Regional and Global Financial Integration in East Asia

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I. Introduction

In East Asia, there has been a rapid increase in international capital mobility, as East Asia has been deregulating their financial markets since the early 1990s. This continuous financial opening process has rendered the economies of the region to become integrated into global financial markets. The available empirical evidence suggests that the East Asian financial markets became increasingly integrated with the markets of developed countries over the last decades. (Bekaert and Harvey 1995, World Bank 1997, and Eichengreen and Park 2005a).

However, it is not clear that the international financial liberalization and integration process has contributed to the integration of financial markets within the region. In general, trade liberalization tends to bring about trade integration on both global and regional levels, though possibly more on the regional level. In a similar vein, we might expect that capital market liberalization can also make these economies more closely linked with one another through cross-border financial transactions. On the contrary, several studies claimed that the degree of financial market linkage in East Asia remains still low and that, unlike trade integration, the integration of financial markets in this region has been occurring more on a global level rather than on a regional level.

The majority of empirical studies suggest such evidence, that the level of financial market integration in East Asia is relatively lower compared to Europe and that East Asia is integrated through global financial markets rather than through regional ones. Park and Bae (2002) and Eichengreen and Park (2005b) both analyzed the distribution of the nationality

of the lead managers, Japanese overseas portfolio investment, co-movement of interest rates and stock prices. They concluded that East Asia has developed stronger financial ties with the U.S. and Western Europe than with one another. Based on various tests utilizing cross-country interest rate and stock price data, Jeon, Oh, and Yang (2005) also support this finding. Kim, Kim and Wang (2003, 2005) estimated the degree of risk sharing for East Asia by using a cross-country consumption correlation and formal regression analysis. They found the degree of regional risk sharing within East Asia is quite low.

Despite this general tenor of existing research that indicates a low degree of financial integration in East Asia, some studies provide opposing evidence. For instance, McCauley, Fung, and Gadanecz (2002) assert that the financial markets of East Asia are more integrated than is often suggested. They show that in the international bond market and the international syndicated loan market, East Asian investors and banks have on average committed half of the funds in bonds underwritten and loans syndicated for borrowers in East Asia.

The progress and prospect of regional financial integration in East Asia has been an important question among economists, as well as public officials in the region. Greater financial integration in East Asia can be beneficial in several ways. With mobile international capital flows, each country can smooth its consumption and finance investment, regardless of its temporary income level. With full international financial integration, each country can be insured against country-specific income risks. These are general benefits of international financial integration, which can be enjoyed at various levels of international financial integration. The issue of the current paper, the regional

financial integration such as financial integration within Asia, can also provide such benefits. For example, when global financial integration is not complete, an increase in financial integration within East Asia can enhance the welfare of East Asia.[1]

However, surprisingly little justification is made to advocate that regional financial integration should be even deeper than global financial integration is. Rather, there is an argument that supports the opposite. In order to diversify portfolios, investors may want to buy equities more from a distant country than a neighboring one, since business cycle co-movements tend to be lower for the pair of countries that are more distant.

We believe that the most compelling argument to justify advocating more regional financial integration is that it can contribute to the formation of monetary integration in the region by decreasing the costs of monetary integration. Monetary integration entails virtually no role for individual monetary policy. Further, a very limited scope for individual fiscal stabilization, and as such, monetary integration, may imply substantial costs for individual member countries, especially when the business cycles of the member countries are not synchronized. Regional risk sharing through regional financial market integration can insure against country-specific income/consumption risks. Additionally, the costs of monetary integration may decrease substantially even when business cycles are not synchronized.

Further, regional financial integration can strengthen regional financial cooperation and provide additional benefits to individual countries. Since the financial crisis of 1997-98,

[1] Kim, Kim, and Wang (2003, 2005) reported that East Asia would have substantial benefits from regional financial integration if the financial integration within East Asia is strengthened substantially.

various financial arrangements started to promote financial and monetary cooperation in East Asia. Although regional cooperation has already produced some concrete results, such as a network of bilateral swap agreements under the Chiang Mai Initiative, its future remains uncertain. Further financial integration among East Asian economies will go hand in hand with financial and monetary cooperation in the region. For instance, in recent years, there have been discussions on how to pool accumulated international reserves of East Asian economies and use them to develop an East Asian regional bond market.

Given that the extent to which East Asian economies are financially integrated among them is still unclear, this paper aims at reassessing the degree of regional financial integration in East Asia with new data and new methodologies. First, we have to compile data on cross-border holdings of international financial assets including equity portfolio, debt securities, and bank claims for 1997 through 2004. By analyzing the geographical composition of the portfolio investment and bank assets holdings in East Asia, we will assess in this paper the degree of regional and global financial market integration in East Asia and compare it to that in Europe and Latin America. We adopt a gravity model of bilateral financial asset holdings to formally test if East Asian financial markets are relatively less integrated with each other than to global markets, particularly compared to the European ones. To our knowledge, no empirical paper to date has systematically assessed the degree of regional and global financial integration in East Asia utilizing this data set.[2]

[2] An exception is Eichengreen and Park (2005a) that has adopted the gravity model to assess the extent and causes of the East Asia's intra-region integration. But this study looks at evidence in the international bank loan market for 2000 only.

We also implement an alternative analysis to provide some insights on the extent of regional and global financial market integration. By extending the standard empirical analysis on consumption risk sharing, we estimate the degree of regional and global consumption risk sharing. In contrast to previous studies, such as Kim, Kim, and Wang (2003, 2005), we assess both regional and global consumption risk sharing models in one empirical framework.

The remainder of the paper is organized as follows. In section II, we analyze the data on geographical distribution of international portfolio assets and bank claims for East Asia compared to that for Europe, in order to judge the degree of regional and global asset diversification of East Asia. A gravity model of bilateral financial asset holdings is adopted to formally test if East Asian financial markets are relatively less integrated within the region than in global markets, particularly compared with ones in Europe. Section III introduces the empirical framework on consumption risk sharing, and estimates the degree of regional and global consumption risk sharing for East Asia and Europe. Section IV discusses several hypotheses that explain the low degree of regional financial integration in East Asia. Concluding remarks follow in Section V.

II. Regional and Global Diversification of Financial Assets

We look at the stylized pattern of the regional composition of the portfolio investment and bank asset holdings. The degree of financial market integration within East Asia can be judged by the share of East Asia in international asset holdings for East Asia,

compared to the comparable figures for European or Latin American countries. In addition, the intra-region investment of East Asia can be compared to their investment in the U.S. or the global financial markets. Thus, we can judge the degree of regional and global asset diversification of East Asia. We have compiled data on cross-border holdings of financial assets including portfolio assets and bank claims.

1. Data

We are interested in comparing cross-border financial transactions within East Asia and those within other regions. Therefore, we require data on international asset holdings on a bilateral basis that distinguish the country of origin and destination.

Data on international portfolio asset holdings have recently published by the International Monetary Fund (IMF). The IMF conducted the Coordinated Portfolio Investment Survey (CPIS) for the first time in 1997, and annually since 2001.

The first CPIS involved 20 economies and the CPIS 2001 expanded to the participation of 67 source economies including several offshore and financial centers. In each case, the bilateral positions of the source countries in 223 destination countries/territories are reported.[3] The CPIS provides a breakdown of a country's stock of portfolio investment assets by country of residency of the nonresident issuer. Problems of survey methods and under-reporting of assets by participating countries are pointed out as shortcomings of the CPIS data (Lane and Milesi-Ferretti, 2003). Nevertheless, the CPIS

[3] Refer to the IMF website at http://www.imf.org/external/np/sta/pi/cpis.htm for details.

survey presents a unique opportunity for the examination of foreign equity and debt holdings of many participating countries.

Data on international bank claims are from the Bank for International Settlements (BIS). It is the consolidated international bank claims of BIS reporting banks by nationality of lenders and borrowers. We gathered these data for 25 reporting countries including two reporting banks from East Asia (Japan and Taiwan) and 15 European countries from the BIS Quarterly Review.[4] The data are available from 1983 on a biannual basis, but most countries report more complete bilateral data from 1999. We have also obtained compatible data for South Korea from its supervisory authority. Note that although the data set includes only three countries in East Asia reporting consolidated foreign bank claims, the other countries, such as Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, and Thailand, are included as the country of destination for the bank loans.

2. Regional and Global Structure of International Financial Assets: Stylized Facts

Portfolio Investment

Table 1 provides the geographical distribution of total portfolio investment asset holdings for East Asian and European countries in 2003. The table highlights that the degree of cross-country asset holdings within East Asia is lower than that of Europe. The share of intra-East Asia holdings is about 14% on average for 8 East Asian economies. It is only 1.3% in Japan and 7.9% in South Korea. Malaysia has the largest intra-East Asia share,

[4] Refer to the BIS website at http://www.bis.org/statistics/histstats10.htm for details.

amounting to 46% of its international portfolio assets. Respectively, the intra-region share is about 16% and 20% for Hong Kong and Singapore.

In comparison, most of Europe holds more than one half of their portfolio assets within Europe. On average, the share of intra-Europe asset holdings is 58% for 17 European countries. It reaches 82% in Finland and 73% in France. Iceland (37%) and the U.K. (42%) have relatively lower intra-Europe share percentages. For the U.K., the below average Europe share in holdings of international assets reflects that London is a global financial center. In fact, the U.K. residents hold relatively larger share positions in East Asia (11%) than other European country residents do.

Table 1 also reports information for the U.S. At the end of 2003, the share of East Asia in the international investment portfolio of the US (14.3%) is far above the average of Europe (3.2%).

Table 1 also presents data on the size of total international portfolio asset holdings. The total recorded level of portfolio investment in the CPIS 2003 is US $16.5 trillion (tln). The G-5 countries are major investors in the international securities markets. The largest foreign investor is the U.S. It holds cross-border assets amounting to about US $ 3.1 tln or 19.1% of the total international portfolio assets. In East Asia, Japan, Hong Kong and Singapore are the major investors. Japan holds international portfolio assets of about US $1.7 tln or 10.5% of the total international portfolio asset. Hong Kong and Singapore hold US $335 and US $144 bln, respectively. Their investment in East Asian financial assets amounts to US $54.6 bln in Hong Kong, $29.1 bln in Singapore, and $22.4 bln in Japan.

When scaling portfolio holdings by GDP, small economies with financial and

offshore centers dominate the picture. For instance, Hong Kong, Singapore, Ireland, and Switzerland have total assets amounting to several times their own domestic output levels. For a typical East Asian economy, bilateral financial linkages are a relatively small fraction of its GDP.

Tables 2, 3, and 4 provide the geographical distribution of portfolio investment holdings separately for each asset- equity, long-term debt, and short-term debt securities.

The distribution of equity or debt securities asset holdings shows a stylized pattern similar to that of total portfolio assets. Table 2 shows that the share of intra-East Asia equity asset holdings for most East Asian economies, is in general, far lower than that of intra-Europe equity asset holdings for Europe. The share of intra-East Asia equity holdings is about 20% on average for 8 East Asian economies. This is lower than the average intra-Europe share of 44% in Europe. The intra-East Asian share is 1.2% in the Philippines, 3.9% in Japan, 17% in Hong Kong and 28% in Singapore. An exception is Malaysia, which invests 75% of its cross-border equity assets in East Asia.

In comparison to equity investment, the intra-East Asia share is relatively lower in international debt securities markets. Table 3 shows the geographical distribution of long-term debt securities. On average, the share of intra-East Asian long-term debt securities asset holdings is about 10% for 8 East Asian economies and ranges from 0.8% in Japan to 15.3% in Malaysia. For the short-term debt securities markets, the intra-East Asia share is nearly null (2.1%). In contrast, the average intra-Europe share for 17 European countries is about 68% and 66% of long- and short-term debt securities, respectively.

Bank Lending

Table 5 reports level and geographical distribution of cross-border bank claims for East Asia, Europe and the U.S. at end-2003. We have data for three East Asian reporting countries (Japan, South Korea and Taiwan). The share of intra-East Asia bank claims is 7.3% in Japan, 36% in South Korea, and 26% in Taiwan. The intra-region shares of bank claims for Japan and South Korea are larger than the comparable figures of equity or debt securities asset holdings for these countries. This implies that the degree of bank loan market integration is relatively larger than that of portfolio market integration in East Asia.

East Asian banks tended to have large bank claims within East Asia. But, lending to East Asian banks dropped after the Asian financial crisis in 1997. This occurred not only due to a reduced willingness to lend, but also because of a weaker demand for loans in the region. In this region, the shift to current account surpluses, corporate deleveraging and an increase in equity investment inflows made external bank financing less needed (Jeanneau and Micu, 2003). BIS data shows that the share of intra-East Asian bank claims for the Japanese banks continued to decline from 14.4% in 2001 to 7.3% in 2004.

While East Asian economies tend to be more integrated in the commercial bank loan market, the degree of cross-border bank claim within East Asia is still lower than that of Europe. The intra-Europe share in holdings of international bank claims is 60.4% on average for 16 European countries. A notable exception is the U.K., which holds only 30% of international bank claims within Europe. Again, this reflects London's status as a global financial center.

Comparing the intra-East Asian share of cross-border financial assets for East Asia

to that of Europe may not be appropriate, because the two regions are quite dissimilar in terms of economic development and financial infrastructure. The geographical distribution of international financial asset holdings for the Latin American countries is presented in Table 6.

The share of intra-Latin America total portfolio asset holdings is low in most of Latin America. For instance, it is 3% in Argentina, 4% in Chile, and 6% in Mexico. Panama has an exceptionally higher intra-regional share of 42%, reflecting its hosting of offshore financial centers. Similar patterns are also visible in the separate categories of equity, long- and short-debt securities. The intra-Latin America share in bank claims is relatively higher than that in portfolio assets, ranging from 6% in Brazil to 48% in Panama. The intra-regional shares of international financial assets for most of Latin America are similar in magnitude to those of East Asian economies.

3. A Gravity-Model Test of Regional Financial Integration in East Asia

To the data set on international portfolio asset holdings and bank claims, we added a number of other variables that are necessary to estimate the gravity model. We collected population and real GDP data from the IMF's "International Financial Statistics." The bilateral trade data are from the Direction of Trade" (DoT) data set.[5] The nominal values

[5] Direction of Trade reports bilateral trade on FOB exports and CIF imports recorded in American dollars. We deflate trade by the American GDP deflator. Then we calculate an average value of bilateral trade between a pair of countries by averaging all of the four possible measures potentially available.

were converted to real values using the common U.S. GDP deflator for every country.[6] A number of country specific variables such as distance, land area, language and land border were obtained from Rose (2000).[7] Finally for Taiwan, we acquired the data on GDP and population from the web site of the Asian Development Bank and the bilateral trade data from the Bureau of Foreign Trade in Taiwan.

The data set has features of a panel structure consisting of 234,597 annual observations from 1999 to 2003 clustered by 13,971 country pair groups for the portfolio data and 11,974 for the bank claims data.[8] The number of observations varies per year. Summary statistics for each data set used in the estimation are presented in Table 7. East Asian country pairs constitute about 1 % in each data set, while the proportion of European country pairs is much larger amounting to about 6 % for the portfolio data set and about 10 % for the bank claims. The average size of portfolio asset holdings (22.343) is much larger than that of bank claims (1.245).

We set up a gravity model of the bilateral financial asset holdings. The gravity model was originally developed as an explanation for the gravitational forces. Initially, the model was adopted by economists to study foreign trade without firm theoretical grounds. In its basic form, trade between two countries depends positively on their total income and negatively on the distance between them. The model can be extended to include other

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[6] For an ideal case, it would be preferable to use a separate deflator for each country, but such deflators are not available.

[7] The data set is available on the web page, http://faculty.haas.berkeley.edu/arose/, maintained by Andrew Rose.

[8] Since most asset holdings data start from 1999, we have ignored the observations before then. Due to the lack of bilateral trade data, we end the sample period at 2003.

variables, depending on the study's purpose. Great empirical success of the gravity model to explain the bilateral trade flows has motivated a number of theoretical models that can justify it.[9]

While the gravity model to explain bilateral trade flows has a long history, there have been relatively few attempts made to use a gravity model in explaining exchanges of financial assets. The main reason is that unlike goods, financial assets are weightless, hence distance cannot represent for transaction costs. Recently, however, Portes and Rey (2005) find that a gravity model performs at least as well in asset trade as goods trade.[10] Portes and Rey interpret that information friction is positively correlated with distance, justifying that financial asset trade is also negatively related to distance. Following their model, this paper also used a gravity model as a basic framework that takes the following form:

$$\begin{aligned}\ln(Assets_{ijt}) = \beta_0 + \beta_1 \ln(GDP_i * GDP_j) + \beta_2 \ln(GDP_i GDP_j / Pop_i Pop_j)_t + \beta_3 \ln Dist_{ijt} \\ + \beta_4 \ln(Area_i Area_j) + \beta_5 Border_{ij} + \beta_6 Language_{ij} + \varepsilon_{ijt}\end{aligned} \quad (1)$$

where i and j denote countries, t denotes time, $Assets_{ijt}$ denotes the financial assets of country j held by country i at time t, *GDP* is real GDP, *Pop* is Population, *Dist* is the distance between i and j, *Area* is the land area of the country, *Border* is a binary variable which is unity if i and j share a land border and *Language* is a binary variable which is

[9] See Anderson (1979), Bergstrand (1985), and Evenett and Keller (2002) for the theoretical background of the gravity equation.

[10] See subsequent researches including Buch (2002, 2003), Yildrim (2003), and Lane and Milesi-Ferritti (2003).

unity if i and j have a common language.

Tables 8 and 9 present the estimation results of specification (1) for total portfolio assets and for bank claims respectively. Column (1) reports random effect estimation and column (2) between effects estimation result.[11] In columns (3) and (4) we also added bilateral trade flows to the explanatory variables, reporting the estimation results. Consistent with Rey and Portes, we found that the gravity model fit the data very well and most estimated coefficients were statistically significant with the expected sign. To briefly summarize the common features of the random- and between-effects estimation results in both tables, the estimated coefficients for the bilateral distance were significantly negative and the estimated coefficients for the log of GDP in pair, log of per capita GDP in pair, common land border dummy and common language dummy were significantly positive. When we add bilateral trade flows as a regressor variable, most coefficients preserve the same sign with statistical significance. The coefficient of bilateral trade flows is also positive and statistically very significant, indicating that even after taking consideration of the conventional explanatory variables of the gravity equation, trade may independently foster more financial integration.

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[11] We omit the fixed-effect "within" estimation results. This method can provide more consistent estimates by controlling for the influences from omitted country-specific factors. One drawback of this fixed-effect approach is, however, that since the fixed effect estimator exploits variation over time, we cannot obtain the estimates for time-invariant factors such as distance, area, land border, common language as well as a regional dummy. We believe that the fixed-effect estimation is not appropriate for our analyses since the time span of our sample is too short. A more serious problem is that the regional dummy variables that will be investigated later are time-invariant and hence cannot be estimated by the fixed-effect regression.

The above regression results suggest that a gravity model can be used as a benchmark to appropriately explain normal financial asset exchanges. Now this paper will investigate how deeply financial integration is entrenched in East Asia by introducing two dummy variables, *EA_single* and *EA_pair*, as additional regressors. *EA_single* is a dummy variable that takes one, if any country belongs to East Asia and *EA_pair* a dummy variable that takes one if both countries do. The estimated coefficient of *EA_single* captures the additional asset exchanges involved with an East Asian country in general. The estimated coefficient of *EA_pair* represents the additional asset exchanges when both countries belong to East Asia. Hence, how deep financial integration is among East Asia, relative to their integration with the rest of the world, can be measured by subtracting the estimated coefficient of *EA_single* from that of *EA_pair*.

Table 10 reports the estimation results for portfolio asset holdings when the new dummy variables are added. Since the between-effects estimation results are very similar, only random-effects estimation results are presented.[12] In column (1), we find that the coefficient of *EA_single* is negative while the coefficient of *EA_pair* is positive, indicating that there is some evidence of regional financial integration. However, neither coefficient is statistically significant. Furthermore, when we added bilateral trade to explanatory variables in column (2), while the coefficient of bilateral trade is positive and statistically very significant, the coefficient of *EA_pair* turned negative. Hence, the evidence of regional financial integration is very weak, if any, and most of it might be explained by trade integration in the region.

[12] The between-effects estimation results are available upon request.

In order to compare the degree of financial integration in East Asia with that for Europe, we have also added the same two dummy variables for Europehat is, *Europe_single* and *Europe_pair*, and reported the estimation results in columns (3) and (4) with and without trade as an additional regressor, respectively. Even after the European dummies were added, the estimated coefficients of East Asian dummies were hardly changed except that the coefficient of *East_single* becomes statistically significant. In contrast, the coefficients of Europe dummies were very significant with the opposite sign to each other. Especially, the coefficient of *Europe_pair* is very large and positive, which implies that European countries make portfolio investments particularly more among themselves. Since the coefficient of *Europe-single* is negative, its subtraction from the coefficient of *Europe_pair* is even larger, implying that European countries more heavily invest in each other than they do in the rest of the world. The estimated coefficients indicate that Europe invest 13 times more among themselves.[13]

So far, we have confirmed that the regional financial integration is much deeper in Europe than in East Asia. Is this because East Asia is more closely linked to the global financial markets? To answer the question, we added three more dummies: *Global*, *EA_global* and *Europe_global*; the first dummy takes a value of one if any country represents a global financial market and zero otherwise, the second dummy takes a value of one if the pair of countries represent an East Asian country and a global financial market, and the third dummy takes a value of one if they were a European country and the global financial market. The coefficient of *Global*, measures how more financial integration

[13] This figure is calculated as $e^{2.462-(-0.109)}=13.1$.

involving a global financial market, is made in general. On the other hand, the coefficients of *EA_global* and *Europe_global* capture how East Asian and European countries are relatively more intertwined to the global market respectively. The global financial market is defined in two ways. The first case includes only the U.S. market and the second case, both the U.S. and the U.K. markets.

In Table 11, we find that the coefficient of *Global* is positive and statistically significant both in columns (1) when the U.S. represents the global market and in (2) when the U.S. and the U.K. do. This indicates that the global financial markets indeed play an important role in world financial integration. However, the global link is relatively more important for East Asian and European countries: the coefficients of *EA_global* and *Europe_global* were positive, much larger and statistically very significant. Surprisingly the coefficient of *Europe_global* was even larger, indicating that European countries are more deeply linked to the global markets as well.

Only when we compared the relative importance of the global market vis-a-vis the regional market for East Asia (*EA_global* vs. *EA_pair*) with that for Europe (Europe_global vs. Europe_pair), we realize that East Asia places relatively more importance in the global financial integration instead of regional financial integration. The estimated coefficients of East Asia were 2.571 or 2.313 for the global integration vs. 0.272 or 0.323 for the regional integration, depending on the definition of *global,* while the corresponding figures for Europe were 3.957 or 2.793 for the global integration vs. 2.604 or 2.228 for the regional integration. The estimated coefficient of the global integration is dominatingly larger in magnitude only for East Asia.

When we added bilateral trade as an additional regressor in columns (3) and (4), the above findings still were preserved. Further the coefficient of trade is positive and statistically significant, indicating a possibility that trade plays additionally an independent role to foster financial integration. Interestingly, the coefficient of *EA_pair* is no longer statistically significant if trade is used as an additional regressor. This again supports the view that the regional financial integration in East Asia, while low, is mainly due to the trade integration taking place in the region.

Now we turn to the same regression results based on the bank claims data set. In Table 12, we report the evidence of how deep financial integration is in both regions by relying on the same set of equations as in Table 10. Unlike the case of portfolio asset holdings, we now find much stronger evidence of regional integration in East Asia. The coefficient of *EA_pair* in column (1) is positive and statistically very significant. Even after bilateral trade is added as a regressor, the coefficient of *EA_pair* in column (2) becomes even larger and still statistically very significant. When we compared the degree of regional financial integration in East Asia with that of Europe, in columns (3) and (4), the degree of regional financial integration in East Asia (0.819 or 1.099) is quite comparable to that of Europe (1.116 or 1.103). Subtracting the estimated coefficients of *EA_single* (-0.231 or -0.075) and *Europe_single* (0.295 or 0.276) from these figures, yields even higher estimates of regional integration in East Asia.

Table 13 reports the same set of estimation results as Table 11 to verify the relative degree of regional integration compared with that of global integration based on the bank claims data. Generally, we found that the importance of global integration is higher in

East Asia. The estimated coefficients of global vs. regional integration were 2.208 (or 2.280) vs. 1.351 (or 1.412) in East Asia, while the corresponding figures for Europe were 1.190 (or 1.790) vs. 1.190 (or 0.983). Since the values in parentheses were estimated when the U.K. market was included in the global markets, it tended to overstate the global integration and underestimate the regional integration in Europe. In both cases, however, relatively global integration is deeper in East Asia.

Why did we reach a different conclusion when we used the bank claims data instead of the portfolio investments data? At the first glance, one may argue that this is solely due to the different definition of the regional dummy, *EA_pair*. Since we have bank claim data available only for three host countries, Japan, South Korea and Taiwan, no observation was included if bank loans were made between any pair of the remaining seven countries. Since relatively fewer bank loans were expected to occur between them, we postulate that the estimated measure of the regional integration derived from the bank claims data may be overstated. We tested this possibility by redefining the regional dummy, *EA_pair,* for the portfolio investment estimation in the same way as the bank claims estimation. That is, by assigning a value of one only when any of the three countries is a host country. We reestimated the same set of equations in Tables 10 and 11 and found that the estimated coefficients hardly change (not reported), implying that the distinction is not due to the difference in the definition of the regional dummy.

Another possibility is, since bank loans were more likely involved with trade than portfolio investments, the evidence of regional financial integration in the bank claims data should only reflect heavy trade integration in the region. The extent of intraregional trade

indeed increased substantially in East Asian economies between the 1980s and the 1990s. In 2000, the share of intra-region trade in total trade is above 50% in most East Asian economies, except for Japan and the Philippines. However, we believe that this argument too is not supported by the data, since the importance of the regional financial integration in East Asia does not disappear even after trade flows are added to regressors.

We conjecture that the difference is due to the special role played by the banks in East Asia. Traditionally the financial systems in East Asia are largely bank-oriented. While most of the banks in East Asia are small in size and have a limited access to international capital markets, some banks (especially in Japan), have been active in providing funds to East Asia.

III. Regional Versus Global Consumption Risk Sharing

1. Global vs. Regional Risk Sharing

Empirical studies on risk sharing have grown rapidly in recent years. The formal literature started by testing the null hypothesis of full risk sharing at various aggregation levels, such as among individuals in a village (Townsend, 1994), households (Mace, 1991, Cochrane, 1991, Altug and Miller, 1990), countries (Canova and Ravn, 1996, Lewis, 1996). These papers were essentially based on the consumption Euler equation under complete (asset) markets as the implication of the perfect risk sharing.

Most of these studies rejected the null hypothesis of perfect risk sharing. Therefore,

literature started to investigate how incomplete the risk sharing arrangement is. Crucini (1999), Crucini and Hess (2000), Obstfeld (1994, 1995), Asdrubali and Kim (2003), and Hess and Shin (2000) addressed such issues. A simple version of such empirical framework can be described as follows.

$$\Delta \log(c_{it}) = \alpha + \lambda \Delta \log(c_{wt}) + (1-\lambda)\Delta \log(y_{it}) + e_{it}, i = 1,2,...,R \qquad (2)$$

where the constant term, α, may reflect the difference in the discount factor across countries, the error term, e_{it}, may reflect the preference shocks, and λ represents the degree of risk sharing. To the extent that the risk sharing arrangements are established (λ), its consumption growth rate follows the aggregate consumption growth rate since the country-specific risks are shared. However, the rest (fraction *1-*λ) of the consumption growth rate follows its own income growth rate since that is what is domestically available.[14][15] The equation (2) can be estimated by non-linear least square method. The restrictions, $0 \le \lambda \le 1$, can be imposed to exclude unrealistic cases.

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[14] Crucini (1999) uses the permanent income instead of the current income by assuming that international intertemporal trade is perfect. On the other hand, Obstfeld (1995) used the current income by assuming financial autarky. Asdrubali and Kim (2003) discuss the intermediate cases. If an income process follows a random walk, changes in current income and permanent income would be equal. For more details, see Asdrubali and Kim (2003).

[15] The presence of common shocks does not strongly bias the estimate. The above regression equation can be re-organized as $\Delta \log(c_{it}) - \Delta \log(c_{bt}) = \alpha + (1-\lambda)[\Delta \log(y_{it}) - \Delta \log(c_{bt})] + e_{it}, i = 1,2,...,R$.

When aggregate income changes are similar to aggregate consumption changes, the regression is similar to using country specific variables.

The above framework is simple and intuitive, but it only considers risk sharing arrangements of a country with the world economy as a whole. However, there is a possibility that risk sharing arrangements of a country are more intensive with countries in a specific region than with the remaining countries. For example, the countries in the European Union may have more intensive sharing arrangement with EU member countries than with the remaining countries. In this section, by extending the above framework, we developed a framework to analyze the risk sharing arrangements of a country not only with the world but also within a region.

We first assume that there was a specific region. By extending the logic of the empirical framework of the previous section, we argued the following. To the extent that one country established risk sharing arrangements with the region (λ_r), the consumption growth rate of the country follows the consumption growth rate of the aggregate consumption of the region. Similarly, to the extent that one country established risk sharing arrangements with the world (λ_w), the consumption growth rate of the country follows the consumption growth rate of the aggregate consumption of the world. The rest of the consumption growth rate of the country follows its income growth rate ($1-\lambda_r-\lambda_w$). This idea can be expressed as the following equation.

$$\Delta \log(c_{it}) = \alpha + \lambda_w \Delta \log(c_{wt}) + \lambda_r \Delta \log(c_{rt}) + (1-\lambda_w-\lambda_r)\Delta \log(y_{it}) + e_{it}, \quad i = 1,2,...,R \tag{3}$$

By rearranging equation (3), equation (4) can be obtained.

$$\Delta \log(c_{it}) - \Delta \log(c_{wt}) = \alpha + \lambda_r \left(\Delta \log(c_{rt}) - \Delta \log(c_{wt})\right) + (1 - \lambda_w - \lambda_r)\left(\Delta \log(y_{it}) - \Delta \log(c_{wt})\right) + e_{it}, \quad i = 1, 2, ..., R \tag{4}$$

In the above equations, λ_r, λ_w, and 1-λ_r-λ_w can be interpreted as the degree of regional risk sharing, the degree of global risk sharing, and the extent that neither of risk sharing arrangements is arranged. Equation can be estimated using a non-linear least square method. The restrictions, $0 \leq \lambda_r \leq 1$, $0 \leq \lambda_w \leq 1$, and $0 \leq \lambda_w + \lambda_r \leq 1$ can be imposed to exclude unrealistic cases.

We applied this empirical framework to Asian and European countries to infer the degree of regional risk sharing (risk sharing with the region) and the degree of global risk sharing (risk sharing with the world). Asian countries under consideration were: China, Hong Kong, Indonesia, Japan, South Korea, Malaysia, the Philippines, Singapore, Taiwan, Thailand. European countries under consideration were: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerlands, and the U.K. The world in our model is assumed to consist of these 10 Asian countries, these 17 European countries, other G-7 countries (the U.S. and Canada), Australia, and New Zealand.

For consumption and income growth rates, real per capita consumption growth rate (in domestic currency) and real per capita GDP growth rate (in domestic currency) are used. The aggregate consumption growth rate of the two regions and the world was constructed as the weighted average of real per capita consumption growth rate of individual countries. Here, the weight was determined by the relative size of the country's total consumption (in

PPP) to the aggregate total consumption (in PPP). Individual countries' real per capita variables were obtained from the WDI, and consumption (in PPP unit) was obtained from the Penn World Table 6.1.

2. Empirical Results

Table 14 reports the estimation results for individual countries for the sample period of 1961-2002.[16] The numbers in the parenthesis are standard errors and '*' indicates that the coefficients are significant at 5% level. The restrictions of $0 \leq \lambda_r \leq 1$, $0 \leq \lambda_w \leq 1$, and $0 \leq \lambda_w + \lambda_r \leq 1$ are imposed in the estimation. To easily compare Asian and European countries, the table reports the average numbers in the two regions. In addition, another average number, which treats the insignificant estimate as zero, is calculated and reported, in order to exclude the influence of large insignificant estimates.

The pattern of regional and global risk sharing for Asian and European countries is quite different. Compared to European countries, Asian countries have a lower degree of risk sharing within the region but a higher degree of global risk sharing. The simple average number for the estimates for the degree of regional risk sharing for Asian countries was 0.149, which was lower than that for European countries, 0.318. The number for the degree of global risk sharing for Asian countries was 0.123, which was larger than that for European countries, 0.048.

When we only considered the estimates which are statistically significant, we

[16] The constant term is dropped since it is insignificant in most estimation.

reached the same conclusion. Out of the 10 Asian countries, there were four countries that regional risk sharing was statistically significantly estimated and four countries that global risk sharing was statistically significantly estimated. In contrast, out of the 17 European countries, there were nine countries where regional risk sharing was statistically significantly estimated and no countries that global risk sharing was statistically significantly estimated. The conclusion was similar when we used the average number that treats the insignificant estimate as zero. The estimates for the degrees of regional and global risk sharing for Asian countries were 0.122 and 0.123, respectively, while those for Europe were 0.236 and 0. When we did not impose the restrictions on λ_r and λ_w, the conclusion is similar.

On the other hand, the overall extent of risk sharing was larger in Europe; the average of the estimates for the extent of no risk sharing arrangement ($1-\lambda_r-\lambda_w$) were 0.729 for Asia and 0.626 for Europe. Except for two European countries, the estimates were significantly different from zero. This implies that the risk sharing arrangements are not perfect in most countries, which is consistent with the results of the past studies.

Table 15 reports the simple average numbers for Asian and European countries for various subperiods. First, we cut the sample up to 1996, in order to exclude the effects of Asian crisis. Second, we divide our sample into two subperiods, 1961-1980 and 1981-2002. Third, we estimated for the period of 1973-2002, in order to count the world wide exchange rate regime changes in early 1970s. For all these subperiods, we reached similar conclusions. Asian countries tend to have weak regional risk sharing arrangements but strong global risk sharing arrangements, compared to Europe. In addition, the degree of

overall risk sharing arrangements tends to be higher in Europe than in East Asia.

IV. Why is the Regional Financial Integration Low in East Asia?

Empirical results in previous sections from the gravity model of international asset holdings and the consumption risk sharing model indicated that East Asia tends to be more integrated to regional financial markets than to global financial markets, compared to Europe. In this section, we discuss three main hypotheses that may help explain the low financial integration within East Asia: incentives for portfolio diversification/risk sharing, the development and deregulation of financial markets, and the monetary and exchange rate regime.

1. Incentives for Portfolio Diversification/Risk Sharing among East Asia

Theoretical models such as International Capital Asset Pricing Model (I-CAPM), imply that investors should diversify their portfolios to the greatest possible extent by investing more in securities, which show a low degree of correlation with the home portfolio. This implies that countries with different structures, subject to different economic shocks, with low business cycle correlation, will find it more advantageous to develop closer financial links with one another. In this regard, extensive portfolio diversification within East Asia may not be necessarily an optimal strategy, considering the homogeneity of East Asian economies.

Eichengreen and Park (2005a) refute this hypothesis. They claim that Europe is more homogenous in income and structure, and more synchronized in business cycles, but more integrated than East Asia. In this regard, we report the cross-country output correlation for East Asian and European countries for various subperiods in Table 16. The number under "Reg" shows the correlations of the growth rate for each country's output and the growth rate of the regional aggregate output.[17] The number under "Glob", on the other hand, shows the correlations of the growth rate for each country's output and the growth rate of the world aggregate output. The table also indicates the average correlation for East Asia and Europe. The average of regional correlation for East Asia ranges between 0.24-0.50 while that for Europe ranges between 0.05-0.11. The average of global correlation for East Asia ranges between 0.30-0.39, while that for Europe ranges between 0.37-0.44. In contrast to Eichengreen and Park (2005a)'s claim, we found that the regional correlation of East Asia is higher than that of Europe while the global correlation of East Asia is not higher than that of Europe.[18] This result may imply that the welfare gains for regional financial integration are lower in East Asia than in Europe. This might alternately explain why East Asia has a lower degree of regional financial integration than Europe.

In general, investors tend to invest the bulk of their financial wealth in domestic

[17] The regional and global aggregates are constructed by a similar method to that used in Section III.

[18] The simple output correlation does not suggest the sources of shocks. Therefore, the substantial synchronization of business cycles among the countries within a region can be caused by a common global shock rather than a regional shock. But, Lee, Park, and Shin (2004) show that, based on dynamic factor model that isolate independent regional and global components, the regional component explains more than half of output variance for individual East Asian economies in 1990s.

assets. An interesting question is whether this phenomenon of 'home bias' in portfolio investment can occur not just at country but also on a regional level. As surveyed by Lewis (1999), there are a number of reasons suggested in the literature to explain home bias at the country level. First, domestic equities can provide a better hedge for risks that are specific to the home country. For example, hedges against domestic inflation and hedges against wealth (not traded in capital markets) such as human capital, are better provided through domestic assets. Second, the gains from global diversification may not be too large, compared to the costs involved. If the costs of acquiring and holding foreign equities are sufficiently large, then investors may find it better to keep their savings at home. Third, information is much more easily communicated at a country level. This information superiority enables portfolios solely based on domestic assets to perform better than global portfolios.

The first two arguments do not seem to generalize well at the regional level. In particular, investing in East Asia may involve with even a larger costs since most East Asian countries are developing countries with under-developed financial markets. Further, information sharing may be easier among East Asian countries than among European countries, and East Asian countries may have better information on financial markets of developed countries like the US than on financial markets of mostly underdeveloped East Asian countries. If so, East Asia would be less inclined to intensify their financial linkages with one another in the region than other European countries are.

2. Development and Deregulation of Financial Markets[19]

There are several institutional and structural characteristics in East Asian financial systems that constrain regional financial integration. Because of the underdevelopment of financial markets, trade in regional securities between different East Asian countries is likely to have been relatively minute.

In East Asia, where financial systems have been largely bank-oriented, securities markets have been relatively less developed. The inadequate financial and legal structure, low auditing and accounting standards, and weak corporate governance must have hampered the development of regional capital markets. After a long period of bank-oriented systems and financial repression, East Asian capital market institutions are not well equipped for the management of East Asia's external financial transactions. The brokerage services for investing in foreign securities have mostly been provided by Western financial institutions. It is therefore natural that financial market liberalization and openings have contributed to integrating East Asia's financial markets into global financial markets than to creating integrated regional financial markets.

Except for the Japanese banks, most other East Asian banks - which are small in size - have relatively limited experience in international corporate banking, and small branch networks. There are not that many domestic investment banks, securities firms, and mutual funds efficient enough to compete against their counterparts from developed countries. In the absence of these securities institutions, underwriting securities in

[19] See Lee, Park and Shin (2004) and Eichegreen and Park (2005a, 2005b)

international capital markets in East Asia have been mostly dominated by American and European investment banks.

Although Hong Kong and Singapore have been two important regional financial centers in East Asia, it still lacks an anchor country or financial center that can mediate financial transactions within the region, helping to attract regional investors into the regional securities markets. These two centers were serving East Asian borrowers and lenders well before financial market opening got underway in the region. However, they were essentially outposts of major international capital markets in advanced countries. Thus, they may have gravitated more toward linking financially East Asian economies with advanced economies, than integrating them with one another.

It is also true that a number of countries in East Asia still remain behind the capital market liberalization process by relying frequently on capital controls. Restrictions on capital account transactions and on entering foreign financial institutions must be an impediment to the process of financial integration involving these economies.

Eichengreen and Park (1995b) provide evidence that a lower level of capital market liberalization and an underdevelopment of financial markets and institutions particularly in potential lending countries, are the main factors contributing to the difference between the intra-Europe and intra-East Asia integration in the cross-border bank lending market. Chelley-Steeley and Steeley (1999) found that the abolition of exchange controls helped equity markets to become more closely integrated in Europe.

3. Monetary and Exchange Rate Regime

There are a number of studies in the literature that focus on how a choice of the exchange rate regime affects the volume of cross-border financial transactions. Most of these studies show that higher exchange rate volatility will lead to fewer transactions in trade in assets, as well as trade in goods. Blanchard and Giavazzi (2002) show that correlations between current account positions and per capita incomes increase more for future European Monetary Union (EMU) countries in 1990s, suggesting that monetary integration enhanced financial integration. Danthine et al. (2000) and Fratzscher (2001) provide evidence that the introduction of the Euro has increased the degree of financial integration in Euro countries. Spiegel (2004) also argues that overall international borrowing is facilitated by the creation of monetary unions, particularly based on the evidence from Portugal's Accession to the EMU. Evidence supports that the degree of financial integration has increased significantly after the introduction of Euro. In addition, based on the broad set of more than 150 countries, Lee and Shin (2004) found that risk sharing is greatly enhanced under monetary union.

In this sense, a higher degree of exchange rate volatility must contribute to a lower degree of financial integration in East Asia. Since we restricted our sample primarily to the period since 1999 in the studies of cross-border assets, the exchange rate volatility at least in the Euro is completely eliminated. In contrast, most of East Asia chose to float their exchange rates after the crisis in 1997-8, contributing to higher volatilities in their exchange rates. On the other hand, a similar logic can be applied to the results of risk sharing estimations using a longer sample periods since most of East Asian countries control the

exchange rate against the U.S. dollars for a very long period while European countries are more eager to stabilize the intra-European exchange rate, for example, through the ERM.

Another special feature after the financial crisis is that East Asia had accumulated a substantial amount of dollar reserve assets. East Asia, with a 'fear of floating' against the US dollar, have intervened in the foreign exchange market so as to moderate excessive volatility of exchange rates and moreover to maintain competitiveness of export sectors. They were also inclined to build up a capacity to draw on reserve in contingency so that it reduces the vulnerabilities to the any future possible external disturbances. The East Asian economies tended to hoard their reserves in low-yielding US Treasuries and other dollar denominated financial assets. This strong tendency of East Asia to invest in dollar-denominated safe-assets must have had a negative impact on regional integration.

V. Concluding Remarks

We have assessed the extent to which East Asian economies are integrated through regional financial markets, especially in comparison with their integration into global financial markets. It is often claimed that the level of financial market integration within East Asia is relatively low. Based on the gravity model of cross-border portfolio asset and bank claim holdings, we found that there is some evidence of regional financial integration in East Asia. However, East Asia tend to be relatively more linked to the global markets than integrated with one another in the region, particularly compared to Europe. The consumption risk sharing model also indicated that East Asia tend to have relatively weaker

regional risk sharing arrangements, but stronger global risk sharing arrangements compared to Europe.

A subsequent question raised by our results, is what has caused this low level of financial integration within East Asia. We have inquired into the plausible hypotheses that can explain the differing experience in East Asia and Europe. The low incentives for portfolio diversification within East Asia, the low degree of development and deregulation of financial markets, and the instability in monetary and exchange rate regime are considered the main causes of low financial integration within East Asia. One critical issue was to investigate exactly what role each factor plays in regional and global financial integration process. An investigation into this issue, which can be conducted by extending the gravity framework with additional data, will shed a light to what policies are needed to strengthen financial integration within East Asia.

Another important question arises as to the extent to which countries should pursue regional integration along with global integration. Although increased regional financial integration, given the extent of global integration, can be beneficial in many ways, it is rather unclear what constitutes the optimal degree of regional integration relative to global integration, given the benefit and costs of regional financial integration. For instance, regional financial market integration helps to share country-specific risks within the region and contributes to improve welfare, but it can also make regional shocks transmit through the financial markets and thus increase the vulnerability of the national economy. Furthermore, regional financial integration may occur by substituting for global integration and thus lower national welfare. In subsequent research, we plan to pursue these important

and interesting questions.

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Table 1. Geographical Distribution of Total Portfolio Asset Holdings in 2003

Host Country	*% of Portfolio Assets Held in Each Region*				*Total*	
	East Asia	Europe	(U.K)	U.S.A.	(bln US $)	(percent in GDP)
Hong Kong	16.3	27.0	14.5	13.9	334.9	213.8
Indonesia	11.3	15.2	2.1	24.8	1.8	0.9
Japan	1.3	35.3	5.8	36.0	1721.3	40.0
Korea	7.9	16.6	6.4	45.9	17.3	2.9
Malaysia	45.9	23.4	5.2	18.1	1.7	1.6
Philippines	7.0	19.5	10.6	68.9	3.7	4.6
Singapore	20.2	38.9	18.2	15.7	143.9	157.5
Thailand	2.9	20.5	4.6	64.2	2.7	1.9
Average	*14.1*	*24.6*	*8.4*	*35.9*	*278.4*	*52.9*
Austria	1.3	70.6	5.0	9.9	206.8	81.7
Belgium	0.8	68.3	4.2	7.8	417.8	138.4
Denmark	4.4	56.5	7.5	22.9	127.0	59.9
Finland	1.5	82.3	8.7	8.1	107.4	66.4
France	2.8	72.7	9.2	11.1	1367.0	77.8
Germany	2.7	63.5	6.4	11.1	1205.1	50.1
Greece	0.2	47.1	14.7	14.2	34.0	19.7
Iceland	4.6	36.9	15.0	23.9	3.7	35.1
Ireland	3.3	56.3	19.2	27.4	811.6	528.0
Italy	2.0	48.2	5.3	12.5	791.1	53.9
Netherlands	3.8	58.8	9.5	27.8	782.6	153.0
Norway	7.7	60.1	10.4	22.9	184.4	83.5
Portugal	0.1	66.4	6.4	6.0	97.3	65.8
Spain	0.6	69.0	8.9	8.5	432.7	51.6
Sweden	5.1	46.0	12.4	30.7	213.7	70.9
Switzerland	2.5	43.4	5.0	14.6	654.4	204.4
United Kingdom	10.9	41.7	0.0	25.0	1729.5	96.4
Average	*3.2*	*58.1*	*8.7*	*16.7*	*539.2*	*108.0*
United States	14.3	52.8	21.2	0.0.	3134.2	28.6

Source: International Monetary Fund, the Coordinated Portfolio Investment Survey, 1997, 2001, and updated data from the IMF website at http://www.imf.org/external/np/sta/pi/cpis.htm

Table 2. Geographical Distribution of Total Equity Asset Holdings in 2003

Host Country	*% of Equity Assets Held in Each Region*				*Total*	
	East Asia	**Europe**	**(U.K)**	**U.S.A.**	**(bln US $)**	**(percent in GDP)**
Hong Kong	17.4	22.7	20.1	5.2	152.8	97.5
Indonesia	12.5	56.3	0.0	6.3	0.02	0.0
Japan	3.9	30.9	12.0	52.0	274.5	6.4
Korea	8.4	5.7	3.0	28.1	3.4	0.6
Malaysia	75.0	5.5	1.8	10.9	0.9	0.8
Philippines	1.2	--	--	86.1	0.2	0.2
Singapore	27.9	21.0	8.9	16.3	42.7	46.8
Thailand	12.5	13.3	1.2	16.9	0.2	0.2
Average	*19.9*	*22.2*	*6.7*	*27.7*	*59.3*	*19.1*
Austria	4.0	50.2	7.2	19.2	44.0	17.4
Belgium	1.7	42.0	4.9	8.6	140.3	46.5
Denmark	9.8	48.8	12.6	27.0	52.1	24.6
Finland	4.3	67.0	15.8	13.5	36.5	22.5
France	6.2	60.3	10.0	15.8	337.7	19.2
Germany	4.2	45.1	7.6	14.5	440.8	18.3
Greece	1.1	36.6	18.6	35.7	3.9	2.3
Iceland	5.1	33.0	15.7	24.9	3.4	32.0
Ireland	9.3	44.8	20.4	31.3	211.4	137.5
Italy	4.1	31.0	4.7	11.6	331.0	22.5
Netherlands	7.4	39.4	15.5	42.8	327.1	64.0
Norway	8.7	49.1	15.9	30.2	76.4	34.6
Portugal	0.9	45.7	9.6	9.5	11.5	7.7
Spain	2.5	60.2	16.3	10.5	83.4	9.9
Sweden	6.3	36.9	13.9	32.9	141.7	47.0
Switzerland	4.0	28.2	5.0	17.7	293.7	91.7
United Kingdom	18.4	34.9	0.0	26.8	749.8	41.8
Average	*5.8*	*44.3*	*11.4*	*21.9*	*193.2*	*37.6*
United States	18.9	52.9	20.2	0.0	2080.3	19.0

Source: International Monetary Fund, the Coordinated Portfolio Investment Survey, 1997, 2001, and updated data from the IMF website at http://www.imf.org/external/np/sta/pi/cpis.htm

Table 3. Geographical Distribution of Total Long-Term Debt Securities Holdings in 2003

Host Country	*% of Debt Securities Held in Each Region*				*Total*	
	East Asia	Europe	(U.K.)	U.S.A.	(bln US $)	(percent in GDP)
Hong Kong	14.4	31.7	10.0	21.8	154.1	98.4
Indonesia	11.8	15.6	2.2	21.4	1.7	0.8
Japan	0.8	36.4	4.4	32.9	1407.2	32.7
Korea	7.8	19.0	6.8	50.3	13.8	2.3
Malaysia	15.3	41.3	8.9	26.0	0.8	0.8
Philippines	11.0	6.8	1.4	72.7	2.2	2.7
Singapore	17.2	35.0	5.7	24.9	57.6	63.0
Thailand	2.2	23.1	5.6	68.6	2.2	1.6
Average	*10.1*	*26.1*	*5.6*	*39.8*	*205.0*	*25.3*
Austria	0.5	76.1	4.4	7.2	159.5	63.0
Belgium	0.3	81.9	3.5	7.1	264.3	87.5
Denmark	0.6	61.9	4.0	19.9	73.6	34.7
Finland	0.0	89.7	5.0	5.6	66.3	40.9
France	1.7	76.7	7.4	9.2	909.7	51.8
Germany	1.8	74.5	5.7	8.6	750.0	31.2
Greece	0.1	47.8	12.8	11.4	29.4	17.1
Iceland	0.0	77.7	7.2	13.5	0.3	3.0
Ireland	1.8	67.9	14.3	18.0	385.7	250.9
Italy	0.5	60.2	5.6	13.3	453.7	30.9
Netherlands	1.2	73.1	5.1	16.9	449.0	87.8
Norway	7.1	67.9	6.6	17.3	105.2	47.6
Portugal	0.0	67.0	7.2	6.4	71.1	48.1
Spain	0.1	72.4	7.4	8.3	327.5	39.0
Sweden	2.9	64.0	9.4	26.5	66.0	21.9
Switzerland	1.3	56.9	4.8	12.5	335.4	104.8
United Kingdom	0.9	44.8	0.0	24.1	875.7	48.8
Average	*1.2*	*68.3*	*6.5*	*13.3*	*313.1*	*59.4*
United States	6.2	46.3	16.5	0.0	868.9	7.9

Source: International Monetary Fund, the Coordinated Portfolio Investment Survey, 1997, 2001, and updated data from the IMF website at http://www.imf.org/external/np/sta/pi/cpis.htm

Table 4. Geographical Distribution of Total Short-Term Debt Securities Holdings in 2003

Host Country	*% of Debt Securities Held in Each Region*				*Total*	
	East Asia	Europe	(U.K)	U.S.A.	(bln US $)	(percent in GDP)
Hong Kong	0.9	1.2	1.1	2.7	28.0	17.9
Indonesia	0.0	0.0	0.0	--	0.1	0.0
Japan	1.3	28.2	13.7	35.4	39.7	0.9
Korea	0.0	--	--	--	0.09	0.0
Malaysia	--	--	--	--	0.01	0.0
Philippines	12.3	3.6	0.0	13.7	1.3	1.6
Singapore	0.1	-0.2	--	--	43.6	47.7
Thailand	0.0	377.2	--	--	0.3	0.2
Average	*2.1*	*68.3*	*3.7*	*17.3*	*14.1*	*8.5*
Austria	0.5	73.0	5.8	12.6	3.2	1.3
Belgium	0.1	74.9	8.8	12.9	13.2	4.4
Denmark	0.0	60.9	2.6	31.9	1.4	0.6
Finland	0.0	97.0	6.3	2.2	4.6	2.9
France	1.5	78.1	21.1	12.4	119.6	6.8
Germany	0.0	54.2	7.2	34.4	14.3	0.6
Greece	0.0	83.1	82.4	7.5	0.6	0.3
Iceland	0.0	50.0	0.0	16.7	0.01	0.1
Ireland	0.0	46.5	26.8	40.4	214.5	139.5
Italy	0.5	87.3	18.4	2.8	6.4	0.4
Netherlands	2.0	49.6	13.3	16.0	6.5	1.3
Norway	0.0	64.8	1.5	34.5	2.8	1.3
Portugal	0.0	80.0	0.0	1.3	14.8	10.0
Spain	0.0	51.5	3.0	3.5	21.8	2.6
Sweden	0.0	62.4	10.5	24.7	6.0	2.0
Switzerland	0.0	41.0	9.6	6.7	25.4	7.9
United Kingdom	0.3	60.8	0.0	19.3	104.1	5.8
Average	*0.3*	*65.6*	*12.8*	*16.5*	*32.9*	*11.0*
United States	0.5	82.2	53.6	0.0	185.0	1.7

Source: International Monetary Fund, the Coordinated Portfolio Investment Survey, 1997, 2001, and updated data from the IMF website at http://www.imf.org/external/np/sta/pi/cpis.htm

Table 5. Geographical Distribution of Cross-Border Bank Claim Holdings in 2003

Host Country	*% of Bank Claims Held in Each Region*				*Total*	
	East Asia	Europe	(U.K)	U.S.A.	(bln US $)	(percent in GDP)
Japan	7.3	35.6	8.3	39.5	1238.2	28.8
South Korea	35.7	21.2	9.8	21.2	50.8	8.4
Taiwan China	26.2	22.9	6.2	37.1	83.2	29.1
Average	*23.1*	*26.6*	*8.1*	*32.6*	*457.4*	*22.1*
Austria	4.1	53.1	10.0	3.8	97.8	38.6
Belgium	3.7	73.6	16.5	12.3	658.0	218.0
Denmark	0.1	86.4	23.2	5.0	82.2	38.8
Finland	1.5	75.8	6.2	13.5	57.8	35.7
France	13.2	49.5	13.6	23.1	1353.4	77.0
Germany	6.3	61.1	20.2	18.1	2576.4	107.2
Greece	0.9	49.3	12.4	14.9	49.9	29.0
Ireland	4.8	82.4	27.9	4.1	341.7	222.3
Italy	2.8	58.1	15.3	7.7	328.8	22.4
Netherlands	6.4	54.5	12.9	26.9	1190.8	232.8
Norway	0.8	60.8	8.6	12.0	17.2	7.8
Portugal	0.2	72.0	16.3	10.0	68.9	46.6
Spain	0.4	49.9	7.7	6.6	409.4	48.8
Sweden	0.9	75.4	11.9	11.5	216.9	71.9
Switzerland	6.9	34.3	17.6	48.2	1565.0	488.9
United Kingdom	16.8	29.9	0.0	33.0	1637.4	91.2
Average	*4.1*	*60.4*	*13.8*	*15.7*	*665.7*	*111.1*
United States	19.8	48.9	16.9	0.0	838.3	7.7

Source: The Bank for International Settlements, available from the BIS website at http://www.bis.org/statistics/histstats10.htm.

Table 6. Geographical Distribution of Asset Holdings in Latin America, 2003

Host Country	*% of Assets Held in Each Region*				*Total*	
	Latin America	Europe	(U.K)	U.S.A.	bln US $	% in GDP
TOTAL PORTFOLIO						
Argentina	3.0	6.3	0.8	86.7	13.1	10.1
Brazil	15.3	18.0	7.1	35.3	4.5	0.9
Chile	3.6	23.5	4.8	25.4	13.0	17.9
Colombia	1.4	7.4	2.1	62.6	1.9	2.4
Mexico	6.0	6.0	2.0	76.4	5.1	--
Panama	42.3	6.0	2.9	45.1	3.6	27.8
EQUITY						
Argentina	1.8	8.1	1.0	83.2	7.5	5.8
Brazil	14.2	18.2	3.3	29.2	2.5	0.5
Chile	0.3	22.4	4.9	23.0	10.7	14.8
Colombia	0.0	5.4	2.7	37.8	0.7	0.9
Mexico	--	--	--	23.8	0.4	0.1
Panama	71.3	1.2	0.2	8.3	0.8	6.5
LONG-TERM DEBT						
Argentina	4.6	3.9	0.5	91.2	5.5	4.2
Brazil	23.2	8.5	1.4	51.9	0.6	0.1
Chile	19.5	28.5	4.0	36.7	2.2	3.1
Colombia	2.6	7.7	1.7	77.2	0.9	1.2
Mexico	7.8	2.8	2.5	85.1	4.0	0.6
Panama	31.9	7.2	4.1	57.8	2.4	19.0
SHORT-TERM DEBT						
Argentina	0.0	0.0	0.0	100.0	0.2	0.1
Brazil	13.7	21.7	16.5	39.3	1.4	0.3
Chile	0.0	0.0	0.0	0.0	0.0	0.0
Colombia	0.7	10.9	1.5	77.0	0.3	0.3
Mexico	14.8	--	--	--	0.8	0.1
Panama	0.0	--	--	--	0.3	2.3
BANK CLAIMS						
Brazil	5.9	49.3	19.4	28.6	23.8	4.8
Chile	24.4	27.0	2.8	39.0	2.2	3.0
Mexico	14.3	2.8	0.0	37.1	2.1	0.3
Panama	48.1	10.7	3.0	27.6	7.9	61.2

Source: The International Monetary Fund and the Bank for International Settlements.

Table 7. Summary Statistics (1999-2003)

	(1) Portfolio (N=13,971)		(2) Bank Claims (N=11,974)	
	Mean	Std. Dev	Mean	Std. Dev
Year	2001.975	0.823	2001.203	1.409
Log of trade	3.797	2.634	4.560	2.617
Log of distance	8.129	0.834	8.075	0.837
Log of GDP in pairs	40.794	2.814	41.649	2.640
Log of per capita GDP in pairs	8.004	1.869	8.552	1.699
Log of area in pairs	24.431	3.076	24.298	2.866
Common land border dummy	0.028	0.166	0.024	0.153
Common language dummy	0.150	0.358	0.130	0.336
Real Portfolio	22.343	170.739	--	--
Bank Claims	--	--	1.245	1.688
East Asia	0.012	0.111	0.010	0.102
Europe	0.059	0.233	0.104	0.305

Note: The summary statistics are based on the bilateral variables for the portfolio holdings data and bank claims data sets. See the text for an explanation of variables and sources of them.

Table 8. Portfolio Estimation

	(1) Random Effects	(2) Between Effects	(3) Random Effects	(4) Between Effects
Log distance	-0.203**	-0.193**	-0.118**	-0.082**
	[0.017]	[0.017]	[0.019]	[0.019]
GDP in pair	0.150**	0.145**	0.063**	0.031*
	[0.008]	[0.008]	[0.011]	[0.012]
Per capita GDP in pair	0.136**	0.131**	0.141**	0.134**
	[0.011]	[0.011]	[0.010]	[0.010]
Common language	0.120**	0.111**	0.065	0.038
	[0.035]	[0.035]	[0.035]	[0.035]
Border	0.641**	0.635**	0.488**	0.428**
	[0.094]	[0.095]	[0.093]	[0.096]
Area in pair	-0.001	-0.002	0.008	0.009
	[0.006]	[0.006]	[0.006]	[0.006]
Log trade			0.106**	0.139**
			[0.010]	[0.012]
Observation	13,971	13,971	13,971	13,971
R-squared	0.38	0.37	0.39	0.39

Note: All the variables are bilateral ones between country i and country j. The dependent variable, real portfolio investment asset holdings, refers to the case where country i is a source country and country j is a destination country. It is taken logarithm after adding 1 to include all the observations with value zero. All other explanatory variables except the dummy variables are taken logarithm. Robust standard errors of the estimated coefficients are reported in parentheses. Intercept and year dummy variables are included (not reported). ** and * indicate that the estimated coefficients are statistically significant at 1 % and 5 % respectively.

Table 9. Bank Claims Estimation

	(1) Random Effects	(2) Between Effects	(3) Random Effects	(4) Between Effects
Log distance	-0.280**	-0.289**	-0.194**	-0.110**
	[0.023]	[0.024]	[0.024]	[0.026]
GDP in pair	0.339**	0.335**	0.230**	0.123**
	[0.011]	[0.012]	[0.015]	[0.018]
Per capita GDP in pair	0.146**	0.154**	0.148**	0.146**
	[0.015]	[0.015]	[0.014]	[0.014]
Common language	0.415**	0.416**	0.347**	0.273**
	[0.049]	[0.049]	[0.048]	[0.048]
Border	1.100**	1.063**	0.988**	0.841**
	[0.137]	[0.138]	[0.133]	[0.134]
Area in pair	-0.059**	-0.058**	-0.045**	-0.037**
	[0.009]	[0.009]	[0.008]	[0.009]
Log trade			0.121**	0.242**
			[0.011]	[0.016]
Observation	11,974	11,974	11,974	11,974
R-squared	0.63	0.62	0.64	0.63

Note: All the variables are bilateral ones between country i and country j. The dependent variable, real bank claims of country i on country j, is taken logarithm after adding 1 to include all the observations with value zero. For others see the note for Table 8.

Table 10. Portfolio Estimation with Regional Dummies

	(1)	(2)	(3)	(4)
Log distance	-0.201**	-0.106**	-0.028	0.059**
	[0.018]	[0.020]	[0.017]	[0.018]
GDP in pair	0.151**	0.068**	0.158**	0.081**
	[0.009]	[0.012]	[0.008]	[0.011]
Per capita GDP in pair	0.135**	0.133**	0.067**	0.065**
	[0.011]	[0.011]	[0.010]	[0.010]
Common language	0.120**	0.066	0.155**	0.105**
	[0.035]	[0.035]	[0.031]	[0.031]
Border	0.642**	0.493**	0.496**	0.361**
	[0.094]	[0.093]	[0.083]	[0.082]
Area in pair	-0.002	0.003	-0.020**	-0.016*
	[0.007]	[0.007]	[0.006]	[0.006]
EA_single	-0.01	-0.074	-0.066	-0.124**
	[0.040]	[0.040]	[0.037]	[0.037]
EA_pair	0.022	-0.118	0.191	0.058
	[0.157]	[0.154]	[0.137]	[0.135]
Europe_single			-0.109**	-0.107**
			[0.027]	[0.026]
Europe_pair			2.461**	2.423**
			[0.068]	[0.067]
Log trade		0.110**		0.102**
		[0.010]		[0.009]
Observations	13,971	13,971	13,971	13,971
R-Squares	0.38	0.47	0.39	0.48

Note: The dependent variable is real portfolio investment asset holdings. For other information see the note for Table 8.

Table 11. Portfolio Estimation with Regional and Global Dummies

	(1) U.S.	(2)U.S. and U.K.	(3) U.S.	(4) U.S. and U.K.
	-0.048**	-0.041**	0.028	0.035*
Log distance	[0.016]	[0.015]	[0.017]	[0.017]
	0.128**	0.117**	0.061**	0.050**
GDP in pair	[0.008]	[0.008]	[0.010]	[0.010]
	0.049**	0.070**	0.048**	0.068**
Per capita GDP in pair	[0.009]	[0.009]	[0.009]	[0.009]
	0.123**	0.093**	0.081**	0.051
Common language	[0.029]	[0.029]	[0.029]	[0.029]
	0.524**	0.588**	0.406**	0.468**
Border	[0.075]	[0.075]	[0.075]	[0.074]
	-0.022**	-0.013*	-0.018**	-0.009
Area in pair	[0.006]	[0.006]	[0.006]	[0.006]
	0.493**	0.371**	0.477**	0.362**
Global	[0.068]	[0.047]	[0.067]	[0.047]
EA_global	2.571**	2.313**	2.437**	2.215**
	[0.227]	[0.162]	[0.224]	[0.160]
EA_single	0.022	-0.004	-0.029	-0.054
	[0.035]	[0.035]	[0.035]	[0.035]
EA_pair	0.272*	0.323**	0.153	0.203
	[0.123]	[0.123]	[0.122]	[0.121]
Europe_global	3.957**	2.793**	3.898**	2.755**
	[0.163]	[0.119]	[0.161]	[0.117]
Europe_single	-0.042	-0.082**	-0.042	-0.080**
	[0.025]	[0.025]	[0.025]	[0.024]
Europe_pair	2.604**	2.228**	2.569**	2.199**
	[0.062]	[0.062]	[0.061]	[0.061]
Log trade			0.090**	0.090**
			[0.009]	[0.009]
Observations	13,971	13,971	13,971	13,971
R-squares	0.42	0.43	0.56	0.56

Note: The dependent variable is real portfolio investment asset holdings. For other information see the note for Table 8.

Table 12. Bank Claims Estimation with Regional Dummies

	(1)	(2)	(3)	(4)
Log distance	-0.244**	-0.090**	-0.142**	0.01
	[0.025]	[0.027]	[0.026]	[0.027]
GDP in pair	0.346**	0.330**	0.243**	0.229**
	[0.013]	[0.012]	[0.015]	[0.015]
Per capita GDP in pair	0.143**	0.099**	0.136**	0.092**
	[0.015]	[0.015]	[0.015]	[0.015]
Common language	0.400**	0.478**	0.332**	0.405**
	[0.049]	[0.048]	[0.048]	[0.047]
Border	1.159**	1.115**	1.050**	1.003**
	[0.137]	[0.133]	[0.132]	[0.129]
Area in pair	-0.066**	-0.051**	-0.058**	-0.045**
	[0.009]	[0.010]	[0.009]	[0.009]
EA_single	-0.152**	0.014	-0.231**	-0.075
	[0.049]	[0.055]	[0.048]	[0.053]
EA_pair	0.994**	1.284**	0.819**	1.099**
	[0.192]	[0.188]	[0.186]	[0.181]
Europe_single			0.295**	0.276**
			[0.045]	[0.044]
Europe_pair			1.116**	1.103**
			[0.085]	[0.082]
Log trade		0.125**		0.125**
		[0.011]		[0.011]
Observations	11,974	11,974	11,974	11,974
R-Squares	0.63	0.65	0.64	0.66

Note: The dependent variable is real bank claims of country i on country j. For other information see the notes for Tables 8 and 9..

Table 13. Bank Claims Estimation with Regional and Global Dummies

	(1) U.S.	(2)U.S. and U.K.	(3) U.S.	(4) U.S. and U.K.
	-0.103**	-0.101**	-0.005	-0.002
Log distance	[0.026]	[0.025]	[0.026]	[0.026]
	0.315**	0.304**	0.217**	0.205**
GDP in pair	[0.013]	[0.013]	[0.015]	[0.015]
	0.086**	0.096**	0.078**	0.088**
Per capita GDP in pair	[0.015]	[0.015]	[0.014]	[0.014]
	0.451**	0.414**	0.381**	0.345**
Common language	[0.047]	[0.047]	[0.046]	[0.046]
	1.131**	1.206**	1.020**	1.095**
Border	[0.129]	[0.127]	[0.125]	[0.123]
	-0.054**	-0.050**	-0.048**	-0.044**
Area in pair	[0.009]	[0.009]	[0.009]	[0.009]
	0.003	0	-0.027	-0.005
Global	[0.091]	[0.059]	[0.088]	[0.057]
EA_global	2.208**	2.280**	2.069**	2.180**
	[0.285]	[0.200]	[0.274]	[0.192]
EA_single	0.018	-0.03	-0.073	-0.115*
	[0.056]	[0.055]	[0.055]	[0.054]
EA_pair	1.351**	1.412**	1.162**	1.225**
	[0.183]	[0.179]	[0.177]	[0.173]
Europe_global	1.190**	1.790**	1.175**	1.774**
	[0.210]	[0.148]	[0.202]	[0.142]
Europe_single	0.288**	0.256**	0.264**	0.239**
	[0.048]	[0.044]	[0.047]	[0.043]
Europe_pair	1.190**	0.983**	1.175**	0.973**
	[0.083]	[0.082]	[0.080]	[0.079]
Log trade			0.123**	0.124**
			[0.011]	[0.011]
Observations	11,974	11,974	11,974	11,974
R-squares	0.64	0.67	0.66	0.69

Note: The dependent variable is real bank claims of country i on country j. For other information see the note for Table 8.

Table 14. The Estimates of Regional and Global Risk sharing, 1961-2002.

(1) Asia

	Regional (λ_r)	**Global (λ_w)**	**None (1-λ_w -λ_r)**	**Adjusted R^2**
China	0.570* (0.038)	0.000 (0.000)	0.430* (0.038)	0.727
Hong Kong	0.238* (0.091)	0.000 (0.000)	0.762* (0.091)	0.396
Indonesia	0.224 (0.176)	0.000 (0.000)	0.776* (0.176)	0.248
Japan	0.045 (0.090)	0.218* (0.052)	0.738* (0.060)	0.845
South Korea	0.212* (0.080)	0.000 (0.000)	0.788* (0.080)	0.619
Malaysia	0.000 (0.000)	0.000 (0.000)	1.000* (0.000)	0.568
Philippines	0.000 (0.000)	0.464* (0.042)	0.536* (0.042)	0.412
Singapore	0.000 (0.000)	0.335* (0.056)	0.665* (0.055)	0.598
Taiwan	0.198* (0.057)	0.000 (0.000)	0.802* (0.059)	0.292
Thailand	0.000 (0.000)	0.210* (0.059)	0.790* (0.059)	0.678
Average 1	0.149 (0.053)	0.123 (0.021)	0.729 (0.066)	0.538
Average 2	0.122	0.123	0.729	---

(2) Europe

	Regional (λ_r)	**Global (λ_w)**	**None (1-λ_w -λ_r)**	**Adjusted R^2**
Austria	0.158 (0.161)	0.189 (0.239)	0.653* (0.260)	0.519
Belgium	0.757* (0.234)	0.075 (0.178)	0.167 (0.137)	0.365
Denmark	0.000 (0.000)	0.000 (0.000)	1.000* (0.000)	0.512
Finland	0.170* (0.050)	0.000 (0.000)	0.830* (0.050)	0.820
France	0.597* (0.092)	0.000 (0.000)	0.402* (0.094)	0.702
Germany	0.467* (0.217)	0.063 (0.144)	0.470* (0.136)	0.486
Greece	0.347 (0.290)	0.191 (0.269)	0.462* (0.091)	0.456
Ireland	0.377 (0.334)	0.129 (0.356)	0.494* (0.113)	0.319
Italy	0.258* (0.094)	0.000 (0.000)	0.742* (0.094)	0.668
Luxemburg	0.887* (0.062)	0.000 (0.000)	0.113 (0.059)	0.280
Netherlands	0.124 (0.106)	0.000 (0.000)	0.876* (0.106)	0.526
Norway	0.170 (0.431)	0.021 (0.278)	0.808* (0.173)	0.409
Portugal	0.157 (0.141)	0.000 (0.000)	0.843* (0.141)	0.362
Spain	0.000 (0.000)	0.000 (0.000)	0.876* (0.051)	0.863
Sweden	0.378* (0.099)	0.000 (0.000)	0.621* (0.101)	0.455
Switzerland	0.501* (0.044)	0.000 (0.000)	0.499* (0.044)	0.636
UK	0.056 (0.222)	0.152 (0.162)	0.792* (0.156)	0.398
Average 1	0.318 (0.152)	0.048 (0.096)	0.626 (0.106)	0.516
Average 2	0.236	0.000	0.610	---

Table 15. The Estimates of Regional and Global Risk sharing (Average), Various Subperiods.

		1961-1996	1961-1980	1981-2002	1973-2002
Regional (λ_r)	**Asia**	0.197 (0.056)	0.184 (0.146)	0.166 (0.025)	0.204 (0.042)
	Europe	0.340 (0.146)	0.372 (0.190)	0.329 (0.107)	0.402 (0.134)
Global (λ_w)	**Asia**	0.140 (0.021)	0.164 (0.153)	0.119 (0.029)	0.121 (0.025)
	Europe	0.060 (0.086)	0.127 (0.118)	0.019 (0.031)	0.037 (0.080)
None (1-λ_w-λ_r)	**Asia**	0.668 (0.047)	0.652 (0.131)	0.724 (0.049)	0.676 (0.102)
	Europe	0.628 (0.109)	0.501 (0.123)	0.645 (0.089)	0.550 (0.099)

Table 16. Cross-country output correlation

Asia										
	1961-2002		1961-1996		1961-1980		1981-2002		1973-2002	
	Reg	Glob	Reg	Glob	Reg	Glob	Reg	Glob	Reg	Glob
China	0.81	0.34	0.86	0.36	0.90	0.45	0.50	0.39	0.60	0.27
Hong Kong	0.24	0.47	0.11	0.42	0.17	0.51	0.57	0.39	0.40	0.48
Indonesia	0.23	0.11	0.03	-0.02	-0.02	-0.07	0.76	0.29	0.54	0.22
Japan	0.20	0.48	0.12	0.46	0.21	0.53	0.57	0.39	0.67	0.59
Korea	0.50	0.44	0.45	0.44	0.45	0.53	0.77	0.39	0.59	0.49
Malaysia	0.21	0.27	0.01	0.15	-0.03	0.33	0.68	0.24	0.43	0.32
Philippines	-0.03	0.05	-0.09	0.01	-0.11	0.13	0.04	-0.07	0.02	0.05
Singapore	0.21	0.29	0.09	0.18	0.11	0.10	0.64	0.47	0.50	0.43
Thailand	0.42	0.64	0.41	0.66	0.48	0.69	0.50	0.57	0.53	0.69
Taiwan	0.44	0.32	0.38	0.34	0.42	0.51	0.81	0.31	0.69	0.38
Average	*0.32*	*0.34*	*0.24*	*0.30*	*0.26*	*0.37*	*0.58*	*0.34*	*0.50*	*0.39*
Europe										
	1961-2002		1961-1996		1961-1980		1981-2002		1973-2002	
	Reg	Glob	Reg	Glob	Reg	Glob	Reg	Glob	Reg	Glob
Austria	0.10	0.34	0.10	0.32	0.22	0.38	-0.14	0.17	-0.18	0.22
Belgium	0.12	0.49	0.09	0.46	0.14	0.40	0.27	0.65	0.06	0.50
Denmark	0.06	0.52	0.05	0.52	0.06	0.57	0.08	0.36	0.23	0.58
Finland	0.09	0.34	0.12	0.34	0.24	0.23	-0.11	0.42	0.00	0.31
France	0.11	0.52	0.12	0.52	0.27	0.68	-0.12	0.31	0.00	0.50
Germany	0.26	0.62	0.25	0.61	0.36	0.73	0.18	0.43	0.23	0.59
Greece	0.18	0.47	0.18	0.49	0.31	0.53	-0.07	0.32	0.30	0.48
Ireland	-0.08	0.10	-0.01	0.13	-0.13	-0.02	-0.09	0.30	0.09	0.23
Italy	-0.14	0.35	-0.20	0.33	-0.24	0.19	0.30	0.65	0.06	0.52
Luxemburg	0.22	0.49	0.28	0.51	0.30	0.65	0.05	0.41	0.20	0.54
Netherlands	0.31	0.60	0.37	0.61	0.47	0.57	0.02	0.61	-0.02	0.56
Norway	-0.19	0.01	-0.27	-0.05	-0.49	-0.52	0.24	0.41	-0.10	0.06
Portugal	0.13	0.45	0.13	0.45	0.18	0.53	0.08	0.21	0.27	0.52
Spain	-0.17	0.31	-0.17	0.31	-0.21	0.22	0.04	0.44	0.00	0.36
Sweden	0.02	0.33	0.05	0.33	0.09	0.14	-0.08	0.53	-0.06	0.31
Switzerland	-0.05	0.36	-0.05	0.36	-0.04	0.23	-0.05	0.56	0.06	0.43
UK	0.32	0.69	0.36	0.71	0.38	0.77	0.23	0.61	0.47	0.78
Average	*0.08*	*0.41*	*0.08*	*0.41*	*0.11*	*0.37*	*0.05*	*0.43*	*0.10*	*0.44*