

Financial Integration in Northeast Asia and Policy Implications

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<Korean Executive Summary>

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Theoretically, financial integration may produce costs as well as benefits for developing countries. Financial integration can boost growth by encouraging trade integration, or strengthening governance and regulatory framework. However, financial integration among developing countries may enlarge the countries' exposure to financial crises by increasing volatility in capital flows and contagion effects.

This paper assesses the development in financial market integration among Korea, Japan, and China by analyzing institutional environment and empirical evidence. Korea, Japan and China continuously pursued financial market opening and capital market liberalization. As a result, financial market integration among the three countries has been strengthened, particularly in money markets and bond markets since the currency crises in 1997. However, the linkages in financial markets have been stronger between U.S. and the Asian three countries than among the three countries even after the currency crises.

Financial integration among Korea, Japan, and China is expected to be accelerated in the future as China's entrance into the WTO and the three countries' efforts to realize the FTA enhance trade integration. On the other hand, financial market integration itself needs to be strengthened to maximize the benefits of trade integration. At the same time, authorities should exert efforts to standardize financial infrastructure and enhance soundness in regulatory and governance framework to minimize the unwanted effects of financial integration.

Keywords: financial market, integration, Korea, Japan, China

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. Introduction

In the last decade, we have witnessed a major change in international financial markets --the so-called international financial integration or financial globalization¹⁾. The international financial market integration can be defined as an individual country's linkages to international markets through capital account liberalization. While financial integration is associated with high growth in some developing countries, it also has resulted in periodic financial crises with serious economic and social costs.

Debates on economic integration have been mainly focused on trade or real sector because financial integration has been believed to be induced by integration in trade or real sector. However, financial integration itself can be an important issue in economic policy. This is because financial integration can boost economic growth when developing countries' financial markets are integrated with those of advanced countries and financial integration with advanced economies can help promote better governance and regulatory framework for developing countries. However, financial integration without adequate governance and regulation might entail huge social cost by inducing financial crisis. For these reasons, there has been an intense debate in both academic and policymaking circles on the effects of financial integration for emerging economies.

Theoretically, a developing country can accelerate its growth by attracting foreign capital. That is, a developing country with access to the international financial markets can grow faster by augmenting its savings and reducing the cost of capital. However, international financial integration itself does not necessarily lead to a convergence between developed and less developed countries because the distortions induced by imperfect financial market are mostly transitory, which may be vanishing over time with the financial market development. As is well-known, the economic growth is mainly determined by productivity in the real sector, not by capital market distortions.

Empirically, it is also unclear whether the financial integration causes fast economic

1) We use these two terms interchangeably in the text.

growth or vice versa, and whether the correlation between the economic growth and the financial integration is robust after controlling for some other factors. For example, the selective and limited financial integration strategy adopted by China and India seems to be helpful in achieving a high economic growth rate for these countries, while the aggressive financial integration strategy that Jordan and Peru have adopted does not generate a positive economic growth rate. Moreover, the financial crises including the recent Asian crisis show that the financial globalization entails social costs as well as benefits. Intensified financial integration may facilitate real sector integration. For example, trade financing facilitates trade flows, while project financing through bank lending, equity and bond markets activates FDI flows. Also, stronger financial integration among developing economies may increase the vulnerability to a financial crisis through stronger contagion effects. However, stronger regional financial integration may reduce heterogeneity in business within the region, thereby, decreases the costs of a common monetary policy. Therefore, it is essential to examine the status, trends, and pattern of financial integration in Northeast Asia to extract implications for regional economic policy on growth and integration.

The objectives of this paper are, first, to discuss theoretical aspects of financial integration and its impact on real economy; and second, to explore the financial development in Korea, China, and Japan and provide an assessment of empirical evidence on the financial integration process in Northeast Asia. We will also extract useful implications that help shed light on the implementation of monetary policy in the region.

We summarize the conclusions of this research as follows. First, there has been a substantial progress in the financial market integration among Korea, China, and Japan. In particular, both the money market and the bond market in the Northeast Asia have been more integrated than the stock market after the Asian financial market crisis. Second, the financial linkage of each country to the U.S. market still dominates the linkages among these countries. Third, the financial market integration should be taken together with the goods market integration, i.e. the trade openness. Finally, regional efforts to improve financial market structure and regulatory framework are essential for trade and financial openness and further financial integration in Northeast Asia.

This paper consists of the following sections. Section II discusses the theoretical background of financial integration. Section III explores the financial integration in Northeast Asia. Section IV assesses empirically the financial integration in these regions. Section V discusses the policy implications and concludes the paper.

II. Theoretical Background

We have witnessed a major change in international financial markets since the beginning of the 1990s. The international financial market integration has affected the emerging economies as well as the developed economies. In particular, emerging markets have rapidly developed to absorb private capital from the industrialized countries.

Theoretically, the benefit of international financial integration involves the efficiency of laissez-faire. Standard argument for the benefit of an international financial integration runs as follows: A country with restriction on capital liberalization bears a distortion proportional to the domestic and foreign returns on investment, forcing the country to take an inefficient economic growth path. Moreover, financial integration helps, in principle, developing countries to better manage their fundamentals such as consumption and output. The former refers to the long run benefit of international financial integration, i.e., economic growth, while the latter is related to the short run benefit of the financial integration. Since the financial integration entails social cost as well as social benefit, we first discuss the benefit and cost of the financial integration in the long run perspective, and then explore the business cycle issue such as market completeness and welfare cost.

1. Financial Integration and Economic Growth

One of the main motivations that the developing countries pursue actively financial integration is to accelerate their growth by attracting foreign capital. Theoretically, it is understood that financial integration can raise the growth rate in developing countries through direct and indirect channels. For example, a developing country can increase the economic growth rate by augmenting its savings and reducing the cost of capital. The economy can also grow faster by diversifying risk. However, as discussed in the introduction, international financial integration itself does not necessarily lead to a convergence between developed and less developed countries because the distortions

induced by imperfect financial market are transitory. The economic growth is mainly determined by productivity, not by capital market distortions.

Empirically, it is also unclear whether the financial integration causes fast economic growth or vice versa, and whether the correlation between the economic growth rate and the financial integration is robust after controlling for some other factors.

Table 1, taken from Prasad, Rogoff, Wei and Kose (2003), gives the impression that the financial integration has positive effect on the economic growth rate. The selective and limited financial integration strategy that China and India have adopted seems to be helpful in achieving a high growth rate. However, the case of Jordan and Peru gives the opposite impression. Although they have opened foreign capital flows, they did not enjoy a positive economic growth rate.

<Table 1> Faster and Slowest Growing Economies During 1980-2000 and Their Status of Financial Openness

Fastest Growing Economies (1980-2000)	Total Percentage Change in p.c. GDP	More Financially Integrated?	Slowest Growing Economies (1980-2000)	Total percentage Change in p.c. GDP	More Financially Integrated?
China	319.6	Yes/No	Haiti	-39.5	No
Korea	234.0	Yes	Niger	-37.8	No
Singapore	155.5	Yes	Nicaragua	-30.6	No
Thailand	151.1	Yes	Togo	-30.0	No
Mauritius	145.8	No	Cote d'Ivoire	-29.2	No
Botswana	135.4	No	Burundi	-20.2	No
Hong Kong	114.5	Yes	Venezuela	-17.3	Yes/ No
Malaysia	108.8	Yes	South Africa	-13.7	Yes
India	103.2	Yes/No	Jordan	-10.9	Yes
Chile	100.9	Yes	Paraguay	-9.5	No
Indonesia	97.6	Yes	Ecuador	-7.9	No
Sri Lanka	90.8	No	Peru	-7.8	Yes

Source: Prasad, Rogoff, Wei and Kose (2003)

Majority of researchers find a mixed effect of financial integration on economic growth because the economic growth rates are determined not only by differences among countries' economic variables such as capital-labor ratios and financial capital, but also by the differences in social infrastructure and rule of law. Although financial integration can induce additional foreign capital to the domestic economy, it cannot boost the economy if the domestic economy is equipped with weak governance and rule of law. If the economy is not well qualified to absorb the advanced financial system, an inadequate financial integration can generate a financial crisis and a collapse of domestic economic system.

2. Financial Integration and Business Cycle

We turn to the issue of macroeconomic volatility and financial integration. Theoretically, financial integration provides better chances for reducing macroeconomic volatilities by diversifying country-specific risk. Since developing countries with less diversified risks have been subject to higher volatility than developed countries, the benefits of financial integration are presumably larger for the former than for the latter. What does the economic theory imply about financial integration and business cycle? We will explore the implication of financial integration in relation to the degree of financial market integration in the following section.

A. Perfectly Integrated Complete Market

When a complete international financial market is integrated, both home and foreign residents can optimally share the risk arising from world-wide and country-specific shocks. Under this market structure, the marginal utilities of consumption will be equated across countries at all dates and states of nature. However, the domestic and foreign consumption need not to be equalized under the complete international financial market. More specifically, assuming a constant relative-risk aversion (CRRA) utility function, the optimal risk sharing condition can be restated as the statement that the real exchange rate (Q_t) is proportional to the relative consumption

ratio of domestic and foreign consumers $\left(\frac{C_t}{C_t^*}\right)$:

$$Q_t = \kappa \left[\frac{C_t^*}{C_t} \right]^{-\sigma}, \quad (1)$$

where σ is the relative risk aversion parameter and C_t , C_t^* are domestic and foreign consumption in period t , respectively. The volatility of real exchange rate in an additive CRRA utility function equals to the variance of the difference of consumption multiplied by the relative risk aversion.

B. Perfectly Integrated Incomplete Market

Suppose that the international financial market is incomplete, but integrated. Specifically, suppose that residents in both countries can trade only one-period riskfree nominal bonds. Then, the real exchange rate is not proportional to the relative ratio of the consumption level, but the expected depreciation rate of the real exchange rate is proportional to the difference of the expected domestic consumption growth rate and the expected foreign consumption growth rate, not the domestic and foreign consumption difference.

$$E_t[q_{t+1} - q_t] = \sigma \{E_t[c_{t+1} - c_t] - E_t[c_{t+1}^* - c_t^*]\}, \quad (2)$$

where x_t is the natural logarithm of the corresponding variable X_t around the steady-state value X_{SS} .

The uncovered interest parity holds if the market is perfectly integrated, irrespective of financial market completeness. That is,

$$i_t = i_t^* + s_{t,t+1}^e \quad (4)$$

where i_t and i_t^* are domestic and foreign interest rate respectively, and $s_{t,t+1}^e$ is next period's expected exchange rate. However, it is well known that the uncovered interest parity does not empirically hold in the international financial market.

C. Imperfectly Integrated Incomplete Market

We must fully take into account the failure of the UIP to explore the implications of the financial integration on the economy. If the financial market is not perfectly integrated, we can show that the uncovered parity does not hold. This implies that there exists a friction in the financial market to work against the international financial market.

Some authors such as Kollman (2001) argue that we need to introduce a kind of shock in the uncovered interest parity, the so-called an uncovered interest parity shock to take into account the imperfect international financial market. Alternatively, the imperfect international financial market can be introduced in the economic model with an adjustment cost in international financial market. We assume that domestic residents have to pay a premium to the foreign lenders if they want to borrow from the international financial market, not domestic financial market. This may reflect the cost due to asymmetric information or the existence of intermediaries in the foreign asset market. To represent the relation between the domestic and foreign interest rates in the case of distortions in financial markets, suppose that the risk premium increases as the borrowing amount increases to the domestic net foreign asset holdings. Then we have the modified uncovered interest parity as follows:

$$E_t[s_{t+1} - s_t] = i_t - i_t^* + \eta b_t, \quad (3)$$

where b_t is the net foreign asset denominated in foreign currency. The expected depreciation rate is proportional to the difference of the domestic and foreign interest rate and the risk premium. If the home country is a borrower, the premium is negative, proportional to its net foreign asset holdings.

Overall, the international finance theory implies that financial integration should reduce consumption volatility because international financial markets provide better

opportunities for countries to share international risk and, thereby, smooth consumption. However, the empirical evidence is again mixed. As we will see in the next subsection, the recent Asian crises suggest that international financial integration may lead to substantial macroeconomic volatility and huge social cost.

3. Welfare Gains and Financial Crises

The benefit of international financial integration can be measured in terms of portfolio diversification or welfare gains in calibrated models. The welfare gains calculated from these models vary enormously depending on the sample countries. Several studies report that welfare gains from international risk sharing are larger in developing countries than in developed countries. For example, Obstfeld (1995) presents the results that the welfare gains from the elimination of consumption variability through risk sharing are between 0.53 percent and 5.31 percent in a selected sample of developing countries.

Moreover, the welfare gains from risk-sharing associated with the growth uncertainty are much larger than the welfare gains from the elimination of consumption variability. Athannasoulis and van Wincoop (2000) reports that the welfare gains from the elimination of the uncertainty associated with growth are about 6.5 percent in their sample of 49 developing and developed countries. According to them, the welfare gains associated with the elimination of growth uncertainty are more than 10 percent in the case of African countries.

However, we must also take into consideration of the cost associated with international financial integration. Contrary to the theoretical argument that international financial integration will reduce the volatility of economic fundamentals, the financial integration often leads to a dramatic increase in fundamental volatilities. The intensification of financial integration or globalization might give rise to financial crises if the country is not well qualified to adopt the advanced financial system. The Asian crises in 1990s demonstrate fully the negative effect of international financial integration.

Financial crises cannot be viewed as phenomena that naturally occur in developing and developed economies. While the financial crises in the 1970s and 1980s affected

both developing economies and developed economies, they seem to have occurred more in the developing economies since 1990s. This may suggest that the developed economies have been able to hedge themselves from the international shocks through improving economic systems and policies. Or the international shocks have changed over time; thereby the developing economies are more vulnerable to them than the developed economies. Kaminsky and Reinhart (1999) point out that the banking crises typically precede balance of payments crises and the currency crises, then worsen the banking crises.

In sum, the financial market integration can exacerbate the crises if the developing economies failed to improve their economic system and policies to effectively hedge against the risks. Because the macroeconomic costs of financial crises are larger and more persistent than the business cycle, the well-functioning safety net is also necessary to minimize the social cost generated by the crises.

III. Financial Integration in NEA at Present

With the theoretical background, we will proceed to explore the degree of financial integration among Korea, China, and Japan and the effect on the region's economy.

1. Korea

A. Regulatory Changes for Foreign Entrance

(1) Capital Market

Korea's capital market had been opened step by step from the early 1990s and it was almost completely opened up soon after the currency crisis in 1997. Korean authorities firstly opened the domestic stock market in January 1992 by allowing direct foreign portfolio investment, up to 10%, in domestically listed private corporation stocks. The limit on foreign investment in listed private corporation stocks was gradually increased until it was completely abolished in May 1998. However, foreign investment in shares of public firm has been regulated within 40% since November 2000 although the limit was increased from 8%. On the other hand, the KOSDAQ market was also completely opened in May 1998 by removal of limits on foreign investment.

The bond market was firstly opened to foreign investors in July 1994 when direct foreign investment in small and medium sized firms's corporate bonds was allowed. As in the stock market, the domestic bond market has been opening gradually as the authorities took steps in widening the range of eligible bonds and increasing the maximum amount of foreign investment. The Korean government opened completely the bond market by removing all restrictions on foreign investment in listed bonds in December 1997 and allowing foreign investment in OTC bonds and RPs in May 1998, and in non-listed bonds in July 1998.

(2) Banking Industry

The Korean banking industry was opened firstly in 1967 when foreign banks were

permitted to establish branches in Korea. The first foreign bank branch in Korea was established by Chase Manhattan Bank at the same year. In the early 1980s when Korea suffered from chronic trade deficit, the authorities encouraged foreign banks to open their branches in Korea, with various advantages such as guaranteed swap returns and exclusion from the central bank's liquidity control, in order to increase the foreign exchange supply to the market. Those advantages had been eliminated step by step from 1985 as the authorities wanted to promote fair competition in the banking industry and Korea's trade account turned into surplus.

At the same time, discriminative regulations on foreign branches' banking activities were also gradually reduced or eliminated. From 1985 foreign branches were allowed to access to the Bank of Korea's rediscount and loan facilities. Foreign branches were also allowed to engage in CD issuance and trust business from 1986 and 1991 respectively. In 1991 ceilings on the capital and swap contracts were removed and foreign banks were permitted to establish multiple branches.

Entry barriers in the banking industry were reduced further by removing economic means test and the requirement to establish a representative office prior to opening a branch in 1994, and the requirement that the parent bank must be in the top 500 banks in terms of asset size in order to establish branches in Korea in 1997. Finally foreign banks were allowed to establish wholly-owned subsidiaries in Korea from 1998.

(3) Other Financial Industry

The Korea-US Insurance Talk initiated the first Korean insurance market opening in the middle of 1980s. As a result of trade dispute between Korea and the US in 1985, the Korean government agreed to authorize license of US life insurance companies in the domestic market. In 1987 two US life insurance companies received license of Korean branches. Two years later, the government authorized foreign insurance companies to establish insurance subsidiaries and joint ventures in Korea. Between 1989 and 1997 five foreign firms and seven joint ventures received licenses to participate in Korea's life insurance market.

After Korea became a regular member of the OECD in 1996, Korean government opened domestic insurance market further. The government removed economic needs test required for foreign insurance companies to open domestic branches, allowed

foreign insurance companies to engage in insurance broker business in the domestic market in 1997. The government also opened reinsurance, insurance appraisal and actuary market between 1997 and 1998. In addition, the Korean government opened mutual credit and pension fund market in 1998. Table 2 and Table 3 describe major steps taken by the Korea authorities to open domestic stock market and bond market respectively.

B. Foreign Direct Investment in Financial Sector

Foreign direct investment in the Korean financial sector surged after the Korean government implemented a series of policies, such as introduction of the Foreign Investment Promotion Act, opening up of domestic stock and bond market, and elimination of all limits on foreigners' M&A in the territory, to promote foreign investment in 1998. The cumulative amount of foreign direct investment in the financial sector increased to 10.4 billion dollars as of the end of 2001 from 1.9 billion dollars as of the end of 1996.

In the banking sector, foreigners entered into the industry mainly through equity investment or branch set-up. The portion of foreign equities in the whole banking sector increased from 20.0% in December 1999 to 25.0% in June 2003. The portion of foreign equities exceeds 50% in four out of eight national commercial banks as of June 2003. Even though the number of foreign banks operating in Korea shrank from 51 to 39 between 1998 and 2003, the amount of total assets increased by 166% over the same period. Foreign Banks' overall market share also increased dramatically from 1.1% in 1998 to 18.7% in 2003 in terms of total assets.

In the capital market, foreigners' holding of listed stocks drastically increased, accounting for 40.1% of market capitalization as of the end of 2003 compared with 18.6% as of the end of 1998. Contrary to stock market, foreign investment in the bond market has not been significant. Foreign investors' holding of listed bonds accounts for only 0.14% as of the end of 2003.

<Table 2>

Major measures relating to Korean stock market openness

Date	Instruments	Note
Mar. 15 1991	Permitted foreign securities firms to establish branches in Korea.	
Jan. 3 1992	Permitted foreign investors to purchase listed Korean stocks up to 10% ¹⁾	3% ²⁾
Jul. 1 1994	Opened bond market to foreign investors Permitted domestic investors to purchase foreign securities	
Dec. 1 1994	Raised ceilings on foreign portfolio investment (10%→12%) ¹⁾	
Mar. 1 1995	Relaxed daily stock price change band (4.6%→6%)	
Jul. 1 1995	Raised ceilings on foreign portfolio investment (12%→15%) ¹⁾	
Apr. 1 1996	Raised ceilings on foreign investment in listed stocks (15%→18%) ¹⁾ Removed limitations on residents' foreign securities investment Permitted foreign firms to list on the Korea Stock Exchange	4% ²⁾
Oct. 1 1996	Raised ceilings on foreign investment in listed stocks (18%→20%) ¹⁾	5% ²⁾
May 2 1997	Raised ceilings on foreign investment in listed stocks (20%→23%) ¹⁾	6% ²⁾
Nov. 3 1997	Raised ceilings on foreign investment in stocks (23%→26%) ¹⁾	7% ²⁾
Nov. 21 1997	Requested IMF Bail-out fund	
Dec. 11 1997	Raised ceilings on foreign investment in listed stocks (26%→50%) ¹⁾	50% ²⁾
Dec. 31 1997	Raised ceilings on foreign investment in listed stocks (50%→55%) ¹⁾ Removed all limitations on foreign investment in bond market	
May 25 1998	Removed all ceilings on foreign investment in listed stocks	

Note: 1) Aggregate base

2) Individual base

<Table 3> **Changes in the limits on foreign investment in Korean bond market**

			Jul 1994	Jan 1997	Jun 1997	Nov 1997	Dec 1997	Dec 1997	Dec 1997	May 1998	Jul 1998	
C o r p o r a t e B o n d	S M E s	N G	Straight	×	×	Total 50%		No limits				
			CB	Total 30% (5%)	Total 50% (10%)			No limits				
			BW, EB	×	×	×	Total 50% (10%)	No limits				
		G	-	×	×	×	×	Total 30% (10%)	Total 30%	No limits		
	L E s	N G	Straight	×	×	×	×	Total 30% (10%)	Total 30%	No limits		
			CB	×	×	Total 30% (6%)		Total 50% (10%)	Total 50%	No limits		
			BW, EB	×	×	×	×	Total 50% (10%)	Total 50%	No limits		
		G	-	×	×	×	×	Total 30% (10%)	Total 30%	No limits		
Public Bond			×	×	×	×	×	Total 30%	No limits			
Listed bonds OTC trading			×	×	×	×	×	×	×	Allowed		
RP			×	×	×	×	×	×	×	Allowed		
Non-listed bonds			×	×	×	×	×	×	×	×	Allowed	

Note: SMEs and LEs stand for small and medium sized enterprises and large enterprises, respectively. NG and G stand for non-guaranteed bond and guaranteed bond, respectively. '×' and ' ' denote 'not allowed' and 'same as before', respectively. CB, BW and EB stand for convertible bond, bond with warranty and Eurobond, respectively. Numbers in parentheses are limits on foreign investment per individual.

C. Presence of Japan and China in Korean Financial Market

Although total foreign investment in the Korean financial market increased rapidly after 1998, Japan and China's portion remained at a quite limited level. In the banking sector, five Japanese and two Chinese banks are operating business in Korea currently. Their assets account for only 16.8% of foreign banks' total assets and 1.5% of commercial banks' total assets as of the end of 2002.

In the capital market, investment by China and Japan are even smaller. The portion of Japanese investors in listed stock market has staggered around 1% since 1990s while that of US and British investors exceeded 60%. Even if we include Hong Kong as a part of China, Chinese investment in stock market has been well below 1%. The dominance of the US and the UK over Japan and China (including Hong Kong) also exists in bond market. With limited foreign presence, this implies much smaller investment in the bond market by Japanese and Chinese investors.

2. China

The opening of China's financial sector has been step by step, in tandem with her successful economic reform. It started with special economic zones, coastal cities in the early years and then moved to central cities and all other regions recently. Foreign banks were firstly allowed to operate in RMB business and then foreign currency business. The entry of foreign financial institutions in the past two decades provides impetus to the financial reform and increases the competitiveness of the Chinese banking sector. Today, foreign financial institutions become integrated components of China's financial system and play an important role in China's economic development.

A. The Status of Foreign Banks and Other Financial Institutions in China

(1) Foreign banks

In 1979, the Chinese government allowed first foreign bank—Japanese Import-Export bank to open a representative office in Beijing, opening the door to foreign financial institutions for the first time. Another foreign bank, Nanyang Commercial Bank, was allowed to open a branch in Shenzhen in 1981. In the following year, five

more commercial banks opened branches in the five economic special regions, mostly operate in foreign currency business. In 1985, the Chinese government further opened the five economic special regions, Xiamen, Zhuhai, Shenzhen, Shangdou, and Hainan to foreign banks. In 1990, in order to promote Shanghai as a prominent financial centre in China, the government further opened Shanghai's Pudong district to attract foreign banks. This is followed by further liberalization of 24 coastal cities such as Dalian, Tianjin, Qingdao, Nanjing, Ningbo, Fuzhou, and Guangzhou. Finally in July 1998, the Chinese government abolished all regional restrictions for the entry of foreign banks in setting up representative offices in any city in China.

There are now 19 countries and economies (mainly Hong Kong and Macau) and 62 foreign banks having their branches in China by the end of 2003. The total assets of foreign banks reach 46.6 billion US dollars (compared with 29.9 billion in 1996 and 34.2 billion in 1998), accounting for 1.4% of total asset in China's commercial bank sector. The total lending of foreign banks is 21.7 billion US dollars, among them foreign currency lending \$16.4 billion, accounting for 13% of foreign currency lending of China's commercial banks.

Since China's entry of the World Trade Organization (WTO) in 2002, the government has been pushing for further opening of the banking sector to the rest of the world. Today, there are no more restrictions on geographical area and customer basis for foreign currency trading of foreign banks. Since 2002, China Banking Regulatory Commission (CBRC) allowed more banks to open branches and representative offices in China.

Foreign banks are mostly concentrated in coastal cities in China. By the end of 2001, there are 39 foreign banks in Shanghai, 23 in Shenzhen, 19 in Beijing, 15 in Guangzhou, 14 in Tianjin, 10 in Xiamen, and 8 in Dalian. Together these cities account for 87% of total foreign banks in China. Most foreign banks come from Germany, Japan, and Hong Kong, accounting for more than 65% of the total number of foreign banks in China. Most foreign banks in China are large international banks. Among the 54 banks in the Fortune 500 list of companies, at least 27 have branches in China.

Foreign banks mainly serve foreign companies and joint ventures in China, with increasing attention paid to serve foreign individuals and oversea Chinese from Hong

Kong, Macau, and Taiwan. For example, the Fuji bank of Japan mainly serves the Japanese enterprises in China for their needs in terms of loans, guarantees, deposits and foreign currency.

The main business of foreign currency service now includes: financing, consulting, investment, international clearing, deposit and lending, guarantee, transfer, trading, and securities trading. According to the agreements of WTO, foreign banks are increasingly developing their RMB business. We expect this trend will continue, especially after the five-year transition period during which domestic banks are still protected to certain degree by the government.

(2) Foreign Investment Banks and Insurance Companies

According to official information of China's Foreign Currency Administration, several major investment banks are allowed to invest in China's emerging securities market as Qualified Foreign Institution Investors (QFII). For example, UBS has a quota of 0.6 billion US dollars, Nomura Securities has a quota of 50 million US dollars and HSBC 100 million US dollars. There are total 11 QFIIs and their total investment quota reaches 1.7 billion US dollars.

One particular successful example is Goldman & Sachs, a major Wall Street investment bank. It opened its branch in Hong Kong in 1983 and entered the China market in 1994. In 1993, Goldman & Sachs served as the lead underwriter of \$2.25 billion Yankee bond by China International Investment and Trust Company. In 1997, Goldman & Sachs served as the lead underwriter for China Telecom's IPO in Hong Kong. In 1998, the company again served as the main underwriter for the issue of China's first 1 billion US dollar government bond. In 2003, the company beat its long time rivals Citibank and became the first in generating investment banking fees in China among all foreign investment banks.

Since China's entry of WTO in 2002, there has been rapid opening of her insurance industry. By the end of 2002, China allowed 34 foreign insurance companies to set up their representative offices and other operating offices. There are now more than 54 foreign insurance entities coming from 12 countries operating in China. There is also an enlargement of operating regions from mainly coastal cities to some other big inland cities. Furthermore, there is increasing freedom for the operation of foreign

insurance companies in China.

(3) Other Foreign Financial Institutions

In October 2003, in accordance with the WTO agreement, the China Banking Regulatory Commission (CBRC) released an important regulation “Regulations on Automobile Financing Companies”. Since the end of 2003, the CBRC has been considering the entry application of Shanghai GM Finance Company, Toyota Finance Company (China), and Volks Wagon Finance Company (China). It signals the opening of China’s automobile finance market to foreign joint ventures and foreign financial institutions in the near future.

China also partially opened its investment fund industry to foreign financial institutions. For example, China Communication Bank jointed with Japan Nikko Asset Management Company to form investment fund for Chinese government bonds. Foreign financial institutions also are allowed to enter China’s giant asset management business associated with the non-performing loans of the state-owned banks.

B. The Entry Regulations and Entry Barriers of Foreign Financial Institutions

(1) The Entry Regulations of Foreign Financial Institutions

In December 2001, the State Council released “Regulations on Foreign Financial Institutions” and proposed to implement the policy starting from February 2002. It laid out the five foundations for the entry of foreign financial institutions: (1) After entering WTO, foreign financial institutions, subject to prudence conditions of entry, can open any operating entities in any city in China. (2) There are no restrictions on customer basis of foreign currency services by foreign financial institutions. (3) Abolish the current quantitative restrictions on foreign banks in their RMB business as long as the foreign financial institutions have been operating in China for three years, profitable for consecutive two years and other prudent conditions set by China’s Peoples Bank. (4) Relax the constraints on the nature of Chinese partnership for foreign financial institutions. In particular, there is no need to have Chinese partners to be a financial institution as before. (5) Broaden the scope of regional and customer

base for the RMB business of foreign banks.

In May of 2003, the Chinese Banking Regulatory Commission (CBRC) released “Regulations on the process and administration of entry of banks” and became effective since July of that year. According to this regulation, the CBRC adjusted the approval process of new banking business and further reduced the requirement for report of some specific banking business to the CBRC and also relaxed the appointment procedure of high-ranking bank executives.

In December 2003, the CBRC released “Regulations on the entry of foreign financial institutions”. As an important aspect of financial reform, the CBRC allows the share of a foreign financial institution in a Chinese bank to be raised from 15% to 20%. If the combined foreign shares in the Chinese bank are below 25%, the nature of ownership structure and banking business is considered to be the same. By December 2003, China has already allowed foreign bank entry in five of the joint-equity commercial banks and city commercial banks. The highest share of foreign bank entry is 15%.

In December 2003, the CBRC also decided to simplify the procedure of foreign banks. For example, in terms of operating funds of a subsidiary or joint-equity foreign banks, there were six categories according to the size. After the December regulation, there are only three with only 100 million RMB, 200 million RMB, and 300 million RMB respectively.

(2) The Restraining Factors for the Entry of Foreign Banks

(Policy Factors)

Although there is “super nationals” treatment to foreign banks in many aspects, there is still no formal law governing a foreign financial institution. The financial market in China is still operating in the environment of experiment and continuing reform. There is a lack of normal rules and regulations for foreign financial institutions; this in turn brings certain uncertainties to the entry of foreign financial institutions.

There are increasing constraints on foreign financial institutions as the laws and regulations become increasingly normalized and consistent with the world standard.

This will put foreign financial institutions on the same level field as domestic ones. Foreign financial institutions will gradually lose their special favors granted to them in the early years of financial opening.

There are significant differences in policies among different regions in China. The more developed big cities usually have more favorable policies towards foreign financial institutions while the less developed regions have greater demand for foreign capital but with less open and transparency policies.

(Other Factors)

To most Chinese depositors, the domestic banks have better credibility than foreign banks because they are backed up by the credibility of the Chinese government. The experience of RMB business of 32 foreign banks in China suggests that they are not at advantage relative to domestic banks.

It is rather difficult for a foreign financial institution to build a network all over China. Through years of work, the four state-owned banks now have branches all over China. Foreign banks are difficult to compete on this aspect.

The localization of foreign financial institutions is a long process. It is difficult to gain knowledge of local market, culture and etc in a short time period for a foreign financial institution to serve successfully Chinese clients.

(The Regulations of Foreign Financial Institutions)

Since its establishment in 2002, the CSBC has done a lot of work in improving the efficiency and the transparency of the banking regulations. The regulations of foreign banks are now under the umbrella of the CSBC while the Chinese Insurance Regulatory Commission (CIRC) supervises the operation of foreign insurance companies in China.

The main contents of the February 2002 “Regulations on foreign banks” are as follows: First, it fulfills China’s commitment to WTO in opening to foreign financial institutions. Second, it adjusts the limit of deposit share of total asset of foreign banks. The new regulations increased the share of foreign currency deposit of total foreign currency assets from 40% to 70%. It also abolishes the linkage requirement of RMB deposits with foreign currency deposits and accounts both the RMB capital and

foreign currency capital in the capital requirement of 8%. Third, it requires 25% liquidity ratio of liquidable asset to liquidable liabilities. Fourth, it unifies the regulations of RMB and foreign currency operation.

(The regulations of foreign insurance companies)

To meet the requirement of WTO, the Chinese Insurance Regulatory Commission (CIRC) has been increasing the transparency of the law and regulations. There is now public consultation before any major changes in law and regulations. The CIRC also publishes the important policies through various channels.

In February 2002, the Chinese government released “Regulations of foreign insurance companies” and it became effective the following year. The spirit of the regulation is to abolish those current practices in insurance market which is not consistent with the agreements of WTO.

C. The Future of Foreign Financial Institutions in China

According to the WTO agreements, China will abolish all geographical restrictions of foreign currency business of foreign banks. As is shown in Table 4, there will be further liberalization of RMB business of foreign banks five years after China’s entrance in WTO. There is also relaxation of restrictions on banking customers in foreign currency business. The foreign banks can engage in RMB business with retail customers five years after the entrance of WTO. There is also virtually every kind of banking business that can be conducted by foreign banks. There are similar liberalizations in securities and insurance industry as detailed in the following table:

Finally, given the increasing opening of China’s financial sector, foreign financial institutions have a promising future in China. This is true also due to their comparative advantage in the following aspects:

<Table 4> **The Financial Liberalization in China after Entrance of WTO**

Financial Industry	3 years after	5 years after
Banks	allow foreign banks to conduct RMB business with Chinese firms	allow foreign banks to conduct RMB business with retail customers in all regions
Securities	allow foreign share of 33% in joint-equity security companies	allow foreign share of 49% in joint-equity securities companies
Insurance	allow foreign share of 49% in joint-equity investment funds	abolish all geographical restrictions

(Advantages in experience, management skills and financial innovations)

Foreign banks that are operating in China are mostly well-known and large international banks. They have accumulated tremendous experience in every aspects of banking, especially in the area of financial innovations. For example, foreign banks have very sophisticated tools of risk management which help them measure and hedge various risks in banking while most Chinese banks lack basic knowledge of modern risk management tools. Foreign banks also have a lot of knowledge about the function of financial derivatives. As China will permit the development of financial derivatives in the near future, foreign banks will see tremendous opportunities.

(The advantage of asset size and profitability)

Foreign banks enjoy the advantage of big size and greater profitability. For example, in 1998, the return of assets of China's four state-owned banks was only 0.2% while the world largest banks claim the return of 2.2%, more than ten times higher than that of the Chinese banks.

(The tax advantage)

So far foreign financial institutions still enjoy tax advantages in many areas. For

example, foreign financial institutions can exempt taxes for their operating income if they are earned in a special economic zone where they were chartered. This tax advantage will last the first five years after starting the operation. Also in these special economic zones, foreign financial institutions can pay corporate income tax at a much lower tax rate of 15% while the Chinese banks have to pay the rate of 33%.

(Managerial talent)

Because of the long history of foreign banks, they have a very efficient training system for employees and have accumulated a lot of banking talents. The higher compensation and better working conditions of foreign banks also attract more talented professionals from domestic banks.

Overall, there are tremendous opportunities for foreign financial institutions in China. However, there are also a lot of challenges as domestic financial institutions will learn to compete with foreign ones.

3. Japan

Japan has enjoyed the so-called ‘Japanese Miracle’ for 30 years after World War II, and then witnessed the ‘Lost Decade’ with the surge and collapse of Japanese economic bubble. It is needless to say that the Japanese financial system has contributed to Japan’s miracle and collapse. Many authors say that an economic system that is successful within one set of environmental conditions could be a fundamental defect under the different environments. The banking-oriented Japanese financial system can be regarded as such an inefficient system that has become somewhat obsolete.

A. Overview of the Financial System

Japan’s financial system can be categorized into three sectors: banks, life insurance and government financial institutions. These institutions account for 75 percent of the total assets in the Japanese financial sector. First, only seven major banks have survived after mergers and failures in the banking sector in 1990s. In the bank-oriented Japanese financial system, these banks account for roughly half of all private

deposits and loans and the life insurance sector accounts for about 20 percent of the total assets. The government sector also plays a key role in the financial intermediation. In particular, though most countries have privatized the banking services at post offices, Japan has not yet closed down its public banking services at post services.

Because Japanese banks in the bank-oriented financial system have not traditionally pursued profitability as measured by ROE or ROA, these profit figures are quite low compared with those of the banks in the West. Japanese financial institutions are considerably behind their U.S. and European counterparts in risk management and profitability. With the financial globalization and the Japanese Big Bang, the Japanese financial institutions should improve their ROE and ROA by providing high-value-added, state-of-the-art financial services to the customers in the future. Without the development of the financial sector comparable to the level of the U.S. and European countries, the Japanese economy cannot grow steadily. In this respect, Japan cannot delay the financial integration to the Northeast Asia or the world anymore.

B. Financial System during the High-Growth Period

Japan tried to catch up other developed countries with high economic growth after World War II. The Japanese government pushed intensive industrialization from light industries to heavy industries. Since the available funds were scarce, the government could not rely on markets. During the high-growth period, it was inevitable for the Japanese government to regulate financial market. Domestic capital markets, such as bond and stock markets, were repressed and both borrowers and lenders were segmented from foreign markets. As a result, Japanese corporations had to rely on the banking sector to get what they needed. Control over deposit interest rates was necessary not only for generating rents for banking sector, but also to gain funds for strategic industries. The banking industry with entry barrier was segmented into various fields. For example, city banks supplied short-term funds for nation's strategic industries while long-term credit banks provided funds of long-term capital investments for these industries. Because of the strict separation of business lines, Japanese banks had to limit their business to traditional banking business of taking deposits and making loans.

The Japanese financial markets were also tightly closed from the rest of the world before 1974. The government did not issue government bonds on a large scale until after 1970s. Most companies obtained their necessary long-term funds from the long-term credit banks. Under these circumstances, the bond market could not develop. Foreign capital transactions were severely restricted to protect domestic financial institutions from the rest of the world. For example, importers who could not get foreign currencies had to apply for available foreign currencies and obtain them from the government. Neither firms nor individuals could purchase foreign securities and real estate. Foreigners were not allowed to buy Japanese securities. Since the government placed priority on high growth, the financial sector was regulated to promote investment in strategically important industries. The administrative guidance was heavily used to encourage investment in strategic industries and to protect the domestic banking sector in the interest of facilitating financial intermediation in Japan. Therefore, the direct financial sector such as the bond market was heavily controlled, thereby constraining the international capital flows to and from other countries.

In summary, a controlled and bank-oriented financial system had been utilized to achieve high economic growth with intensive capital injections into strategic industries. The financial industry was also tightly closed from the world and could not develop appropriately.

C. The Financial Market Liberalization

In the 1970s, with the end of high economic growth, the Japanese economy experienced a rapid structural change. Many factors are cited to explain the decline of economic growth and the burst of bubbles during these periods. With the end of labor force movement from the agricultural to the industrial sector, the fragile financial sector has been cited as one of the most fundamental factors in the economic decline.

With the expansion of their financial wealth, the Japanese people who deposited lots of their assets to a bank account wanted to have higher returns on bank deposits and to diversify investment in other financial assets. Moreover, the decrease in investment with lower economic growth rate made it unnecessary for the financial sector to provide the surplus funds to the domestic industry. This increased the need for financial liberalization in Japan. Financial market opened step by step during 1970s.

The Japanese monetary authority, in addition to the output and inflation stabilization, had to pursue an exchange rate stabilization. Hence, the Japanese government lifted financial market restrictions based on the exchange rate fluctuation.

The Japanese government relaxed foreign exchange control in 1980, and allowed Japanese corporations to raise funds abroad in 1984 by abolishing real demand principle. Large firms who obtained almost all external finance from the banking sector gradually reduced their dependence on banks. As large corporations sought to get their external finance through capital markets, Japanese banks had to lend to small and medium corporations without intimate knowledge of these new customers. The banks just required collateral, i.e., land for those loans to compensate for the incomplete information. The aggressive bank loans without complete information, however, ended up with the collapse of the bubble.

It is noteworthy that Japan opted for a strategy of selective and gradual opening of the financial market in line with its time schedule. For example, it took 34 years for capital and foreign transactions to be fully liberalized in April, 1998. The gradual and delayed financial liberalization reflected the various interests in financial and corporate sectors. In some sense, the birth and burst of the bubble in Japan are the result of the gradual and delayed financial liberalization: The slow and incomplete financial deregulation or globalization made Japanese financial institutions vulnerable to the movement of land prices, leading to lost decade in Japan in 1990s.

Table 5 summarizes the chronology of the major steps toward integrating the Japanese financial market into the World market.

After the collapse of the bubble, the Japanese government had to take a fiscal deficit stance to boost its economy by issuing bonds. The banking sector could not absorb the outstanding government bonds because the government expanded enormously the volume of bonds to get out of the long slump tunnel. Bonds had to be floated in the financial markets, which sparked serious deregulations of banks and other financial institutions. Many Japanese corporations and banks also turned to foreign capital markets to earn higher rate of returns despite various controls and regulations. These trends of globalization coupled with sustaining savings surplus accelerated the financial integration with the world as table 5 shows.

<Table 5>

The Chronology of Financial Market Integration

Year	Month	Contents
1964	Apr.	Japanese accepts IMF Article VIII obligations. Japanese joins OECD.
1968	Feb.	Yen conversion controls introduced to restrict conversion of foreign currencies into yen and domestic investment into yen.
1971	July.	Upper limits on foreign securities purchased by investment trusts and insurance companies abolished.
	Aug.	US suspend dollar conversion to gold.
	Dec.	IMF parity changed to 308 Yen/US\$ (Smithsonian rate) and band widened by +/- 2.5%
1972	Feb.	Purchase of foreign securities by trust bank liberalized.
	Mar.	Purchase of foreign securities by commercial banks liberalized.
	June	Outward foreign direct investment liberalized.
1973	Feb.	Floating exchange rate regime introduced
	May.	Inward direct investment liberalized with exception five categories of business.
	Dec.	Yen conversion controls on banks partially eased.
1974	Jan.	'Voluntary restraint' to balance net foreign securities investments by banks, securities companies, investment trusts, and insurance companies introduced.
1976	Nov.	Conditions attaching to outward long-term bank loans are eased.
1977	Mar.	Acquisition of foreign equities and bonds by residents belonging to foreign companies permitted.
	June	Regulations on net open positions of residents abolished.
1979	Jan.	Regulations on acquisition of yen-denominated bonds excluding those with remaining maturity of more than one year by non-residents relaxed.
	May	Repo transactions by non-residents liberalized(gensaki market)
	June	Short-term impact loans introduced and regulations on long-term impact loans lifted.
1980	Dec.	New Foreign Exchange and Foreign Trade Control Law implemented: in-and-out transactions free in principle.
1984	Apr.	Regulations based on the principle of real demand related to forward foreign exchange transactions abolished.
	June	Regulations regarding the conversions of foreign currency-denominated funds into yen abolished. Yen-denominated loans to residents contracted in overseas markets liberalized.
1985	Oct.	Interest rates on large time deposits liberalized.
1986	Dec.	Japan Offshore Market (JOM) established.
1993	June	Interest rates on time deposits fully liberalized.
1994	Oct.	Interest rates on demand deposits (excluding current accounts) liberalized.
1995	June	Restriction on number of new branches a bank can establish removed.
	Aug.	Recycling restrictions on yen-denominated bonds issued by non-residents in overseas markets abolished.
1996	Nov.	'Big-Bang' reform of capital market announced.
1997	Dec.	Ban on financial holding companies lifted.
1998	Apr.	Revised Foreign Exchange and Foreign Trade Law enforced.

<Table 6>

Japan's Financial Big Bang

1. Diversification of investment and financing choices		
1998	Apr.	Cross-border capital transactions liberalized.
	Sept.	Securitization of loan assets permitted.
	Dec.	Securities derivatives fully liberalized.
		Sale of investment trusts by banks permitted.
		Definition of securities expanded and enhanced.
2001	Apr.	Over-the-counter sale of insurance products by banks partly permitted.

2. Improvement of intermediary agent service quality and fostering competition		
1988	Mar.	Establishment of financial holding companies permitted.
	Dec.	Licensing of securities activities shifted to register system.
	Oct.	Scope of business widened for subsidiaries of financial institutions.
		Equity brokerage commissions fully liberalized.

3. Development of user-friendly financial market		
1977	July	Sale of unlisted and unregistered equities by securities companies permitted.
	Dec.	Stock exchange features improved, and off-exchange equities transactions permitted.
		Over-the-counter market for equities improved (introduction of market and new register system).
		Features of financial futures contract improved.

4. Development of credible, fair and transparent business system		
1998	Dec.	Disclosure practices enhanced.
1999	Apr.	Prompt corrective action introduced.
2001	Apr.	Law on Sales of Financial Products enacted.
2002	Jan.	Methods of settling government bonds changed from designated-time net settlement to real-time gross settlement (RTGS).
2003	Jan.	STRIPS (Separate Trading of Registered Interest and Principal of Securities) introduced for government bonds.

Under these circumstances, the government had no choice but to take a fundamental reform, i.e., the so-called Japanese financial Big Bang with the deepening of the economic slump (See table 6). The primary purposes of the Big Bang are to strengthen the functioning of the capital markets and activate capital market transactions by aggressively relaxing and abolishing financial regulations. If the Japanese financial markets are completely integrated into the world market, Japan can attract overseas investors to domestic market and the financial transactions in Japan's market will become more active.

IV. Empirical Evidence

In this section, we examine whether there has been a tendency of financial integration among financial markets among Northeast Asian countries (China, Japan and Korea). The policy measures taken to open domestic financial markets in these countries over the last decade paved the road for financial globalization in institutional dimension. However, financial globalization does not necessarily go in parallel with regional integration. It depends on the channels of capital flows. If capital flows mainly through inter-regional channel rather than through intra-regional as a result of market openness, we will observe much less evidence of regional financial integration than that of financial globalization.

Various methods have been employed to measure financial integration in the literature. They can be categorized into three groups. The first category is price conditions, which mainly test the interest parity conditions or co-movement of stock market returns. The second category is quantity-based measures such as savings-investment correlations, consumption correlations and gross capital flows. The third category is regulatory or institutional factors such as capital controls and market structure. We already examined regulatory or institutional factors in the previous chapter. It is not easy to gauge Northeast Asian financial integration with quantity-based measures due to data availability problem. Here we measure the financial integration with two sets of price conditions; uncovered interest parity condition and co-movement of stock market returns.

1. Uncovered Interest Parity (UIP) Condition

The UIP can be expressed as follows:

$$i_t = i_t^* + s_{t,t+1}^e \quad (4)$$

where i_t and i_t^* are domestic and foreign interest rate respectively, and $s_{t,t+1}^e$ is next period's expected exchange rate change. From this relationship, we can define

UIP differential (UID) as follow:

$$UID_t = i_t - i_t^* - s_{t,t+1}^e \quad (5)$$

If UID is positive, expected return from domestic assets is higher than that of foreign assets and capital will flow into home country. If UID is negative, capital will flow out of home country. As financial markets become more integrated, measured ex post UID becomes smaller because of larger capital flows of arbitrage.

We estimate the UIDs in money market and bond market for Japan, China, Korea, and U.S. pairwise. The U.S. is included for comparison. As for the money market interest rate, interest rates in inter-bank markets (federal funds market for the U.S.) are used. However, in the case of China, we use bank rate, which is the interest rate applied to the central bank's lending to banks, due to the data limitation. Previous period's actual change is used for the expected exchange rate change. (The result does not change significantly when we use next period's actual exchange rate change.) The data are monthly and the sample are split into three sub-periods: 1980:1 to 1990:2, 1990:3 to 1996:12, and 1999:1 to 2003:9. The sample represents 1980s, pre-crisis 1990s, and post-crisis period, respectively. The period between 1997:1 and 1998:12 are removed to avoid disturbing effects from abnormal period in financial markets. The results are shown in Table 7. Due to limited data, China appears partly in the table.

The upper panel and the lower panel of the table show the estimated UIDs in money market and bonds market for pairs of countries over three sub-sample periods respectively. The UIDs in Korea-Japan and China-Japan (left-hand side country is treated as a home country) show significant positive values over the whole sample periods in money market and bond market, which implies that there have been strong attractions for capital to flow from Japan into Korea and China. This result is consistent with actual observation. On the other hand, UIDs in China-Korea are negative over the available sample periods although the size decreased in the post-crisis period. This implies that capital has been induced to flow from China to Korea in money market and bond market if capital transactions were liberalized across the two countries.

Most interesting result is that the UIDs among Japan, China and Korea in both markets became smaller after the currency crisis compared with pre-crisis periods at least based on the available data. This implies that regional financial integration in Northeast Asia became stronger after the currency crisis.

However, the (absolute value of) UIDs for the pairs of Korea-Japan and China-Japan in money market and bond market are consistently larger than those for the pairs of Korea-US and China-US respectively over the selected sample periods. This result is further evidence that Northeast Asian countries' financial markets have been more integrated with US financial market than with each other, a result similar has been found in Park and Bae (2002) with different methodology.

2. Co-movement in Stock Market Returns

In this section we examine regional financial integration with sample correlations and Granger-Causality tests in Northeast Asian stock market returns. We also examine the integrity between Northeast Asia and US stock markets for comparison. We use the daily changes in stock price indices for Japan, China, Korea and US, and split the sample period into three sub-samples: 1980:1~1991:12, 1992:1~1996:12, and 1999:1~2004:4. Again the period from 1997:1~1998:12 was removed to avoid abnormal effects of the currency crises. First, we calculate sample correlations in the log difference of stock market returns for each pairs of countries. Table 8 reports the result. China appears only from the second sub-sample due to data limitation. The sample correlations in stock market returns show mixed pattern on the regional financial integration among Japan, China and Korea. The correlations between Japan and Korea are positive over the whole sub-sample periods. Further, it is greatest in the post-crisis sub-sample. Surprisingly, the correlations between Japan and Korea are greater than those between Japan and US or Korea and US in all sub-samples. However, the correlation between China and Korea turns negative in the post-crisis period although that between China and Japan remains positive in the same period.

Next, we turn to the Granger-causality test on the changes in stock returns among Northeast Asian countries. Using log difference of the daily stock price indices in each country, we conduct the test with lag 2. Table 9 reports the result. Here, the linkage

among Northeast Asian countries' stock markets is much less clear. In the post-crisis period, only the pair of Korea and China has statistically significant causality that runs from Korea to China. However, this result looks dubious. On the other hand, we see strong causality that runs from US to Japan and Korea in the post-crisis period.

The empirical analysis may be summarized as follows: at least in money market and bond market regional financial integration in Northeast Asian countries (Japan, China and Korea) has strengthened in the post-crisis period. Stock market does not show clear sign of stronger integration in the post-crisis period. On the other hand, Northeast Asian countries' financial markets are more strongly integrated with US financial markets than with each other. This is the case in all three financial markets we examined: money market, bond market and stock market.

<Table 7> UIDs in Money Market and Bond Market

	1980:1 ~ 1990:2	1990:3 ~ 1996:12	1999:1 ~ 2003:9
<Money Market>			
Korea- Japan	5.9	9.4	4.6
China – Japan	NA	4.0	3.1
China – Korea	NA	-5.3	-1.6
Korea – U.S.	2.3	8.3	1.0
China – U.S.	NA	3.0	-0.5
Japan – U.S.	-3.7	-1.1	-3.7
<Bond Market>			
Korea- Japan	9.0	8.5	5.7
China – Japan	NA	NA	1.2
China – Korea	NA	NA	-4.6
Korea – U.S.	5.7	7.0	2.9
China – U.S.	NA	NA	-1.6
Japan – U.S.	-3.4	-1.5	-2.9

<Table 8>

Sample Correlations in Stock Market Returns*

(Period: Jan. 1980 ~ DEC. 1991)

	JAPAN	KOREA	US
JAPAN	1.000	0.085	0.147
KOREA	0.085	1.000	-0.002
US	0.147	-0.002	1.000

(Period: Jan. 1992 ~ Dec. 1996)

	JAPAN	KOREA	CHINA	US
JAPAN	1.000	0.016	0.007	0.100
KOREA	0.016	1.000	0.035	0.010
CHINA	0.007	0.035	1.000	-0.008
US	0.100	0.010	-0.008	1.000

(Period: Jan. 1999 ~ May 2004)

	JAPAN	KOREA	CHINA	US
JAPAN	1.000	0.478	0.067	0.173
KOREA	0.478	1.000	-0.014	0.177
CHINA	0.067	-0.014	1.000	-0.030
US	0.173	0.177	-0.030	1.000

Note: * Log difference of daily stock price indices

<Table 9>

Granger-Causality Test on the Stock Market Returns*

(Period: Jan. 1980 ~ Dec. 1991)

Null Hypothesis:	Obs	lag	F-Stats	(Prob)
JAPAN does not Granger Cause KOREA	2759	(2)	5.2979	(0.0051)
KOREA does not Granger Cause JAPAN	2759	(2)	2.0148	(0.1335)
US does not Granger Cause KOREA	2759	(2)	4.2356	(0.0146)
US does not Granger Cause JAPAN	2759	(2)	224.4860	(0.0000)
JAPAN does not Granger Cause US	2759	(2)	1.4587	(0.2327)

(Period: Jan. 1992 ~ Dec. 1996)

Null Hypothesis:	Obs	lag	F-Stats	(Prob)
JAPAN does not Granger Cause KOREA	1097	(2)	2.3606	(0.0948)
JAPAN does not Granger Cause CHINA	1094	(2)	0.6682	(0.5129)
CHINA does not Granger Cause JAPAN	1094	(2)	0.0643	(0.9377)
CHINA does not Granger Cause KOREA	1094	(2)	0.1506	(0.8602)
KOREA does not Granger Cause JAPAN	1097	(2)	1.4808	(0.2279)
KOREA does not Granger Cause CHINA	1094	(2)	0.1573	(0.8545)
US does not Granger Cause KOREA	1097	(2)	0.2145	(0.8070)
US does not Granger Cause CHINA	1094	(2)	0.6801	(0.5068)
US does not Granger Cause JAPAN	1097	(2)	11.8638	(0.0000)
JAPAN does not Granger Cause US	1097	(2)	1.7843	(0.1684)
CHINA does not Granger Cause US	1094	(2)	0.4521	(0.6364)

Note: * Log difference of daily stock price indices

(Period: Jan. 1999 ~ May 2004)

Null Hypothesis:	Obs	lag	F-Stats	(Prob)
JAPAN does not Granger Cause KOREA	933	(2)	0.7172	(0.4884)
JAPAN does not Granger Cause CHINA	933	(2)	1.3254	(0.2662)
CHINA does not Granger Cause JAPAN	933	(2)	1.0149	(0.3629)
CHINA does not Granger Cause KOREA	933	(2)	0.0360	(0.9647)
KOREA does not Granger Cause JAPAN	933	(2)	1.7329	(0.1773)
KOREA does not Granger Cause CHINA	933	(2)	3.1983	(0.0413)
US does not Granger Cause KOREA	933	(2)	48.5889	(0.0000)
US does not Granger Cause CHINA	933	(2)	0.0249	(0.9754)
US does not Granger Cause JAPAN	933	(2)	52.7212	(0.0000)
JAPAN does not Granger Cause US	933	(2)	0.6922	(0.5007)
CHINA does not Granger Cause US	933	(2)	0.1132	(0.8930)

V. Prospects and Policy Implications

In this paper, we discuss the benefits and costs of financial integration in both theoretical and empirical aspects. Although the developing countries can theoretically accelerate their growth by attracting foreign capital, it is empirically unclear whether the financial integration causes fast economic growth or vice versa. This basically reflects the fact that the economic growth is mainly determined by productivity, not by capital market distortions.

The theoretical interaction between trade openness and financial integration is complex and uncertain. Most trade models from Dornbusch, Fischer and Samuelson (1977) to Backus, Kehoe and Kydland (1992) predict that trade openness results in a narrowing non-traded sector and thereby an interdependence of the economy. Financial integration also increases the independence of the economy to the world. Both trade in financial assets and goods have affected directly and indirectly the cross-country synchronization of business cycles. Therefore, if both trade openness and financial liberalization are pushed together, the business cycle of the economy hinges on the international shocks rather than the domestic shocks. In this sense, the degree of business cycle synchronization is a relevant policy question because it is an important concept to measure the desirability of a currency area. If the business cycle is not highly synchronized, the government should not give up its policy tool, i.e. monetary policy because it is very costly to curb the abnormal business cycle, for example the financial crisis.

In recent years, the issue of FTA and the financial integration among the Northeast Asian countries are frequently discussed in both academic and policy circles. If the financial integration and trade openness synchronize the business cycles, the currency union can be put forth or discussed as an ultimate goal of Northeast Asian economy unification. The empirical results in this paper show that the Northeast Asian economies became more financially integrated after 1997, Asian crisis, but not to the degree to discuss the currency union. Substantial trade barriers still exist in the Northeast Asian countries, preventing the financial sector from integrating across the regions. The empirical results from section VI, however, also imply that the trade-

sector integration among northeast Asia will be accelerated with WTO and FTA and the trade integration will induce tighter financial integration in this area. To build more favorable FTA environment in Northeast Asia, it is important that these countries should strengthen regional financial integration. Moreover, adoption of common infrastructure and regulatory framework is necessary for stronger financial integration. We should also bear in mind that financial integration among Northeast Asian countries, where financial markets are less developed, may increase the vulnerability to a financial crisis.

There are many sources of business cycles such as technology shocks, fiscal shocks, and preference shocks. Monetary shocks are also one of the most important sources of business cycles. Even though the non-synchronization of business cycles in these regions is not an artifact of an international non-convergence of monetary policy, the premature financial integration implies that the monetary authorities in Northeast countries should cooperate to pursue their common goal of stabilization in price and stability in the financial sector.

Finally, regional efforts to improve financial market structure and regulatory framework are essential for trade openness, coupled with financial market openness to promote further economic integration in Northeast Asia.

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