國際學碩士學位論文

Is East Asia Moving toward a More Suitable Common Currency Zone?

: Recent Changes in OCA Indices of East Asia

동아시아지역은 공동통화적합지역으로
변하고 있는가? :
동아시아 지역 OCA Index의 최근 변화

2012年 8月

서울大學校 國際大學院
國際學科 國際通商 專攻
申 珉 伊

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Thesis by

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Graduate Program in International Commerce
For the degree of Master of International Studies

August 2012

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Seoul, Korea

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이 論文을 國際學碩士學位論文으로 提出함

2012 年 6 月

서울大學校 國際大學院

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申珉伊의 國際學碩士學位論文을 認准함

2012 年 6 月

委 員 長 安 德 根 (印)

副 委 員 長 金 鍾 燮 (印)

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ABSTRACT

Economists have different opinions on the suitability of East Asian monetary unification. It might be true that East Asian economies are not yet ready for monetary integration like EU; however, since East Asian region is dynamically changing with industrial development in some East Asian regions, rising China and etc, the discussion of E.A common currency should be more seriously considered. By checking OCA index of East Asian countries, this paper aimed to see; 1) whether East Asian economies are moving toward a more suitable common currency zone from 2000 to 2010; 2) if there is any change of what common external peg should be in the last 11 years; 3) whether it is suitable to include Australia and New Zealand into East Asian common currency zone. Since East Asian region is very actively changing and lots of efforts for economic cooperation going on in this region, constant study on the suitability of common currency in East Asia is needed. In this sense, this paper finds its importance, as it is one of constant study on East Asian monetary integration with the most recent data.

Key words: East Asia, OCA index, monetary integration, common currency

Student ID Number: 2010-22380

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CHAPTER I. BACKGROUND

The world monetary system these days seems to be polarized into dollar and Euro. The United States has been playing a crucial role in world monetary order thanks to the internationalization of US dollar. European countries started to have more influence on world monetary system since the introduction of Euro and an economic and political union, EU.

Table I

Currency distribution of global foreign exchange market turnover

(Percentage shares of average daily turnover in April)

	2001	**2004**	**2007**	**2010**
US dollar	**89.9**	**88.0**	**85.6**	**84.9**
Euro	**37.9**	**37.4**	**37.0**	**39.1**
Japanese yen	23.5	20.8	17.2	19.0
Pound sterling	13.0	16.5	14.9	12.9
Australian dollar	4.3	6.0	6.6	7.6
Swiss franc	6.0	6.0	6.8	6.4
Canadian dollar	4.5	4.2	4.3	5.3

Others	20.9	21.0	27.5	25.0
Total	200	200	200	200

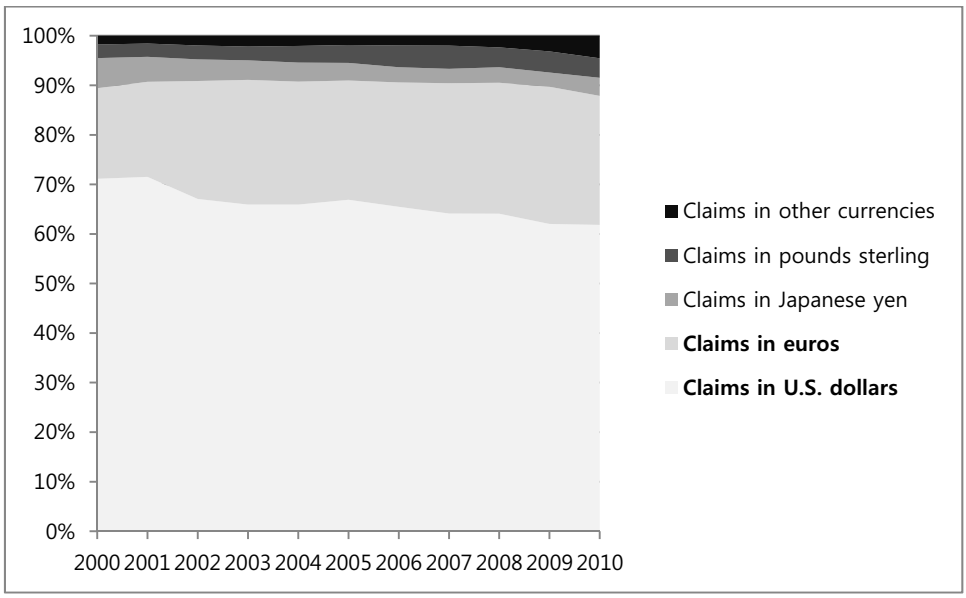
Source: BIS

When you look at the currency distribution of global foreign exchange market in the last ten years, US dollar and Euro have constituted more than 60 percent in the last 10 years in all global foreign exchange market transactions. Japanese yen only accounted less than 10 percent and it has shown a declining trend in the last decade. In addition, there is no other Asian currency that functions as an important currency in global foreign exchange market.

The currency composition of official foreign exchange reserves also clearly describes the polarizing trend into US dollar and Euro. In the last decade, almost 90 percent of official foreign exchange reserves have been constituted by US dollar and Euro. The percent of Japanese yen is continuously declining and other Asian currencies do not seem to be playing role in currency composition of official foreign exchange reserve.

Figure I

Currency Composition of Official Foreign Exchange Reserves



Source: IMF

In this polarization of world monetary background, East Asian countries started to worry that they might lose their power in international economy. East Asian region is still staying as individual currency unit and does not play a key role in international monetary order. (Moon 2006)[1] Therefore, the need for East Asian monetary cooperation has become the important issue among East Asian countries. Chiang Mai Initiative[2] has been launched in May 2000 in that sense

[1] Moon(2006), A Roadmap for Monetary Cooperation in East Asia, page 3

[2] The Chiang Mai Initiative is a currency swap arrangement among the ten members of ASEAN, China, Japan, and Korea.

and recently Chiang Mai initiative multilateralisation Agreement was signed on 28 December 2009. Furthermore, many economists started to study about whether East Asia should form a common currency zone like EU, by evaluating the OCA index of East Asian countries and comparing the benefits and costs of monetary unification.

Then East Asia should from a common currency unit? According to many past studies done in 1990s and early 2000s, it seems that common currency in East Asian region was not appropriate due to great diversity compared to EU area. ASEAN+3 countries[3], this country group shows great diversity, such as different stages of development, trade structure and etc. According to Masahiro(2004), the East Asian economies are quite diverse and varied in their economic systems, stages of economic and social developments; such as per capita income levels, industrial structures, trade openness and patterns, and etc. When a country group has a great diversity, it is often argued not suitable to have common currency. Kwan(1994) said some East Asian countries compete with Japan in international markets, and their currencies follow the yen up and down; others, which import from Japan but compete less with it, prefer to depreciate their currencies when the yen strengthens to offset the recessionary impact of higher import prices.

[3] ASEAN+3 countries are "Japan, China, Korea, Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam, Laos, Brunei, Myanmar, and Cambodia" In this paper, East Asian countries mean ASEAN+3.

However, the trend of active economic integration, rapidly rising Chinese economy, structural change of export, rapidly developing some East Asian economies, and economic cooperation efforts like Chiang Mai Initiative in East Asian region over the recent years might have made a different picture for East Asian common currency. The intra-regional trade share in East Asia is a good example that shows actively integrating East Asian economies. East Asian 15 countries' intra-regional trade share has been constantly increased up to 55 percent level, which is a comparable level to old EU-15 countries.

Table II

Intra-regional trade share (%)

Grouping	1985	1990	1995	2000	2001	2002	2003	2004	2005	2006
East Asia 15[4]	39.0	43.1	51.9	52.1	51.9	53.8	55.4	55.9	55.4	54.5
NAFTA	38.7	37.9	43.1	48.8	49.1	48.4	47.4	46.4	46.1	44.3
MERCOSUR	7.2	10.9	19.2	20.3	17.9	13.6	14.7	15.2	15.5	15.7
EU-15(old)	59.8	66.2	64.2	62.3	62.2	62.5	63.0	62.2	60.4	59.5

Source: re-quoted from "BUI Truong Giang(2008)"[5]

Then, such changes in East Asia might have made different picture on the

[4] East Asia 15 includes China, Japan, Korea, Hong Kong, Singapore, Taiwan, Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Thailand and Vietnam.
[5] Intra-regional Trade of ASEAN Plus Three: Trends and Implications for East Asian Economic Integration, KIEP

suitability of East Asian common currency zone. East Asian economies might have been moving toward a more suitable common currency zone in recent years. There would have been change of what common external peg should be. The growing commercial transactions among East Asia, Australia and New Zealand might have made the inclusion of Australia and New Zealand into East Asian common currency zone more suitable.

CHAPTER II. LITERATURE REVIEW

In many of the studies on East Asia monetary union, optimum currency area theory, so-called OCA theory, is used as tool for evaluating the suitability of monetary union or common currency. The theory of an optimum currency area, pioneered by Mundell(1961) and McKinnon(1963), establishes criteria for the creation of a common currency area in a region.[6] According to Zhang, Sato, McAleer(2001)[7], the OCA criteria generally fall into following groups: (1) the symmetry of shocks across economies, (2) high intra-regional trade, (3) factor mobility and labor market flexibility, (iv) financial market integration, and (v) coordination of macroeconomic policy. Many economists developed a procedure for applying the core implications of the theory of optimum currency area. The most often used variables are GDP-related data, exchange rates, inflation rates, trade-related data and interest rates. For instance, Rhee(2003)[8] used degree of openness and intra-regional trade, correlation of shocks and trade structures, and average inflation rates in his study.

Eicheengreen and Bayoumi(1996) even developed OCA index that shows the

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[6] Robert J. Barro and Jong-Wha Lee(2011), Cost and Benefits of Economic Integration in Asia, pp 13-16, Oxford

[7] Zhaoyoung Zhang, Michael McAleer, and Kiyotaka Sato(2001), "Is East Asia an Optimum Currency Area?", Working Paper Series Vo. 2001-37, The International Center for the Study of East Asian Development, Kitakyushu

[8] Rhee(2003), "East Asian Monetary Integration: Destined to Fail?", pp7-10

suitability of monetary union in numbers. They related exchange rate variability to country characteristics that OCA theory suggests increase or reduce the desirability of stable exchange rates and monetary unification. Those characteristics are

1. The difference in real output between two countries
2. The dissimilarity of the composition of the exports of a pair of trade partner
3. Bilateral trade
4. Economic size

The difference in real output and dissimilarity of the composition of the exports of two countries are to measure the symmetry of output disturbances. As pointed out by Mundell(1961), the major cost of joining a currency union is the loss of an independent monetary policy. However, the cost will be remarkably reduced if business cycle moves together, for in this case the common monetary policy can play a stabilizing role just as well as individual monetary policy.[9] The bilateral trade is the proxy for importance of commercial links between two countries. A high level of trade integration is likely to increase the efficiency gain, because using a common currency would lower transaction costs of trade.

[9] Robert J. Barro and Jong-Wha Lee(2011), Cost and Benefits of Economic Integration in Asia, page 14, Oxford

Economic size is a proxy for the benefits of a common currency. Small countries will benefit the most from the unit of account, means of payment, and store of value services provided by a common currency.

Eichengreen and Bayoumi(1996) studied the question of what that common external peg should be. OCA index for each Asian country vis-à-vis Japan, the United States and Germany was measured. Hong Kong and Singapore obviously preferred to peg to the dollar, while Indonesia, Korea and Thailand preferred the yen. In addition, very small and open economies of the region, Hong Kong and Singapore would find it most appealing to peg to other East Asian countries. On the other hand, Malaysia and Thailand had relatively little economic incentive to adopt the same external peg.

CHAPTER III. PURPOSE OF THE STUDY

The first purpose of the research is to check whether East Asian economies are moving toward a more suitable common currency zone in recent years. East Asian region has been the fastest growing region all over the world, leading by China in the recent decade. Moreover, increasing intra-regional trade and economic cooperation efforts after 1997 Asian crisis would have made some changes onto the suitability of E.A common currency zone. There have been remarkable changes in terms of economic factors, such as GDP, inter-regional trade in East Asian region, etc. Therefore, the OCA index of East Asian countries might have been changing rapidly, especially in the recent decade.

Second, this thesis aimed to see if there is any change of what common external peg should be in the last 11 years. It will look at whether other Asian countries are becoming to prefer to peg to Yen, Yuan, or US dollar. Since Japanese yen has been the most often discussed peg key currency for other Asian countries for several decades, I will test for Japanese yen vis-à-vis other East Asian countries. Because of remarkable growth of Chinese economy and internationalizing trend of Yuan, Chinese Yuan will be also tested. In addition, as some Asian countries, like Hong Kong, have been closely related with US dollar, US dollar vis-à-vis East Asian countries will be tested. Euro is excluded in the study as there is no

active discussion on pegging to Euro, due to extremely different economic structure. In addition Euro, itself, is created for European own good so that it is considered as a unsuitable candidate for common external peg currency with East Asia.

Third, since there are active discussions on inclusion of Australia and New Zealand into East Asian region, I aimed to explore whether it is suitable to include Australia and New Zealand into East Asian common currency zone. The growing commercial transaction among East Asia, Australia and New Zealand and the negotiations between ASEAN, Australia and New Zealand for a Free Trade Agreement(AANZFTA) have made this topic get more attention these days.

CHAPTER IV. METHODS

This paper used the well-known OCA index by Tamim Bayoumi and Barry Eichengreen(1996). The following equation is the OCA index developed by Eichengreen B and T. Bayoumi(1996)

SD(eij) = a + ß1 SD(▲yi-▲ yj) + ß2 DISSIMij + ß3 TRADEij + ß4 SIZEij,

SD(▲yi- ▲yj) is the standard deviation of the difference in the logarithm of real output between i and j. This is the measure of "asymmetric output disturbances". When business cycles are symmetric and national outputs move together, the value of this measure will be small. DISSIMij is the sum of the absolute differences in the shares of agricultural, mineral, and manufacturing trade in total merchandized trade.[10] It is also the measure of "the asymmetry of shocks". When two countries have a revealed comparative advantage in the same export sectors, industry-specific shocks will be more symmetric. TRADEij

[10] Manufactured goods are defined as the total of basic manufactures, chemicals, machines and transport equipment, miscellaneous manufactured goods, and other goods. Food is the sum of food and live animals, beverages and tobacco, and animal, vegetable oils and fats. Minerals amalgamate data on crude materials excluding fuel with mineral fuels, etc. The dissimilarity of the commodity composition of two countries' export was then defined as the sum of the absolute values of the differences in each share. Higher values suggest less similarity in the composition of commodity exports between the two countries.

is the mean of the ratio of bilateral exports to domestic GDP for the two countries. SIZEij is the mean of the logarithm of the two GDPs measured in U.S. dollars. This is the measure of the benefits from a more stable currency. Benefits will be greatest for small countries. The predicted level of exchange rate variability SD(eij) can be thought of as an "OCA index." Smaller values suggest that countries are closer to an optimum currency area.[11]

Countries in this analysis are total 12 countries, including ASEAN+3 countries, which are China, Hong Kong, Japan, Korea, Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam, Australia and New Zealand. As I mentioned earlier, Australia and New Zealand are included in my study, since there are active discussions on inclusion of the two countries in Asia.. Laos, Brunei, Cambodia, and Myanmar, which are members of ASEAN, are excluded in this study due to lack of data. The years studied here are from 2000 to 2010. The reason for choosing starting year as 2000 is that that is the year that many of East Asian countries have recovered from 1997 Asian crisis and got back to their normal economic cycle. In addition, that is the year that all 12 countries' data are available for regression purpose.

[11] For more detailed explanation, refer to Eichengreen & Basoumi (1996)

CHAPTER V. RESULTS AND FINDINGS

According to the statistical analysis of this paper, it is not certain that East Asian economies are moving toward a more suitable common currency zone in the last 11 years. The average value of OCA index overall did not show significant declining trend. However, concerning the question of what common external peg should be, OCA indexes versus China showed a meaningful change. The average of OCA index of East Asian countries versus China have been generally decreased, which would mean that other East Asian countries have been changed to earn more benefits if they have fixed or stable exchange rate with China. The OCA index for Asian country vis-à-vis Japan and the US did not record any substantial change or rather showed increasing trend. Regarding the inclusion of Australia and New Zealand into East Asian common currency, it seems that for Australia and New Zealand, the benefits from having common currency with other E.A countries do not seem to be substantial. Compared to other E.A country group, the OCA index versus Australia and New Zealand represents relatively high number, even though many commercial transactions are being conducted these days. This is largely explained by the factor that their industrial structure is very different from other Asian countries. Other county groups, which are comparable to EU level, are Singapore-China, China-Hong Kong, and Singapore-Hong Kong.

5-1. China

I estimated the equation for China and its 14 leading trading partners over the period 2000-2010. The basic results are as follows (with t-statistics in parentheses):

$$SD(eij) = 0.25 - 0.00*SD(Yi-Yj) + 0.04*DISSIMij - 0.18*TRADEij$$

(3.17) (-0.03) (3.94) (-6.54)

$$- 0.01*SIZEij$$

(-1.94)

$R^2 = 0.36$ S.E= 0.029

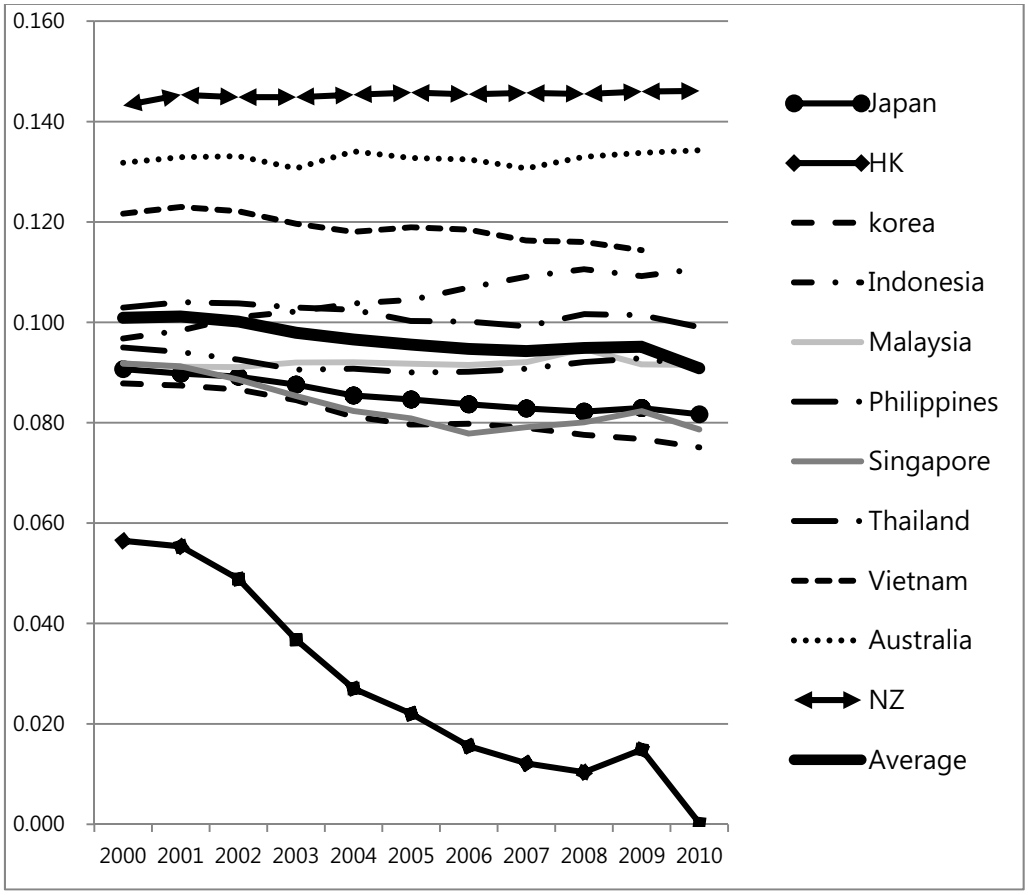
Next, I estimated coefficients and values of the independent variables to predict the dependent variable of ASEAN+3, Australia and New Zealand for the case of china as the common external peg. The dependent variable, which is the predicted level of exchange rate variability, can be thought of as an "OCA index". Smaller values suggest that countries better approximate an optimum currency area.

The average value of OCA indexes for China vis-à-vis other East Asian countries continuously declined, as described in Figure II. This is mainly

because of growing Chinese bilateral trade with other Asian countries and the structural change Chinese export. The movement toward closer relation with other East Asian countries in terms of trade partner has contributed the declining trend of OCA index vis-à-vis China.

FIGURE II

OCA index versus China



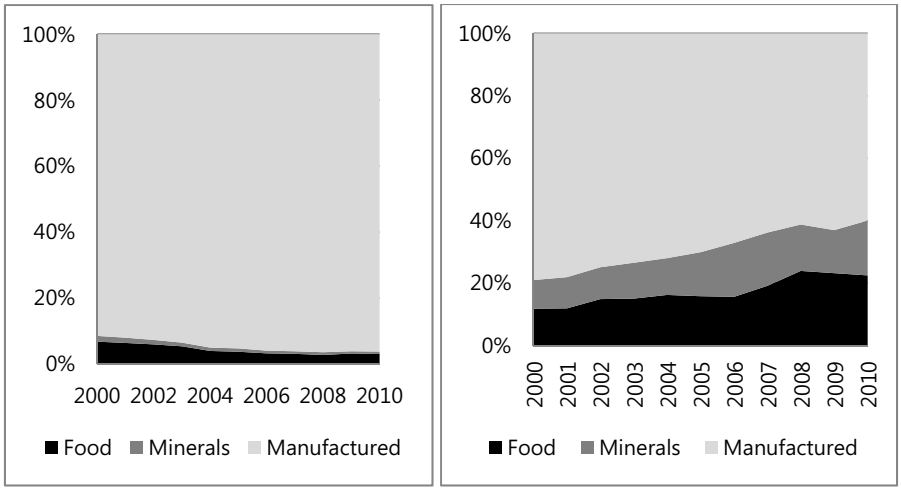
Source: World Bank, UN Comtrade, and IMF, IFS

Except for New Zealand, Australia, and Indonesia, all other 8 countries' OCA index vis-à-vis China declined. In the case of Indonesia, the dissimilarity of the composition of the exports of a pair of trade partner played role for increasing OCA index, as we can see from the figure III.

FIGURE III

Shares of agricultural, mineral, and manufacturing exports in total merchandize exports: China and Indonesia compared

China **Indonesia**



Source: UN Comtrade

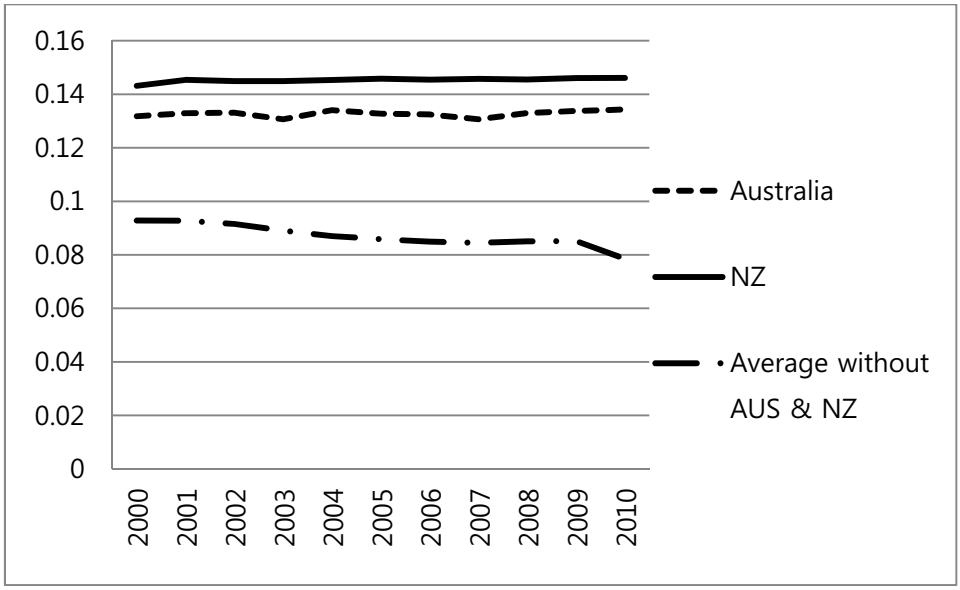
While the share of Chinese manufactured goods exports continuously increases, the manufacturing goods export from Indonesia is continuously shrinking and food and mineral export shares are becoming greater. Since their export structure is differing over time, the possibility of asymmetric output

disturbances becomes larger. If two countries' business cycle does not moves together, the common monetary policy cannot play a stabilizing role just as well as individual monetary policy. The increasing OCA index of Indonesia versus China can be understood in that sense.

The OCA index of New Zealand versus China records the highest. Australian OCA index was the second highest. Those two countries OCA index versus China shows very big gap with the OCA index of other E.A. Countries versus China, as clearly showed in Figure IV.

FIGURE IV

OCA Index of NZ and Australia versus China



Source: World Bank, UN Comtrade, and IMF, IFS

Even though their trade with other Asian countries has increased and efforts for economic cooperation, like AANZFTA, have been made, their major industrial difference makes the common currency with other Asian countries not suitable. Large asymmetric shocks would make them difficult to choose economic policy if they have a common currency with China. For example, suppose New Zealand is suffering from a food price recession, while Chinese economy is prospering thanks booming manufacturing sector. Then, economic policy makers will have to encounter the difficult situation, such as choosing between two options, simulative monetary policy or stabilization policy.

5-2. Japan

I estimated the equation for Japan and its 14 leading trading partners over the period 2000-2010. The basic result is as follows (with t-statistics in parentheses):

$$SD(eij) = 0.64 + 0.00*SD(Yi-Yj) + 0.02*DISSIMij - 1.21*TRADEij$$

(7.76) (0.04) (3.30) (-9.17)

$$- 0.02*SIZEij$$

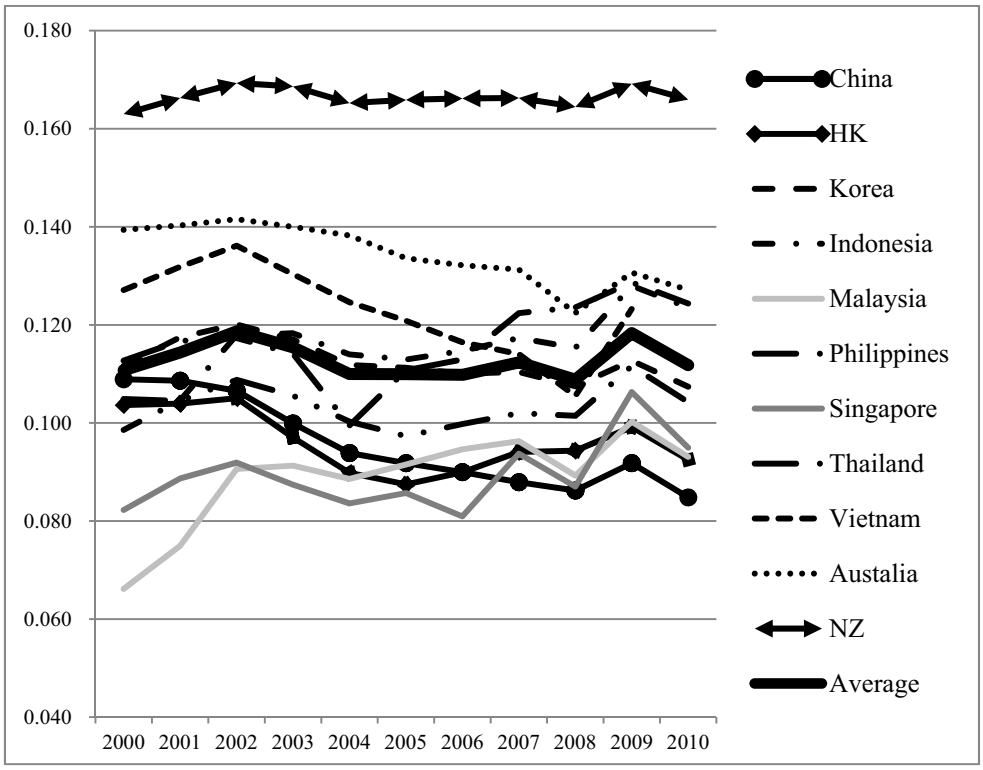
(-6.32)

$R^2 = 0.44$ S.E. = 0.017

Next, I use the estimated coefficients and values of the independent variables to predict the dependent variable of ASEAN+3 countries, Australia and New Zealand. The methodology here is same as the previous one. Smaller values imply that countries better approximate an optimum currency area.

FIGURE V

OCA Index versus Japan



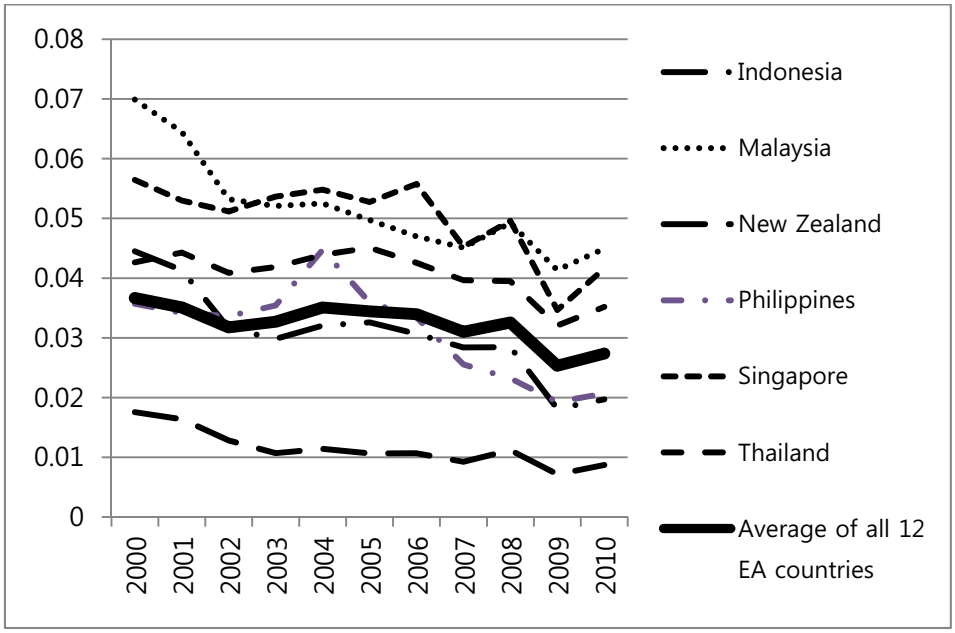
Source: World Bank, UN Comtrade, and IMF, IFS

The average value of OCA index does not seem to have changed a lot from 2000 to 2010, suggesting that East Asian countries' economy have not moved

better suited to adopt Japanese yen as their external peg. Figure V shows this stable tendency of OCA index versus Japan. This general trend of Japan versus other East Asian countries is mainly due to decreasing trade links. The bilateral trade to domestic GDP continuously decreases as described in Figure Ⅵ.

FIGURE Ⅵ

Mean of the ratio of bilateral exports to domestic GDP vis-à-vis Japan



Source: UN Comtrade

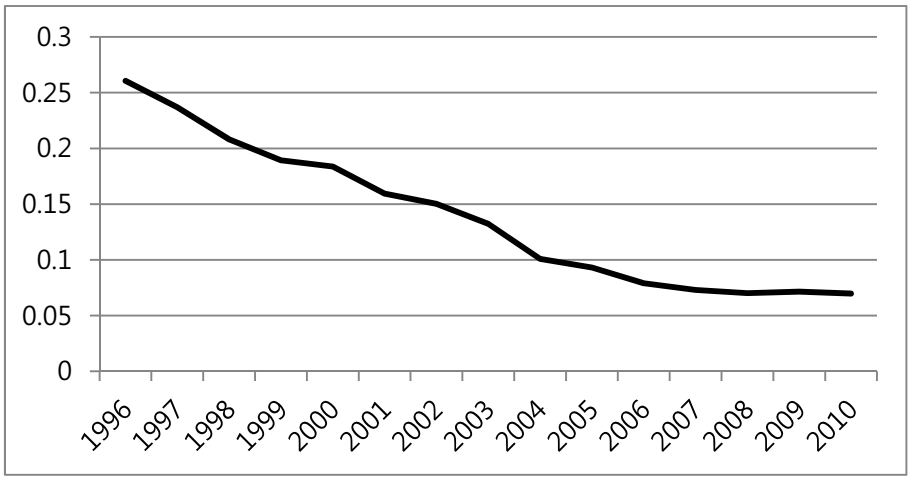
The importance of Japan as a major trading partner seems to be declining in 2000s. Japan was the leading trader in East Asia during the 1980s and the 1990s,

but it has become a diminishing driver of ASEAN+3 intra-regional trade in 2000s. (Giang 2008)

The lowest OCA index country with Japan, the one who might benefit the most from pegging the currency to Japan is China in 2010, followed by Hong Kong and Malaysia. In 2000, China did not have the lowest number; it was 6th lowest out of 11; however, during last 11 years, it came up having the lowest OCA index. This is because China's trade structure has become similar to Japanese one, as the manufacturing sector of China has rapidly grown up in the recent years. Figure Ⅶ shows the declining dissimilarity of trade structure between Japan and China. In the discussion on the common currency zone in East Asia, the rivalry relation between China and Japan is often mentioned; however, as their industrial structure is becoming more similar to each other, the competitor relation would have diminished somewhat in the recent years.

FIGURE Ⅶ

Trade Dissimilarity Index between Japan and China[12]



Source: UN Comtrade

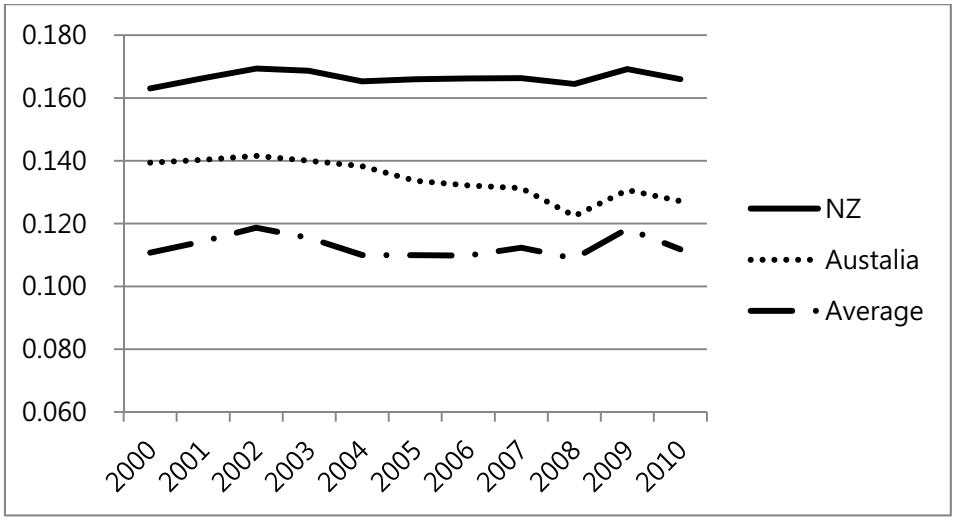
The OCA index between Japan and New Zealand recorded the highest, which means this group is not a suitable case to peg currency to Japan, as described in Figure VIII. The second highest OCA index country with Japan was Australia, however; interestingly, the number is getting smaller. This declining index number is mainly from the increasing bilateral trade between the two countries, not from symmetric output disturbances or industrial structural change. Their commercial transaction calculation cost will be greatly reduced, if they have

[12] Trade dissimilarity Index is the sum of the absolute differences in the shares of agriculture, mineral, and manufacturing trade in total merchandize trade. Manufactured foods are defined as the total of basic manufactures, chemicals, machines and transport equipment, miscellaneous manufactured goods, and other goods. Food is the sum of food and live animals, beverages and tobacco, and animal, vegetable oils and fats. Minerals amalgamate data on crude materials excluding fuel with mineral fuel, etc.

common currency, while certain output shocks would put them into difficult position when choosing economic policy for easing the output shock.[13]

FIGURE VIII

OCA Index of NZ and Australia versus Japan



Source: World Bank, UN Comtrade, and IMF, IFS

5-3. Dollar

I estimated the equation for the United States and its 14 leading trading partners over the period 2000-2010. The basic results is as follows (with t-statistics in parentheses):

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[13] When business cycles are asymmetric and national outputs do not move together between two common currency countries, they cannot easily choose their economic policy. For example, suppose New Zealand is suffering from food price recession, while Japanese economy is prospering thanks to high tech manufacturing sector. Then, economic policy makers have to decide whether they will choose simulative economic policy or stabilization policy.

$$SD(eij) = 0.40 - 0.25*SD(Yi-Yj) + 0.20*DISSIMij - 0.21*TRADE(ij)$$

(4.26) (-11.32) (27.98) (-5.05)

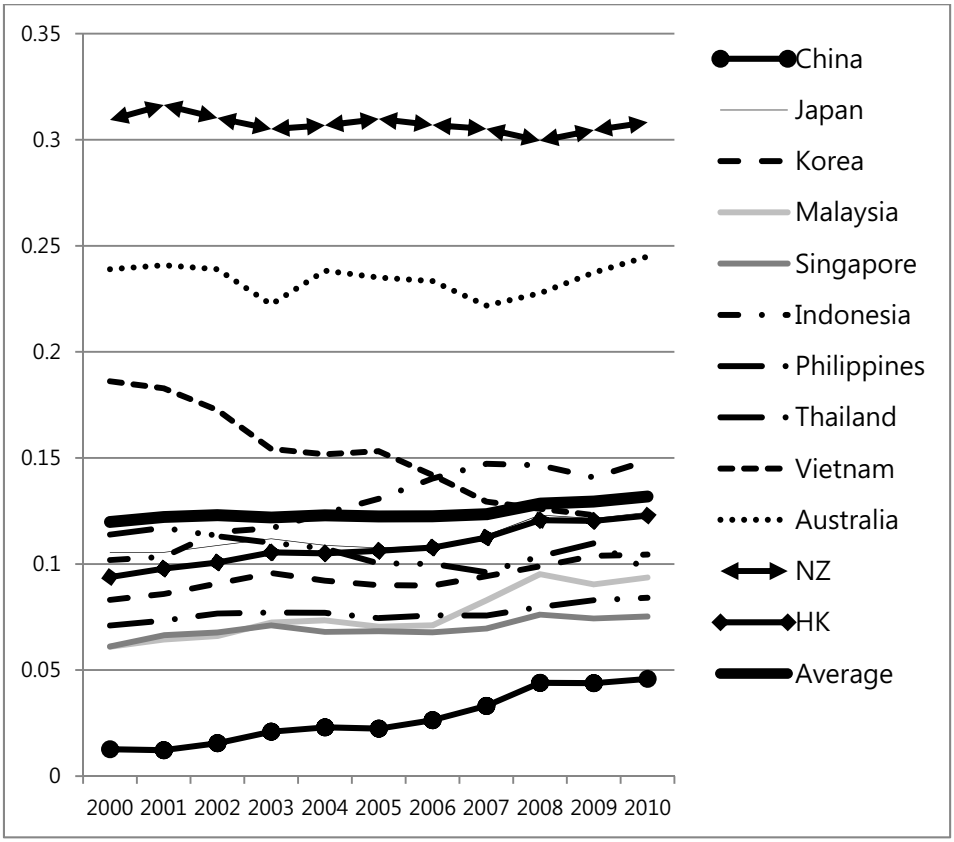
$$- 0.01*SIZEij$$

(-3.40)

$R^2 = 0.86$ S.E.= 0.019

FIGURE IX

OCA index versus the United States

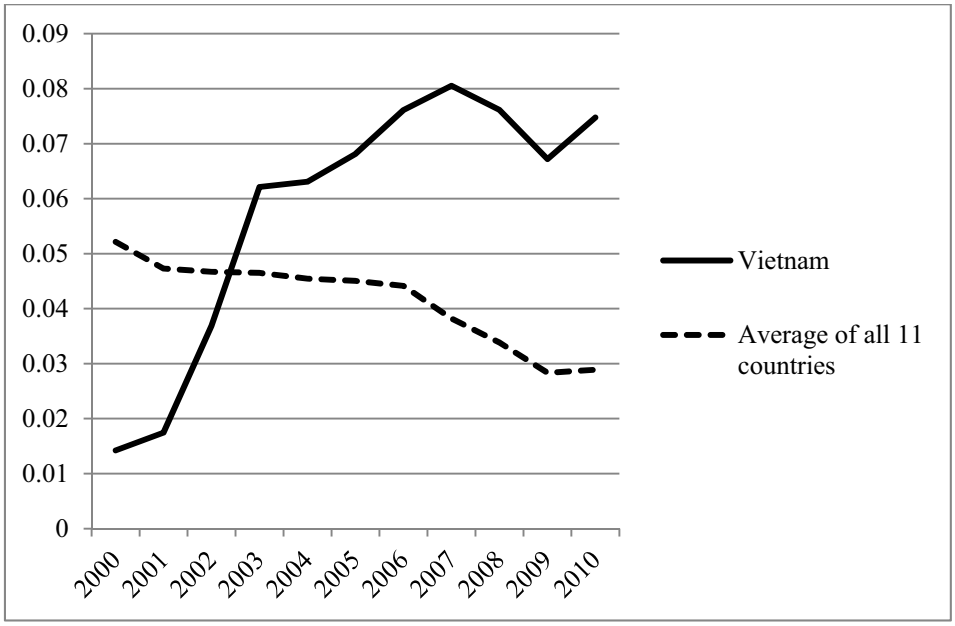


Source: World Bank, UN Comtrade, and IMF, IFS

The average value of OCA index vis-à-vis dollar generally stayed stable from 2000 to 2007. However, during 2008 to 2010, the average index increased continuously. Those two trends of OCA index versus the U.S are described in Figure IX. The increasing index during 2008-2010 is largely from declining East Asian countries export to the US due to 2008 global crisis.

FIGURE X

Mean of the ratio of bilateral exports to domestic GDP



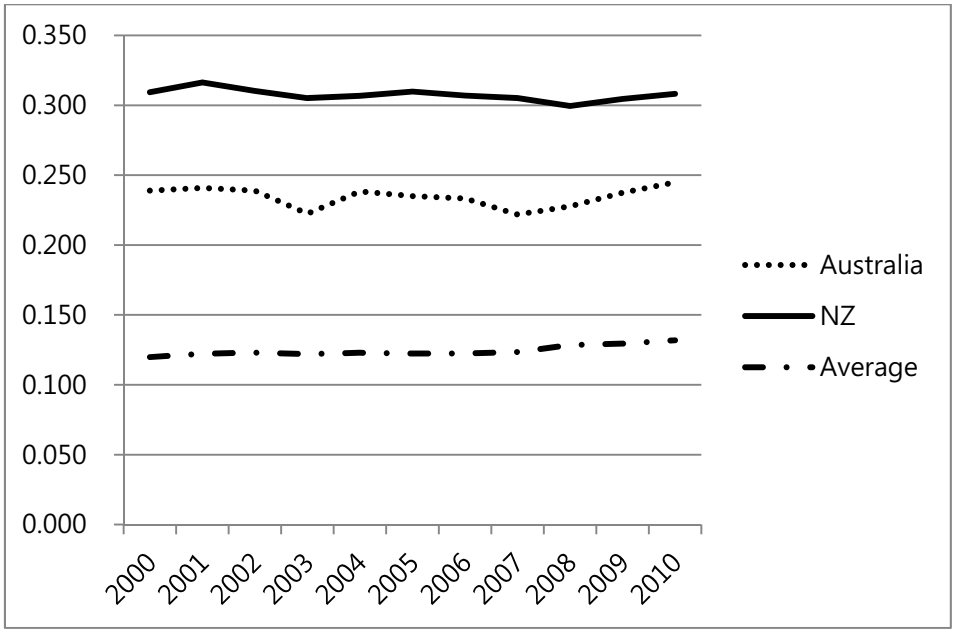
Source: UN Comtrade

Interestingly, only the OCA index of Vietnam declined. This trend is mainly from dramatically increased bilateral trade between Vietnam and the United

States. While the mean of the ratio of bilateral exports to domestic GDP between Vietnam and the US has become almost six times bigger from 2000 to 2010, the mean of average of all 11 countries with the US has almost halved over the same period. Figure X describes increasing bilateral trade between Vietnam and the US.

FIGURE XI

OCA Index of NZ and Australia versus the US



Source: World Bank, UN Comtrade, and IMF, IFS

The cases of New Zealand and Australia with the United States also record the highest OCA index again, as described in Figure XI. Their unique export

structure, which is agricultural sector centered, makes their OCA index high, compared to other countries whose export structure are mainly comprised of manufacturing goods. Their unique export structure makes them unsuitable candidate for a common currency zone with many others, since asymmetric shocks would make policy makers difficult to choose monetary policy. The common monetary policy cannot play a stabilizing role just as well as individual monetary policy in this case. It is expected that New Zealand and Australia, those two countries would fit for Optimum currency area by themselves because of their similar industry structure, high level of bilateral trade, political similarity, and etc.

5-4. Comparison with Germany Case

The comparison of the OCA indexes versus China and Japan in 2010 with the one versus Germany in 1995 still shows some gap, as described in Table III. Since the index versus Germany has lower number, it seems that their economic environment in 1995 was more suitable for common currency than China and Japan as the common external peg case with other East Asian countries in 2010. Even though the OCA index versus China is continuously decreasing, the gap in average value with OCA Index versus Germany, seems to be still large. However, when we consider the OCA index between Germany-France(0.074),

Germany-Finland(0.087), Germany-Spain(0.073), the OCA index between China-Japan(0.082), China-HK(0.000), China-Korea(0.075), China-Singapore(0.079) are approached to a comparable level.

TABLE III

Comparison of the OCA Indexes versus China and Japan in 2010 with the one versus Germany in 1995

	OCA Indexes Versus Germany in 1995[14]		OCA Index Versus China in 2010		OCA Index Versus Japan in 2010
France	0.074	Japan	0.082	China	0.085
Italy	0.059	HK	0.000	HK	0.093
Austria	0.008	Korea	0.075	Korea	0.107
Belgium	0.013	Indonesia	0.111	Indonesia	0.124
Finland	0.087	Malaysia	0.091	Malaysia	0.093
Greece	0.054	Philippines	0.091	Philippines	0.124
Ireland	0.021	Singapore	0.079	Singapore	0.095
Netherlands	0.007	Thailand	0.099	Thailand	0.104
Portugal	0.062	Vietnam	0.114	Vietnam	0.123
Spain	0.073				
Average	**0.046**	**Average**	**0.082**	**Average**	**0.105**

Source: World Bank, UN Comtrade, and IMF, IFS

[14] Re-quoted from T. Bayoumi, B. Eichengreen(1997), "Ever closer to heaven? An optimum-currency-area index for European countries", European Economic Review 41(1997)761-770

5-5. Other good candidates for common currency group.

The cases where the value of the OCA index in 2010 approaches the average of EU countries(0.046) in 1995, which is the year they formed common currency, are Malaysia-Singapore(0.046), China-Hong Kong (0.000). The OCA index of Singapore-China (0.065) and Singapore-HK(0.067) also almost reached comparable level to EU countries. This is very similar results with the previous study by Eichengreen and Bayoumi(1996). According to them, the cases where the value of the OCA index approaches Western European levels are Singapore-Malaysia, Singapore-Thailand, Singapore-Hong Hong, Singapore-Taiwan, and Hong Kong-Taiwan.

CHAPTER VI. CONCLUSION

It is not clear that East Asian economies are moving toward a more suitable common currency zone in the last 11 years. The overall trend of OCA index, which implies that smaller index country group is a better optimum currency area, does not seem to significantly show declining trend from 2000 to 2010. However, concerning the question of what common external peg should be, OCA indexes versus China showed a meaningful change; the OCA index for each 9 East Asian country vis-à-vis China have been generally decreased, which would mean that other East Asian countries are turning out to get more and more economic benefits by having fixed or stable exchange rate with China. The OCA index for each East Asian country vis-à-vis Japan and the US did not record any substantial change or rather showed increasing trend. Regarding the inclusion of Australia and New Zealand into East Asian common currency, it seems that for Australia and New Zealand, the benefits from having common currency with other E.A countries do not seem to be substantial. Compared to other E.A country group, the OCA index versus Australia and New Zealand represented relatively high number

According to Jong-Wha Lee and Robert J. Barro(2011), the prospect for an East Asian currency union will hinge on future developments of economic and

political conditions, rather than current environment. A long-term process of monetary and economic cooperation would make a common currency unit visible and appropriate. Since East Asian region is one of the most actively changing region and lots of efforts for economic cooperation going on, the constant study on the suitability of common currency in East Asia would be beneficial for the stable and prosper East Asian economies.

CHAPTER VII. LIMITATIONS

There are many OCA criteria, such as trade openness, the symmetry of shocks across countries, labor mobility, and financial integration. It is totally certain that financial integration is an important aspect, which should be considered, when we discuss common currency unit or monetary integration. However, due to difficulty of access to bilateral financial data, such as bilateral FDI, this study did not take account of financial sector. The inclusion of financial factors in the design of OCA index would make more valuable study.

REFERENCES

1. Publications in English

Robert A. Mundell (1961), A theory of optimum currency areas "The American Economic Review", Vol. 51, No. 4, pp 657-665

T. Bayoumi, B. Eichengreen(1997), "Ever closer to heaven? An optimum-currency-area index for European countries", European Economic Review 41(1997)761-770

Eichengreen, B. and T. Bayoumi(1996), "Is Asia an optimum currency Area? Can it become one? Regional, Global and Historical Perspectives on Asian Monetary Relations"

Zhaoyong Zhang, Kiyotaka Sato, Michael McAleer (2001) "Is East Asia an Optimum Currency Area?", The International Centre for the Study of East Asian Development, Kitakyushu

Rhee, Yeongseop(2003), "East Asian Monetary Integration: Destined to Fail?"

Paul De Grauwe (2000), “Economics of Monetary Union”, Oxford

Robert J. Barro and Jong-Wha Lee(2011), Cost and Benefits of Economic Integration in Asia, Oxford

Masahiro Kawai (2004), “Regional Economic Integration and Cooperation in East Asia, Seminar paper: Impact and Coherence of OECD Country Policies on Asian Developing Economies

BUI Truong Giang(2008), “Intra-regional Trade of ASEAN Plus Three: Trends and Implications for East Asian Economic Integration”, CNAEC Research Series 08-04, KIEP

2. Publications in Korean

박영준・이동은・오용협・안지연 (2010) “새로운 국제금융질서하에서 동아시아 금융협력 방안” KIEP 연구보고서 10-08

문우식 (2006) “A Roadmap for Monetary Cooperation in East Asia” KIEP

국제거시금융연구회

강삼모(2007) “동아시아 통화통합과 ACU의 역할” 한국금융연구원

금융경제연구(2008) “최적통화지역 이론의 한계 및 동아시아에 대한 시사점” 금융경제연구 제 326호

APPENDIX

APPENDIX I

OCA Index versus Japan

Year	China	HK	Korea	Indonesia	Malaysia	Philippine
2000	0.109	0.104	0.112	0.099	0.066	0.113
2001	0.109	0.104	0.117	0.105	0.075	0.117
2002	0.107	0.105	0.120	0.118	0.091	0.117
2003	0.100	0.097	0.117	0.118	0.091	0.114
2004	0.094	0.090	0.112	0.114	0.089	0.099
2005	0.092	0.087	0.111	0.113	0.092	0.111
2006	0.090	0.090	0.110	0.115	0.095	0.113
2007	0.088	0.094	0.110	0.117	0.096	0.122
2008	0.086	0.094	0.107	0.115	0.089	0.124
2009	0.092	0.099	0.113	0.128	0.100	0.129
2010	0.085	0.093	0.107	0.124	0.093	0.124
	Singapore	Thailand	Vietnam	Australia	NZ	**Average**
2000	0.082	0.105	0.127	0.139	0.163	**0.111**
2001	0.089	0.105	0.132	0.140	0.166	**0.114**
2002	0.092	0.109	0.136	0.142	0.169	**0.119**
2003	0.087	0.106	0.130	0.140	0.169	**0.115**
2004	0.084	0.100	0.125	0.138	0.165	**0.110**
2005	0.086	0.097	0.121	0.134	0.166	**0.110**
2006	0.081	0.100	0.116	0.132	0.166	**0.110**
2007	0.094	0.102	0.114	0.131	0.166	**0.112**
2008	0.087	0.101	0.106	0.122	0.164	**0.109**
2009	0.106	0.112	0.123	0.131	0.169	**0.118**
2010	0.095	0.104		0.127	0.166	**0.112**

Source: World Bank, UN Comtrade, and IMF, IFS

APPENDIX II

OCA index versus China

Year	Japan	HK	Korea	Indonesia	Malaysia	Philippine
2000	0.091	0.056	0.088	0.097	0.092	0.095
2001	0.090	0.055	0.087	0.098	0.091	0.094
2002	0.089	0.049	0.087	0.101	0.091	0.093
2003	0.088	0.037	0.084	0.102	0.092	0.091
2004	0.085	0.027	0.081	0.104	0.092	0.091
2005	0.085	0.022	0.080	0.104	0.092	0.090
2006	0.084	0.016	0.080	0.107	0.091	0.090
2007	0.083	0.012	0.079	0.109	0.092	0.091
2008	0.082	0.010	0.078	0.111	0.095	0.092
2009	0.083	0.015	0.077	0.109	0.092	0.093
2010	0.082	0.000	0.075	0.111	0.091	0.091
	Singapore	Thailand	Vietnam	Australia	NZ	**Average**
2000	0.092	0.103	0.122	0.132	0.143	**0.101**
2001	0.091	0.104	0.123	0.133	0.145	**0.101**
2002	0.089	0.104	0.122	0.133	0.145	**0.100**
2003	0.085	0.103	0.120	0.131	0.145	**0.098**
2004	0.082	0.102	0.118	0.134	0.145	**0.097**
2005	0.081	0.100	0.119	0.133	0.146	**0.096**
2006	0.078	0.100	0.118	0.132	0.145	**0.095**
2007	0.079	0.099	0.116	0.131	0.146	**0.094**
2008	0.080	0.102	0.116	0.133	0.146	**0.095**
2009	0.082	0.101	0.114	0.134	0.146	**0.095**
2010	0.079	0.099		0.134	0.146	**0.091**

Source: World Bank, UN Comtrade, and IMF, IFS

APPENDIX III

OCA index versus the United States

Year	Japan	China	HK	Korea	Indonesi	Malaysi	Philippine
2000	0.105	0.013	0.094	0.083	0.102	0.061	0.071
2001	0.105	0.012	0.098	0.086	0.103	0.064	0.073
2002	0.109	0.016	0.101	0.091	0.115	0.066	0.077
2003	0.112	0.021	0.105	0.096	0.117	0.072	0.077
2004	0.109	0.023	0.105	0.092	0.124	0.073	0.077
2005	0.108	0.022	0.106	0.090	0.131	0.070	0.074
2006	0.108	0.026	0.108	0.090	0.140	0.071	0.076
2007	0.113	0.033	0.112	0.094	0.147	0.083	0.076
2008	0.123	0.044	0.121	0.099	0.147	0.095	0.080
2009	0.121	0.044	0.120	0.104	0.141	0.090	0.083
2010	0.124	0.046	0.123	0.104	0.149	0.094	0.084
	Singapor	Thailan	Vietna	Australi	NZ		**Average**
2000	0.061	0.114	0.186	0.239	0.309		**0.120**
2001	0.066	0.117	0.183	0.241	0.316		**0.122**
2002	0.068	0.113	0.173	0.239	0.310		**0.123**
2003	0.071	0.110	0.154	0.222	0.305		**0.122**
2004	0.068	0.107	0.152	0.238	0.307		**0.123**
2005	0.068	0.100	0.153	0.235	0.310		**0.122**
2006	0.068	0.100	0.142	0.233	0.307		**0.122**
2007	0.070	0.096	0.129	0.222	0.305		**0.123**
2008	0.076	0.104	0.126	0.228	0.300		**0.128**
2009	0.074	0.110	0.123	0.237	0.305		**0.129**
2010	0.075	0.098		0.245	0.308		**0.132**

Source: World Bank, UN Comtrade, and IMF, IFS

동아시아지역은 공동통화적합지역으로 변하고 있는가? : 동아시아 지역 OCA Index의 최근 변화

국문초록

동아시아의 통화통합에 관해서 경제학자들은 각기 다른 견해를 보이고 있다. 동아시아 경제가 아직 EU 같은 통화통합을 하기에 적합하기 않을 수도 있다. 하지만 동아시아 지역은 급격한 경제발전, 산업구조의 변화 등 최근 많은 변화가 있는 지역임으로 이 지역 공동통화는 지속적인 관심을 가지고 고려해야 할 이슈이다. 본 논문은 최근 동아시아의 OCA Index 변화를 통해서 다음과 같은 주제를 살펴보고자 했다. 1) 최근 동아시아 지역은 공동통화적합지역으로 변하고 있는가? 2) 동아시아의 common external 페그화로 어떤 화폐가 떠오르고 있는가? 3) 호주와 뉴질랜드를 동아시아 공동통화지역으로 포함시키는 것이 적절한가? 동아시아 지역의 경제환경은 역동적으로 변화하고 있기에 동아시아지역 공동통화에 관한 지속적인 연구가

필요하다. 이러한 점에서 가장 최근 데이터를 가지고 진행된 이 연구는 그 중요성을 갖는다.

Key words: 동아시아, 공동통화, OCA index, 공동통화적합지역

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감사의 글

논문을 작성하며 많은 어려움이 있었지만 지도교수님이신 이영섭교수님의 큰 도움으로 마무리할 수 있었습니다. 학문적인 가르침뿐만 아니라 인생에 관한 많은 조언을 아끼지 않으신 지도교수님께 진심으로 감사의 말을 올립니다. 그리고 많은 가르침을 주신 모든 GSIS 교수님들께도 존경과 감사를 표합니다. 또한 석사과정에 집중할 수 있는 환경을 조성해 준 사랑하는 아버지, 어머니, 그리고 멀리 일본에서 응원해 준 동생에게 고맙다는 말을 꼭 전하고 싶습니다. 마지막으로 대학원에서 함께 공부하며 학술적 토론과 인생과 진로에 대한 고민을 나눈 GSIS 동기 및 선후배, 그리고 공부에 지칠 때 응원을 해준 오랜 벗 최연지, 신지아 등에게 진심으로 고마웠다는 말을 전합니다.