Crisis, FDI, and Investment: The Impact of Banking Crisis in Source Countries on the Investment of Foreign-Owned Companies

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Abstract

Using combined firm-level data on annual financial statements with the banking crises database and information of foreign-owned companies in South Korea from 1994 to 2013, this paper examines firm-level evidence that banking crises in source countries affect investment decisions of foreign multinationals. The system-GMM estimator is used in order to estimate the dynamic investment equations with foreign ownership and the crises in source countries. I find that foreign multinationals increase their investment rate during the banking crisis. In addition, an increase in foreign shareholding decreases the investment rate of foreign multinationals during the banking crises in source countries. To find whether firm characteristics or financial vulnerabilities alter the impact of the banking crisis on investment decision of foreign multinationals, I split the sample into two groups with various criteria and estimate the baseline specification for each subsample, respectively. In the case of non-chaebol, non-exporter firms, or less financially sensitive industries, there exists an inverse relationship between foreign shareholding and investment rate of foreign-owned firms during banking crises, but the rest of the firms suffer no effects from banking crises in source countries, concerning the investment behavior of foreign multinationals.

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1 Introduction

Generally, foreign-owned companies face less credit constraints because they can be provided equity from foreign parent company (Harrison and McMillan (2003)). However, instability of foreign multinationals during financial crises is debatable. According to McAleese and Counahan (1979), foreign multinationals may be no less stable than domestic firms during the crisis because some of sunk costs related to foreign direct investment (FDI) make it unlikely for them to react strongly to short-term changes in host country conditions. On the other hand, in Flamm (1984), foreign multinationals can be more unstable because production facilities can be moved from one country to another country.

Some of previous literature shows positive effects of global financial crisis between 2007 and 2009 or the Asian crisis between 1997 and 1998 on the performance of foreign-owned companies. In Alfaro and Chen (2012), the authors examine the effect of the global financial crisis on the annual percentage point increase in sales of foreign-owned establishments. Desai et al. (2007) find that the multinational corporations increase sales, assets, and investment caused by currency depreciations, but local companies increase little or decrease them during the currency crisis. They argue that, in the case of multinational corporations, foreign equity is supplied from foreign parent company during the crisis, and this is the main role of foreign direct investment in the developing countries. On the other hand, local companies do not have additional source to mitigate financial constraints, so they cannot expand economic activity at severe currency depreciation. Blalock et al. (2005) analyze the impact of financial crisis on investment for domestic and foreign owned firms in Indonesia, and find that not domestic exporters but foreign-owned exporters only increase investment. Tong and Wei (2011) also show that local companies in which non-FDI capital is invested face severe credit constraint during the global crisis, whereas, in the case of multinational subsidiaries with FDI, the liquidity constraint is reduced.

However, other literature shows negative or no impact of financial crisis on the performance of foreign multinationals. Alvarez and Görg (2007) find the empirical results from plant-level survey data in Chile between 1990 and 2000 that the behavior of foreign-owned company is not different from that of domestic company during crisis in Chile in the late 1990s. In addition, Javorcik and Spatareanu (2009) show that the banking crisis in Czech Republic from 1999 to 2000 has no effect on investment decision among multinational suppliers

in Czech market using firm level survey data conducted in 2003 and 2004.

Almost all previous literature focuses on the role of global crises or the crisis in host countries that receive FDI from other countries. However, just a few papers investigate the role of the source countrys financial crisis. That is, barely any examine how the financial crisis in the source country involves in the performance of foreign-owned company. This paper uses information about source countrys banking crisis to distinguish between the specific external shock from the source country and the common external shock from the global financial crisis, and analyzes the effects of banking crisis in the source country on investment of foreign multinationals. These are the main contributions of this paper.

For this analysis, I use firm level dataset on financial statements of companies in South Korea from 1994 to 2013. This dataset includes information not only on all companies publicly listed but also on some private companies that external audit of financial statements is required by the Law.[1] In order to construct a dummy variable for source countrys banking crisis, I use the banking crises database from Valencia et al. (2012). For information about foreign-owned companies, I use the data on the list of foreign multinationals from Ministry of Trade, Industry and Energy in South Korea. For empirical analysis, I use the system-GMM estimator suggested by Arellano and Bover (1995) and Blundell and Bond (1998) in order to estimate the dynamic investment equations with foreign ownership and the crises in source countries.

I find that foreign multinationals increase their investment rate by 11.4 percent points during the banking crisis. In addition, an increase in foreign shareholding decreases the investment rate of foreign multinationals during the banking crises in source countries. During the banking crises in source countries, a ten percent point increase in foreign shareholding decreases foreign multinationals investment rate by about 1.8 percentage points. Next, to find whether firm characteristics or financial vulnerabilities alter the impact of the banking crisis on investment decision of foreign multinationals, I split the sample into two groups with various criteria and estimate the baseline specification for each subsample, respectively. In the case of non-chaebol, non-exporter firms, or less financially sensitive industries (more

[1] According to the Act of External Audit of Joint-Stock Corporations revised on September 3rd 2014, the following firms are required to publish audited financial statements to the Financial Supervisory Commission: (a) public firms; (b) private firms with assets more than or equal to 12 billion Korean Won; (c) private firms with assets and total liabilities more than or equal to 7 billion Korean Won, respectively; or (d) private firms with assets are more than or equal to 7 billion Korean Won and employees more than or equal to 300.

asset tangibility and/or more trade credits), there exists an inverse relationship between foreign shareholding and investment rate of foreign-owned firms during banking crises. On the contrary, firms that belong to chaebols, export firms, or more financially sensitive industries (less asset tangibility and/or less trade credits) suffer no effects from banking crises in source countries, concerning the investment behavior of foreign multinationals. In the case of non-chaebol and non-exporter firms, a ten percent point increase in foreign shareholding decreases foreign multinationals investment rate by about 1.62 percentage points and 2.20 percentage points during the banking crises in source countries, respectively. Similarly, in the case of firms with more asset tangibility and more trade credits, a ten percent point increase in foreign shareholding decreases foreign multinationals investment rate by about 2.56 percentage points and 1.80 percentage points during the banking crises in source countries, respectively.

I organize the rest of this paper as follows. In the next section, the empirical model is presented. In section 3, I describe the firm-level data. In section 4, I present the empirical results. The last section concludes.

2 Empirical Model

In order to identify whether the banking crisis in the source country affects investment behavior of foreign multinationals, I estimate the following dynamic investment equation:

$$\frac{I_{ijt}}{K_{ijt-1}} = \beta_1 \frac{I_{ijt-1}}{K_{ijt-2}} + \beta_2 \frac{S_{ijt}}{K_{ijt-1}} + \beta_3 \frac{CF_{ijt}}{K_{ijt-1}} + \beta_4 BC_{jt} + \beta_5 FDI_{ijt} + \beta_6 BC_{jt} \times FDI_{ijt} + \upsilon_i + \nu_t + \tau_{jt} + \varepsilon_{ijt}, \tag{1}$$

where $\frac{I_{ijt}}{K_{ijt-1}}$ is investment rate for firm i, the source country j from which foreign direct investments are made, in year t, to control for the autocorrelation that may arise because of adjustment costs in investment; $\frac{S_{ijt}}{K_{ijt-1}}$ is the firms sales revenue to control for marginal profitability of capital; and $\frac{CF_{ijt}}{K_{ijt-1}}$ is the firms cash flows from operating activities as a proxy for financial constraints.[2] These variables are normalized by their real capital stock to control for the firms size. BC_{jt} is a dummy variable, equal to one if the source country j is in the banking crisis in year t, and FDI_{ijt} is company is percentage of foreign shareholding invested by parent company in source country j in year t. In addition, firm fixed effects and common

[2]The firms sales revenue and the cash flows from the operating activities are used by Fazzari et al. (1988).

time effects are included in the model to capture the firm-specific time-invariant effects on firms investment and macroeconomic fluctuations which affect each firm. Country specific time trends (τ_{jt}), interaction terms between a linear time trend and source country dummies, are included in the model because firms with foreign direct investments from the same source country could be affected by the same productivity trends each year.

In order to estimate the above baseline specification, the system-GMM estimator by Arellano and Bover (1995) and Blundell and Bond (1998) is used. The biases from the correlation between the lagged dependent variable and the firm fixed effects, υ_t, can be removed by the estimator. To do so, the lagged values of dependent and explanatory variables dated $t-2$ and $t-3$ are used as the GMM-type instruments.

3 Data

The main data used in this paper is a South Korean firm-level panel data set for the years 1994 to 2013 provided by Korea Information Service, Inc.(KIS).[3] This data set contains detailed financial data based on annual financial statements of both all publicly-listed and some private firms.[4]

This data set includes all information to construct variables included in the estimating equation such as investment rate ($\frac{I_{ijt}}{K_{ijt-1}}$), sales revenue ($\frac{S_{ijk}}{K_{ijk-1}}$), and cash flows from operating activities ($\frac{CF_{ijk}}{K_{ijt-1}}$). In order to construct real capital stock (K_{ijt-1}) and real investment (I_{ijt}), I follow the measure from Kim et al. (2015).[5] The real capital stock is constructed $K_t = (1-\delta)K_{t-1} + I_t$, where I_t is real investment and δ is depreciation rate, assumed to be 11 percent, an average depreciation rate of building, machinery, structure, and vehicle in South Korea. The real investment is the nominal investment deflated by the capital goods price index provided by the Bank of Korea. The nominal investment is constructed by the sum of change in the book value of capital, calculated by subtracting land and lease assets from tangible assets, and depreciation for tangible assets which is included in statement of cash flows. In addition, this data set also includes other information such as amount of exports,

[3]This data set includes information from balance sheet, statement of income, and statement of cash flows. Among them, statement of cash flow has been required to be published by Generally Accepted Accounting Principles in South Korea since 1994. Thus, this data set covers the 1994-2013 periods.

[4]See footnote 1. KIS compiles those data.

[5]In order to construct the real investment, Kim et al. (2015) followed Bayraktar et al. (2005).

proportion of export, Korean Standard Industrial Classification (KSIC) Code, and name of largest stockholders and percentage of shareholding of each firm.

Next, to construct dummy variable for source countrys banking crisis, I combine the banking crises database from Valencia et al. (2012) with the main panel data set. This data set includes the period of banking crisis in each country from 1970 to 2011. In addition, I use the data on the list of foreign multinationals from Ministry of Trade, Industry and Energy in South Korea. From this data set, I get the name of source country where the parent firm is located and the registration date when a firm became a foreign-owned firm. According to the law, firms with foreign ownership less than 10 percent can be considered foreign-owned firms.[6]

In addition, if investment rate, sales revenue, or cash flows from operating activities in the combined data set are distributed to the top or lower 1 percent, I exclude these observations from the data set to remove outliers. Finally, the data set includes 13,655 firms for the years 1994 to 2013. The summary statistics is presented in Table 1. In addition, Table 2 and Table 3 show the list of source countries and the periods of source countries banking crises, respectively.

4 Results

4.1 The Main Effect of Banking Crisis in Source Countries on Investment of Foreign Multinationals

Table 4 shows the results from baseline specification (equation (1))for investment decision of foreign multinationals. In column (1) of Table 4, the coefficient on the lagged dependent variable is positive (0.100) and statistically significant at the 1 percent level. That is, there exists a positive serial correlation in the investment rate. The coefficient on sales revenue

[6]According to the Enforcement Decree of the Foreign Investment Promotion Act revised on July 28th, 2016, a foreign-capital invested company shall file for registration as a foreign-capital invested company. A foreign-capital invested company needs to meet the following requirements: (a) the amount of investment shall be at least 100 million Korean Won; and (b) a foreigner shall own at least 10/100 of either the total number of voting stocks or the total equity investment. In the case of a business which fails to meet the requirements of the main sentence of this paragraph due to partial transfer of stocks or shares or capital reduction, etc. after it has been registered as a foreign capital invested company, it shall be also deemed a foreign investment.

is also positive (0.001) and statistically significant. It implies that previous marginal profitability of capital affects current one. On the contrary, the coefficient on cash flows from operating activities is statistically insignificant even if it is also positive (0.004).

The coefficient on banking crisis in source countries is positive (0.010), but not statistically significant. It means that foreign multinationals do not increase their investment rate during the banking crisis. The coefficient on foreign shareholding of foreign multinationals is also positive, but not statistically significant, either. It means that foreign shareholding of multinationals does not affect the investment behavior of foreign-owned companies.

In column (2), the interaction term between banking crisis and foreign shareholding is included. The coefficient on foreign shareholding (0.008) is still statistically insignificant, but the coefficients on the banking crisis and the interaction term between banking crisis and foreign shareholding are 0.114 and -0.180, respectively, and statistically significant at the 5 percent level. The coefficient on the former means that foreign multinationals increase their investment rate by 11.4 percent points during the crisis. This confirms the results from Desai et al. (2004) and Harrison and McMillan (2003) that foreign multinationals can less rely on domestic finance in their operations than domestic firms. The coefficient on the latter implies that a ten percent point increase in foreign shareholding decreases foreign multinationals investment rate by about 1.8 percentage points during banking crisis in source country. In addition, the two coefficients above show that companies in which foreign shareholding exceeds by about 63 percent have negative effects of the banking crisis in source countries on investment decision. That is, in the case of companies with low inward foreign direct investment (FDI), FDI can alleviate negative impact of banking crisis in source countries because FDI relaxes credit constraints of firms, but in the case of companies with high inward FDI, financial dependence on parent firms in source countries aggravates those companies investment behavior.

Column (3) shows the results from 1999 to 2014 in order to consider the 1997-1998 Asian crisis. According to the dataset from Valencia et al. (2012), the banking crisis occurred in South Korea between 1997 and 1998. This crisis might have affected investment decision of both foreign multinationals and domestic firms in South Korea negatively. Thus, to avoid this influence, I use a reduced sample by excluding the observations between 1997 and 1998. The coefficient on banking crisis is 0.128, higher than the result in the period 1994-2013,

and statistically significant at the 5 percent level. The coefficient on the interaction term is -0.194 and also statistically significant at the 5 percent level. It means that ten percent point increase in foreign shareholding decreases foreign multinationals investment rate by about 1.94 percentage points during source countrys banking crisis, higher than the result in the period 1994-2013, too. That is, after the Asian crisis, foreign multinationals in South Korea became more sensitive to foreign shareholding, and they increased investment when banking crises occurred in source countries.

4.2 Firm Characteristics

Table 5 presents the effects of banking crises in source countries on the investment decision of foreign multinationals with different firm characteristics. First, I define a chaebol dummy which takes the value one if the firm is an affiliate of a conglomerate.[7] According to previous literature, the advantage of affiliates that belong to chaebols is that it is easier for them to access sources of financing than non-chaebol firms. (Lee et al. (2000), Borensztein and Lee (2002), and Min (2007)) Thus, the external shock such as banking crisis from the source country may have a less influence on affiliates of chaebols. In order to confirm it, I split the sample into firms that belong to chaebols and firms that does not belong to chaebols, and estimate the baseline specification for these subsamples, respectively. From 1994 to 2013, for affiliates of chaebols, column (1) shows that the coefficients on the banking crisis and the interaction term between banking crisis and foreign shareholding is 0.067 and -0.119, respectively, but statistically insignificant. They imply that becoming foreign multinationals and/or change in foreign shareholding do not affect the investment behavior of subsidiaries of chaebols when the banking crisis occurred in the source country. That is, there is a rare advantage of foreign multinationals during a banking crisis if those companies belong to a chaebol.

In comparison, column (2) presents the results of non-chaebol companies. The coefficient on banking crisis is 0.108, greater than the result of companies that belong to chaebols, and statistically significant at the 10 percent level. This implies that foreign multinationals that

[7] According to Law for limit of assurance, chaebol is the conglomerate whose summation of total assets is more than 5 trillion Korean Won. Each affiliate that belongs to a chaebol cannot acquire or hold any stock of another affiliate which belongs to the same chaebol. The list of chaebol is announced by the Korea Fair Trade Commission on April 1st annually. In 2016, there exist 65 chaebols and 1,741 affiliates belong to 65 chaebols.

do not belong to chaebols increase their investment by 10.8 percent points during the banking crisis in source countries. In addition, the coefficient on the interaction term is -0.162, less than the result of chaebols affiliates, and statistically significant. It means that ten percent point increase in foreign shareholding decreases investment rate of foreign-owned companies not belong to chaebols by about 1.62 percentage points during source countrys banking crisis. That is, from these results, we can support that financial dependence on parent company in source countries rarely affects the investment decision of chaebols subsidiaries due to chaebols better access to financing.

Next, I define an exporter dummy which takes the value one if the amount of export of the firm is more than zero. Export firms can have easy access to financing markets for international transactions because they need more upfront expenses and more periods for cross-border shipping and delivery than domestic firms. Thus, export firms seem to be less affected by the external shock such as banking crisis from the source country. In order to confirm it, the sample is split into exporters and non-exporters, and the baseline specification is estimated for these subsamples from 1994 to 2013, respectively. Column (3) shows the result of exporters. The coefficients on banking crisis and the interaction term between banking crisis and foreign shareholding is 0.031 and -0.100, respectively, but statistically insignificant. The empirical results suggest that banking crisis in source countries does not affect exporters investment behavior, and change in foreign shareholding of exporters have no effect on their investment behavior when banking crisis occurred in source country.

The results of non-exporters are in column (4). The coefficient on banking crisis is 0.152, greater than the result of exporters, and statistically significant at the 10 percent level. This means that if the foreign multinationals are non-exporters, then their investment is increased by 15.2 percent points during the banking crisis in source countries. Moreover, the coefficient on the interaction term is -0.220, less than the result of exporters, and statistically significant. That is, ten percent point increase in foreign shareholding decreases investment of foreign-owned and non-exporter companies by about 2.2 percentage points during source countrys banking crisis. Thus, the results support that financial dependence on parent company in source countries affects less the exporters investment decision because of their better access to financing markets for international transactions.

4.3 Financial Constraints

According to Desai et al. (2004) and Harrison and McMillan (2003), foreign multinationals can rely on domestic finance in their operations less than domestic firms. Thus, financial crisis affects firms behavior differently depending on the needs of domestic finance. To investigate it, I use the measures about the industry-level financial vulnerability, close to the methods calculated by Claessens and Laeven (2003) and Fisman and Love (2003). The first one is asset tangibility, proxy for collateral to raise finance, defined as net property, plant and equipment divided by book value of assets. Another measure is trade credit, proxy for access to alternative financial market, computed as the ratio of the change in accounts payable over the change in total assets. These measures are based on a South Korean firm-level panel data set for the years 2001 to 2005 provided by KIS. In addition, I split the sample into firms that belong to the industry with relatively greater asset tangibility (or trade credit) than the median value of industry level asset tangibility (or trade credit) and firms that belong to industry with relatively less asset tangibility (or trade credit) than the median value of industry level asset tangibility (or trade credit), respectively. The Table 6 shows the empirical results about financial constraints.

First, in the case of affiliates which belong to industry with greater asset tangibility, column (1) presents that the coefficients on banking crisis is 0.134 and statistically significant at the 5 percent level. It implies that foreign multinationals included in less financially vulnerable industry increase their investment by 13.4 percent points during the banking crisis in source countries because foreign affiliates face less credit constraints. In addition, the coefficients on the interaction term between banking crisis and foreign shareholding is -0.256 and statistically significant at the 5 percent level, too. This is the same result from the baseline specification that in the case of companies with high inward FDI, financial dependence on parent firms in source countries aggravates those companies investment behavior. However, in column (2), the coefficients on banking crisis and the interaction term are statistically insignificant. It means that FDI has a statistically insignificant effect on the performance of foreign multinationals included in a more financially vulnerable industry.

Next, in the case of affiliates which belong to industry with greater trade credit, column (3) shows similar results in column (1). Both coefficients have the same signals and statistically significant at the 10 percent level. It means that foreign multinationals in a less

financially vulnerable industry increase their investment during the banking crisis in source countries, but in the case of companies with high inward FDI, financial dependence on parent firms due to the banking crisis in source countries aggravates investment behavior. The result from column (4) is also similar to the result from column (2).

5 Conclusion

I investigate in this paper the role of the banking crisis in source countries in investment behavior of foreign multinationals. To do so, I estimate the dynamic investment equation with foreign ownership and the crises in source countries based on the standard investment problem of a firm using the system-GMM estimator. I use firm-level panel dataset on annual financial statements with the banking crises database in South Korea during 1994-2013. First, I find that foreign multinationals increase investment, and there exists an inverse relationship between the percentage of foreign shareholding and foreign multinationals investment behavior during the banking crisis. In the case of foreign-owned firms, the investment rate rises by 11.4 percent points when the banking crisis occurred in source countries. Moreover, a ten percent point increase in the percentage of foreign shareholding decreases foreign-owned firms investment rate by about 1.8 percentage points during the banking crisis in source countries. Next, I find that firm characteristics and financial vulnerability of industries also affect investment behavior of foreign multinationals during the banking crisis in source countries. If firms do not belong to a chaebol, are not exporters, or if firms industry is less financially sensitive, then foreign-owned firms investment rises during the banking crisis in source countries, and an increase in the percentage of foreign shareholding decreases foreign-owned firms investment during the banking crisis in source countries.

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Table 1: Summary Statistics

Variable	Min	Mean	Standard Dev.	Max
Lagged investment rate $\left(\frac{I_{ijt-1}}{K_{ijt-2}}\right)$	-0.454	0.289	0.513	6.152
Sales revenue $\left(\frac{S_{ijt}}{K_{ijt-1}}\right)$	0.172	22.759	68.260	1221.392
Cash-flow $\left(\frac{CF_{ijt}}{K_{ijt-1}}\right)$	-49.718	0.683	4.896	80.648
Banking crisis dummy (BC_{jt})	0	0.031	0.173	1
Foreign shareholding (FDI_{ijt})	0	0.073	0.236	1
Chaebol dummy	0	0.062	0.241	1
Export firm dummy	0	0.186	0.389	1
Asset tangibility	0.120	0.274	0.104	0.620
Trade credit	0.020	0.073	0.023	0.220

Notes: The above table presents the summary statistics for the 111,061 observations from 13,655 firms used in the estimations.

Table 2: List of Source Countries

Country	All firms	Chaebol	Export firms	Banking crisis
Japan	5,840 (40.69%)	426 (44.89%)	1,031 (47.25%)	808 (24.46%)
U.S.A.	2,498 (17.40%)	115 (12.12%)	300 (13.75%)	1,039 (31.45%)
Netherlands	1,023 (7.13%)	101 (10.64%)	71 (3.25%)	344 (10.41%)
Germany	984 (6.86%)	21 (2.21%)	51 (2.34%)	325 (9.84%)
U.K.	532 (3.71%)	32 (3.37%)	87 (3.99%)	193 (5.84%)
France	518 (3.61%)	29 (3.06%)	61 (2.80%)	178 (5.39%)
Switzerland	428 (2.98%)	40 (4.22%)	38 (1.74%)	132 (4.00%)
Singapore	407 (2.84%)	5 (0.52%)	47 (2.15%)	0 (0%)
Cayman Islands	214 (1.49%)	15 (1.58%)	88 (4.03%)	0 (0%)
Malaysia	204 (1.42%)	12 (1.26%)	56 (2.57%)	9 (0.27%)
Hong Kong	197 (1.37%)	5 (0.52%)	41 (1.88%)	0 (0%)
Sweden	137 (0.95%)	12 (1.26%)	25 (1.15%)	52 (1.57%)
China	106 (0.74%)	5 (0.52%)	16 (0.73%)	0 (0%)
Belgium	98 (0.68%)	16 (1.69%)	9 (0.41%)	27 (0.82%)
Luxemburg	94 (0.65%)	10 (1.05%)	7 (0.32%)	34 (1.03%)
Italy	82 (0.57%)	0 (0%)	20 (0.92%)	38 (1.15%)
Denmark	77 (0.54%)	6 (0.63%)	5 (0.23%)	23 (0.70%)
Ireland	60 (0.42%)	10 (1.05%)	28 (1.28%)	37 (1.12%)
Austria	46 (0.32%)	0 (0%)	0 (0%)	18 (0.54%)
Spain	35 (0.24%)	0 (0%)	2 (0.09%)	24 (0.73%)
Finland	25 (0.17%)	2 (0.21%)	1 (0.05%)	1 (0.03%)
Hungary	22 (0.15%)	15 (1.58%)	7 (0.32%)	7 (0.21%)
Portugal	18 (0.13%)	6 (0.63%)	9 (0.41%)	11 (0.33%)
Slovenia	12 (0.08%)	0 (0%)	0 (0%)	4 (0.12%)
Etc.	696 (4.85%)	66 (6.95%)	182 (8.34%)	0 (0%)
Total	14,353 (100%)	949 (100%)	2,182 (100%)	3,304 (100%)

Sources: Korea Information Service, Inc., Valencia et al. (2012), and Ministry of Trade, Industry and Energy in South Korea

Table 3: Periods of Source Countries' Banking Crises

Country	Period	Country	Period
Japan	1997-2001	Denmark	2008-2011
U.S.A.	2007-2011	Spain	2008-2011
Netherlands	2008-2011	Finland	1993-1995
Germany	2008-2011	Hungary	1993-1995, 2008-2011
U.K.	2007-2011	Ireland	2008-2011
France	2008-2011	Italy	2008-2011
Switzerland	2008-2011	Luxemburg	2008-2011
Malaysia	1997-1999	Portugal	2008-2011
Austria	2008-2011	Slovenia	2008-2011
Belgium	2008-2011	Sweden	1993-1995, 2008-2011

Sources: Valencia et al. (2012)

Table 4: Baseline Results

Dependent Variable: Investment rate $\left(\frac{I_{ijt}}{K_{ijt-1}}\right)$	(1)	(2)	(3)
Lagged investment rate $\left(\frac{I_{ijt-1}}{K_{ijt-2}}\right)$	0.100***	0.106***	0.099***
	(0.007)	(0.007)	(0.007)
Sales revenue $\left(\frac{S_{ijt}}{K_{ijt-1}}\right)$	0.001***	0.001**	0.001***
	(0.000)	(0.000)	(0.000)
Cash-flow $\left(\frac{CF_{ijt}}{K_{ijt-1}}\right)$	0.004	0.004	0.008
	(0.006)	(0.006)	(0.006)
Banking crisis dummy (BC_{jt})	0.010	0.114**	0.128**
	(0.012)	(0.049)	(0.059)
Foreign shareholding (FDI_{ijt})	0.016	0.008	0.009
	(0.140)	(0.079)	(0.077)
Banking crisis dummy × Foreign shareholding ($BC_{jt} \times FDI_{ijt}$)		-0.180**	-0.194**
		(0.079)	(0.091)
Observations	111,061	111,061	103,701
Number of firms	13,655	13,655	13,581
Hansen-Sargan test (p-value)	0.401	0.443	0.400
First-order serial correlation test (p-value)	0	0	0
Second-order serial correlation test (p-value)	0.709	0.371	0.646

Notes: The empirical model is based on equation 1. The estimation is by the two-step system GMM procedure with firm fixed effects, common time effects, and country specific time trends. GMM-type instruments are the second and the third lags of investment rate, sales revenue, cash flows from operating activities, foreign shareholding, and the interaction term between foreign shareholding and banking crisis. The rest variables are IV-type instruments. Clustered standard errors at the source country-year level in parentheses. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

Table 5: Firm Characteristics

Dependent Variable: Investment rate $\left(\frac{I_{ijt}}{K_{ijt-1}}\right)$	(1) Chaebol	(2) Non-chaebol	(3) Exporter	(4) Non-exporter
Lagged investment rate $\left(\frac{I_{ijt-1}}{K_{ijt-2}}\right)$	0.149**	0.105***	0.115***	0.092***
	(0.070)	(0.007)	(0.013)	(0.008)
Sales revenue $\left(\frac{S_{ijt}}{K_{ijt-1}}\right)$	0.000	0.001**	0.001**	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Cash-flow $\left(\frac{CF_{ijt}}{K_{ijt-1}}\right)$	0.008	0.002	-0.003	0.004
	(0.005)	(0.006)	(0.011)	(0.005)
Banking crisis dummy (BC_{jt})	0.067	0.108*	0.031	0.152*
	(0.095)	(0.058)	(0.042)	(0.082)
Foreign shareholding (FDI_{ijt})	0.026	0.002	0.097	0.018
	(0.184)	(0.085)	(0.100)	(0.085)
Banking crisis dummy × Foreign shareholding ($BC_{jt} \times FDI_{ijt}$)	-0.119	-0.162*	-0.100	-0.220*
	(0.268)	(0.089)	(0.138)	(0.124)
Observations	6,872	104,189	19,271	84,186
Number of firms	668	12,987	2,801	12,530
Hansen-Sargan test (p-value)	0.719	0.226	0.535	0.514
First-order serial correlation test (p-value)	5.33e-09	0	0	0
Second-order serial correlation test (p-value)	0.848	0.403	0.924	0.831

Notes: See notes below the Table 4

Table 6: Financial Constraints

Dependent Variable: Investment rate $\left(\frac{I_{ijt}}{K_{ijt-1}}\right)$	(1) Asset Tangibility above Medium	(2) Asset Tangibility below Medium	(3) Trade Credit above Medium	(4) Trade Credit below Medium
Lagged investment rate $\left(\frac{I_{ijt-1}}{K_{ijt-2}}\right)$	0.097***	0.097***	0.100***	0.094***
	(0.009)	(0.008)	(0.008)	(0.012)
Sales revenue $\left(\frac{S_{ijt}}{K_{ijt-1}}\right)$	0.004***	0.001***	0.001***	0.003***
	(0.001)	(0.000)	(0.000)	(0.001)
Cash-flow $\left(\frac{CF_{ijt}}{K_{ijt-1}}\right)$	0.002	0.002	0.001	-0.001
	(0.007)	(0.005)	(0.005)	(0.007)
Banking crisis dummy (BC_{jt})	0.134**	0.055	0.117*	0.024
	(0.060)	(0.088)	(0.061)	(0.074)
Foreign shareholding (FDI_{ijt})	0.038	0.011	0.023	0.005
	(0.124)	(0.101)	(0.094)	(0.185)
Banking crisis dummy × Foreign shareholding ($BC_{jt} \times FDI_{ijt}$)	-0.256**	-0.066	-0.180*	-0.061
	(0.115)	(0.137)	(0.096)	(0.156)
Observations	59,925	51,136	79,079	31,982
Number of firms	7,309	6,346	9,744	3,911
Hansen-Sargan test (p-value)	0.166	0.203	0.185	0.347
First-order serial correlation test (p-value)	0	0	0	0
Second-order serial correlation test (p-value)	0.126	0.479	0.374	0.144

Notes: See notes below the Table 4