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The Performance of Domestic and Foreign Banks: The Case of Korea and the Asian Financial Crisis

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Abstract

This paper considers the performance of banks, domestic and foreign, in Korea prior to, during, and immediately after the Asian financial crisis, examining how the profitability of those banks differed and identifying factors that explain why those differences existed. The performance of Korean banks deteriorated dramatically in 1998 with most banks recovering somewhat in 1999. Foreign banks did not experience the same negative effect on their returns on assets and equity as a rule. Several standard findings emerge. For example, equity to assets correlates positively with domestic, but not foreign, bank performance, as measured by the returns on assets and equity, even when the government recapitalized institutions that were performing quite badly. Also, foreign-currency deposits significantly and negatively correlate with domestic Korean bank performance, although only in the post-crisis period for regional banks. In sum, the domestic Korean banks suffered more severely from the Asian financial crisis than foreign banks.

I.   Introduction:

The world's economy experienced several financial crises in the last decade – for example, the 1994 Mexican peso collapse and the resulting turmoil in Latin America, and the 1997-98 Asian crisis.[1] The devaluation of the Thai baht initiated the Asian financial crisis on July 2, 1997 that quickly spread to a number of Asian countries. The effects of the crisis on countries differed with some countries experiencing severe economic contractions while others saw modest effects on their domestic economies.[2]

Our paper focuses on the performance of nationwide (national) and regional Korean banks as well as foreign banks (bank offices) prior to, during, and immediately after the Asian financial crisis.[3] We examine how the profitability of these banks differed and identify factors that explain why these differences existed. Our paper also adds significant value in two areas. First, we assemble probably the best panel data set on Korean domestic – nationwide and regional – and foreign banks during the mid and late 1990s. Second, we capitalize on that panel data structure and employ the fixed-effect regression technique.

Various analysts suggest that foreign bank lending played a unique role in the Asian financial crisis vis-à-vis other similar events (Cho and Hong 2001, Kaminsky and Reinhart 2001, and Tornell 2001). Domestic banks supplied major quantities of credit to domestic firms. Domestic banks also came to rely more heavily on foreign bank lending. When the crisis reared

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[1] Ito and Krueger (2001) recently edited a series of papers that examine the causes and consequences of the Asian financial crisis with comparisons to similar prior crises.

[2] Corsetti, Pesenti, and Roubini (2001), for example, argue that Hong Kong, Singapore, and Taiwan did not suffer as much as other countries because of trade and current account surpluses, significant holdings of foreign exchange reserves, and the relative absence of "crony capitalism." Other discussions of financial crises include Kaminsky and Reinhart (2001), Tornell (2001), and Hahm and Mishkin (2000)

[3] Jeon and Miller (2002) provide an analysis of Korean nationwide banks with a slightly longer time frame and a

its ugly head, the supply of foreign lending evaporated quickly, confronting the domestic banks with a liquidity crisis. Moreover, some commentators indict the initial International Monetary Fund (IMF) rescue programs as worsening the liquidity crisis by requiring tighter credit (Radelet and Sachs 1998).

Noland (2000) differentiates the Korean crisis from other Southeast Asian crises, since the Korean investment boom occurred in the manufacturing sector, especially the *chaebols,* rather than in real estate and since investment growth was funded in large part by short-run capital inflows. That is, short-term capital controls were liberalized while the long-term controls were not.[4] In short, the financial crisis caused some important corporate borrowers to default on their loans to banks. That negative shock was reinforced and compounded by the loss of foreign lending to domestic banks. Impending bank failures necessitated the intervention by the central bank to assist in finding merger partners (possibly foreign) or to take over operations of the failed banks itself.

Our analysis supports several conclusions. The performance of Korean banks deteriorated dramatically in 1998. Most banks recovered somewhat in 1999. Foreign banks did not experience the same negative effect on their returns on assets and equity as a rule. Several standard findings emerge. First, equity to assets correlates positively with domestic, but not foreign, bank performance, even when the government recapitalized a number of institutions that were performing quite badly. Second, provisions for loan losses generally correlates negatively

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richer set of balance sheet and income statement data.

[4] Noland also argues that the initial IMF program exacerbated problems by confusing the Asian financial crisis with the earlier Latin American crisis. The Asian crisis differed according to Noland, because the corporate expansion was loan, not equity, based. Thus, the financial crisis raised interest rates, triggering a liquidity crisis. The IMF's prescription to tighten credit worsened the liquidity crisis.

with bank performance. Finally, decreases in foreign-currency deposits significantly and negatively correlate with domestic Korean bank performance as measured by the returns on assets and equity.

II.   Foreign Banks: A Blessing or A Curse in Domestic Financial Markets

The Asian financial crisis underscores the importance of strong, stable financial markets for the maintenance of economic development, since weak, unstable financial markets can push an economy to its knees. In this regard, some analysts argue that foreign bank participation in domestic financial markets strengthens the domestic economy. Other analysts argue that the financial service industry possesses public good characteristics and that the unfettered private interests (markets), especially interests with foreign connections, should not control credit allocation decisions. That view, at a minimum, implies that foreign banks should not operate in the domestic economy. An even more stringent view argues that state ownership and state-mandated credit allocation needs to send credit to those sectors most crucial for economic development.

Korea transversed the spectrum from a system with large elements of state ownership and state-directed credit flows to a more open and competitive financial markets with a significant presence of foreign banks. And a large privatization of state-owned banks has occurred since Korea decided to travel down the path of deregulation.

Proponents of foreign bank entry make several arguments (e.g., Claessens, Demirgüç-Kunt, and Huizinga 2001, Demirgüç-Kunt, Levin, and Min 1998, Goldberg, Dages, and Kinney 2000, and Levin 1996). First, foreign banks provide the channel through which capital inflows finance domestic activities. To the extent that such funding adds to, rather than substitutes for,

domestic funding, it will stimulate the domestic economy, at least one that experiences a shortage of available funding from domestic sources. Second, the increased competition among banks – domestic and foreign –- will improve the performance of banks and provide financial services at a lower average cost. Finally, the experience of foreign banks in their home country may lead to better regulation and supervision in the foreign markets where they do business.

Opponents of foreign bank entry also make several arguments (e.g., Claessens, Demirgüç-Kunt, and Huizinga 2001, and Demirgüç-Kunt, Levin, and Min 1998). First, unlike the optimists, the pessimists see the capital flow channel as a path for capital flight when the "going gets tough". That is, the pessimists place a much higher weight on the negative consequences of capital outflows during bad times than on the positive consequences of capital inflows during good times. Second, foreign banks may have a competitive advantage that allows them to "cherry" pick among the available domestic funding options, choosing the more-profitable, low-risk options and leaving the less-profitable, higher-risk options for domestic institutions. Third, foreign banks from developed countries may introduce complexities not seen by domestic regulators and supervisors, worsening, rather than improving, the regulatory and supervisory process.

The movement in recent decades toward more-open financial markets and the increased activity of foreign banks in domestic financial markets suggests that the proponents have currently won the day. The Asian financial crisis raises the issue of the role, if any, of foreign banks in creating or continuing the crisis.

Claessens, Demirgüç-Kunt, and Huizinga (2001) note a conundrum in understanding foreign bank operations. To wit, foreign banks that operate in developing countries generally

achieve higher profitability than domestic banks;[5] the opposite occurs in developed countries. They first articulate the popular explanation: banks from developed countries follow domestic customers into foreign markets, even when the profitability is lower.[6] They then offer several rationalizations for the differences between the profitability of foreign banks in developed and developing countries. First, low net-interest margins in developed countries may reflect participation in wholesale, rather than retail, markets with smaller net-interest margins. Second, the technical advantages for foreign banks in developed countries may be too small to cover informational disadvantages. Of course, those two explanations of low net-interest margins may reverse themselves in developing countries. That is, foreign banks may enter retail markets more fully in developing countries and/or they may possess higher levels of technical efficiency that overcomes any informational disadvantages.[7]

Claessens, Demirgüç-Kunt, and Huizinga (2001) examine foreign bank operations in 80 countries. They conclude that foreign banks experience lower net-interest margins, overhead expenses, and profitabilities than domestic banks in developed countries.[8] The opposite ranking emerges in developing countries. They also consider how the operation of foreign banks may affect the performance of domestic banks as well as how the performance of domestic banks may

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[5] The Korean experience matches that observation over the 1994 to 1999 period. See Table 1 below.

[6] Nolle and Seth (1996), however, examining the experience of U.S. banks operating in 6 developed countries (Canada, France, Germany, Japan, the Netherlands, and the U.K.), conclude that " … the 'follow the customer' hypothesis may have more limited applicability … than previously supposed." (p. 2). DeYoung and Nolle (1996) argue that lower profitability of foreign banks in the U.S. reflects a preference for growth over profits.

[7] On this point, see our discussion of Berger, DeYoung, Genay, and Udell (2001) at the end of this section.

[8] Terrell (1986) reports similar findings.

attract foreign banks. They conclude that the expansion of the foreign bank presence associates with a lower profitability and a higher provisioning for bad loans by domestic banks.[9]

Berger, DeYoung, Genay, and Udell (2001) explore this conundrum from a slightly different point of view. They consider two alternative hypotheses that can explain differences in foreign and domestic bank performance – the home-field- and global-advantage hypotheses. The home-field-advantage hypothesis argues that domestic banks generally outperform foreign banks because of informational and cost advantages. The global-advantage hypothesis argues that banks from some countries possess sufficient efficiency gains, allowing them to overcome any home-field advantages accruing to domestic banks. They examine the X-efficiency of domestic and foreign banks within the borders of a given country. They calculate X-efficiency in five developed (OECD) countries – France, Germany, Spain, the U.K., and the U.S. Moreover, the foreign banks also come from developed (OECD) countries, except for Korea. They conclude that domestic banks exhibit higher cost- and profit-efficiencies than foreign banks, supporting the home-field-advantage hypothesis. Decomposing the foreign banks by country of origin provides some support for the global-advantage hypothesis. That is, foreign banks from the U.S. generally exceed the cost- and profit-efficiencies of domestic banks.[10]

The empirical observation that foreign banks perform better than domestic banks in developing countries implies that the technical savvy of banks from developed countries

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[9] Amel and Liang (1997) describe similar results.

[10] Demirgüç-Kunt, Levin, and Min (1998) employ the same data as Claessens, Demirgüç-Kunt, and Huizinga (2001) and draw three conclusions concerning the effects of foreign bank operations on the domestic economy. Greater participation by foreign banks tends to (1) reduce the probability of a banking crisis, (2) improve the efficiency of domestic banks, and (3) boost indirectly economic growth by improving domestic bank efficiency. Further, the effects of foreign bank operations relate to the number of foreign banks and not the size of their operations.

generally overcomes the home-field-advantage in developing countries, especially when the domestic economy has relatively unsophisticated financial markets and institutions. Of course, that conjecture only makes sense in those countries where financial markets allow the entry of foreign banks.

III.   Data Sources and Descriptive Analysis

Our balance sheet and income statement data for nationwide and regional Korean banks and foreign banks come from *Bank Management Statistics*, published by the Financial Supervisory Services (1999, 2000). Sixteen nationwide and 10 regional banks and 59 foreign banks enter our database for at least one year in the sample from 1994 through 1999.[11] Several bank entrances, mergers, acquisitions, and conversions occurred over the sample period, as the Asian financial crisis threw a roadblock across the path of deregulation and privatization of the financial sector begun by the Korean government and the Bank of Korea in the early 1980s.[12]

During the 1960s and 1970s, major components of the Korean financial system were nationalized. Lending was targeted toward favored sectors (and firms), such as exports and heavy industries (Bank of Korea 1994). Moreover, regional banks, which could operate only in their own provinces (and a branch in Seoul), entered the scene in 1967 to encourage regionally based development.[13] Plans to deregulate the financial system and place Korean commercial banks in the private sector began in the early 1980s.

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[11] See the appendix for the banks and country of origin in the sample.

[12] Bank of Korea (1994) and Gilbert and Wilson (1998) provide information on the Korean financial system.

[13] Over 1980 to 1994, Gilbert and Wilson (1998) calculate that nationwide banks experienced significant, large productivity improvement while regional banks experienced mixed results.

Deregulation in the early 1980s expanded the power of commercial banks, who could now, for example, offer credit cards, issue negotiable certificates of deposit, provide automated teller machines, and so on (Gilbert and Wilson 1998). Simultaneously, foreign exchange controls and restrictions on foreign ownership of Korean assets eased. The government's hand still wielded, nonetheless, a potent force, controlling interest rates on certain types of loans and deposits. Further, the government's informal credit policy continued to favor selected sectors.

Gilbert and Wilson (1998) argue that the Korean commercial banking system experienced a crisis in the mid-1980s with significant levels of bad loans. No Korean bank failed at this time, however, as charge-off rates for bad loans were allocated slowly enough to maintain individual bank viability. No such luck (skill) graced the Korean commercial banking industry during the Asian financial crisis.

While the Asian financial crisis produced the dramatic domestic economic crisis in Korea, more fundamental causes also added to its severity.[14] The corporate sector overextended itself with too much investment and borrowing. Commercial banks overused short-term foreign lending as a source of funds. Finally, the lack of transparency of balance sheets, income statements, and management practices all led to a crisis of confidence in Korean institutions. In sum, the Korean economy was an "accident waiting to happen."

Korea First and Seoul became insolvent during the Asian financial crisis. They were judged as "too-big-to-fail" institutions. Thus, the government nationalized and recapitalized them in January 1998. The Bank of Korea sought private (foreign) buyers for both banks after

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[14] The next few paragraphs rely on information from Bank of Korea (1998).

recapitalization. After protracted negotiations, Newbridge Capital acquired Korea First in December 1999. Seoul still sits on the auction block.

Having determined that Korea First and Seoul were too-big-to-fail, the Monetary Board of the Bank of Korea in February 1998 identified 12 of the remaining 24 Korean banks as falling below the Bank of International Settlements (BIS) capital adequacy requirement of 8 percent. After examining the financial conditions of those twelve banks, the Financial Supervisory Commission ordered the closure of 5 Korean banks – 3 nationwide and 2 regional – since they were judged to have little chance of recovering. Those banks were closed through purchase and assumptions (P&As) where the acquiring banks assumed the liabilities and purchased only the "sound" assets.

Chase Manhattan entered the Korean economy as the first foreign bank in 1967.[15] The participation of foreign banks grew at a good pace through out the 1970s and 1980s, but stabilized in the 1990s and then fell somewhat after the Asian financial crisis. Foreign banks came to Korea during the 1970s and 1980s, partly because they received more favorable treatment in certain areas than domestic banks. In the mid-1980s, regulatory change began eating away at the preferential treatment of foreign banks. But along with the elimination of preferential treatment in some areas, other regulatory changes reduced barriers and restrictions on foreign bank activities. Thus, the playing field was basically leveled between foreign and domestic banks.

Demirgüç-Kunt, Levin, and Min (1998) argue that the foreign bank presence in Korea provided positive, competitive pressure on domestic banks through the end of their sample in

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[15] The discussion in this paragraph relies on Demirgüç-Kunt, Levin, and Min (1998).

1996, just prior to the Asian financial crisis. They attribute the better foreign bank performance to more economical labor use and better underwriting of loans. That is, foreign banks possessed much higher ratios of profit to employee, loans to employee, and expenses to employee and much lower ratio of non-performing loans to loans than domestic banks (Demirgüç-Kunt, Levin, and Min, 1998, Table 10, p. 102).

From 1994 through 1999, 59 foreign banks operated in Korea – some for the full sample period, others for only parts. The 59 banks include 14 each from the U.S. and Japan, 6 from France, 4 each from Canada and Singapore, 3 from the U.K., and 2 each from Australia, China, the Netherlands, and Switzerland.[16]

Our database includes information on the asset and liability holdings and income and expense information of Korean and foreign banks. Before performing more rigorous analysis of the database, we first provide an overview discussion of a number of key variables related to bank performance over the 1994 to 1999 period.

Table 1 lists the average returns on assets and equity for foreign, nationwide, and regional banks. The foreign banks consistently experience higher average returns on assets and equity, consistent with half of the conundrum noted by Claessens, Demirgüç-Kunt, and Huizinga (2001). Moreover, foreign banks average returns remain positive through the Asian financial crisis, unlike Korean banks – nationwide and regional. Regional banks first lead nationwide banks in average returns on assets and equity while returns remain positive. Once returns flip negative, regional banks sustain a larger hit in 1998 and become more negative than nationwide

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[16] The following countries each had one bank represented – Germany, Hong Kong, India, Jordan, and Pakistan.

banks. Regional banks recover more quickly than nationwide banks and exhibit higher returns, although still negative, than nationwide banks in 1999.

Table 2 enumerates the number of foreign, nationwide, and regional banks over the sample period. Foreign banks outnumber Korean banks – nationwide plus regional – by about 2 to 1. Bank closures in 1998 and 1999, however, push this ratio to nearly 2.5 to 1. Japanese and U.S. banks surpass by a large margin the presence of banks from other countries. In 1994, 14 Japanese banks operated in Korea. As just noted, this number falls to 7 by 1999 with all but one of the exits occurring after the Asian financial crisis. In 1994, 11 U.S. banks operated in Korea. After 3 entrances and 3 exits, 11 U.S. banks remain in business in 1999. France and Singapore each held steady with 6 and 4 banks, respectively, in all sample years.

Superiority in numbers does not translate into dominance in the markets, since Korean banks uniformly exceed, on average, the foreign banks in asset size. Table 3 reports the average assets held by foreign, nationwide, and regional banks. Nationwide banks possess about 4 times the assets of regional banks and about 35 times the assets of foreign banks. Those ratios rise to about 6 and 45 by 1999. Foreign banks achieved the highest average size in assets in 1998. The top 15 foreign banks in 1998 in asset size include 2 U.S. banks, 5 Japanese banks, 4 French banks, and one bank each from Germany, Hong Kong, the Netherlands, and Switzerland.

Table 3 also suggests that Korean banks did respond to the shocks from the Asian financial crisis to the extent that they could. In general, loans decreased as a percent of assets in both 1998 and 1999 as banks tried to reduce the income risk that they faced. Moreover, deposits increased as a percent of assets in 1998 and 1999 as banks tried to reduce the expense risk that they faced.

Researchers suggest that foreign lending to domestic banks played an important role in the Asian financial crisis (Radelet and Sachs 1998, Cho and Hong 2001, Kaminsky and Reinhart 2001, and Tornell 2001). That is, the Asian crisis precipitated a loss of foreign-source liabilities, exerting strong pressure on those banks with an illiquid asset base. If accurate, then we expect to see retrenchment in bank portfolios – declining assets and/or deposits. We do not observe such movements by in large for the Korean or foreign banks.

Total assets climbed continually from 1994 through 1999 for Korean nationwide and regional banks, and fell only slightly in 1999 for foreign banks (see Table 3). Deposits also rose steadily over the entire 1994 to 1999 period (see Table 4). In short, the consolidated balance sheet information does not provide much ammunition for the hypothesis that the withdrawal of foreign-source liabilities played a significant role in the Korean economic woes after the Asian financial crisis. If foreign-source liabilities were withdrawn from Korean nationwide banks, then such loses were more than replaced from domestic sources.

To offer a related insight to that last observation, Tables 4 and 5 also report information on foreign-currency deposits and foreign-currency loans, respectively. Both items, measured in Won, decrease after the Asian financial crisis in absolute terms (not shown) and as a percent of loans and discounts and deposits, respectively. Unfortunately, we do not know whether the lost loans and deposits were domestic or foreign residents, since that data are not available.

The holding of foreign-currency loans and foreign-currency deposits do expose banks to foreign exchange risk as long as foreign-currency loans exceed, or fall short of, foreign-currency deposits. For example, if foreign-currency loans exceed foreign-currency deposits, then a weakening Won increases the Won value of foreign-currency loans more than deposits, adding

to the equity base. Of course, a strengthening Won squeezes the equity base.[17] We note that foreign-currency loans and deposits rise and fall together with those loans exceeding deposits in every year except 1997 for only nationwide banks (not shown).

Finally, Tables 4 and 5 also offer some evidence on the effects, if any, of foreign-currency deposits and foreign-currency loans on bank performance. Nationwide banks rely more heavily on foreign-currency deposits and foreign-currency loans than regional banks.[18] Both nationwide and regional banks did reduce their dependency on foreign-currency deposits and foreign-currency loans in 1999. Regional bank performance exceeded nationwide bank performance over 1994 to 1996, deteriorated more significantly during the 1997 and 1998 period, and then recovered more briskly in 1999. In addition, foreign banks by 1999 relied more heavily on both foreign-currency deposits and foreign-currency loans than Korean nationwide or regional banks. Also, foreign bank performance dominated Korean nationwide and regional banks throughout the sample period. Thus, it is improbable that the holding of foreign currency deposits or foreign currency loans *per se* systematically contributed to poor bank performance across all bank types. If that were the case, then Korean regional bank performance should not have suffered so significantly and foreign bank performance should have suffered more severely.

IV.   Explaining Bank Performance in Korea

Our data sample includes all nationwide and regional banks and all foreign banks in operation in any year from 1994 to 1999. Since some banks entered and/or exited over the sample period, we have an unbalanced panel data set of 441 observations – a panel of 510 observations with 69

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[17] The database does not provide the breakdown of foreign-currency loans and deposits into individual currencies.

[18] Negotiable certificates of deposit include both won- and foreign currency-denominated accounts. Total loans and discounts do not equal the sum of won- and foreign-currency-denominated loans, since total loans and discounts

missing values. As noted above, the data include balance sheet and income statement data on these banks. In addition, we collected some macroeconomic information that change over time, but do not differ between banks at a point in time.

Our econometric analysis considers possible correlations between the balance sheet and income statement data as well as the macroeconomic data and our measures of bank performance returns on assets and equity. We produce two sets of regressions for the foreign, nationwide, and regional banks. In each set, the first regression considers three different types of individual bank explanatory variables: (1) portfolio distribution variables – won loans to assets, foreign currency loans to assets, won deposits to assets, negotiable certificates of deposit to assets, foreign currency deposits to assets, and equity to assets; (2) a risk variable – provision for loan losses to loans; and (3) a scale variable – total assets. The second regression broadens the analysis to include macroeconomic variables -- the unemployment rate, the rate of growth of real gross domestic product, the rate of depreciation of the Won, the fiscal budget surplus as a fraction of nominal gross domestic product, and the rate of inflation in the consumer price index.

We anticipate that interest-earning assets – Won loans to assets and foreign currency loans to assets --- will garner positive effects on bank profitability while interest-earning liabilities – Won deposits to assets, negotiable certificates of deposits to assets, and foreign currency deposits to assets – will garner negative effects. We expect that equity to assets will possess a positive effect, which reflects complementary factors. Higher equity to assets implies lower interest earning liabilities to assets. So net income, which includes any dividend payments, should increase as equity to assets rises, other things constant. Higher equity to assets also may

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include domestic import usance bills and advances to customers.

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imply a well-run bank operation with fewer problems. And a well-run bank may imply higher

net income. We foresee a negative effect of our risk variable, provision for loan losses to loans,

on bank performance. Since we predict that poor macroeconomic performance will lead to poor

bank performance, then negative effects on bank performance should associate with higher

unemployment, a faster depreciation in the exchange rate, and a higher inflation rate. Further, a

higher growth rate of real gross domestic product should associate with better bank performance.

Finally, we do not have prior expectations about the effects of bank size of a higher fiscal surplus

as a fraction of nominal gross domestic product on bank performance.

The standard method in empirical bank studies estimates regression equations with

ordinary least squares (OLS), which assumes that the omitted variables are independent of the

regressors and are independently, identically distributed. Such estimation, however, can create

problems of interpretation if bank-specific characteristics, such as bank management, that affect

performance are not considered. If those omitted bank-specific variables (both observed and

unobserved) correlate with the explanatory variables, then OLS produces biased and inconsistent

coefficient estimates (see Hsiao, 1986). Using panel data, however, the fixed-effect model

produces unbiased and consistent estimates of the coefficients.[19]

The fixed-effect model assumes that differences across banks reflect parametric shifts in

the regression equation. Such an interpretation becomes more appropriate when the problem at

hand uses the whole population, rather than a sample from it. Since our sample considers all

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[19] Another method of excluding unobserved country-specific variables estimates the first-differenced regression (see Hsiao 1986, and Westbrook and Tybout 1993). Also see Woolridge (2000, p. 447) for the choice between using fixed effects and first differences. Another popular method is the random-effects model, which assumes that individual specific constant terms are randomly distributed across cross-sectional units. See Greene (2000, Ch. 14) for details.

domestic and foreign banks over a particular time period (i.e., 16 nationwide, 10 regional, and 59 foreign banks), we adopt the fixed-effect model for our analysis.

Before reporting the results of our regression analysis, some background discussion on the sequence of events in our research will provide useful information. Jeon and Miller (2002) performed similar analysis on a richer data set for nationwide banks from 1991 to 1999.[20] They found that including the 1999 data made the regression models less precise. Moreover, they discovered that Seoul appeared as an outlier.

Such large changes in results from adding data from 1999, with hindsight, seems a probable outcome, since the post-Asian-financial-crisis data are much noisier. The government's hand in nationalization of several institutions and in recapitalizing many others likely altered normal relationships. A quick look at Table 1 suggests that amongst the nationwide banks, Seoul appears to have followed a different path in 1999. Seoul's returns on assets and equity deteriorate further in 1999 when other banks experience some relief from the difficulties in 1998. Moreover, while the government finally did find a foreign purchaser for Korea First, Seoul remains at the altar awaiting a proper suitor. Jeon and Miller (2002) deleted the 1999 Seoul observation from their data set to improve the performance of the regression estimates. Thus, we also delete the 1999 Seoul observation, converting our data set to an unbalanced panel of 510 with 70 missing values. And lastly, before examining our econometric results, we allow for differentiation between the effects of independent variables before and after the Asian financial crisis. To do so, we construct an Asian-financial-crisis dummy variable (equal zero for 1994 to

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[20] The data provided on foreign banks required that we limit the variables considered in our econometric analysis. That is, the portfolio distribution and income and expense variables provide much less information in our current data set, although we are considering a much larger number of banks.

1996; one otherwise) and interact it with each independent variable. We drop all interaction terms for which the coefficients do not significantly differ from zero at the 20-percent level and re-estimate.

Table 6 and 7 report the regression results for the returns on assets and equity, respectively, excluding the 1999 Seoul observation and omitting the interaction terms with insignificant coefficients. Several observations deserve mention. First, F-tests determine whether foreign and domestic banks and then nationwide and regional banks experience different relationships. The foreign and domestic bank regressions differ significantly from each other at the 1-percent level in every case – returns on assets and equity both with and without macroeconomic controls. The nationwide and regional bank regressions also differ significantly from each other at the 1-percent level, except for the return on asset regressions without macroeconomic controls.[21] In sum, we report separate regression results for nationwide, regional, and foreign banks. Within each bank subgroup, however, we employ panel data estimation, using the fixed-effect technique.

Second, the adjusted R^2 for the regional-bank regressions suggest a reasonably good fit. The fit for the nationwide-bank regressions falls somewhat compared to the regional-bank regressions. The fit for the foreign-bank regressions leaves much unexplained variability.[22]

Third, higher capital adequacy (equity to assets) associates positively with both the rates of return (return on assets and equity) for domestic (nationwide and regional) banks, but not for

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[21] Here, the F-test is not significant even at the 20-percent level.

[22] The home-country variables for the foreign banks may explain movements in foreign bank performance. To pursue such issues goes beyond the intent of the current paper. Jeon, Natke, and Miller (2002) address those issues.

foreign banks.[23] While that effect occurs for both the pre- and post-crisis periods for the return on assets specification, it only appears in general in the post-crisis period for the return on equity specification. What does that difference imply? When equity to assets increases, that may reflect higher equity, lower assets, of both. Thus, the return on assets more easily rises with an increase in equity to assets, than can return on equity. Nonetheless, we still find that positive correlation between return on equity and equity to assets during the post-crisis period, implying that the size of equity to assets provides a strong signal. Moreover, the positive effect of equity to assets on the returns on assets or equity for domestic banks emerges even as the government recapitalized several domestic banks and arranged for the merger of many others. That is, banks with significant financial problems receive an injection of new equity that should raise the equity to asset ratio. Such recapitalizations presumably impart a negative correlation. Thus, the highly significant and positive association between capital adequacy and rates of return must offset this government-induced negative association.

Fourth, provisions for loan losses to total assets has a strong negative correlation with the returns on assets and equity across all three types of banks except for the regional banks in the rate of return on equity equations. The provision for loan losses crudely signals the riskiness of banks. Thus, higher loan loss provisions signal higher risk and associates negatively with bank returns.

Fifth, the ratio of foreign-currency deposits to total assets displays a significantly negative effect on the returns on assets and equity for both nationwide and regional banks. For

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[23] The fact that capital adequacy does not significantly affect foreign bank performance probably reflects the fact that the equity positions of foreign banks comprise a small part of the larger equity positions of the international banks to which they belong.

nationwide banks, that effect occurs in both the pre- and post-crisis periods; for regional banks, it occurs only in the post-crisis period. The foreign banks did not experience that significant effect. Jeon and Miller (2002) do not find that conclusion in their study of 16 nationwide banks. They considered a longer time period – 1991 to 1999. Differences in sample length may explain the difference in findings as to foreign currency deposits. That is, the Asian financial crisis began in mid-1997. As such, the sample from 1994 to 1999 has a larger percentage of sample years coming from after the crisis. Less influence is potentially wielded by the post-Asian financial crisis years in the 1991 to 1999 period. In additions, Jeon and Miller (2002) use end-of-year (last-quarter) data. Here, we employ quarterly averages. Thus, the well-known "window-dressing" effect may explain the findings in Jeon and Miller (2002).[24]

Sixth, the ratio of won-denominated loans to assets possesses a positive correlation with the rates of return on assets and equity for foreign banks, but not for domestic national banks. Moreover, that effect seems isolated to the post-crisis period. Nationwide banks possess a positive correlation between foreign currency loans and the rates of return on assets and equity. Regional banks possess a significant positive correlation only for the return on equity.

Finally, the macroeconomic variables exert the most effect on the foreign and regional banks and the least effect on the nationwide banks. A rising unemployment rate and an increase in surplus to GDP ratio each associate with a lower rate of return on assets and equity for regional banks, but not for nationwide or foreign banks. The inflation rate and exchange rate depreciation negatively affect the rates of return on assets and equity for foreign banks, but generally do not affect the rates of return on assets and equity for domestic banks.

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[24] "Window dressing" refers to the accounting "tricks" used at the close of the year to make an institution's

In sum, the empirical results accord with our prior expectations with a few exceptions. All significant financial and macroeconomic variables possess the anticipated correlation with bank performance for Korean banks. A few more unexpected significant correlations emerge in the foreign bank regressions. Moreover, unexpected negative effects of foreign currency loans to assets, equity to assets, and inflation on bank performance appears in the foreign bank regressions as well as an unexpected positive effect of the unemployment rate.

V.   Conclusion

The Asian financial crisis is but one of several recent crises that hit the world's economies. Analysts suggest that it differs from prior crises in the importance of foreign lending. That is, recent capital flows into many Asian countries in response to the Asian miracle quickly exited once the crisis emerged. The sharp loss of lending quickly plunged financial institutions and corporations into a liquidity crisis. In addition, some analysts (e.g., Radelet and Sachs 1998, and Noland (2000) cite the initial IMF rescue programs that required credit tightening as contributing to the severity of the problems. The problems in Korea mirrored many of the problems confronted by other countries. The financial institutions needed recapitalization and restructuring. Furthermore, a number of important *chaebols* faced imminent default on their obligations.

If the exodus of capital precipitated a liquidity crisis in Korean banking, the data should reveal dramatic retrenchment in assets and deposits. We find no such evidence. Thus, although the data do not allow us to disentangle foreign-owned assets and liabilities from their domestic counterparts, any loss of foreign-owned liabilities that may have occurred was more than offset

performance appear better than it actually is.

by an expansion in domestically owned liabilities, since total assets continued to increase before, during, and after the Asian financial crisis.

This also paper considers the performance of banks in Korea – nationwide, regional, and foreign -- before, during, and immediately after the Asian financial crisis that is dated in July 1997. The two largest banks – Korea First and Seoul – were judged as "too-big-to-fail." The government sought foreign buyers for those banks. It took nearly two years to reach agreement with Newbridge Capital to acquire Korea First. As of this writing, Seoul was still on the auction block. Government assistance was given to a number of banks to facilitate an acquisition by other Korean banks.

The performance of Korean banks took a big hit in 1998. Most banks recovered somewhat in 1999 with the notable exception of the further deterioration of Seoul. The foreign banks did not experience the same negative effect on their returns on assets and equity as a rule.

Several other factors also possess a strong correlation with bank performance as measured by the returns on assets and equity. Equity to assets correlates positively with domestic, but not foreign, bank performance, even when the government recapitalized a number of institutions that performed quite badly. Decreases in foreign-currency deposits associate significantly and negatively with domestic Korean bank performance. Provisions for loan losses generally correlates negatively with bank performance as one expects.

In sum, the Korean economy and financial sector has so far weathered a huge financial storm. But the oceans are not yet safe; the storm continues. Much progress has occurred in restructuring the financial sector. Less progress has occurred in the restructuring of the *chaebols*. This story has not yet seen its last chapter.

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Table 1:   **Average Rates of Return on Assets and Equity (percentage)**

	1994	1995	1996	1997	1998	1999
	ROA					
Foreign Banks	1.23	1.39	1.56	3.74	2.43	0.92
Nationwide Banks	0.62	0.27	0.31	-1.03	-3.60	-1.89
Regional Banks	0.81	0.55	0.40	-2.13	-7.53	-0.09
	ROE					
Foreign Banks	6.67	9.25	9.74	23.02	18.97	7.96
Nationwide Banks	5.45	3.01	3.66	-15.04	-55.80	-65.57
Regional Banks	5.74	4.88	4.40	-20.51	-175.45	-1.61

Note: See Appendix for bank names and country of origin.

Table 2:   **Number of Foreign, Nationwide, and Regional Banks**

	1994	1995	1996	1997	1998	1999
	Number of Banks					
Foreign Banks	52	52	49	53	51	46
Nationwide Banks	14	15	15	16	13	11
Regional Banks	10	10	10	10	8	6

Note: See Table 1.

Table 3:   **Average Total Assets, Deposits, and Loans and Discounts**

	1994	1995	1996	1997	1998	1999
	Assets (millions of Won)					
Foreign Banks	2847	3659	4637	6142	7967	7693
Nationwide Banks	103361	129683	154244	204071	275763	350231
Regional Banks	24793	31054	37840	44331	47603	60727
	Deposits (% of assets)					
Foreign Banks	11.8	9.2	7.9	8.2	12.3	16.3
Nationwide Banks	57.7	60.2	59.5	58.0	60.7	63.6
Regional Banks	69.2	67.2	64.8	61.7	61.3	71.4
	Loans and Discounts (% of assets)					
Foreign Banks	34.4	28.2	27.2	25.8	23.9	22.0
Nationwide Banks	57.3	56.5	55.7	57.9	50.7	48.6
Regional Banks	56.0	54.3	52.3	53.0	49.7	45.3

Note: See Table 1.

Table 4:   **Average Deposits and Their Distribution**

	1994	1995	1996	1997	1998	1999
Deposits (million of Won)						
Foreign Banks	337	338	368	504	979	1255
Nationwide Banks	59656	78065	91811	118318	167481	222852
Regional Banks	17165	20861	24523	27358	29191	43382
Won Deposits (% of deposits)						
Foreign Banks	29.9	26.1	29.9	34.6	36.8	44.9
Nationwide Banks	60.2	64.7	65.9	68.3	68.0	81.3
Regional Banks	80.1	76.3	72.9	73.2	75.0	90.2
Negotiable Certificates of Deposit (% of deposits)						
Foreign Banks	60.6	66.5	62.6	53.6	36.7	33.3
Nationwide Banks	13.5	13.8	12.1	8.3	5.0	3.9
Regional Banks	15.1	18.1	21.1	20.2	16.1	6.3
Foreign Currency Deposits (% of deposits)						
Foreign Banks	10.1	7.5	7.4	11.8	26.6	21.8
Nationwide Banks	26.3	21.5	21.9	23.4	27.0	14.9
Regional Banks	4.9	5.6	5.9	6.6	8.9	3.5

Note: See Table 1.

Table 5:   **Average Loans and Discounts And Their Distribution**

	1994	1995	1996	1997	1998	1999
Loans and Discounts (million of Won)						
Foreign Banks	979	1031	1262	1585	1906	1694
Nationwide Banks	59226	73208	86872	118059	139836	170226
Regional Banks	13890	16871	19801	23490	23668	27496
Won Loans (% of loans and discounts)						
Foreign Banks	68.0	66.6	57.1	47.4	45.2	55.0
Nationwide Banks	67.8	69.6	66.9	65.6	70.1	77.9
Regional Banks	95.5	94.6	93.7	92.8	88.2	94.3
Foreign Currency Loans (% of loans and discounts)						
Foreign Banks	27.1	27.1	36.5	47.0	51.0	39.6
Nationwide Banks	29.5	28.3	31.0	32.3	27.5	19.8
Regional Banks	3.0	3.9	4.6	5.3	7.0	4.3

Note: See Table 1.

Table 6: **Panel Regressions of Return on Assets: 1994-1999**

Variable	ROA					
	Foreign		Nationwide		Regional	
WL/A	-0.0150	0.0523	-0.0441	-0.0615	0.0755	0.0855
	(-0.44)	(1.37)	(-0.59)	(-0.86)	(0.60)	(1.18)
D*WL/A	0.1177*	0.0837**				
	(2.89)	(2.09)				
FCL/A	-0.0048	-0.0553‡	0.1625**	0.1512‡	-0.0362	-0.0449
	(-0.17)	(-1.86)	(2.38)	(1.93)	(-0.06)	(-0.14)
E/A	-0.0012	-0.0098	0.3463*	0.1580	0.3191*	0.2593*
	(-0.06)	(-0.55)	(2.96)	(1.15)	(3.50)	(3.67)
D*E/A						
PLL/A	-0.6030*	-0.5149*	-0.0193	0.2496	-1.2800*	-1.4269*
	(-3.38)	(-2.88)	(-0.0528)	(0.58)	(-4.68)	(-3.72)
D*PLL/A			-0.6059	-0.8661**		0.7555‡
			(-1.55)	(-2.06)		(1.97)
A	0.0021	-0.0055	-0.0003	0.0000	-0.0024	-0.0024
	(0.49)	(-1.27)	(-1.24)	(0.05)	(-0.65)	(-0.86)
WD/A	-0.0850	0.0416	0.0403	0.0333	-0.1178	-0.1303**
	(-0.67)	(0.33)	(0.72)	(0.56)	(-1.44)	(-2.32)
D*WD/A						
CD/A	-0.0629	-0.0411	0.0715	0.0293	-0.2511**	-0.2281*
	(-1.14)	(-0.78)	(0.88)	(0.37)	(-2.07)	(-3.54)
FCD/A	0.1012	0.1155	-0.4246*	-0.3412*	0.0981	0.1621
	(1.00)	(1.19)	(-6.40)	(-4.63)	(0.22)	(0.64)
D*FCD/A					-1.8769*	-0.5344
					(-3.76)	(-1.58)
UNEM		0.9283		-0.7440		-1.2016‡
		(1.49)		(-1.28)		(-1.86)
DGDP		0.2683		00815		0.4802‡
		(0.95)		(0.31)		(1.99)
DEXCH		-0.1987*		0.0612		-0.0473
		(-2.96)		(0.99)		(-0.77)
SUR		0.9607		-0.8987		-1.9619‡
		(0.89)		(-0.94)		(-1.93)
INF		-0.7359**		0.6604‡		0.0538
		(-2.08)		(1.96)		(0.15)
Adjusted R^2	0.0711	0.1861	0.6554	0.6981	0.7398	0.9307
SEE	0.0276	0.0249	0.0125	0.0117	0.0171	0.0088

Note: The dependent variable is the return on assets (ROA) as a fraction. Independent

individual bank variables include won-denominated loans to assets (WL/A), foreign currency loans to assets (FCL/A), equity to assets (E/A), provisions for loan losses to assets (PLL/A), assets (A, in billions of won), won-denominated deposits to assets (WD/A), certificates of deposit to assets (CD/A), and foreign currency deposits to assets (FCD/A). Independent macroeconomic variables include the unemployment rate (UNEM) as a fraction, the rate of growth of real GDP (DGDP) as a fraction, the rate of change in the Won per US dollar exchange rate (DEXCH) as a fraction, the government budget surplus to nominal gross domestic product (SUR), and the rate of inflation in the consumer price index (INF) as a fraction. Finally, D is the Asian financial crisis dummy variable (equals zero from 1994 to 1996; one otherwise). Summary statistics include the adjusted R^2 and the standard error of the regression (SEE). Numbers in parentheses under coefficient estimates are t-statistics.

*	means significantly different from zero at the 1-percent level
**	means significantly different from zero at the 5-percent level
‡	means significantly different from zero at the 10-percent level
‡‡	means significantly different from zero at the 20-percent level

Table 7:   **Panel Regressions of Return on Equity: 1994-1999**

Variable	ROE					
	Foreign		**Nationwide**		**Regional**	
WL/A	-0.1988	0.3264**	0.9660	-1.0809	6.4047‡	7.9386**
	(-1.07)	(2.08)	(0.61)	(-0.88)	(1.72)	(2.28)
D*WL/A	0.4087‡		-3.0081‡			
	(1.85)		(-1.74)			
FCL/A	-0.0208	-0.2997**	3.2046*	2.2202	-15.2288	-5.9433
	(-0.14)	(-1.96)	(2.72)	(1.65)	(-0.93)	(-0.39)
E/A	-0.0838	-0.1501	3.0559	3.6925	-1.3906	5.7026
	(-0.89)	(-1.63)	(1.23)	(1.57)	(-0.30)	(1.15)
D*E/A			6.5000‡		15.6920*	10.6105**
			(1.79)		(2.88)	(2.12)
PLL/A	-9.1705*	-8.2430*	-8.3901*	3.6082	-67.6646*	-60.7605*
	(-5.25)	(-5.41)	(-2.95)	(0.49)	(-3.17)	(-2.77)
D*PLL/A	4.7305**	5.2592*		-12.7275‡	82.2019*	80.1891*
	(2.30)	(2.67)		(-1.76)	(3.53)	(3.57)
A	0.0748*	0.0376‡	-0.0042	0.0009	0.1099	-0.0986
	(3.40)	(1.69)	(-0.88)	(0.14)	(1.03)	(-0.74)
WD/A	0.5799	-0.4385	0.8379	0.3661	-2.4612	5.8787
	(0.58)	(-0.69)	(0.88)	(0.36)	(-0.98)	(1.31)
D*WD/A	-2.3267‡					-12.1790**
	(-1.80)					(-2.27)
CD/A	-0.1370	-0.0245	0.5417	-0.3733	-7.5209**	-7.3239**
	(-0.48)	(-0.09)	(0.40)	(-0.27)	(-2.11)	(-2.42)
FCD/A	-0.2239	-0.2036	-6.2501*	-4.4065*	12.0958	5.8084
	(-0.52)	(-0.41)	(-5.70)	(-3.47)	(0.87)	(0.48)
D*FCD/A					-58.4154*	-38.8472**
					(-3.63)	(-2.37)
UNEM		7.2613**		-12.6696		-103.3952**
		(2.31)		(-1.26)		(-2.22)
DGDP		1.2614		0.1060		-1.5374
		(0.87)		(0.02)		(-0.13)
DEXCH		-1.0163*		1.0892		-0.0433
		(-2.94)		(1.03)		(-0.01)
SUR		8.1054		-12.4824		-148.7384**
		(1.48)		(-0.76)		(-2.15)
INF		-4.0207**		7.5334		-17.9635
		(-2.21)		(1.30)		(-1.04)
Adjusted R^2	0.1896	0.2971	0.5903	0.6199	0.7277	0.8133
SEE	0.1371	0.1277	0.2093	0.2016	0.4994	0.4136

Note: See Table 6. The dependent variable is the return on equity (ROE) as a fraction.

Appendix:

The banks included in this study were in operation in Korea at some point during 1994 to 1999 and are subdivided into nationwide and regional Korean banks and foreign banks. Table A lists the banks, their country of origin, and the number of years in the sample.

Table A: The Banks and Country of Origin

	Country	Bank Name	Sample Period
	Foreign Banks		
1	United States	CitiBank	1994-1999
2	United States	Bank of America	1994-1999
3	United States	First National Chicago	1994-1999
4	United States	American Express Bank	1994-1999
5	United States	Chemical	1994-1999
6	United States	Chase Manhattan	1994-1995
7	United States	Banker Trust	1994-1998
8	United States	Bank Boston	1994-1999
9	United States	The Union Bank of California	1994-1999
10	United States	Bank of New York	1994-1999
11	United States	Bank of Hawaii	1994-1999
12	United States	Nations Bank	1997-1998
13	United States	First Union National	1997-1999
14	United States	Morgan Guaranty Trust Co	1998-1999
15	Japan	Bank of Tokyo	1994-1995
16	Japan	Bank of Tokyo Mitsubi	1994-1999
17	Japan	Fuji Bank	1994-1999
18	Japan	DaiIchiKankyo	1994-1999
19	Japan	Sumitomo Bank	1994-1999
20	Japan	Sanwa Bank	1994-1999
21	Japan	ToOhKai	1994-1998
22	Japan	SaKura	1994-1998
23	Japan	Asahi Bank	1994-1999
24	Japan	Taiwa	1994-1998
25	Japan	Mitsubisu Trust	1994-1998
26	Japan	Yamakuchi	1994-1999
27	Japan	Japan Long-Term Trust	1994-1997
28	Japan	Yasda Trust	1994-1997
29	France	Credit Agricole Indosuez	1994-1999
30	France	Banque Nationale de Paris	1994-1999
31	France	Banque Paribas	1994-1999
32	France	Credit Lyonnais	1994-1999
33	France	YoBafe	1994-1999
34	France	Societe Generale	1994-1999

		Foreign Banks (continued)	
	Country	**Bank Name**	**Sample Period**
35	United Kingdom	Standard Chartered Bank	1994-1999
36	United Kingdom	Barclays	1994-1995
37	United Kingdom	National Westminster	1994-1997
38	Canada	Bank of Nova Scotia	1994-1999
39	Canada	Montreal	1994-1996
40	Canada	Canada Royal	1994-1999
41	Canada	National Bank of Canada	1994-1999
42	Singapore	Singapore	1994-1999
43	Singapore	Development Bank of Singapore	1994-1999
44	Singapore	United Overseas Bank	1994-1999
45	Singapore	Overseas Union Bank	1994-1999
46	Australia	Australia and New Zealand Banking Group	1994-1999
47	Australia	National Australia Bank Limited	1994-1999
48	Netherlands	ABN-AMRO Bank	1994-1999
49	Netherlands	ING Bank NV	1994-1999
50	Germany	Deutsche Bank	1994-1999
51	India	Indian Overseas Bank	1994-1999
52	Hong Kong	Hong Kong-Shanghai	1994-1999
53	Pakistan	National Bank of Pakistan	1994-1999
54	Jordan	Arab Bank PLC	1994-1999
55	China	Bank of China	1994-1999
56	China	Industrial and Commercial Bank of China	1997-1999
57	Philippines	Metropolitan Bank and Trust Company	1997-1999
58	Switzerland	Credit Suisse First Boston	1997-1999
59	Switzerland	UBS	1999-1999

		Korean Nationwide Banks	
	Country	**Bank Name**	**Sample Period**
1	Korea	Cho Hung	1994-1999
2	Korea	Sang-Up	1994-1999
3	Korea	Korea First	1994-1999
4	Korea	Hanil	1994-1998
5	Korea	Seoul	1994-1999
6	Korea	Korea Exchange	1994-1999
7	Korea	Kook-Min	1995-1999
8	Korea	Housing &Commercial	1997-1999
9	Korea	Shinhan	1994-1999
10	Korea	Han Mi (KORAM)	1994-1999
11	Korea	Dong-Wha	1994-1997
12	Korea	Dong-Nam	1994-1997
13	Korea	Dae-Dong	1994-1997
14	Korea	Hana	1994-1999
15	Korea	Boram	1994-1998
16	Korea	Pyong-Wha (peace bank of Korea)	1994-1999

	Korean Regional Banks		
	Country	**Bank Name**	**Sample Period**
1	Korea	Daegu	1994-1999
2	Korea	Pusan	1994-1999
3	Korea	Chung-Cheong	1994-1997
4	Korea	Kwang-Ju	1994-1999
5	Korea	Che-Ju	1994-1999
6	Korea	Kyung-Gi	1994-1997
7	Korea	Jeon-Buk	1994-1999
8	Korea	Kong Won	1994-1998
9	Korea	Kyong-Nam	1994-1999
10	Korea	Chung Buk	1994-1998

Table 6o: **Panel Regressions of Return on Assets: 1994-1999**

Variable	ROA					
	Foreign		**Nationwide**		**Regional**	
WL/A	0.0476‡	0.0999*	-0.0333	-0.0432	0.1190	0.1024‡‡
	(1.79)	(3.24)	(-0.44)	(-0.59)	(0.81)	(1.37)
FCL/A	-0.0055	-0.0564‡	0.1523**	0.1640**	-0.1379	-0.0780
	(-0.19)	(-1.88)	(2.21)	(2.04)	(-0.21)	(-0.25)
E/A	-0.0016	-0.0100	0.3313*	0.1021	0.3349*	0.2758*
	(-0.09)	(-0.55)	(2.81)	(0.74)	(3.15)	(3.79)
PLL/A	-0.6103*	-0.5080*	-0.5549*	-0.5576*	-1.0599*	-0.6999*
	(-3.37)	(-2.82)	(-3.28)	(-3.17)	(-3.39)	(-4.21)
A	0.0025	-0.0058‡‡	-0.0003	0.0000	-0.0001	-0.0011
	(0.58)	(-1.33)	(-1.14)	(0.02)	(-0.02)	(-0.37)
WD/A	-0.1145	0.0390	0.0273	0.0146	-0.0317	-0.0931‡‡
	(-0.89)	(0.31)	(0.49)	(0.24)	(-0.35)	(-1.68)
CD/A	-0.0680	-0.0429	0.0512	0.0142	-0.1979‡‡	-0.2160*
	(-1.21)	(-0.81)	(0.63)	(0.17)	(-1.41)	(-3.23)
FCD/A	0.0904	0.1181	-0.4394*	-0.3740*	-0.8593**	-0.1294
	(0.88)	(1.21)	(-6.62)	(-5.05)	(-2.07)	(-0.61)
UNEM		0.7045		-0.3122		-1.7386*
		(1.14)		(-0.56)		(-2.81)
DGDP		0.2482		0.2118		0.5260**
		(0.87)		(0.80)		(2.10)
DEXCH		-0.2031*		0.0339		-0.0542
		(-3.00)		(0.55)		(-0.86)
SUR		0.7299		-0.6131		-2.6178**
		(0.68)		(-0.63)		(-2.62)
INF		-0.7893**		0.7429**		0.2034
		(-2.22)		(2.16)		(0.56)
Adjusted R^2	0.0422	0.1743	0.6472	0.6800	0.6449	0.9245
SEE	0.0270	0.0251	0.0127	0.0121	0.0199	0.0092

Note: The dependent variable is the return on assets (ROA) as a fraction. Independent individual bank variables include won-denominated loans to assets (WL/A), foreign currency loans to assets (FCL/A), equity to assets (E/A), provisions for loan losses to assets (PLL/A), assets (A, in billions of won), won-denominated deposits to assets (WD/A), certificates of deposit to assets (CD/A), and foreign currency deposits to assets (FCD/A). Independent macroeconomic variables include the unemployment rate (UNEM) as a fraction, the rate of growth of real GDP (DGDP) as a fraction, the rate of change in the Won per US dollar exchange rate (DEXCH) as a fraction, the government budget surplus to nominal gross domestic product (SUR), and the rate of inflation in the consumer price index (INF) as a fraction. Summary statistics include the adjusted R^2 and

the standard error of the regression (SEE). Numbers in parentheses under coefficient estimates are t-statistics.

*	means significantly different from zero at the 1-percent level
**	means significantly different from zero at the 5-percent level
‡	means significantly different from zero at the 10-percent level
‡‡	means significantly different from zero at the 20-percent level

Table 7o: Panel Regressions of Return on Equity: 1994-1999

Variable	ROE					
	Foreign		**Nationwide**		**Regional**	
WL/A	0.0582	0.3397**	-0.5238	-0.8117	5.8239	6.7288‡‡
	(0.43)	(2.14)	(-0.41)	(-0.65)	(1.24)	(1.59)
FCL/A	-0.0308	-0.3131**	2.6497**	2.4088‡	-15.4080	-14.8777
	(-0.20)	(-2.02)	(2.30)	(1.76)	(-0.73)	(-0.83)
E/A	-0.0795	-0.1375‡‡	5.9484*	2.8609	11.6522*	14.8876*
	(-0.84)	(-1.47)	(3.01)	(1.22)	(3.40)	(3.63)
PLL/A	-5.7875*	-5.2829*	-9.0958*	-8.2521*	8.5090	15.5917‡‡
	(-6.21)	(-5.68)	(-3.21)	(-2.75)	(0.84)	(1.66)
A	0.0753*	0.0332‡‡	-0.0035	0.0007	0.1571	0.0010
	(3.41)	(1.47)	(-0.75)	(0.11)	(1.17)	(0.01)
WD/A	-1.0614‡‡	-0.4058	0.4744	0.0910	-1.8413	-1.1207
	(-1.59)	(-0.63)	(0.50)	(0.09)	(-0.62)	(-0.36)
CD/A	-0.1675	-0.0330	0.2185	-0.5954	-4.9077	-5.8685‡‡
	(-0.58)	(-0.12)	(0.16)	(-0.43)	(-1.08)	(-1.56)
FCD/A	-0.2346	-0.2042	-6.2189*	-4.8895*	-31.3187**	-14.5412
	(-0.44)	(-0.41)	(-5.60)	(-3.87)	(-2.34)	(-1.22)
UNEM		6.9832**		-6.3185		-88.0117**
		(2.20)		(-0.66)		(-2.52)
DGDP		0.9494		2.0211		9.7697
		(0.64)		(0.45)		(0.69)
DEXCH		-0.9457*		0.6880		-3.1143
		(-2.71)		(0.65)		(-0.87)
SUR		8.2428‡‡		-8.2849		-128.4488**
		(1.48)		(-0.50)		(-2.28)
INF		-4.5418**		8.7454‡‡		-4.1863
		(-2.47)		(1.49)		(-0.20)
Adjusted R^2	0.1680	0.2785	0.5797	0.6052	0.5504	0.7057
SEE	0.1389	0.1293	0.2120	0.2055	0.6417	0.5192

Note: See Table 6. The dependent variable is the return on equity (ROE) as a fraction.