

Is East Asia suitable for a Monetary Union?

—experience from EU and evidence from China¹, Japan and South Korea

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Abstract:

East Asia's suitability for a monetary union has long been under discussion of economists. Especially after the 1997's financial crisis and the launch of euro, financial and monetary cooperation in East Asia attracts much more attention. This paper comprehensively examines the economic suitability of the major East Asia countries, China, Japan and Korea, for forming a monetary union. We compare their meets of OCA criteria to those of the major EMU members, Germany, France and Italy during the period before their circulating euro. We find that, although some economic indicators are agreeable, China, Japan and Korea don not appear to be economically suitable for monetary cooperation.

Keywords:

. Introduction

A currency union is a zone consisting of several countries or regions where (a) a single currency circulates; (b) a single monetary authority implements monetary policy defined at the union level; (c) a single exchange policy prevails; and (d) the single monetary authority maintains a common pool of reserves; (e) in the absence of political integration².

More than forty years later after the Mundell's pioneer work of Optimum Currency Area (OCA) theory³, the European Monetary Union founded and the Euro was introduced in the 11 countries(1999) comprising the European single-currency area. In addition, North American countries have formed NAFTA (1994); Latin America arranged MERCOSUR(1991) and Andean Pact, and Sub-Saharan African developed COMESA, SADC and SACU to promote inter-regional trade and economic integration.

In Asia, especially after the financial crisis in 1997, growing efforts have been made to promote regional monetary and financial cooperation. In 1999, ASEAN expanded itself into ASEAN+3; in 2001, ASEAN+3 launched Chiang Mai Initiative to ensure exchange rate stability among members, and in 2003, decided to establish an ASEAN Economic Community (AEC) by 2020. And last month, Asia Development Bank (ADB) declared to launch Asian Currency Unit (ACU) in 2006 in order to further accelerate cooperation within Asia, hoping that one day the ACU will grow to become the region's legal currency.

But does East Asia already feasible for forming a currency union⁴? The empirical findings are rather mixed. Moon, Yoon and Rhee (2000) conclude that East Asia is not inferior to Europe in satisfying OCA conditions. Baek and Song (2002) and Lee, Park and Shin (2002)'s examinations

¹ Here, we refer to the economy China, mainland.

² See Fabella, 200, 'Monetary Cooperation in East Asia: A Survey', ERD Working Paper

³ See Mundell, R., 1961, 'A Theory of Optimum Currency Areas' American Economic Review, pp. 657-665

⁴ In this paper, we only discuss the suitability of forming a currency union is the economical perspective. As for political analysis, see Eichengreen and Bayoumi (1999), Williamson (1999), Eichengreen (2001), Tourk, K. (2004), etc.

confirm the plausibility for a common currency union. Lee, Park and Shin (2002), and McKinnon and Schnabl (2004) also find that East Asia is not unsuitable for a currency union. While Chow and Kim (2000), Wyplosz (2001) argue that East Asia does not satisfy the preconditions for implementing a monetary union yet. Kwack (2004) propose to form a quasi-monetary bloc in East Asia due to differences among member countries.

In this paper, we focus on the three countries in East Asia, China, Japan and Korea⁵, who is known as the largest economies in East Asia and closest trade partners as well. We examine the suitability of East Asia's forming a currency union from a comparative approach to the situations in major EU countries, Germany, France and Italy. Total GDP of these three countries accounts for more than 70% of all the EMU members for 30 years, and trade, country size and population also distinguish them as leaders in EMU. We compare the accordance to OCA criteria of China, Japan, and Korea over the period of 1979 to 2004 to that of Germany, France and Italy from 1972, right after the collapse of Bretton Wood System, to 2000, the eve of the circulation of Euro.

We find that capital mobility is high, intra regional trade are quite high between China, Japan and Korea, but economic development, productive structure, financial system and development, and exchange rate correlation, comparing to those of the three EMU members, don't satisfy the OCA criteria. We also compare the correlation of real supply shock, real demand shock and monetary shock between two groups; we find the correlation between Japan and Korea is close to those among EMU members in terms of real supply shock and real demand shock, but the economic adjustment to monetary shock and correlations between China and Japan, and China and Korea is extremely low. According to all our findings, we believe China, Japan and Korea are not economically favorable for a monetary union yet.

The rest of this paper is arranged as follows. Section 2 reviews the criteria for monetary integration. Section 3 discusses the feasibility of a common Currency Union among these countries from a comparative point of view to the experience of European Union (EU). Section 4 provides recommendations towards further economic, monetary and financial cooperation and integration. In section 5, we conclude.

2. Criteria for Optimum Currency Area (OCA)

The OCA theory stems from the seminal work of Mundell (1961). In the paper, the author assumes that (a) prices and wages are sticky, and (b) countries are adverse to unemployment and inflation; and defines a currency area as a 'domain within which exchange rates are fixed'. According to this, *factor mobility* is positively related to suitability of forming a currency union.

McKinnon (1963) considered *trade integration* and *openness*, defined as the ratio of tradables to non-tradables, as crucial criterion of optimality of monetary union. The more participating countries integrated by trade, the more open the economies, the more they are suitable for a monetary area where a fixed exchange rate among countries is implemented.

Kenen (1969) emphasized the *diversity of the productive structure* of a country by arguing that the diversification provides some insulation against a variety of shocks, forestalling the necessity of frequent changes in the terms of trade via the exchange rate. Therefore, highly-diversified economies are viewed as better candidates for currency areas than less-diversified ones. However, among countries willing to join a currency area, *similarity of*

⁵ In this paper, by saying Korea, we mean South Korea, i.e., Republic of Korea.

production structures and financial systems will lead less nominal exchange rate adjustments and thus contribute the suitability of forming a currency union.

Moreover, *financial development* and *fiscal integration* also be regarded as important characteristics in participating in a currency area, since they facilitate absorbing and smoothing diverse shocks in a fixed exchange rate system, and as a result, limits the pressures on the exchange rate stability.

Recently, many a literature points to importance of the degree of *business cycle synchronization* in monetary cooperation. Flexible nominal exchange rates are important in shock-absorbing mechanisms of the countries pondering monetary unification when under strongly nominal or real asymmetric shocks (e.g., Bayoumi and Eichengreen (1994, 2002); Lee, Park and Shin (2002), Alesina, Barro and Tenreyro (2002)).

In the analysis of suitability for forming a currency union, some authors embrace the famous *Lucas Critique* into OCA criteria, suggesting that countries that do not comply with these criteria *ex ante* can manage to do so *ex post*, once the currency union is established⁶. Here, we consider this discussion more relevant for a study of the benefits and costs of participating in an OCA, while we are interested in the degree to which China, Japan and South Korea are already prepare to satisfy the OCA criteria.

. Experience from Europe and Evidence from China, Japan and South Korea

3.1 Basic Characteristics

Although European Monetary Union has 12 members, the total area of these countries is only 40% of the total area of China, and most of which locate in the central Europe Continent and share a similar culture and economic development. But East Asia is more characterized by diversity in terms of size, levels of economic development and political and social system. Table 1 shows the divergence of country size and population among China, Japan and Korea. China is the largest country in both terms of area and population but with a relatively lowest population density of 135, while Korea is the smallest country with more than 480 people per sq. km. According to Human Development Index (2005), which indicates the level of human and economic development of a country, Japan enjoys an advanced status with a high score of 0.943 out of 1, whereas China and Korea still belong to the medium level. Comparing to table 2 which gives the relevant information of Germany, France and Italy, we can see that every indicator appears more harmony among EMU members.

Table 1. Basic Characters of China Japan and Korea
(2004)

Country	Area (sq. km)	Population (mil.)	Population density	HDI*
China	9,598,050	1,297	135	0.525
Japan	377,800	127	336	0.943

⁶ See Frankel and Rose (1996),

Korea	99,260	48	484	0.707
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Source: World Bank, World Develop Indicator 2005

* Human Development Index 2005

Table 2. Basic Characters of Germany France and Italy
(2000)

Country	Area (sq. km)	Population (mil.)	Population density	HDI*
Germany	357,030	82	230	0.93
France	551,500	59	107	0.93
Italy	301,340	58	191	0.92

Source: World Bank, World Develop Indicator 2005

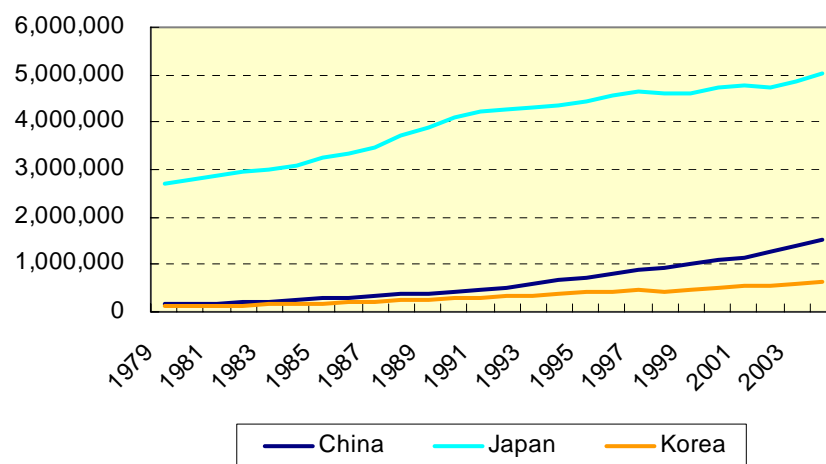
* Human Development Index 2005

3. 2 GDP Size and Growth

3.2.1 GDP Size

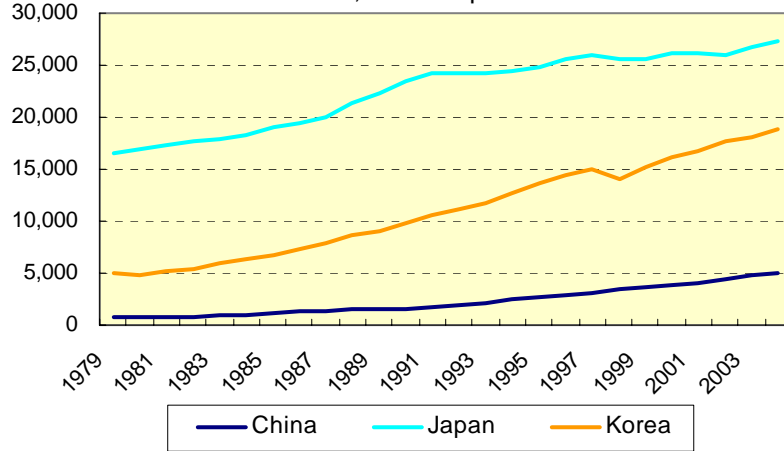
China experienced a vigorous growth since the economic reform in 1978. After more than two decades of expansion, China's gross domestic product (GDP) totaled 1,506 billion USD in 2004, which is nearly 10 times as much as that in 1979. In spite of enjoying the highest economic growth, China's GDP and GDP per capita is still far less than Japan and Korea. Figure 1 and 2 shows the huge differentials in GDP size among China, Japan and Korea. In 2004, China's GDP is 30% of the GDP of Japan, and 2 times that of Korea. But when it comes to GDP per capita, China had the bad performance among the three, which accounts for 18% of GDP per capita of Japan and 27% of Korea.

Figure 1. GDP (mil. constant 2000 US\$)
1979-2004, China, Japan, and Korea



Source: World Bank, World Develop Indicator 2005

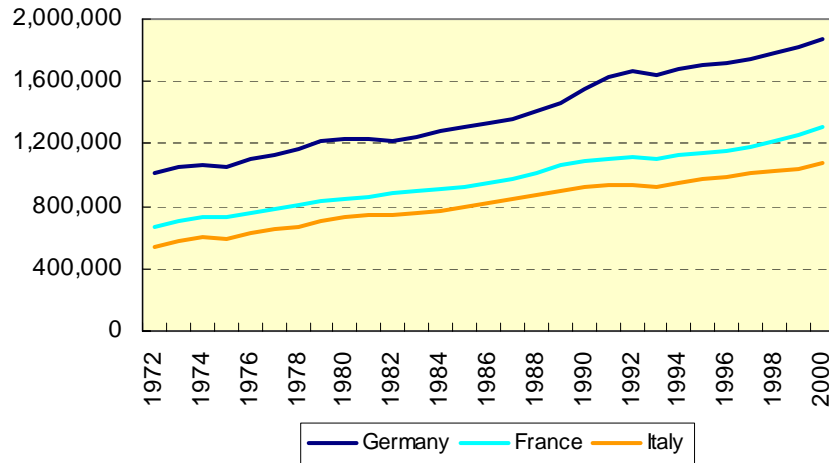
Figure 2. GDP per capita PPP (constant 2000 international \$)
1979-2004, China Japan and Korea



Source: World Bank, World Develop Indicator 2005

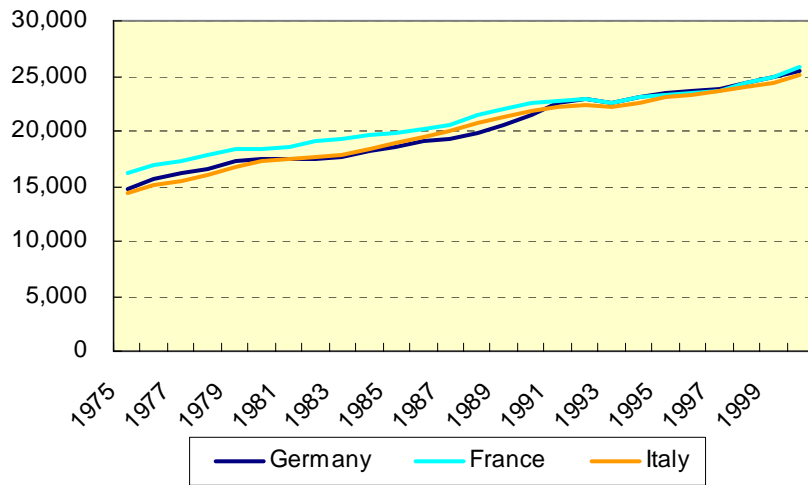
Figure 3 and 4 give the GDP size and GDP per capita of the 3 EMU members. Figure 2 shows a similarly ascending trend of GDP size among Germany, France and Italy, and figure3 displays a coherency of GDP per capita. Comparing to those figures of China, Japan and Korea, we have to say that there is much less similarity of economic size among these East Asia countries.

Figure 3. GDP (mil. constant 2000 US\$)
1972-2000, Germany, France, and Italy



Source: World Bank, World Develop Indicator 2005

Figure 4. GDP per Capita, PPP (constant 2000 international \$)
1975-2000, Germany, France, and Italy

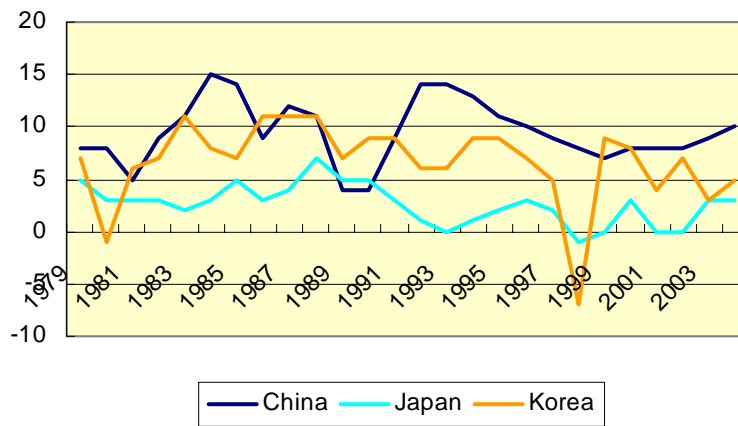


Source: World Bank, World Develop Indicator 2005

3.2.2 GDP Growth

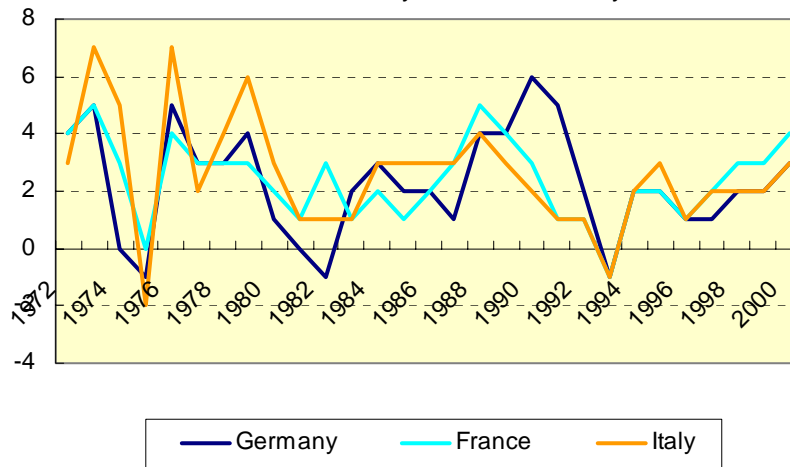
Other than GDP sizes, GDP growth patterns are different among China, Japan and Korea. Figure 5 illustrates the economic growth paths during the last 25 years, where China's have an average GDP growth of 9.5%, while Japan 2.7% and Korea 6.7%. When we comparing them to those of EMU members (see Figure 5), we have to agree to the less similarity of GDP growth among East Asia countries.

Figure 4. GDP Growth (annual %)
1979-2004, China, Japan, and Korea



Source: World Bank, World Develop Indicator 2005

Figure 5. GDP Growth (annual %) 1972-2000, Germany, France, and Italy



Source: World Bank, World Develop Indicator 2005

Table 4 and Table 5 contain the Pearson correlation of two groups, which give a quantitative description of different extent of GDP growth coherence. The correlation between China and Korea is only 0.18, while between China and Japan is negative. The correlation of economic growth between Japan and Korea is relatively high, but still much lower than those between Germany, France, and Italy.

Table 3. GDP Growth Correlation 1979-2004, China, Japan, and Korea

Country	China	Japan	Korea
China	1		
Japan	-0.12	1	
Korea	0.18	0.41	1

Source: World Bank, World Develop Indicator 2005

Table 4. GDP Growth Correlation 1972-2000, Germany, France, and Italy

Country	Germany	France	Italy
Germany	1		
France	0.59	1	
Italy	0.58	0.76	1

Source: World Bank, World Develop Indicator 2005

3.3 Factor Mobility

3.3.1 Labor Mobility

Labor mobility helps members of a monetary union to adjust to asymmetric shocks by allowing labor mobility varies across countries. Although the level of labor mobility is rather low in East Asia relatively to that of Europe, it had been rapidly increasing since 1990s. In 1991 there were 1.2 million foreign residents in Japan, which was less than 1% of Japan's population. Of this number, 693,100 (about 57%) were Koreans and 171,100 (some 14%) were Chinese. According to data from Ministry of Justice of Japan registered Chinese increased from 150,000 in 1990 to 462,000 in 2003, and registered Korean⁷ increased more than 60,000. In 2003, around 8,300 Koreans went abroad to permanently settle in a foreign country. According to government surveys of emigrants, China is the second popular destination (16.8%) and Japan the third (12.6%).

Of course, currently, the degree of labor mobility is still rather low comparing to that of EMU members before their forming European Monetary Union.

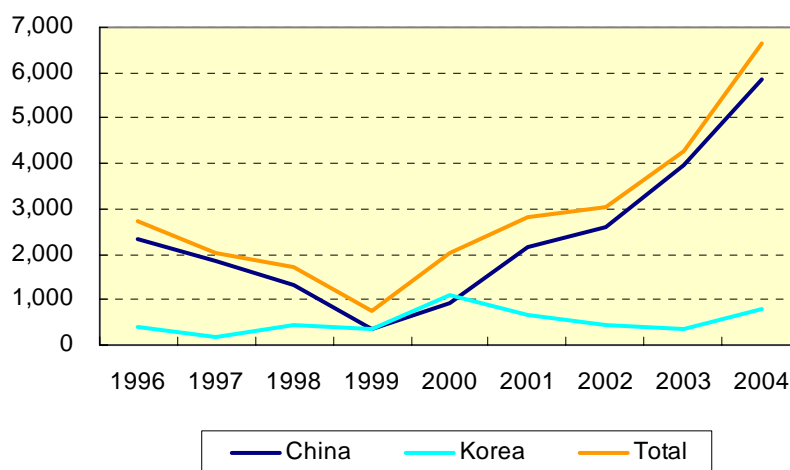
3.3.2 Capital Mobility

If labor cannot move quickly from one country to another, high mobility of funds will compensate by alleviating balance of payments pressure caused by sticky wages and prices and therefore help to maintain macroeconomic stability.

Despite of relatively low level of labor mobility, capital mobility East Asia is high. Moon et al. (2000) indicate that, in the mid-1990s, the ratio of Foreign Direct Investment (FDI) inflow to regional GDP was the highest in East Asia (1.56%), followed by the EU (1.26%), and the ratios of outflow to regional GDP show the same order: 1.74% in East Asia, 1.59% in EU.

Intra-Asia FDI accounts for more than 60% of China's total FDI inflow, and the number of Japan is 7.9% in 2002 and 9.5% in 2003. South Korea's FDI to China increased even strong from 5.2% in 2002 to 8.4% in 2003. Figure 8 shows that Japan's FDI to China growing strongly after 1999.

Figure 8. Japan FDI Outflow (mil. USD)



Source: Statistics Bureau of Japan

3.4 Trade Openness and Interdependence

3.4.1 Trade Openness

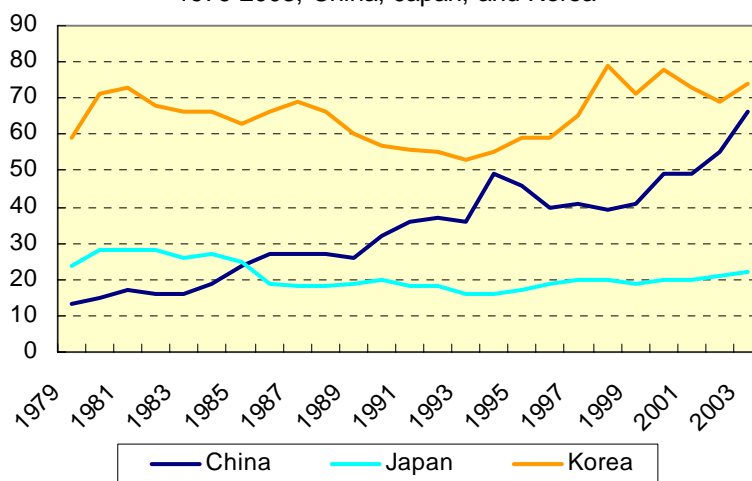
Trade openness indicates the extent of an economy's openness to the whole world. According

⁷ Include immigrants from North Korea.

to McKinnon (1963), the higher the openness levels of potential members, the lower the demand for autonomous monetary policy, and the more suitable to form a monetary union. As we can see from figure 9, China's trade openness increased dramatically from a little than 10% of GDP in 1979 to nearly 70% in 2004. Korea has been a high openness country in the term of trade, with a trade volume accounted for more than 50% for 25 years. Whereas Japan is more inclined to use protective trade policy, whose total trade volume has been less than 30% of GDP all these time, and came to around 20% of GDP since middle 1980s. In this aspect, China and Korea are sharing more and more similarity, with the trade openness of more than three times that of Japan, which indicates the international exposures of these three economies are quite different, and in turn may cause different performance when hit by external shocks.

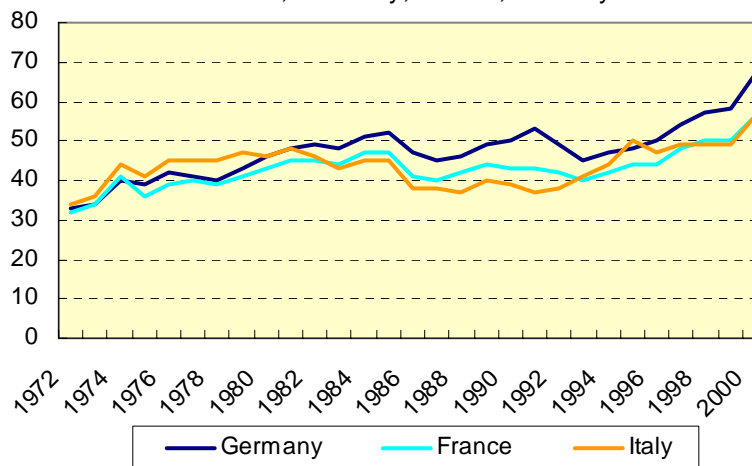
When we come to the trade openness of Germany, France and Italy (see Figure 10), we find the openness level and moving trend of these EMU members, unlike the East Asia group, are in agreeable harmony.

Figure 9. Trade (% of GDP)
1979-2003, China, Japan, and Korea



Source: World Bank, World Develop Indicator 2005

Figure 10. Trade (% of GDP)
1772-2000, Germany, France, and Italy



3.4.2 Trade Interdependence

East Asia witnessed a rapid expansion of international trade during the past 30 years, and intra-regional trade grew very fast as well. Following Goto (2002), here, we use trade intensity index as an indicator for trade interdependence. Trade intensity index is defined as follows:

$$I_{i,j} = (T_{i,j} / T_i) / (T_{w,j} / T_w)$$

where $I_{i,j}$ is the index of trade intensity between country i and country j , $T_{i,j}$ is the trade volume between country i and country j , T_i the total volume of country i , $T_{w,j}$ is the total volume of the world with country j , and T_w the total volume trade of the world. If the index is equal to unity, it means that the degree of trade interaction between countries i and j is equal to that between the world and country j . As we can see in table 7 and 8, the intensity index among China, Japan and Korea was high in 1999, and even became even higher in 2004. This indicates that these three countries are closely interrelated by trade, which agrees one of the pre-condition of forming a monetary union.

Table 7. Trade Intensity Index (1999)

Country	China	Japan	Korea
China	-		
Japan	2.5	-	
Korea	2.7	2.5	-

Source: Ministry of Commerce of the PRC
 Statistics Bureau of Japan
 Korea National Statistical Office
 World Trade Union database

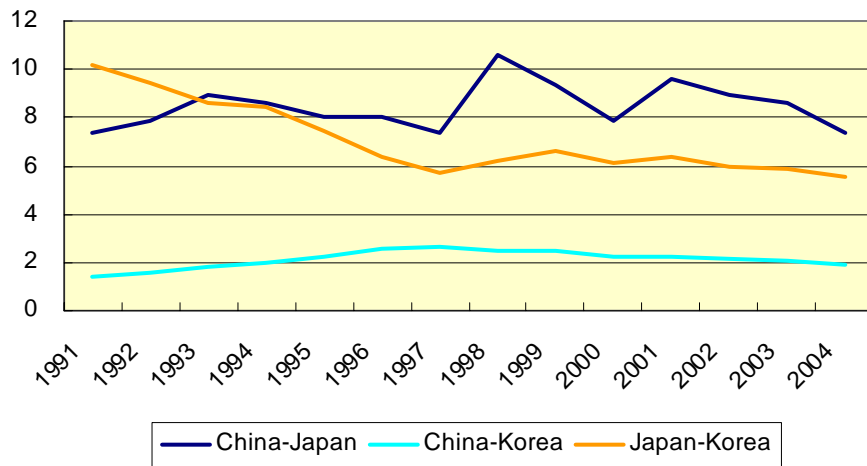
Table 8. Trade Intensity Index (2004)

Country	China	Japan	Korea
China	-		
Japan	4.8	-	
Korea	3.0	4.6	-

Source: Ministry of Commerce of the PRC
 Statistics Bureau of Japan
 Korea National Statistical Office
 World Trade Union database

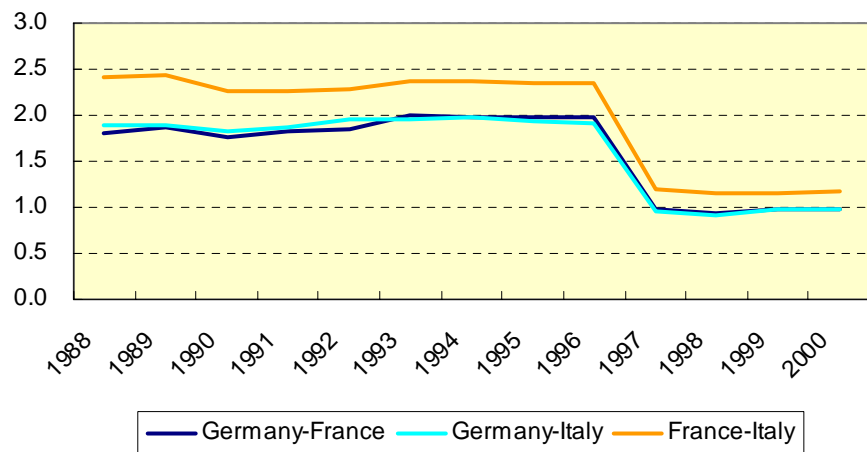
Trade intensity among China, Japan and Korea is rather high comparing to that among Germany, France and Italy. But at the same time we find the intensity is much more volatile in the East Asia group than the EU group. Of course high trade intensity indicates high interdependence between economies, which is favorable in order to form a currency union, but at the same time high fluctuation is obstacle.

Trade Intensity Index
1991-2004, China, Japan, and Korea



Source: Direction of Trade Yearbook, IMF

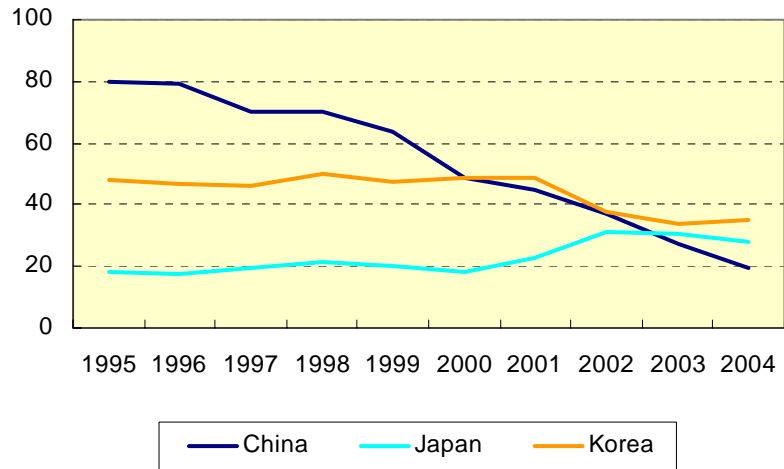
Trade Intensity Index
1988-2000, Germany, France, and Italy



Source: Direction of Trade Yearbook, IMF

But at the same time, although intra-regional trade increases by numbers, all these countries were beginning to diversify their trade partners, this leads to the result of decreasing bilateral trade share among total trade (see Figure 11).

Figure 11. Bilateral Trade Share of Total Trade
(the other two countries as a partner)



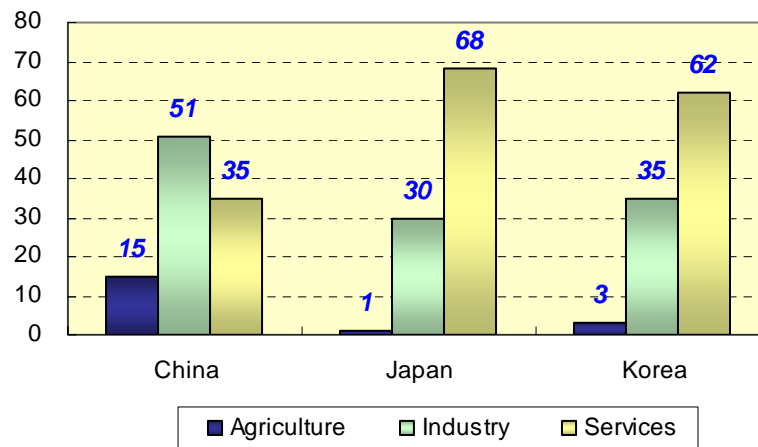
Source: Ministry of Commerce of the PRC
 Statistics Bureau of Japan
 Korea National Statistical Office

3.5 Productive Structure

Due to the difference in development stage, China's productive structural is quite different from that of Japan and Korea. Figure 7 shows that agriculture sector still accounts for 15% of total output of China in 2004, whereas the corresponding figure of Japan 1%, and Korea 3%. Service sector dominates Japanese and Korean economy by contributing more than 60% of GDP, while for China, the largest share comes from industrial production. Economic structure of Japan and Korea are more close to each other, but different from that of China.

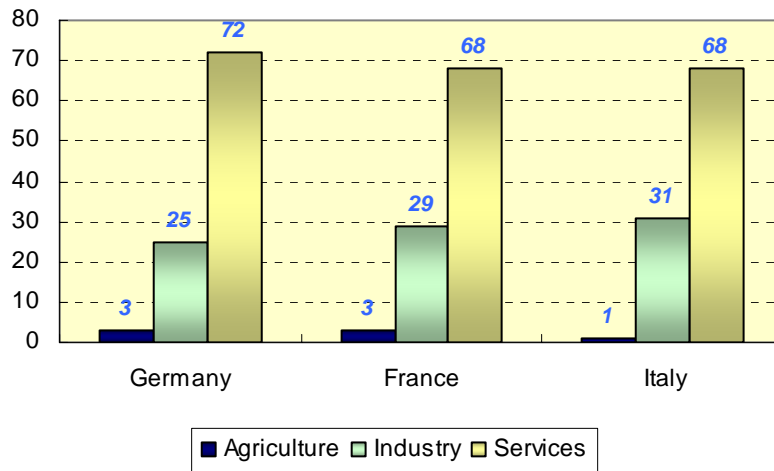
Comparing with figure 8, which illustrates the outcome structure of Germany, France and Italy in 2000, the productive structure of the latter group displayed much more similarity.

Figure 12. Structure of Output in 2004 (% of GDP)



Source: World Bank, World Develop Indicator 2005

Figure 13. Structure of Output in 2000 (% of GDP)

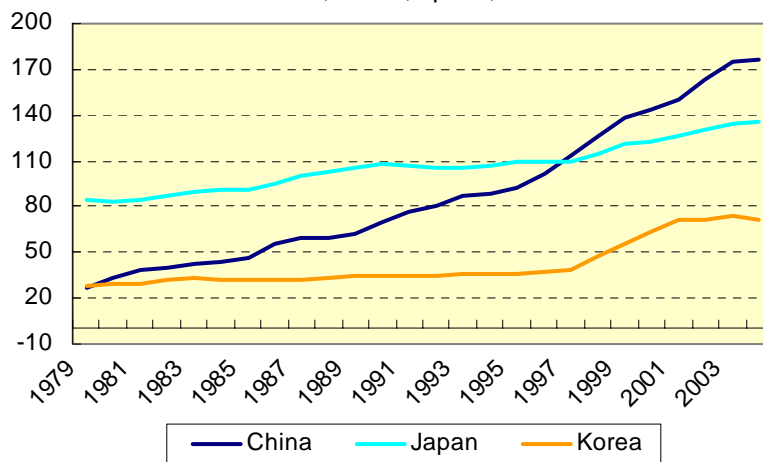


Source: World Bank, World Develop Indicator 2005

3.6 Financial Development and Policy

Depth of financial development, exchange rate regime arrangement and monetary policy preference are major differences in financial aspect among the 3 countries. Figure 14 describes financial depth process of China, Japan and Korea. We can see that although Korea bears many similarities in other aspects with Japan, the financial depth indicator of Korea in 2004, evaluated from money and quasi money to GDP, is only half of that of Japan and 40% of China. China's M2 maintain strong growth during the past 25 years, and first excelled Japan in 1997, but this is much more because of its exchange rate policy than financial development. Table 9 lists relevant information about differentiations in exchange rate regime and monetary policy.

Figure 14. Money and quasi money (M2) as % of GDP
1979-2004, China, Jpana, and Korea



Source: World Bank, World Develop Indicator 2005

Table 9. Exchange Rate Arrangements and Anchors of Monetary Policy

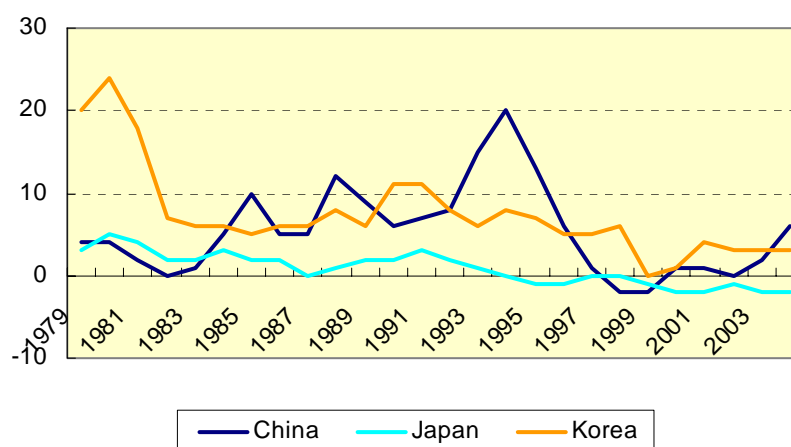
Country	Exchange Rate Regime	Monetary Policy Framework
China	De facto peg arrangement under a formally announced policy of managed independent floating (against dollar)	Exchange rate anchor, Monetary aggregate target
Japan	Independently floating	Has no explicitly stated nominal anchor, but rather monitors various indicators in conducting monetary policy
Korea	Independently floating	Other (not specified)

Source: IMF, International Financial Statistics

3.7 Inflation

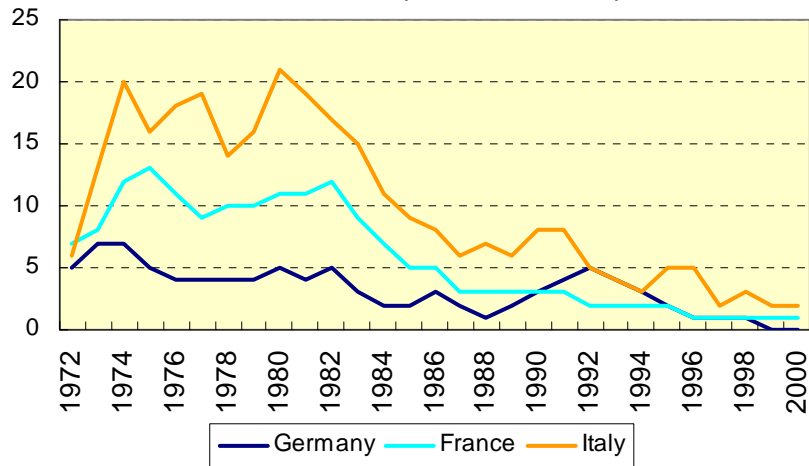
Inflation rates differentials will change the purchasing power of currencies of potential members disproportionately. The more convergent inflation rates are among economies, the more suitable for them to form a currency union. Here, we use GDP deflator as an indicator of inflation rate. As we can see from Figure 6, inflation rate fluctuated dramatically in China and Korea in the past three decades, while Japan successfully controlled inflation under 5%, but this is partly because of the stagnation of economic growth. As a contrast, inflation levels among the EMU members (see Figure 7) converging steadily after 1980, being controlled under 5% since 1992 and below 2% in the late 1990s.

Figure 6. Inflation (GDP Deflator)
1979-2004, China, Japan and Korea



Source: World Bank, World Develop Indicator 2005

Figure 7. Inflation (GDP Deflator)
1972-2000, Germany, France, and Italy



Source: World Bank, World Develop Indicator 2005

Table 5 and 6 provide the Pearson correlation of inflation among China, Japan, and Korea, versus Germany, France and Italy. The correlation among East Asia group is similar to the level of the EMU group, which is positive evidence for suitability of forming monetary cooperation.

Table 5. Inflation (GDP deflator) Correlation
1979-2004, China, Japan, and Korea

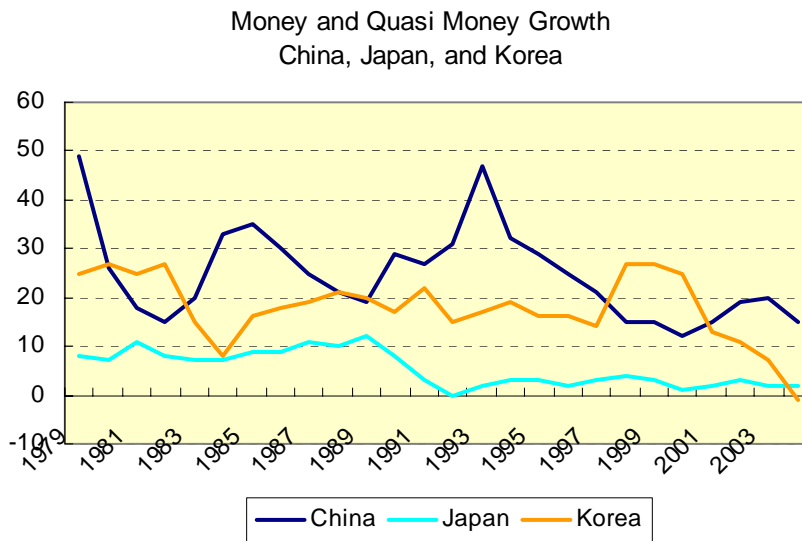
Country	China	Japan	Korea
China	1		
Japan	0.69	1	
Korea	0.98	0.70	1

Source: World Bank, World Develop Indicator 2005

Table 6. Inflation (GDP deflator) Correlation
1972-2000, Germany, France, and Italy

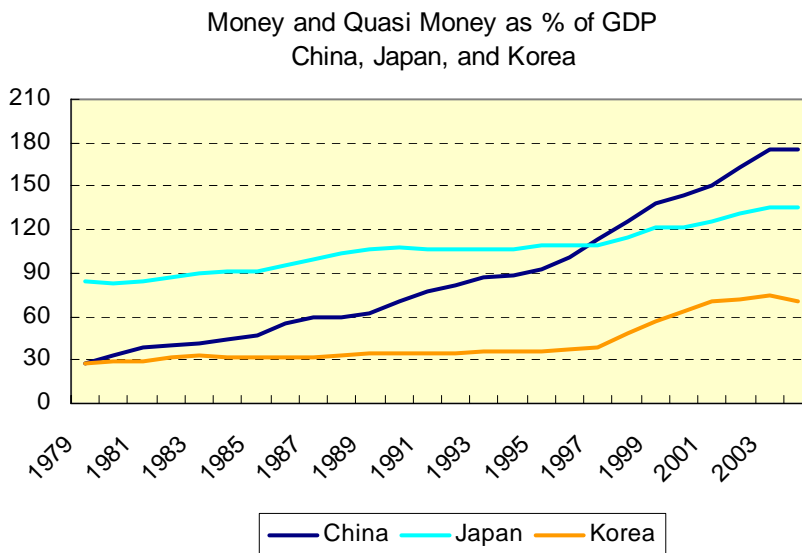
Country	Germany	France	Italy
Germany	1		
France	0.71	1	
Italy	0.67	0.95	1

Source: World Bank, World Develop Indicator 2005



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World Bank, World Develop Indicator 2005



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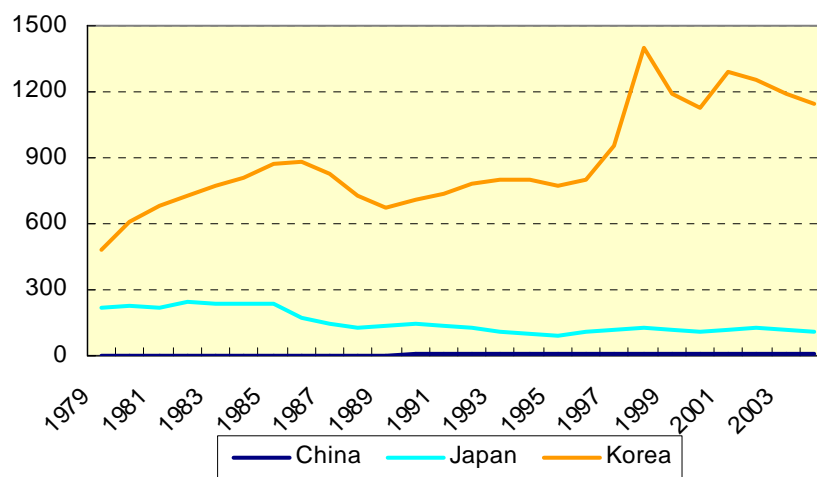
World Bank, World Develop Indicator 2005

3.8 Exchange Rate

The OCA choice is also an exchange regime choice. Within the currency union, exchange rates are fixed between member countries, and at the same time float as a whole to the other parts of the world. High volatility of an exchange rate will more likely leads to a floating exchange regime and low harmony in exchange rate movement will hinder the cooperation between potential members. Figure 15 and 16 explicates the Nominal Exchange Rate (NER), vis-à-vis the US dollar, and Real Effective Exchange Rate (REER) of China, Japan, and Korea over the period of 1979-2004. The first figure shows remarkable divergence of nominal exchange rate, while the latter shows an amazing converging trend in REER of China, Japan and Korea. But this may be an illusion since we set the REER in 2000 equals to 100. At the same time, REERs of these

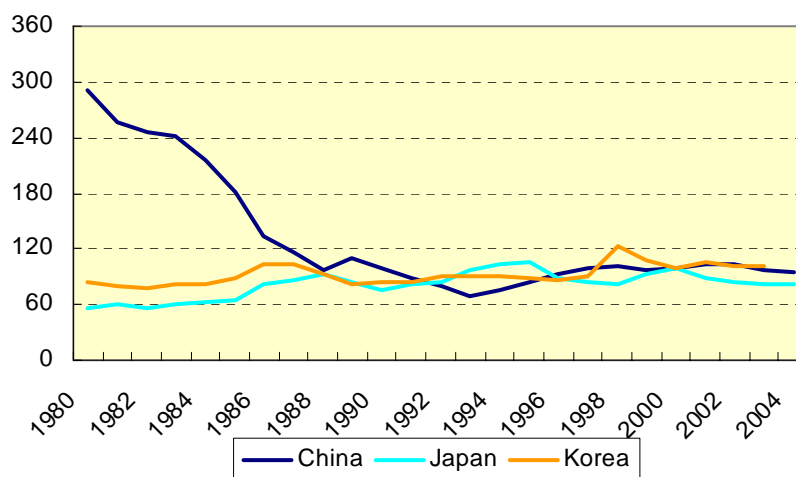
countries fluctuate differently during the observing period. Table 10 gives the Pearson correlation of REERs of East Asia group, we find that the correlation of REER is negative between China, Japan, and China and Korea; while Japan and Korea have a correlation of 0.45. We believe this lack of synchronization in REER movement is a great obstacle of forming a currency union between China and Japan and Korea. Table 11 also shows the volatility of REERs, among which Chinese Yuan is the least stable currency with a standard deviation of 65, which is another drawback in monetary cooperation.

Figure 15. NER
1979-2004, China, Japan, and Korea



Source: World Bank, World Develop Indicator 2005

Figure 16. REER (2000=100)
1980-2004, China, Japan, and Korea



Source: World Bank, World Develop Indicator 2005

Table 10. REER Correlation
1979-2004, China, Japan, and Korea

Country	China	Japan	Korea
China	1		
Japan	-0.87	1	
Korea	-0.47	0.45	1

Source: World Bank, World Develop Indicator 2005

Table 11. Descriptives of REER (2000=100)
1979-2004, China, Japan, and Korea

Country	Mean	Std. Deviation
China	130.92	65.06
Japan	80.73	14.29
Korea	92.45	11.00

Source: World Bank, World Develop Indicator 2005

When comparing to the REER correlation (see Table 12) of Germany, France and Italy, we cannot find a strongly evidence that they share more similarity in REER movement among the EMU members, but surely, the correlation between Germany and France, 0.64 is 40% higher than that of Japan and Korea. Table 13 shows the descriptions of REER historical data, where the volatilities of these currencies are greatly lower and closer to each other than those of the East Asia group.

Table 12. REER Correlation
1975-2000, Germany, France, and Italy

Country	Germany	France	Italy
Germany	1		
France	0.64	1	
Italy	-0.35	-0.1	1

Source: World Bank, World Develop Indicator 2005

Table 13. Descriptives of REER (2000=100)
1975-2000, Germany, France, and Italy

Country	Mean	Std. Deviation
Germany	115.42	8.24
France	109.92	6.81
Italy	105.65	8.71

3.9 Symmetry of Macroeconomic Underlying Shocks

If potential members of a monetary union face symmetric shocks, the costs of using a single currency are likely to be reduced because of less need for flexible exchange rate adjustment as a shock absorbing mechanism, *ceteris paribus*. On the other hand, the sovereign of the exchange rate as an independent policy instrument is crucial if a country faces mainly asymmetric shocks.

Differences in basic economic structures may cause asymmetry of shocks to different countries. Eichengreen (1994, 2002) employed the structural VAR method to identify the underlying structural shocks by dividing economic shocks into supply shocks and demand shocks. Zhang (2005) and Ding (2005) further differentiate economic shocks into real supply shocks, real demand shocks and monetary shocks.

Table 14 to 17 displays the correlations of real supply shock, real demand shock and monetary shock among East Asia group and EMU member group. Real supply shock correlation and real demand shock correlation between Japan and Korea is close to those among EMU members, however the correlation between China and Japan and China and Korea show less symmetry. As far as monetary shock correlation is concerned, we find China, Japan and Korea still have a long process to go in order to reach the precondition of OCA criteria. Monetary shock correlation between China and Japan and Japan and Korea is negative, the correlation between China and Korea is less than 0.1, whereas the correlation among EMU members are 0.67, 0.67, and 0.46 during 1980-2000.

Table 14. Correlation of Real Supply Shock
1980-2000, China, Japan and Korea

Country	China	Japan	Korea
China	1		
Japan	0.09	1	
Korea	0.12	0.42	1

Source: Ding and Li (2005)

Table 15. Correlation of Real Supply Shock
1980-2000, Germany, France, and Italy

Country	Germany	France	Italy
Germany	1		
France	0.31	1	
Italy	0.62	0.5	1

Source: Ding and Li (2005)

Table 16. Correlation of Real Demand Shock
1980-2000, China, Japan and Korea

Country	China	Japan	Korea
China	1		
Japan	0.18	1	
Korea	0.60	0.41	1

Table 17. Correlation of Real Demand Shock
1980-2000, Germany, France, and Italy

Country	Germany	France	Italy
Germany	1		
France	0.44	1	
Italy	0.44	0.32	1

Table 18. Correlation of Monetary Shock
1980-2000, China, Japan and Korea

Country	China	Japan	Korea
China	1		
Japan	-0.12	1	
Korea	0.09	-0.06	1

Table 17. Correlation of Real Supply Shock
1980-2000, Germany, France, and Italy

Country	Germany	France	Italy
Germany	1		
France	0.67	1	
Italy	0.67	0.46	1

. Conclusion

In this paper, we comprehensively examine the economic suitability for forming a monetary union within China, Japan and Korea, the three major economies in East Asia. We compare the many economic indicators stressed by OCA theories of China, Japan, and Korea over the period of 1979 to 2004 to that of Germany, France and Italy from 1972 to 2000.

We find that capital mobility is high, intra regional trade is intensive between China, Japan and Korea, but economic development, productive structure, financial development, and exchange rate correlation, comparing to those of the three EMU members, East Asia group are less favorable to OCA criteria. We also compare the correlation of real supply shock, real demand shock and monetary shock between two groups; we find the correlation between Japan and Korea is close to those among EMU members in terms of real supply shock and real demand shock, but the economic adjustment mechanisms to monetary shock bear great difference and correlations among the three East Asia country is extremely low. Therefore we believe China, Japan and Korea are

less ready for a monetary cooperation than Europe was in terms of economic conditions

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