

Quantitative Analysis of Regional Economic Integration Process Affected by Economy and Trade Cooperation Between China and Japan

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Abstract: - With the stepwise advance in comprehensive national strength, keeping a high level in economic progress has been one of the most crucial factors to a nation. In order to keep national economy mount up, such proposal as establishing Economic Integration has been considered to be an effective way, besides setting down various policies. However, why is "East Asian Economic Integration" still far away? This paper is to index that status quo of the trade and economy cooperation between China and Japan has been analyzed, so is with the East Asia Economics Integration. Based on the quantitative analysis in econometrics, we apply lineal and non-linear regression analysis to get that strong relativity is in between China and Japan. Also Weight Theory, Lineal Modeling and Games Theory have been used to support the argument. The reasons that slow down the steps of Integration are discussed. Furthermore, sticking point will be indicated after conclusive result has been given.

Key-Words: - Integration of East Asian Economy; Economy and Trade Cooperation between China and Japan; Quantitative analysis; Regression analysis.

1 Introduction

Nowadays, European Union and North America Free Trade Area are more developed economic integration region. Due to the unbalance of economics of each country, the economic integration process of East Asian region is very slow. After Asian financial crisis, East Asian countries realize the importance and necessary of regional economic integration, this gives birth to ASEAN (Association of South East Asian Nations), APEC (Asia-Pacific Economic Cooperation), 10+3 and 10+1, but all of these are just the forerunner of regional economic integration, the actually effect is not that significant, especially the effects of boosting intra-regional trades and investment liberalization are not satisfied. But China and Japan, as the two big economic entities of this region, the trades between them are very frequent, the economic and trade cooperation of these two countries will have a deep impact on the economic integration process of East Asian region. This paper researches on economic and trade cooperation of China and Japan in the East Asian economic integration process, and investigates their effects they bring to it.

2 Basic situation of East Asian economic integration process

Precisely, the members of East Asian economic integration are ASEAN 10 nations plus China, Japan and South Korean. Currently, East Asian economic integration hasn't built, but the bases for this are ready and there is a promising future. But there are still some problems in it, such like inefficient cooperation, slow process and so on.

2.1 Governments pay high attention to cooperation in this region

Shouzheng Wang (2007) thinks that there are three stages to establish orderliness framework: "early trying stage, APEC dominant stage and realization of 10+3 and incremental value from bilateral free trade stage" [1]. Before the integration of East Asian economics, there are already dozens of regional economic and trade cooperation in this area, some of countries' bilateral negotiations are still ongoing. Part of FTA agreements such like: ASEAN, ASEAN-CHN, Japan-Singapore FTA, FTA plan and so on. These sub-regional cooperation put more

attention on economic construction, they emphasize tariff concession, which creates good investment environment for each country of East Asian even for the whole region. Some of FTAs are at negotiation stage, but from the initial setting date, they will come to bilateral agreements, the signed date will be no later than 2012. the detailed FTA schedule is in Table 1 as followings:

Table 1 East Asian FTA schedule

	Date	Members	nature	Object
ASEAN	1992.1	ASEAN 10 Nations	FTA agreement	Realization of ASEAN free trade zone plan with tariff concession and free trade
10+3 Cooperation	1997.12	ASEAN plus China, Japan and South Korean	Cooperation Forum	Emphasize on economic cooperation, put financial cooperation as pilot to propel the comprehension cooperation of the whole area. Final object: build East Asian free trade zone
Japan-South Korean FTA	2000.9	Japan, South Korean	FTA plan	Reduce tariff wall and capital wall, realization of zero tariff, development of agriculture, science and technology, tourism and human recourse
CHN-ASEAN	2001.11	China, ASEAN	FTA agreement	Build up CHN-ASEAN free trade zone
Japan-Singapore Economic Partnership Agreement	2002.1	Japan, Singapore	FTA agreement	Acceleration of trade, investment freedom, convenient, and establish partnership and cooperation
Japan-ASEAN	2002.11	Japan, ASEAN	FTA plan	Build up free trade zone in 10 years
Mekong Development Cooperation	2002.11	China, Vietnam, Burma, Laos, Cambodia, Thailand	International Cooperation Development	Development of energy, transportation, communication, environment protection and tourism

Source: Guiyan Yang, Research on China-Japan-South Korean free trade zone, China Social Sciences Press. May 2005, 10-15, 86-101, 165-182.

Regional bilateral FTA has Domino effect, each country pays high attention to FTA's performance, but due to the unbalance of economic development of East Asian area. Essentially, this effect establishes a potential model which is good to integration process. Even lots of bilateral FTA have Spaghetti Bowl effects, but economic heavyweight enthusiasm for regional bilateral FTA is a good signal. China and Japan have not agreed on FTA, but these two countries' economy develop very well and they both intend to accelerate its economic development. So if China and Japan sign the FTA, it is an all-win action. And there are evidences show that these kind of cooperation will continue, will scale up, the cooperation will extend to more fields,

and the development object will be more close to the requirement of construction economic integration of East Asian.

2.2 Economic and trade cooperation of East Asian area develop well

The achievement of trade cooperation in East Asian area is significant, "East Asian improves

Interdependent Relationship at trade, investment and finance" [2]. Which shows as followings: firstly, the total export grow rate of East Asian is No.1 of world. The region share of world's total export of this area increases from 15% (1980) to 25% (2003); secondly, though it is lower than that of NAFTA or EU, the export percentage of East Asian in the whole area increase from 33% (1980) to 50% (2003), and it still increases nowadays; Thirdly, the trade intension of this area improve significantly, the cheap and skilled labor of this area attracts a mass of foreign investment.

2.3 East Asian countries are in economic growth stages which make a good base for regional economic cooperation

The GDP graph shows that, from 2003 to 2007, the GDP of Asian area is increase all the time, and in the prediction of 2008 and 2009, the blue dummy

block in Figure1 show the potential of increasing. The red trend line indicates average moving in 5 years, from 2003 to 2009, GDP rise slowly. We can see that, if economics and finance of East Asian keep steady and with countries' GDP of this area increase step by step, the possibility of realizing economic integration is become higher and higher.

2.4 East Asian countries are in economic growth stages which make a good base for regional economic cooperation

Though East Asian countries have some economic development, and they also appeal for economic integration, but the integration didn't come true until now, why? It is mainly because of unbalance of economic development and inefficiency of cohesion and cooperation of this area. There is developed country in this area such like Japan, it still has NIEs four small dragons, but lots of countries of this area are developing country, and the big economic development gap between countries is the main reason for slow integration. In addition, the flying geese model doesn't fit economic development of Each Asian country any more. Other countries in this region hope to export more labor-intensive products and some low capital-intensive and low technology-intensive products to Japan, but the economics of Japan is recession all the time, which make other East Asian countries cannot keep its export growth rate, all of these impede the integration of East Asian economics.

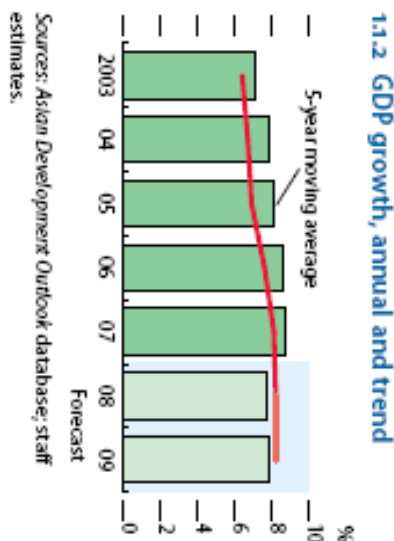


Figure 1 GDP growth rate of East Asian area (2003-2008)

3 The impact of cooperation between China and Japan on East Asian economic integration process

Obviously, the cooperation between China and Japan has great impact on East Asian economic integration process. The "snowball mode" [4], which mentioned by Enli Zhao (2006), is a better cooperation mode compared with the current multiply centers cooperation mode, because this mode has more cohesive force.

3.1 Cooperation between China and Japan help to improve industrial division in East Asian intra-economy

Resource Integration and industry upgrade, not only are the trend of world economic development, but also is one of object for East Asian area to improve its economic level. If East Asian area wants to make some change on its economic situation, to get some development by integration, it has to integrate resource and adjust its industrial structure. The resource integration mentioned above, in narrow sense, we can consider that economic and trade cooperation between China and Japan about how to make specification of work in East Asia region so that it can better reflect the efficiency of resource. The economic and trade cooperation between China and Japan can make the product transfer among countries in East Asian area before the product be transferred to consumer, this may improve the cooperation among manufacturing countries, it also may improve the cooperation among manufacturing countries and distribution countries.

For example: Japanese manufacturer export cars to European. These cars can be manufactured by it, or can be done cooperating with China manufacturer. Now let analysis these two effects as followings:

Assumption 1: Japan manufacture by itself (before China-Japan cooperation)

Natural resource:	Japan	0
Human resource:	Japan	3
Technology:	Japan	5
Total:		8

According to the Rybczynski theorem: at constant relative goods prices, a rise in the endowment of one factor will lead to a more than proportional expansion of the output in the sector which uses that factor intensively, and an absolute decline of the output of the other good. In other words, if Japan manufactured cars by itself, based on other fixed resource in this country, the

production of other big equipment made of steel reduces, and the export will be cut also.

Assumption 2: China-Japan economic and trade cooperation

The cars exported to European are manufactured by cooperation of Japan and the countries in East Asian area, which improve the production efficiency, the cooperation working procedure as show in Figure 2.

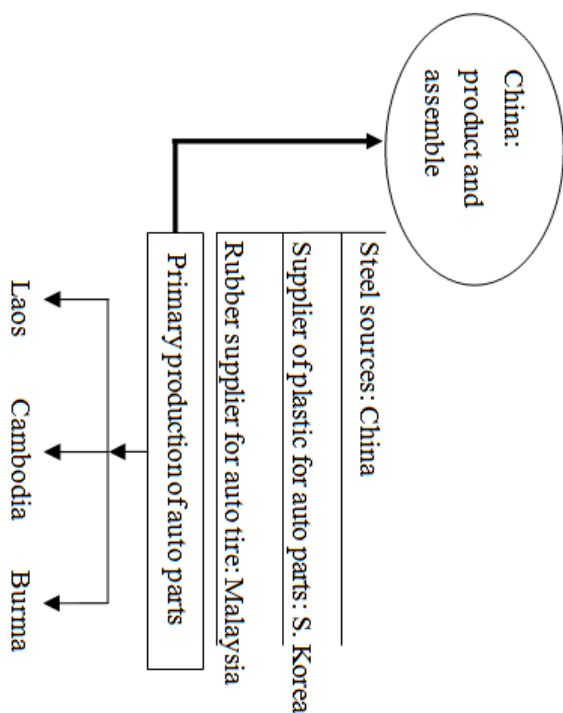


Figure 2 sketch map of China as product and assembly center

Because of cooperation, each country gives full play to its advantage, so it can improve production rate.

After cooperation:

Natural resources: Countries	5
Human resources: Countries	5
Technology: Japan	5
Total:	15

Due to cooperation between China and Japan, the vehicle production procedures can integrate all the resources in East Asian area, and each country can get its profit by manufacturing goods it good at. As for countries manufacturing primary products such like Laos, Cambodia and Burma, they cannot get scale economics even they manufacture similar products, because these 3 countries just provide

human resource not natural resource products. The other point is that the product they manufactured has different types and different level, this also can reduce cut-throat trade competition and unnecessary of non-tariff trade barriers.

3.2 Cooperation between China and Japan make structure of regional economic integration more perfect

Currently, the trend of world economics is international industry structure update and transfer. As for industry structure update, according to FTA theorem: the FTA between developed country and developing country will accelerate the optimization of resource allocation of the whole region and industry update in developing country.

China-Japan economic and trade cooperation follows FTA theorem, based on this and the trade cooperation with other countries in East Asian area also follows FTA theorem.

Members in this region all face restriction of economic development due to their Incompletion industry structure. Moreover, because of this, the prototype structure of integration cannot be perfected until now. The only thing China-Japan E-T Cooperation can do is to help developing country to update its industry structure so as to promote the update of integration. China-Japan E-T Cooperation let East Asian country be original from primary product manufacturing, then steps into intermediate product manufacturing and finally reaches high-level product manufacturing and export, from labor-intensive to technology-intensive. In detailed:

Firstly, from industry type, Japan is the biggest capital-intensive country in East Asian area, it is also technology-intensive country, which ban not be reached by South Korea, Singapore and Malaysia.

Secondly, China is the biggest labor-intensive country in this area, its labor skill rise from west to east as ladder; this is a big advantage comparing with countries in ASEAN, Chinese unique labor-intensive type is suitable for different level of development in East Asian area.

Thirdly, due to the structure of Japan is different with lots of countries of ASEAN, the trade between Japan and ASEAN is not that good as that of China and ASEAN, it is difficult to change some countries' productive structure in East Asian area just by trade between Japan and ASEAN.

China-Japan E-C cooperation can push integration structure update by promoting technology innovation, introducing technology, constituting industry policy which is suitable for East Asian countries. The detailed approaches are: Japan trades

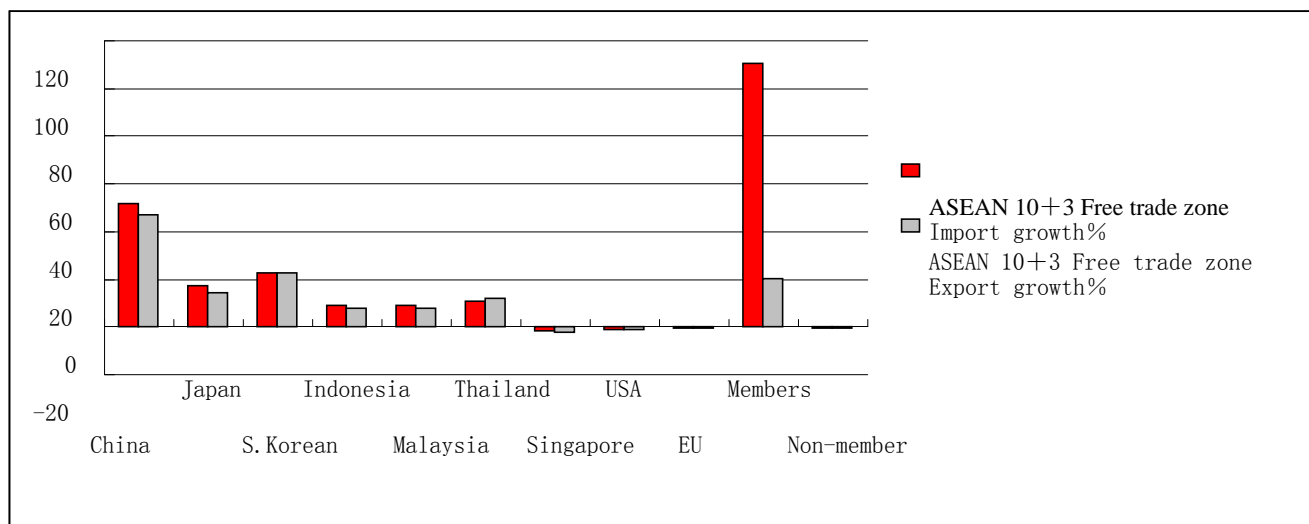


Figure 3 ASEAN “10+3” free trade zone import and export growth rate

with China, it provides technology, and China acts as high level producing center, ASEAN products primary products. As the quality requirement increases, Japan export more advanced technology to China, and China move more production chain to ASEAN, by this way, ASEAN can switch from primary product manufacturing to intermediate product manufacturing, furthermore, it does not need rely too much on import and export with capital-intensive and technology-intensive country besides East Asian.

3.3 Cooperation Between China and Japan Can Increase Import and Export in Economic Integration Region

If China and Japan build up free trade zone, the trades between these two countries definitely increase very fast, but it is not only a trend for these two countries merge into East Asian, in order to extend their economic development scale, they have to do this.

Lijun Jia (2007) gives out a statement: “China-Japan E-C cooperation can increase volume of trade between these two countries”. From Figure 3, the export growth percentage for China and Japan are 47.28% and 14.28% which are both greater than that of pure bilateral trade agreement between these two countries, which are 44.36% and 14.29% separately. At the same time, other countries of East Asian, such like Indonesia, Malaysia and Thailand all increase in import and export. The increases of each country make the total increase of this area reach 20.34% (total volume of export), as to the trade with other country beside this area, the volume of trade decrease, such like USA decrease 0.8%, EU

decrease 0.35%. Based on this, we can get the conclusion that, if the cooperation between China and Japan can promote the integration of East Asian, it is not a two-win strategy; it is an all-win action.

Table 2 China-Japan total volume of trade (2001-2007) And FDI of East Asian (2001-2005)
Unit: hundreds millions

	Total trade (China-Japan)	Growth rate of total trade (China-Japan)	FDI (East Asian economic integration area)
2001	877.5	0.023920653	-1233.3
2002	1019.1	0.161367521	12210.5
2003	1335.76	0.31072515	14968.2
2004	1678.66	0.256707792	22500.5
2005	1844.47	0.098775214	27507.5
2006	2073.6	0.124225387	null
2007	2360.2	0.138213735	null

Source:Key indicators 2006 Regional Table 24; ADB Key indicators 2007 Regional Table 23

3.4 Cooperation between China and Japan can increase import and export in economic integration region

This paper analyses the effects bring by China-Japan economic and trade cooperation to economic integration. From Figure 2 we can see that there is relative steady increase for trade between China and Japan.

By using Eviews, we make regression analysis on data in table 1, and get the result which is show in table 2. After regression, we get the non-linear regression function: $LgY = -0.142458 + 1.370402 LgX$, here LgX is explanatory variable and LgY is explained variable. From table 2, we see that R square is 0.954600, which is greater than 0.95, means that this regression function fit the data very well, F and t are 0.02964 and 0.023, which are both less than 0.05, indicates that this model pass the test, X and Y are linear significantly.

By this equation, we can get point prediction for 2020. Based on the increasing speed of total economy and trade between China and Japan, we get the average increasing speed is 0.181669133, i.e. by 2020 which all developing countries in APEC realize trade and investment liberalization, total amount of economics and trade between China and Japan will reach to $2360.2 * (1 + 0.181669133 * 13) = 20672.6$ hundreds million US dollars. By then the FDI amount will get to $Y = 590701.1$ hundreds million US dollars in East Asia region.

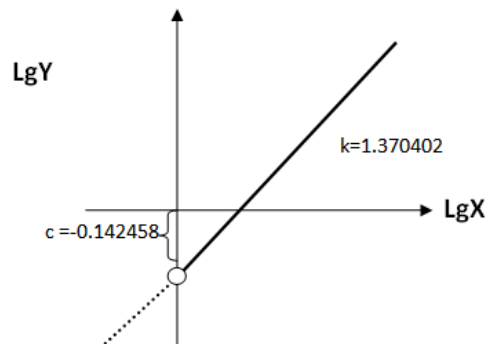


Figure 4 Linear relationship

By the equation mode of total amount of economics and trade between China and Japan, and FDI of East Asia, we find that if amount of economics and trade between China and Japan increases, then amount of FDI increases too, i.e. the change of economics and trade amount between China and Japan stimulates FDI amount in East Asia region in some way. By regression, we get $LgY = -0.142458 + 1.370402 LgX$.

From determination coefficient and all test indexes, there is a linear relationship between these two. The enhance of economics and trade between China and Japan will increase FDI amount in East Asia region. This relate with the better investment environment driven by the economics and trade between China and Japan. The linear relationship can be seen in figure 4.

4 Strategy study of economics and trade cooperation between China and Japan

We consider the elementary path of economics and trade between China and Japan from a realistic view.

4.1 Discuss “Magdeburg hemisphere expand effect” with respect to economy and culture

By the property of interaction of economy and culture can promote the communion of two countries as well as cooperation of economy and trade between two countries. Shuhua Peng (2006) in his paper The interior restrict factors of East Asian Integration disagreed with Ernst B. Hass’s view of point that the process of integration has to involve national politics elites. He believes that “The idea of functionalism of East Asian integration maybe not realistic”. Polity of East Asia, especially China and Japan, is deviation of the anticipation of economic welfare of integration. The history has been the fetter of bilateral diplomacy of China and Japan. However, we see that the trade come-and-go between China and Japan never stops. Hence a good way to promote politics diplomacy between China and Japan is to promote polity by economy.

The parallel development of economy and culture is in view of the interior development of the two countries. The foundation of communication between China and Japan is that both of the two countries have the same possible progress. Hence in order to dig the potential cooperation of the two countries, China and Japan must strive to develop economy and culture under the prerequisite of cooperation, so that the foundation stone of communication gets more and more firm. For Japan, in order to develop balanceable, the imperative thing is to figure out the problem of soft domestic demand market. Outcome of demand is consumption and this is a chain reaction that any one link of the chain

getting problem will consume the energy of economic development. As for China, while in the process of developing economy, it doesn't have technical skills support so that it uses too much cost and resource to deal with the industrial residue and effluent. The important fact to develop culture balanceable is to enrich its intension and increase the culture added value independently. Figure 5 states two countries' relationship in economy, culture and politics.

Development of economy and culture at the same time is the base of bilateral trade cooperation. The process of involving culture is also the process of producing economy. The stimulation of culture is obviously. In some point of view, culture is not just pure culture but economic culture. The communication of culture is also communication of economy since economy change is the result of culture communication. Therefore culture promoting politics is that economy promotes politics. Furthermore culture communication has properties of stability, spontaneity, and universality for economic interaction. This is because culture mostly comes from nongovernmental contact; culture communication also comes from people to people in two countries so that this communication can break through political limit. The closer relation culture and economy is, the more they rely on each other. We call it Magdeburg hemisphere expand effect, i.e. the degree of association will keep increase even goes to dependence relationship in some level so that need to seek for extension in more levels cooperation. When this dependence reaches to some certain degree through economy and culture, it will force motivation of policies improvement that connects the two countries tightly. The bilateral economy trade and culture is like the air of inside the sphere that it does exist even we can not see it. Under the frequent communication, it is like the vacuum sphere that the density inside keeps increasing and hard to be broken. So we can see the two hemispheres are mutual attracted tightly. As the result, two countries politics are more and more stable.

4.2 China and Japan must seek for solutions for trade friction

Along with the increasing volume of trade between China and Japan, in proportion to the trade friction is increasing as well. Due to the difference of protective trade policy in different countries, trade barrier is caused. At the very beginning of making the policy, the cooperation is put to the second consideration. This is not a good competition but a

bad idea that restrains the trade development. There are many complicated factors that cause the trade friction; it doesn't matter what kinds or what reasons these frictions exist, as long as they are inside the East Asia region, they will affect the process of integration of East Asia.

Because of the trade frictions between China and Japan, based on the current conditions, both countries can start from assistance, then try to improve. For instant, make schedule of solving trade friction, set priority processing to solve the problem faster; strengthen communion and cooperation, know each other better to decrease the trade frictions.

4.3 China and Japan seek for the developmental pattern of Integration of East Asian Economy

We have accepted the fact that East Asia pattern is no longer applies to today's East Asia economic environment. To make the economy develops in the region; the first job is to find the appropriate economic pattern for the development of regional economies. Comparing to the European mode, it is unrealistic for the Integration of East Asia. Thus East Asia must find its own way.

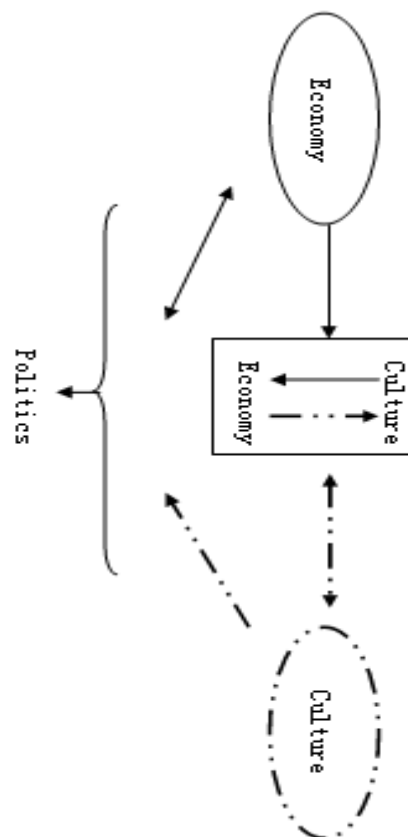


Figure 5 interactions of economics and culture

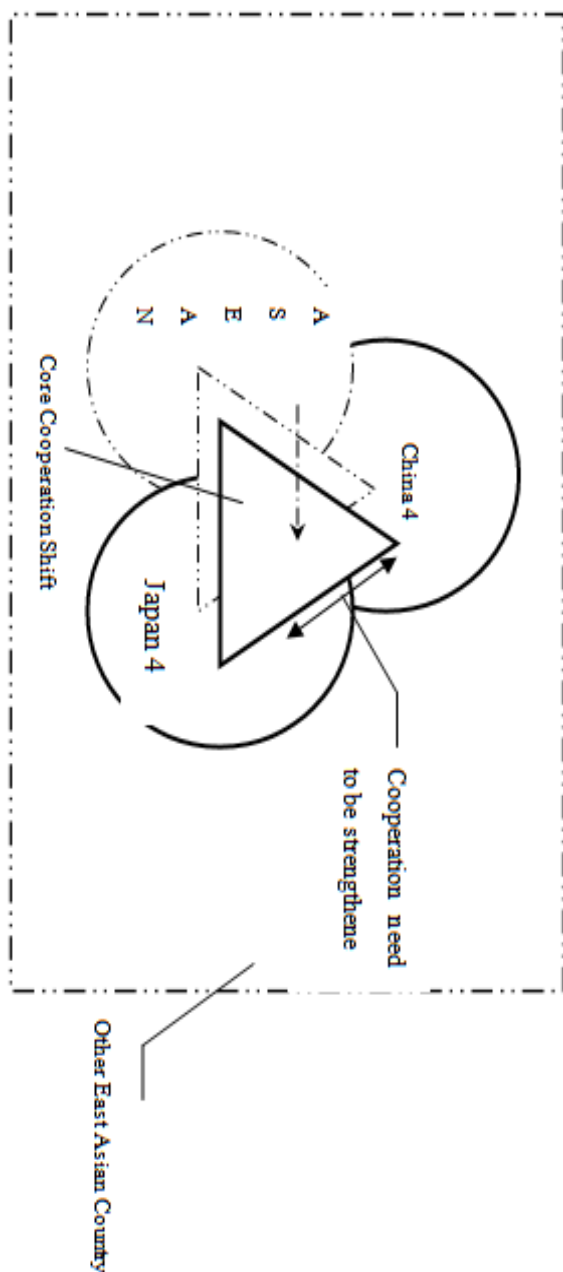


Figure 6 Pattern of Core Cooperation shift

The way for East Asia integration is the adjust of “10+3”. Based on the way that the trade and economy cooperation between China and Japan change the trade structure of region in East Asia, in this paper, we give the “core move mode” which is applied to development of East Asia economic integration (see figure 6). This mode thinks, based on the current status quo, the integration can’t change directly to the mode that has China and Japan as the vanguard. The change is necessary, but it is a process. ASEAN (the Association of Southeast Asian Nations) will still play an important role in East Asia since the trade policy is still unfair to interior and exterior of the association, even to

China and Japan. Along with trade between China and Japan strengthen and bilateral FTA, the mode for interior cooperation in East Asia will be China-Japan-ASEAN “4-4-3 mode”. From the whole view of the change of this process, this change process can cover the “core move mode”, where the mode maker and decision maker should lead by China and Japan. This is not a concentric circle, which China and Japan are both in the leader position inside the region and meanwhile both the two countries can extend to have cooperation with other countries outside the region. We must point, the key point of building the mode is based on the strengthened bilateral trade between China and Japan.

This model avoids the contradictions of economic development level and need protect of political stable and culture harmony. In this paper, we think to build a harmonic integration environment is a necessary condition for realizing the integration. To have the same goal is a crucial factor to maintain the stabilization in the region. China and Japan must have the ability of calling all other member countries together for integration, and this ability is based on the cooperation and has tendency to guide member countries and to make long continual plan.

4.4 Foundation of the cooperation- to keep the financial market stabilization

Since 1997’s Southeast Asian financial crisis, 2008 America Wall Street sub-debt crisis caused the global financial crisis. This unprecedented global financial crisis is the big test for the trade and economy cooperation between China and Japan as well as for the integration of East Asian Economy. The foundation of the cooperation is to keep current financial market stabilization. Of course this also proves the “impossible triangle” viewpoint. In the process of building up the integration of East Asian Economy, the members in the region can’t avoid the difference of speed and level of economic development. To form the integration of East Asian Economy, top priority is to keep economies developing stabilization for all countries in the region. At present, it is hard to tell how much effect of the global financial crisis caused by the American sub-debt crisis, but we know for China and Japan both need to keep the financial market relatively stable. In this paper, we believe for the existing circumstances, both Japanese Yen and Renminbi (RMB) can’t be substituted by US dollars. Since 1997 financial crisis, many southeast Asian countries which included China, have given up the policy of keeping watching only for US dollars, but

the “package currency” policy. Here the “package currency” especially points the special drawn right of “package currency”. In principle, Japanese Yen as one of the hard currency of special drawn right should play a big role in southeast Asian, but Japanese Yen is not stable so that Japanese Yen doesn’t do much help in stabling southeast Asian financial market. We think to realize Japanese Yen and RMB relatively stable will help southeast Asian build a stable financial market. Besides “package currency” policy, the region should have a flexible early warning mechanism to prevent financial crisis.

Besides making relative index system, law frame should be first build to prevent arbitrage and speculate ect. China has the experience of not being affected by the 1997’s financial crisis storm so China should unites all countries in the region; while Japan can use the experience of getting over the financial crisis to lead the financial regulation in the region to a perfect level.

5 Conclusion

The process of the East Asia Economics Integration, the trade and economy cooperation between China & Japan has gotten great development. However, due to the restriction of many complicate factors, there is no mechanism that conforms to both mutual interests. We believe in the Integration of East Asian Economy process will reach to a historical breakthrough. We can foresee that the trade and economy cooperation between China and Japan will play more and more important rule under the “East Union 10+3” economic and development models and sub-region economic cooperation. This will also greatly push the development of Integration of this region.

References:

- [1] Shouzhen Wan. Economic Integration in East Asia: Review and Prospects, Around Southeast asian, 4, 2007.
- [2] Hai Dong, On the recovery, reasons and indeterminate factors of the regional integration in east Asia, Asia-Pacific Economic Review, 4, 2002.
- [3] Shamshad Akhtar, Economic Integration of East Asia: Trends, Challenges and Opportunites, Asian Development Bank, Cct 27th, 2004.
- [4] Tanikawa Hiroya, Pitfall of Envisaged East Asian Economic Integration Implications of Expanding Imbalances in the Global Economy, Research Institute of Economy, Trade and Industry. Jun 8th , 2004.
- [5] Lijun Jia. An Analysis of the Equilibration of China and Japan in the Process of East Asia Economic Integration. Japan Studies, 02, 2007.
- [6] Michael E. Porter. The Competitive Advantage of Nations. 1990.
- [7] Zhiwen Zhang, Economic Integration of East Asia: Trades, investment liberalization and currency financial cooperation, Shanghai Finance, 04, 2004
- [8] Wenxiu hu. An Analysis of Several Factors in Influencing East Asian Economic Cooperation.

Table 3 output of EViews

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.142458	1.536541	-0.092714	0.9346
LOG(X)	1.370402	0.211324	6.484835	0.0230
R-squared	0.954600	Mean dependent var		9.816810
Adjusted R-squared	0.931900	S.D. dependent var		0.370980
S.E. of regression	0.096811	Akaike info criterion		-1.525267
Sum squared resid	0.018745	Schwarz criterion		-1.832120
Log likelihood	5.050534	F-statistic		42.05308
Durbin-Watson stat	2.242411	Prob(F-statistic)		0.022964

Journal of Hubei Administration Institute, 05,
2006.

- [9] Hongfei Li. Analysis on Export Similarity of
China, Japan and South Korea to ASEAN,
World Economy Study, 07, 2004.