

The Effect of Foreign Ownership on the Performance of Domestic Banks in China

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Abstract –There is an increasing number of commercial banks in China introduce foreign strategic investors, though people hold different ideas about its real effects. This paper attempts to figure it out through an empirical study on panel data of Chinese banks with foreign ownership over 3 years and finds that there's an significant and positive correlation between foreign equity and return on assets. It is, therefore, advisable to encourage more cooperation with foreign strategic investors to improve bank performance.

Keywords –Foreign ownership; Strategic investor; Bank performance; Panel data; GMM; OLS; FE

1. Introduction

Under the challenge of economic globalization, China's financial sector should strengthen close cooperation with international financial organizations. We must reintegrate existing resources and make full use of external resources. One important and effective way is to introduce foreign strategic investors through the sale of part of the shares to establish a benefit-sharing and risk-sharing mechanism, which makes way for the advanced technology and management experience into domestic banks.

Foreign ownership entering Chinese commercial banks started from 1996, when Asian Development Bank held 3.02% of the shares of China Everbright Bank by approximately US\$19 million. Since then, many national joint-stock commercial banks and state-owned banks followed the steps. As can be seen from table 1, the pace was speeded up ever since China entered WTO. According to CBRC (China Banking Regulatory Commission) annual report, a sum of US\$32.78 billion had been introduced to Chinese commercial banks by the end of 2008. In 2009, a joint-stock commercial bank in Hong Kong raised equity of HK\$30.4 billion. Regarding to the investors, there are non-profit international financial organizations such as the International Finance Corporation and for-profit financial institutions such as Bank of American, etc. The investees also vary from state-owned commercial banks, joint-stock to city commercial banks and investment area covers the coast, the eastern and western region and inland areas, showing a wide range of features. We have to say foreign equity has enriched the ownership structure, together with different management concept, management mode and risk control. However, there isn't an agreement as to whether foreign ownership will help to optimize corporate structure, improve level of management and performance, etc. Supporters argue that reasonable ownership would have positive impact on bank performance, while opponents believe the reverse is the case. Moreover, the existing literature mainly conducts qualitative analysis from the aspects of theory. This paper attempts to make up for the defect by applying empirical

analysis of panel data and further to make a few suggestions to the reform of our banking sector.

Table 1. Chinese commercial banks with foreign equity

Time	Domestic banks with foreign equity
1996	China Everbright Bank
1999	Bank of Shanghai
2002	Bank of Nanjing
2003	Shanghai Pudong Development Bank
2004	Industrial Bank, Bank of Communications, China Mingshen Banking Corp, Qilu Bank
2005	Bank of China, China Construction Bank, Shenzhen Development Bank, Bank of Beijing, Bank of Xi'an, Bank of Hanzhou
2006	Industrial and Commercial bank of China, Huaxia Bank, China Bohai Bank, Bank of Ningbo, Bank of Tianjin, Nanchong City Commercial Bank
2007	Citic Bank, China Guangfa Bank, Bank of Chongqing, Shanghai Rural Commercial Bank
2008	Evergrowing Bank, Yantai Bank, Bank of Yingkou

Sources: Banks' annual report

2. Literature Review

The issue of whether to introduce foreign equity has drawn a lot of publicity among the domestic and international politics, academic and financial sectors. In contrast, there are more foreign theory and empirical research. For example, Levine (2002) held the opinion that the introduction of foreign strategic investors would improve the service level of the host country's financial sector, then enhance the overall financial development, and ultimately promote the capital accumulation and rational allocation, thus contributing to the economic development of the host country. In the theoretical analysis of corporate governance, Shleifer and Vishny (1997) verified that the ownership can give foreign shareholders impetus to supervise bank management performance and take action to improve its corporate value. Based on the study, Claessens etc. (2001) give further consideration to equity ratio. He thought that the more shares investors held, the more motivation for their

supervision and the more beneficial to the improvement of bank management efficiency and productivity. The increasing foreign equity also strengthen their position in the voice of board of directors and gives more power to influence the final decision, which definitely helps to improve business management and corporate governance. Likewise, from the perspective of corporate governance, Khanna and Palepu (1999) also found that foreign strategic investors play a more valuable role in supervision in emerging markets under the situation of economic globalization. Majnoni (2003) examines the influence of foreign ownership on Hungary's banking reform through empirical analysis. The results demonstrate that foreign ownership has made local banks able to maintain a good performance record. The reason is that compared to the state-owned banks, local banks with foreign ownership can provide more innovative products, varieties of financial services and more effective lending standards and procedures. By investigating the banking data of Korea, Thai land, Indonesia, Malaysia, the Philippines-five Asian financial crisis severely affected countries from 1990 to 2003, Williams and Nguyen (2005) find that foreign equity can greatly improve the bank performance, but the positive effects would show up after a longer time period.

Domestic scholars have also conducted similar study based on the reality of China. Through the establishment of the game model, Shuo Zhan (2005) find that the decentralized equity structure model due to the introduction of strategic investors is unstable. When the rent of control is big enough to compensate for the risk and equity transaction cost, strategic investors will have the motivation to to concentrating equity mode, which will lead to shareholder transfer and additional efficiency loss. Yijiang Wang and Guoqiang Tian (2004) point out the introduction of foreign capital is of great strategic choice to to realize the reform of state-owned commercial banks by comparing banking experience of China, South Korea and Japan. Zhifeng Wu (2006) chooses eastern European countries banking data as the empirical object, which has similarity with our banking reform. The results indicate that a small foreign equity can't build good banking management structure and won't effectively improve the operational performance, while a big control may result in good bank performance, but at the same time, it may lead to total loss of the control. Form the point of his view, it seems difficult to improve the bank while keeping the power of control. From the perspective of resource integration, Jian Zhou and Guanglin Cheng (2011) analyze the strategic alliances between Chinese banks and abroad partners. They argue that the strategic alliance are of mutual benefits based on the needs of additional resources from other sides, and that the desire for additional resources is of crucial importance in choosing allied partners. The strategic alliance between Chinese banks and abroad partners, especially the cooperation in depth, has optimized equity structure and increase the net profit and operating efficiency for domestic commercial banks.

3. Methodology

3.1. GMM

Generalized method of moments (GMM) is a generic method for estimating parameters in statistical models. Usually it is applied in the context of semiparametric models, where the parameter of interest is finite-dimensional, whereas the full shape of the distribution function of the data may not be known, and therefore the maximum likelihood estimation is not applicable.

The method requires that a certain number of moment conditions were specified for the model. These moment conditions are functions of the model parameters and the data, such that their expectation is zero at the true values of the parameters. The GMM method then minimizes a certain norm of the sample averages of the moment conditions.

The GMM estimators are known to be consistent, asymptotically normal, and efficient in the class of all estimators that don't use any extra information aside from that contained in the moment conditions.

3.2. OLS

Ordinary least squares (OLS) or linear least squares is a method for estimating the unknown parameters in a linear regression model. This method minimizes the sum of squared vertical distances between the observed responses in the dataset and the responses predicted by the linear approximation. The resulting estimator can be expressed by a simple formula, especially in the case of a single regressor on the right-hand side.

The OLS estimator is consistent when the regressors are exogenous and there is no multicollinearity, and optimal in the class of linear unbiased estimators when the errors are homoscedastic and serially uncorrelated. Under these conditions, the method of OLS provides minimum-variance mean-unbiased estimation when the errors have finite variances. Under the additional assumption that the errors be normally distributed, OLS is the maximum likelihood estimator. OLS is used in economics (econometrics) and electrical engineering (control theory and signal processing), among many areas of application.

3.3. FE

Fixed effects model (FE) is a statistical model that represents the observed quantities in terms of explanatory variables that are treated as if the quantities were non-random. This is in contrast to random effects models and mixed models in which either all or some of the explanatory variables are treated as if they arise from the random causes. Note that the biostatistics definitions differ, as biostatisticians respectively refer to the population-average and subject-specific effects as "fixed" and "random" effects. Often the same structure of model, which is usually a linear regression model, can be treated as any of the three types depending on the analyst's viewpoint, although there may be a natural choice in any given situation.

In panel data analysis, the term fixed effects estimator (also known as the within estimator) is used to

refer to an estimator for the coefficients in the regression model. If we assume fixed effects, we impose time independent effects for each entity that are possibly correlated with the regressors.

4. Empirical study

4.1. Model Set Up and Variables

This paper has referred to the research results of Lensink and Naaborg (2007) and Wu (2007). ROA (Return on Assets) is an effective and one of the basic measure indexes of bank performance. This paper selects ROA as explained variable, the formula is:

$$ROA = \frac{\text{Net profit after tax}}{\text{Asset}} \quad (1)$$

Taking foreign equity into consideration, a dynamic panel data model can be set as following:

$$\begin{aligned} ROA_{i,t} = & \alpha FOR_{i,t} + \beta_1 OVERH_{i,t} + \beta_2 LLPTA_{i,t} + \beta_3 EQU_{i,t} \\ & + \gamma_1 INF_t + \gamma_2 RGDP_t + \gamma_3 PERGDP_t \\ & + \phi PERGDP_t \cdot FOR_{i,t} + vROA_{i,t-1} + \lambda_t + \eta_i + \mu_{i,t} \end{aligned} \quad (2)$$

$ROA_{i,t}$ is the explained variable, measuring the effect of foreign equity. $FOR_{i,t}$ (Foreign Ownership Ratio) is the explanatory variable, which means the ownership ratio of bank_{*i*} foreign investors hold in year_{*t*}.

Control variables which affect bank performance can be divided into two parts. From the part of bank itself, this paper chooses cost control, risk management and scale expansion as variables. $OVERH_{i,t}$ is the ratio of management fee and total asset of bank_{*i*} in year_{*t*}, which indicates the cost control ability of bank. $LLPTA_{i,t}$ is the ratio of loan loss plan and total asset of bank_{*i*} in year_{*t*}, which demonstrated the risk management ability, while $EQU_{i,t}$ is the ration of equity and total asset, showing its expansion situation. From macroeconomic part, this paper chooses inflation rate (INF_t) and GDP growth rate ($RGDP_t$) and GDP per capita ($PERGDP_t$) in year_{*t*}. This paper also introduces interactive item- $PERGDP \cdot FOR$ to indicate the effect caused by the national development level. Apart from that, λ_t , η_i and $\mu_{i,t}$ means time effect, unobserved banking effect and random error respectively.

4.2. Data

Those Chinese commercial banks which have foreign equity for over three years are the objectives we study in this paper. The data time span is from the year foreign equity introduced to the end of 2009. The banks can be divided into three groups. The first group includes four state-owned banks. They're Industrial and Commercial Bank of China, Bank of China, China Construction Bank and Bank of Communications. The second group includes nine national joint-stock

commercial banks. They are China Everbright Bank, Huaxia Bank, Citic bank, China Mingshen Banking Corp, Shenzhen Development Bank, China Bohai Bank, Industrial Bank, China Guangfa Bank and Shanghai Pudong Development Bank. And the third group is the city commercial bank, which including Bank of Beijing, Shanghai Rural Commercial Bank, Bank of Shanghai, Bank of Tianjin, Bank of Chongqing, Bank of Nanjing, Bank of Hanzhou, Bank of Ningbo, Bank of Xi'an, Qilu Bank, Nanchong City Commercial Bank. The macro data come from China Statistical Yearbook, while the financial data of banks are from BankScope, China Financial Yearbook and each bank's annual report. Since the time of introducing foreign ownership varies in different banks and some date is missing, the panel data is unbalanced. Statistical description of the variables, please refer to table 2.

Table 2. Statistical description of the variables

Variable	Max	Min	Mean	Standard deviation	Median
ROA (%)	2.04	-1.39	0.81	0.44	0.79
FOR (%)	24.99	0	13.9	7.45	15.66
OVERH (%)	2.47	0.54	1.02	0.22	1.01
LLPTA (%)	1.73	0.03	0.43	0.3	0.33
EQU (%)	31.35	-1.32	5.41	3.25	5.12
INF (%)	5.9	-1.4	2.56	2.48	1.8
RGDP (%)	11.9	7.6	10.09	1.35	10.1
PERGDP (¥)	25125	6420	18231	5322	18934

Sources: BankScope, China Financial Yearbook and Banks' annual report

4.3. Method

The impact of foreign ownership is likely to be a long-term role in the process. This article intends to use GMM to study the relationship between foreign ownership and bank performance. GMM can be divided into Difference-GMM and System-GMM. Instrumental variable set of Difference-GMM includes the explanatory variables and given variables, but Difference-GMM may lead to information disappearing. And if the explanatory variable has time duration, the validity of instrumental variables will be weakened, while System-GMM will have better effects by taking advantage of both the change of endogenous variables and differential item. That's why I choose System-GMM in the model estimation.

GMM estimators are consistent, but when the sample size is small or the tool is weak, the estimation is prone to offset. Bond (2002) found a way to solve this issue. He suggested comparing GMM estimator with OLS estimator and the static fixed effects model estimator, to see if the dependent variable lag of GMM is between that of the other two.

5. Analysis of Empirical results

Stata 10.0 is used in this paper to estimate the model. As mentioned above, the dynamic panel data model is estimated through System-GMM, OLS and fixed effect

model (FE) respectively as show in table 3. The GMM estimator is 0.473222, between that of OLS (0.489317) and FE (0.280409), which means it is reliable and effective. The test results of AR(1), AR(2) and Sargan are also shown in table 3. AR (1) is to test whether there is a significant first-order serial correlation in residuals of first-order differential equation, while the AR (2) is for the test of second-order serial correlation. Under the null hypothesis that there doesn't exist serial correlation in

original equation, AR (1) should be significant and AR (2) shouldn't be significant. Model residuals from the relevant test of AR (1) and AR (2) values were 0.000 and 0.249, which validated the first order difference equation residuals autocorrelation model GMM estimation is better. But the autocorrelation test values of AR (1) and AR (2) go against the null hypothesis, which means the GMM estimator is not bad.

Table 3. Estimates of effects of foreign equity on bank performance of Chinese Commercial Banks

	ROA		
	GMM	OLS	FE
L1.	0.473 222** (*9.34)	0.489 317** (*8.75)	0.280 409** (*3.88)
FOR	0.015 030* (*2.20)	0.016 921** (*2.67)	0.011 160 (0.94)
OVERH	-0.103 727 (-0.91)	-0.078 663 (-0.77)	-0.469 921* (*-2.10)
LLPTA	0.405 340** (*-5.86)	-0.376 017** (*-3.75)	-0.523 041** (*-5.27)
EQU	0.020 828* (*2.38)	0.017 593* (*2.08)	0.016 323 (1.61)
INF	0.049 840** (*5.02)	0.041 979** (*3.60)	0.054 344** (*5.60)
RGDP	0.006 347 (0.29)	0.011 286 (0.63)	-0.020 297 (-1.12)
PERGDP	0.000 029** (*2.91)	0.000 021** (*3.86)	0.000 020** (*2.87)
PERGDP-FOR	-5.99e-07 (-1.36)	-6.67e-07 (*-1.95)	-5.60e-07 (-1.11)
_cons	-0.181 261 (-0.45)	-0.058 499 (-0.22)	0.916 347* (*2.23)
R-squared		0.776 6	0.710 9
Arellano-Bond AR (1)	0.000		
Arellano-Bond AR (2)	0.249		
Sargan Test	0.046		

The results in table 3 also tell us there is significant and positive correlation between FOR and ROA, indicating the increase on foreign ownership will improve bank performance. Although the proportion of foreign ownership is not high, according to the cooperation agreement, however, foreign institutions will send qualified staff to the board of directors and the area of corporate governance, risk management, product development etc, to improve bank profitability, efficiency and asset quality. All this can have a positive impact on the banking reform and development. Besides, some of the strategic investors win a good reputation over the world as of their mature risk prevention mechanism and advanced technology and innovative means, which definitely benefit domestic banks a lot.

6. Conclusion

As is shown by above empirical results, foreign equity significantly improves bank performance of domestic banks in China. But due to current low proportion of foreign ownership, foreign strategic investors are reluctant to share their core technology and management experience. Therefore, it is necessary to attract more foreign capital, relatively relax foreign ownership limit, and encourage more cooperation with foreign institutions. Under this circumstance, it is advisable to extend holding period of the strategic investors. Once the relationship is established, Chinese commercial banks should focus more on product and service innovation, as well as off-balance sheet business. On the one hand, we should optimize corporate structure and develop corporate governance. On the other hand, we should learn from their advanced management experience, speed up the process of convergence with the advanced

international banks and strengthen the risk management, thus to effectively improve the performance of domestic banks in China [10-18].

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