbin-Watson Stat.	0.7403	Durbin-Watson Stat.	0.4842

Notes: 1. the variables used in the estimation are as follows:
yt: real GDP of Thailand,
yj: real GDP of Japan,
bt/yen: the exchange rates of Thai baht per Japanese yen,
BRISK: risk measurement related to the baht exchange market,
YRISK: risk measurement related to the Japanese yen market.
2. The numbers in the parenthesis [] under the estimated coefficients
represent t-statistic, respectively.

Both risk variables in the export estimation are statistically insignificant at 5 percent level. However, the estimated coefficients of BRISK and YRISK in the import equation are statistically significant at 1 percent level. And quite interestingly, the signs of both coefficients are opposite. The imported goods from Thailand would have been influenced positively by the risk events in the Japanese market. That is, the risk event in Thailand could be regarded more likely to materialize favorable deals in the international transactions. On the other hand, the risk event which has appeared and perceived in Japan has probably signaled for business people to take cautiously a restraining stance in the foreign goods purchasing.

All the estimation exercises, conducted in the study, suggest the expansive international trade relationship is generally observed in along with the economic development in both countries. That is to say that the smooth, not disruptive or turbulent, economic environment has served positively to promote more favorable international trade transactions between Thailand and Japan.

IV. Risks and Disturbances in International Transactions



As Figure 4 tells, there are three notice able discrepancies in residuals of two estimates. The first discrepancy from the whole sample years as shown in the Figure is recognized around 1973 up to 1976. There was the worldwide oil crisis around that period and this created the economic disruption in world, especially in the imported-oil dependent societies. Both Thailand and Japan have been known as major importers of petroleum, basically from the Middle-East region, thus this crisis, initiated suddenly by the quadrupled oil price, generated instantaneously the damaging shockwave on both economies. The overall effects on the economy were so significant and lasted for some time. In Japan, the productive activities have stagnated and the unprecedented inflationary pressure drove many Japanese households to fall into great confusion in their consumption behavior. Even now it is still remembered as a funny topic that many panicked consumers run thoughtlessly about to buy up as many consumer goods such like toilet papers.

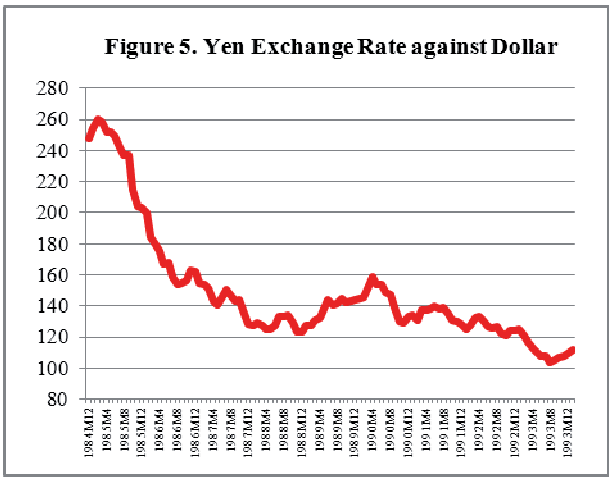
Prior to the oil crisis, Japan had been shaken by the currency diplomacy. Due to the persistent trade surplus, some foreign countries gave constantly a pressure on Japan not to have taken a necessary action to mitigate the trade imbalances [17]. After some debates among major western countries, Japan had finally agreed to adopt the flexible exchange rate system in 1973. Soon after this new decision was made, the appreciation of the yen currency value accelerated especially against the U.S. dollar. In those days, it was so concerned that the stronger yen value against other major currencies would soon become the single most damaging hurdle for the export oriented industries. The so-called convoy system, which towed successfully the post-war Japanese industrial development, has to a certain extent enjoyed the benefits of the favorable exchange rate, especially under the Bretton Woods system [18]. The success of the post-war economic growth in Japan is doubtlessly related to the export-driven economic policy [19].

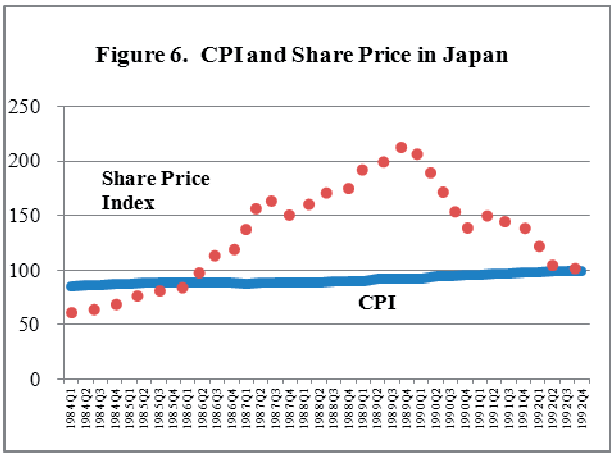
Without any anticipation and of course necessary preparation, Japan all the sudden encountered the oil crisis. It is no question that the period of 1973 up to 1975 turned out to become one of the most disruptive environments for the Japanese economy. Therefore, a certain kind of risk variable serves to capture this disruptive effect in the trade transactions. Of course, the risk variables, which are applied above, are very simple and therefore those are unable to explain the great deal of the turbulences in those years. For further study, it may need more to elaborate the specification on this variable.

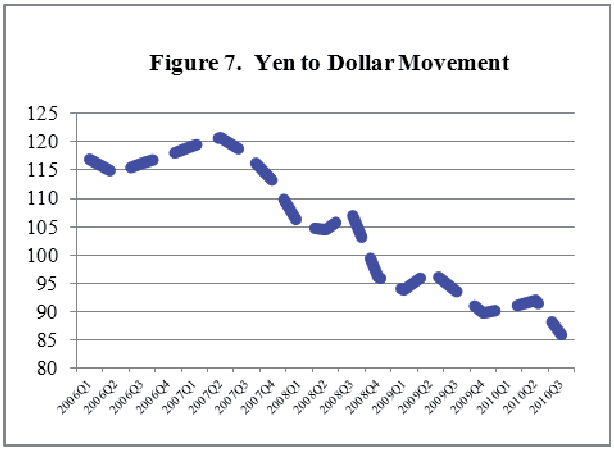
The second discrepancy appeared around 1985 up to 1989. At that period, the Japanese economy was in the middle of the bubble phenomenon. We became eyewitness that the wealth values of properties and corporate stocks have accelerated with a spectacular pace, as seen in Figure 6. Although the causes of the bubble are still debated, the U.S. economic policy under the Reagan Administration at least had a deep relationship to the development in the Japanese financial and industrial activities. The policy stance of the stronger dollar was firmly maintained until the Plaza Agreement in 1985 was made, thus until then this encouraged the Japanese manufacturers to export more to the U.S. markets [20]. This considered as the following wind in favor the Japanese economic booming [21]. At the same time, the Japanese monetary authorities attempted to accommodate the U.S. policy. As a consequence, the massive foreign exchange reserves were piled up and thus the abundant money supply was injected in the market.

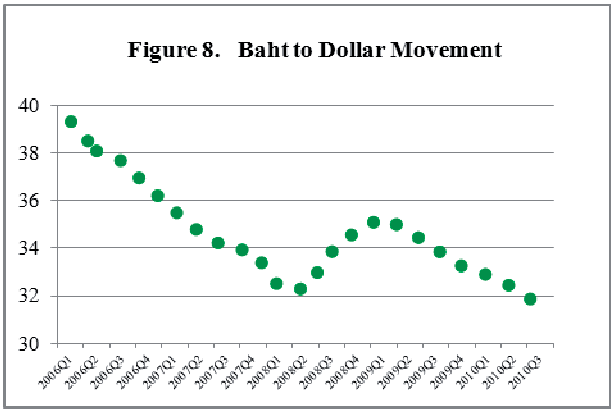
The Plaza Agreement changed the course of the U.S. economic policy, departing from the strong dollar. The pressure on yen became imminent, as clearly shown in Figure 5. In order to avoid the aggravation of the yen appreciation, the Japanese monetary authorities kept the low interest rate policy. Unfortunately this monetary stance ended up adding fuel to the frames. We observed the bubble outcome in the wealth assets, but did not see any ordinary inflationary effect. That is, consumer price index CPI was rather kept low and stable, as seen in Figure 6. Nonetheless, through those developments, the currency value of yen abruptly appreciated responding immediately to the Plaza Agreement, then this turbulence helped exports and imports squeeze down. And since 1987, both exports and imports expanded rapidly due mostly to the wealth effects and the calm foreign

exchange market. A series of those policy changes and responses generated various uncertain situations in the market. Such a disruptive event would be even not totally reflecting in the large residuals of the estimation outcomes. Two risk variables seem well capturing the disturbing environment at that time.









The third discrepancy appeared during the period of 2005 to 2009. At that period, the Japanese society has been bewildering the consecutive lost-decade phenomenon. It was trapped into the difficult situation unable to find any effective measure to escape from the deflationary environment [22]. Around the same time, it has been reported in the U.S. that the housing market bubble went wild. The influence of a series of the financial deregulations and the leveraged investment booming led basically by the hedge funds made investors realize the gigantic wealth effects. This situation encouraged American people to invest furthermore into the housing market. The currency value of yen has been rather following the depreciation trend up until the middle of 2007, but all the sudden the yen shifted to appreciate against the U.S. dollar since then, as seen in Figure 7. Similar pressure was observed in the movements in the Thai currency baht, see Figure 8. Around that time, it was widely debated in Thailand whether the on-going acceleration of the baht value may bring another nightmare of the currency crisis in the Thai economy. Again, it became difficult to predict the direction of the currency adjustment in the market. Toward the end of 2007, the market started to anticipate some kind of the policy action to curtail the bubble market. Trade transactions were again stagnated. These events created the instable situation even in the international trade. However, it looks that the risk variables capture relatively well to reduce the magnitude of error components in the estimation, see Figure 4.

V. Final Remarks

The international trade relationship between Thailand and Japan has unquestionably widened and deepened in the last four decades. Thailand built up successfully the industrial clusters and attracted massive foreign direct investment, especially from Japan. All the way through this process, Japan regarded Thailand the most favorable investment destination and intended to maintain the smooth two-way trade relationship through, in particular, manufactured industrial activities. In fact, throughout 1970s and 1980s, Japanese efforts toward internationalization chose Thailand, after the U.S., as the primary trade and investment partner [23]. As the quantitative study above demonstrated, the economic growth in both Thailand and Japan helped many industrial sectors sustain

the expansive trade activities. Also, the cost factor, which assumed incorporated in the foreign exchange rates, played the significant influence on the international transactions. Those findings are generally confirmed by the statistical examinations in this study.

However, the specified equations are rather simple, so that the residuals of the estimation exercises are somewhat substantially large. To test whether the risk factors might have caused to generate such large residuals, the risk variables are constructed by paying an exclusive attention to the foreign exchange markets and applied to the equations. It is assumed that the foreign exchange market is known efficient and thus reflects swiftly available information regarding the economic and political events. We found that those additional risk variables help residuals, especially in import equation, decrease in a sizable magnitude. As shown in Figure 4, we found the three events where the discrepancies between two estimates of imports, that is, with and without the risk variables, are quite substantial. It is interesting to see that those three cases are corresponding to the major international economic and sometimes political disputes.

Although the outcomes of the estimation exercises look successful even partially, the study needs furthermore elaboration of the model and also specification of the equations. In addition, the sector to sector examination would be fruitful to know more in details about the deepening process of the trade relationship between Thailand and Japan. This challenge will be tackled in the forthcoming study.

Appendix: Sources and Description of Data used in the study

Variables:

ext: exports from Japan to Thailand, in Japanese yen.
imt: imports of Japan from Thailand, in Japanese yen.
Above data, both ex and im, are taken from the Ministry of Internal Affairs and Communication, Japan Statistical Yearbook, various issues.
yj and yt: real GDP of Japan and Thailand, respectively, adopted from IMF, International Financial Statistics, Database, various packages in CD.
bt and yen: the average figure of the period of the exchange rates of baht and yen relative to the U.S. dollar, respectively, taken from IMF, International Financial Statistics, Database, various package in CD.

REFERENCES

[1] The ASEAN was officially formed in 1967. Indonesia, Malaysia, Philippines, Thailand and Singapore are the founding member countries.
[2] The failure of the import substitution policy was reported by various cases in the South American nations. After various experiments in some sectors, most of the ASEAN nations swiftly shifted to the export promotion policy stance.
[3] *Kokusaika* is the term in Japanese, probably corresponding to internationalization process. After confirming the export expansion, the Japanese government and business community became so serious to go abroad. The whole process in Japan of the 1970s is described in S. Odano, "Ups and Downs of Japan and Emerging Asian Economies", The HikoneRonso, the Economic Society of Shiga University, No. 389, Autumn 2011, pp. 004-021.
[4] A lot of similarities in social and cultural backgrounds are acknowledged. Also, the stability in the social and political areas was highly appreciated by the Japanese businesses. Because of these circumstances, many Japanese tourists have been visiting Thailand.
[5] It was constantly reported by media even in Japan that the threat of flooding approaches minutes by minutes to the industrial parks and greater Bangkok area at that time.
[6] The shocking news in the Japanese businesses was that the production of the vital electronics products for Christmas sales was enforced to temporarily terminate due to the shortage of essential parts from Thailand.
[7] Goldstein, M. and M.S. Khan, "Income and Price Effects in Foreign Trade", in Handbook of International Economics, 1985, Vol II: 1041-1105, eds. R.W. Jones and P.B. Kenen, Elsevier Science Publishers. Warner, D. and M.E. Kreinin, "Determinants of International Trade Flows", TheReview of Economics and Statistics, 1983, 65:96-104.
[8] Exception was only Singapore in the Southeast Asian countries.
[9] Green revolution was widely discussed in the 1970s. One of the widely cited publications on this issue is: HlaMyint, Southeast Asia's Economy: Development Policies in the 1970s, New York, Praeger Publishing, 1972.
[10] There is no established definition on the notion regarding the take-off. Around 1970s, many economists, especially in the policy-making circle, assume that the take-off can be attained at the level of per capita GDP around US $1,000.
[11] For example, Toyota started the knock-down operation in Indonesia and the Philippines soon after the ASEAN formation.
[12] Student movement erupted in Thailand and Indonesia. Their anti-Japan movements in fact affected the official visiting of the Japanese prime minister to each capital city in 1973.
[13] Many economists are interested in the interaction between trade and FDI. Among many outputs, the followings may be some good references in this area of study. Aizenman, J. and I. Noy, "FDI and Trade-Two Way Linkages?",NBER Working Paper Series, #11403, June 2005. And for the empirical research outputs, see, for example, Chaisrisawatsuk S. and W. Chaisrisawatsuk, " Imports, Exports and Foreign Direct Investment Interactions and Their Effects", Asia-Pacific Research and Training Network on Trade, UNESCAP, Working Paper Series, No. 45, October 2007.
[14] Theoretical foundation of the model specification about export and import can be found in any international economics textbook. For example, there are following two textbooks for good reference. Krugman, P.R. and M. Obstfeld, International Economics: Theory and Policy, Scott, Foresman and Company, 1988, or Appleyard, D.R. and A.J. Field, International Economics: Trade, Theory and Policy, McGraw-Hill Book Co. 2001.
[15] Data source is explained in the appendix at the end of the paper.
[16] Efficiency in the financial economics assumes that the current prices fully reflect all the available and relevant information. See, for example, the paper by Eugene Fama, "Efficient Capital Markets II,"Journal of Finance 26 (1991), pp. 1575-1617.
[17] Trade dispute issues, especially between Japan and the U.S., were so intense throughout 1960s up to 1990s. General picture of the process is well summarized in Dennis J. Encarnation, Rivals Beyond Trade, America versus Japan in Global Competition, Cornell University Press, 1992. Related to this issue, it has been argued that the yen currency has been long kept undervalued. See some theoretical and empirical research outputs, for example, Richard C. Marston, "Real Exchange Rates and Productivity Growth in the United States and Japan" in Real-Financial Linkages among Open Economies, pp. 71-96, (eds.) Arnde, S.W. and J.D. Richardson, The MIT Press, 1987.
[18] The economic growth model and industrial organization in Japan is in detail described in Patrick, H. and H. Rosovsky (eds), Asia's New Giant, Brookings Institution, 1976.
[19] Although Japan was criticized by many trade partners regarding the trade imbalance issues, it has to note that she had been suffered the persistent trade deficit problems up until 1965.
[20] The history of the dollar is well summarized in a little book by Craig Karmin, Biography of the Dollar, Three River Press, 2009.
[21] From the U.S. perspective, the issue is now how sustainable the U.S. trade deficits would be in the foreseeable future. C. L. Mann explains her view on this issue, in Is the U.S. Trade Deficit Sustainable?, Institute for International Economics, September 1999.

[22] It is generally understood that almost policy instruments, from monetary and fiscal options, were exhausted. Thus Japan has been placed in the dilemma situation.

[23] After 1990s, China emerged as the major destination for the Japanese investments. However, it is often debated lately that the new strategy, China plus one, would be very important and crucial to sustain the global operations throughout the Southeast Asia. Thailand is once again assessed positively, in addition to Vietnam, with respect to this strategic approach.