The Increase of Foreign Ownership and its Impact on the Performance, Competition and Risk in the Indonesian Banking Industry

Rofikoh Rokhim* and Anindya P. Susanto

ABSTRACT

Foreign ownership in Indonesian banking has increased dramatically after deregulation in 1998, following the severe economic crisis. A bank now can have up to 99% foreign ownership. This study aims to investigate the impact of increasing foreign ownership on performance, competition and short-term insolvency risk in the Indonesian banking industry. This study uses financial reports of all (115) commercial banks over a period of six years. Foreign banks are proven to be superior compared to domestic banks in terms of profitability and cost-efficiency. Competition increases with the influx of foreign ownership to the industry which brings more efficiency to it. Nevertheless, insolvency risk builds up too and it should direct policy makers to come out with additional restrictive policies on the liberalisation.

Keywords: Banks, Foreign Ownership, Performance
JEL Classifications: G20, G21, G32

1. Introduction

Foreign ownership in the Indonesian banking industry has grown significantly since 1998. Following the commencement of the economic crisis and the Banking Act amendment, insolvent banks were liquidated

* Corresponding author: Rofikoh Rokhim is a Senior Lecturer and Head of Management Research Centre, Department Management Building 2nd floor, Faculty of Economics, Universitas Indonesia, Depok Campus, West Java 16424. Ph: +62-21-7272425. Fax: +62-21-7863556. Email: rofikoh.rokhim@ui.ac.id
Anindya Pradipta Susanto is a graduate from Graduate School of Management, Faculty of Economy, Universitas Indonesia, e-mail: nino.susanto@alumni.ui.ac.id

within the period of 1997-1999. The rest of the banks were under major restructuration due to excessive non-performing loans (NPLs) as a result of lending to related parties (Rokhim, 2005).

Indonesia then saw ownership changes in major private banks. Foreign parties have emerged as the leading contestants in the industry through recapitalisation and purchasing of shares. Group-affiliated banks were replaced with foreign-owned private banks (Sato, 2005). Similar phenomena were seen in other South East Asian countries, such as Thailand and the Philippines (Okuda & Suvadee, 2006; Unite & Sullivan, 2003).

Restrictions of foreign ownership have been made in other Asian countries, including Malaysia (30%), Thailand (49%), India (49%), and Philippines (51%). Similar to Indonesia, South Korea essentially has no percentage restriction although the foreign company must be an intending foreign bank, not other type of corporations (Kurniasih, 2005; Lee, 2008).

This study aims to understand the impact of increasing foreign ownership on the performance, competition and risk in the Indonesian banking industry. Since there are limited studies regarding the banking industry in Indonesia, this project adds to the collection of works. This study offers empirical recommendations for policy-makers to shape the desired structure in the banking industry. Specifically, this study addresses the long debates on the merits of opening the emerging market financial sector to the foreign ownership.

2. Literature Review

Globalisation sees tremendous increase in Foreign Direct Investment (FDI), mainly due to the reduction of barriers and lower costs of transportation. Several positive effects of FDI, the 'spill over effects', include human resource development by way of higher education accomplishment (Zhuang, 2008), higher wages in the industry (Lipsey & Sjöholm, 2001) as well as stricter corporate governance practices and therefore yielding better performance (Chevalier, Prasetantyoko, & Rokhim, 2006). However, FDI also faces confrontation particularly from emotional sentiment relating to nationalism, grass root economy, the development of Small Medium Enterprises (SMEs), and anti neo-liberalisation.

In the banking industry, it is suggested that foreign presence improves the comparative cost advantage in terms of information

production and processing (Okuda & Suvadee, 2006). This is because foreign banks are willing to invest heavily in human resources and advanced technology in order to obtain efficiency. The presence of foreign banks enhances the growth and GDP of the host country due to more productive and efficient allocation of capital and labor (Wu, Jeon, & Luca, 2010).

In the Chinese banking industry, the foreign presence also brings benefit at the macro level especially in increasing bank performance in terms of profitability (Shen, Lu, & Wu, 2009). Foreign-funded banks have the highest Return on Assets (ROA) and Cost to Income Ratio (CIR), whereas the joint venture commercial bank has the highest Net Interest Income (NII) and Net Interest Margin (NIM). The regression reports of this study further show that foreign presence increases the profitability of the bank (significant in ROA & NIM) while it does not have effect in cost efficiency (CIR). In overall efficiency, the entry of foreign banks has brought positive influences especially in bigger domestic banks, by reducing operating expenses and increasing profit (United & Sullivan, 2003).

In the Latin American setting, a positive link between stability and foreign presence in the banking industry is observed despite a more competitive atmosphere (Yeyati & Micco, 2007). The banking market became less monopolistic (decrease in *H* by Panzar and Rosse's approach) along with the increased foreign presence. Foreign presence also has significant positive influence over the banking stability as was measured by reduction of short-term risk in Latin American banks. In the case of the Philippines banking industry, however, short-term risk is directly related to entry of foreign banks (United & Sullivan, 2003).

3. Data and Methodology

This study utilizes detailed financial reports of all commercial banks in Indonesia that were still in operation up to December 2008. A data panel computed time series data from 2003-2008 over cross-sections of 115 commercial banks. Both SPSS 17 and eViews 5 were used for the data computation.

This study measures foreign ownership using a standard indicator which is the assets of foreign ownership in domestic banks to total banking assets (Moreno & Villar, 2005). This ratio (*FO*) is obtained from the percentage of shares held by the foreign investors over the total

share, thus reflecting the degree of control possessed by the foreign parties. For comparison, the total assets of foreign share (*FOTA*) as well as foreign banks (TA_F) over the total size of bank system (TA_S) are also measured.

This study evaluates performance by bivariate and regression analysis. Foreign and domestic banks are compared by bivariate analysis, with foreign banks defined as having foreign ownership of more than 10%. Following two earlier studies (Shen, Lu, & Wu, 2009; Unite & Sullivan, 2003), a regression study is conducted by using 3 dependent variables: Return on Assets (*ROA*) and Net Interest Margin (*NIM*) measure the profitability whereas Cost to Income Ratio (*CIR*) assesses the ability of bank to reduce cost.

$$Performance_{it} = \alpha + \beta FO_{it} + \gamma control + \varepsilon_{xt} \qquad (1)$$

where the subscripts denote the bank *i* during the year *t*. *Control*: *LOG_TA*, logarithm of total assets; *OE*, ratio of operating expense to the total assets; *EQ*, ratio of equity to the total assets; *LDR*, loan to deposit ratio.

Competition measurement upon increasing of foreign ownership uses the popular Panzar and Rosse's (PR) Approach (Panzar & Rosse, 1987; Yeyati & Micco, 2007; Bikker & Haaf, 2002).

$$H = \sum_{i=1}^{n} \frac{\partial \mathrm{R}\, \mathrm{w}_i}{\partial \mathrm{w}_i\, R} \qquad (2)$$

In order to estimate the *H*-statistic, Panzar and Rosse's approach assumes a log-linear regression model as a reduced-form revenue equation

$$InIR_{it} = \alpha + \beta_1\, In(w_{1,it}) + \beta_2 In(w_{2,it}) + \beta_3 In(w_{3,it}) + \gamma InControl \qquad (3)$$

where the subscripts denote the bank *i* during the year *t*. *IR* denotes ratio of gross interest revenue to total assets as an indicator for output price of loans; w_1, ratio of interest expenses to total deposits and money market funding as a proxy for input price of deposits; w_2, ratio of personnel expense to total assets as a proxy for input price of labor; w_3, ratio of other operating and administrative expense to total assets as a proxy for input price of equipment/fixed capital. *Control*: *LOG_TA*, logarithm of

total assets; *OE*, ratio of operating expense to the total assets; *EQ*, ratio of equity to the total assets; *LDR*, loan to deposit ratio.

In turn, the parameter *H* defined above can be estimated, as the sum of the elasticities of the reduced-form revenues with respect to factor prices w_1, w_2, and w_3.

Competition may also be analysed under the structural approaches (concentration ratios), including three- or five-bank concentration ratios and Herfindahl–Hirschman Index or HHI (Alegria & Schaeck, 2006; Casu & Girardone, 2006).

Insolvency risk (Z_{it} or *Z-score*) is quantified through Chebyshev's Inequality by calculating the probability of the losses in a given year

$$P\left(ROA_{it} \leq -\frac{EQ_{it}}{TA_{it}}\right) \leq \frac{\sigma^2 ROA_{it}}{\left(\mu ROA_{it} + \frac{EQ_{it}}{TA_{it}}\right)^2} \equiv \frac{1}{z_{it}^2} \qquad (4)$$

which exceed the bank's equity capital as demonstrated by Yeyati, *et al.* (2007).

$$Z_{it} = \alpha + \beta FO_{it} + \gamma_1 H_{it} + \delta\, control + \varepsilon_{xt} \qquad (5)$$

To understand the effect of foreign ownership, competition, and concentration on risk, a bank-level regression can be performed with following model:

For robustness check, Non-Performing Loan (*NPL*) is also used as an alternative risk indicator.

4. Empirical Results

This study aims to understand the impact of increasing foreign ownership on the performance, competition and risk in the Indonesian banking industry. In the regression study, foreign ownership (*FO*) has significant relationship to *ROA* and *NIM* with negative coefficient. This means that increasing in foreign ownership decreases the profitability of banks. Increasing of foreign ownership does not have significant relationship to *CIR*.

Table 1 The extent of foreign ownership in Indonesia's banking industry based on several indicators in time-series (2003-2008)

Indicators/Yr	2003	2004	2005	2006	2007	2008
FO						
Mean	0.2501	0.2519	0.2575	0.2617	0.2735	0.2915
Std. Dev	0.4038	0.3998	0.4039	0.4096	0.4159	0.4254
FOTA (in trillion rupiah)						
Mean (bank-level)	2.4336	3.0825	3.9151	4.4364	5.3324	5.6179
Std. Dev	8.1398	9.4213	10.8707	12.4952	14.9849	13.6409
Total (industry-level)	279.8651	354.4847	450.2324	510.1870	613.2277	646.0616
$FOTA/TA_S$						
Share	0.2490	0.2890	0.3016	0.3106	0.3133	0.2896
TA_F/TA_S						
Share	0.4331	0.4531	0.4463	0.4561	0.4726	0.4823

Note: *FO*, foreign ownership, shares owned by foreign parties in bank-level; *FOTA*, share of asset of the foreign ownership; TA_S, total size of the banking industry, TA_F, total size of the foreign banks. For mean and std. dev. comparison, $N = 690$.

Table 2 Descriptive Statistics for Regression Analysis Variables

Variables	**Mean**	**Max**	**Min**	**Stdev**
ROA	2.5923	17.7000	-7.8700	2.2544
NIM	7.1373	32.9500	-0.4100	3.5299
CIR	0.8079	4.6401	0.084	0.2605
LOG_TA	6.4011	8.5294	4.2440	0.8069
OE	0.0931	0.2684	-0.0344	0.0358
EQ	0.1644	1.6090	-0.0275	0.1772
LDR	0.7558	3.3497	0.0000	0.3693
lnIR	-2.2873	-1.3154	-3.8284	0.3381
lnw_1	-2.8463	-0.5014	-6.0638	0.5862
lnw_2	-4.0663	-2.1370	-6.1921	0.5848
lnw_3	-3.9792	-1.8966	-5.7088	0.4758

Note: *LOG_TA*, logarithm of total assets; *OE*, ratio of operating expense to the total assets; *EQ*, ratio of equity to the total assets; *LDR*, loan to deposit ratio

Table 3 Bivariate & Regression Analysis Foreign Ownership and Performance

Dep. Var.	Class.	Mann-Whitney Test: Mean Rank	Sum of Ranks	
ROA	Domestic	331.0738	139051	**
	Foreign	367.9407	99344	
NIM	Domestic	415.1060	174344.5	***
	Foreign	237.2241	64050.5	
CIR	Domestic	374.3821	157240.5	***
	Foreign	300.5722	81154.5	

$$Performance_{it} = \alpha + \beta FO_{it} + \gamma control + \varepsilon_{xt}$$

	ROA	*NIM*	*CIR*
Constant	3.0341***	7.6595***	0.9661***
	(0.7518)	(1.2103)	(0.0858)
FO	-0.5777***	-2.7719***	0.0412
	(0.2208)	(0.3555)	(0.0252)
LOG_TA	0.2628***	-0.2907*	-0.0654***
	(0.1011)	(0.1629)	(0.0115)
OE	-29.5948***	17.7045***	3.1651***
	(2.3661)	(3.8089)	(0.2699)
EQ	-0.6320**	-1.0405***	0.0803***
	(0.2472)	(0.3979)	(0.0282)
LDR	1.1952***	0.8220**	-0.0803***
	(0.2149)	(0.3460)	0.0245
Total balanced obs.	690	690	690
Adjusted R^2	0.2442	0.2012	0.2637
Durbin-Watson Stat	0.7479	0.6670	1.0285
Prob (F-statistic)	0.0000	0.0000	0.0000

Note: *FO*, Foreign Ownership; *Control* = [*LOG_TA*, logarithm of total assets; *OE*, ratio of operating expense to the total assets; *EQ*, ratio of equity to the total assets; *LDR*, loan to deposit ratio]. Least squares method (fixed effect) is used. *, **, *** indicate significance at the 10, 5 and 1% levels, respectively.

The result of *ROA* and foreign ownership relationship confirms previous study of the Korean banking industry (Moon, 2009; Shen, Lu, & Wu, 2009) and contradicts other studies (Claessens, Demirguc-Kunt,

& Huizinga, 2001; Unite & Sullivan, 2003). A negative coefficient in the level of significance in *ROA* may be explained by some reasons. *First*, the entry of foreign ownership has led the banks to increased capabilities, such as by training the staff, rotating staff job descriptions, changing workflow or culture, and introducing novel cutting-edge technology. These activities increase the expenses and therefore may offset the beneficial effects of foreign ownership in the short run (Shen, Lu, & Wu, 2009). *Second*, inflow of foreign ownership has also introduced foreign experts and procedures to the banks. The differences in language and corporate culture may create obstacles for the local staff or management to cooperate.

Inverse relationship in *NIM* is also observed in a similar study in the Philippines (Unite & Sullivan, 2003). It may suggest several things. *First*, there may be interest-rate-spread reduction upon the increasing of foreign ownership. During the increasing of foreign ownership, most banks were owned by the affliations withing their group and usually have higher interest-spread. With the increasing of foreign ownership, competition also tightened and therefore banks are reducing their interest spread. *Second*, foreign banks in emerging markets are also associated to bring less credit access to the companies (Gormley, 2010). Foreign banks are well-known to have cautious and tight credit policies, especially towards the SMEs.

Nevertheless, no significant relationship between *CIR* and level of foreign ownership was observed. Another study in China shows similar results (Shen, Lu, & Wu, 2009) This means that increasing foreign ownership in the bank industry does not strengthen the cost-efficiency of the industry.

Table 4 reports the Weighted Least Square (WLS) estimates of a time-invariant *H* for Indonesian banking industry in 2003-2008. Based on previous study, WLS gives three advantages including fair assessment of competition to borrowers in the system, reduced error, and addressing market power problem (Yeyati & Micco, 2007).

From 2003-2008 the Indonesian banking industry has time-invariant *H* equal to 0.2829 and is considered rather oligopolistic, with $H = 1$ is a perfect competition and $H \leq 0$ is monopoly cartel. This *H* is comparable to other cross-country studies by Panzar Rosse's Approach (Yeyati & Micco, 2007; Bikker & Haaf, 2002; Gischer & Stiele, 2008), although cross-country comparisons of the *H* variable can be highly misleading (Yeyati & Micco, 2007).

Table 4 Linear Regression to Estimate *H* by Panzar & Rosse's (PR) Approach

$$InIR_{it} = \alpha + \beta_1 In(w_{1,it}) + \beta_2 In(w_{2,it}) + \beta_3 In(w_{3,it}) + \gamma InControl$$

Independent Variable	Coefficient	Std. Error
lnw_1	0.1042***	0.0164
lnw_2	0.1394***	0.0200
lnw_3	0.0393*	0.0209
lnTA	-0.0084*	0.0046
lnOE	0.4327***	0.0290
lnEQ	0.0252**	0.0109
lnLDR	0.0674***	0.0173
H	0.2829	
Observations		
Adjusted R^2	0.6191	
Durbin-Watson	0.5962	
Prob(F-statistic)	0.0000	

Note: *IR* = Gross interest revenue per total asset. Regression uses Weighted Least Square (WLS) based on cross-sections. *, **, *** indicate significance at the 10, 5 and 1% levels, respectively.

Since this is not a cross-country study, dynamic comparison of *H* variable only can be compared by time-variant (see Table 5). The time-varying *H* shows considerable fluctuation across the time period of study, with the highest being in 2004 (0.3058) and the lowest in 2006 (0.2795); therefore the maximum difference is 0.0263. This pattern of fluctuative time-varying *H* is also seen in a cross-country study (Yeyati & Micco, 2007).

In comparison, the *HHI* index should range between from 0.0087 to 1 with 115 banks considered in the system. The *HHI* shows that market concentration in the Indonesian banking industry is slightly reduced in concentration, although the figures still fall inside the un-concentrated level (*HHI* < 0.1). The reduction in concentration may be due to divestiture (Adams, Johnson, & Pilloff, 2009). The divestiture hence brings a pro-competitive effect.

The 3- and 5-bank concentration index also declines over the period of the study. *k3* declines from 0.4538 to 0.3718 whereas *k5* declines from 0.5849 to 0.5086. This means that bigger banks have lesser market share

and make the industry less concentrated as the foreign ownership increases over time. Previously, the business of banking in Indonesia was dominated by several state-owned banks and one or two private, group-affiliated banks. Some of state-owned banks even inherited the systems or infrastructures of the banks during colonisation and/ or Independence. With the liberalisation and increasing of foreign ownership, more inflow of capital came to the Indonesian banking industry, therefore the size of several banks grew swiftly.

Table 5 Competition Measures across the Observed Period

	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**Average**
H#	0.2928	0.3058	0.3032	0.2795	0.2847	0.2945	0.2934
HHI	0.0908	0.0816	0.0654	0.0651	0.0668	0.0649	0.0724
k3	0.4538	0.4282	0.3692	0.3661	0.3700	0.3718	0.3932
k5	0.5849	0.5632	0.4987	0.5089	0.5304	0.5086	0.5325

Note: #This study also show time-variant *H* based on period-specific regression estimation, *Prob(F-statistic)* = 0.000. *HHI*, Herfindahl Hirschman Index; *k3*, 3-bank concentration; *k5*, 5-bank concentration.

Table 6 Competition, Foreign Ownership and Concentration

	H			
	(1)	(2)	(3)	(4)
FOTA	0.5146***	0.4382***	-0.0130	0.0775
	(0.0568)	(0.0696)	(0.0560)	(0.7380)
k3	0.3667***		1.4374***	
	(0.0383)		(0.1013)	
k5		0.3151***		0.7078
		(0.0328)		(0.8111)
HHI			-3.6395***	-1.4282
			(0.3416)	(2.9788)
Observations	6	6	6	6
Adjusted R^2	0.99	0.99	0.99	0.99
Durbin-Watson	2.0244	1.8856	3.4230	1.9729
Prob(F-Stat)	0.0000	0.0000	0.0000	0.0000

Note: Regression uses weighted least square (WLS) over the period of study. Foreign ownership measures use *FOTA*, the foreign ownership shares multiply by total asset. ***, ** and * indicate two-tailed significance at 1%, 5% and 10% levels respectively.

After analysing the pattern of competition and concentration index over the period of study, this study investigates the relationship between the increasing foreign ownership to the competition, that denoted by the variable *H* (Table 6). Since this is not a cross-country study, linear regression could only be done over the period of study. Foreign ownership measurement uses *FOTA* which is the total foreign share asset in the industry.

The result of regression between competition and foreign ownership (Table 6), demonstrates that foreign ownership increases competition: shown by positive sign with significant relationship. This phenomenon may be explained by several reasons. *First*, it must be understood that the Panzar & Rosse's approach is based on comparison between revenues (output) and the respective factor prices (input). One may relate this to principles of efficiency. Interest revenue is used as the output factor whereas deposit, personnel and other administration expenses are used as the input factor. The entry of foreign ownership brings expertise in banking know-how and human resources. The banks in the system may react with making the operation more efficient as well as spending more in personnel recruitment and development, to catch up with the system's improvement.

Second, the increasing competition may be a result of increasing efficiency after inefficiency during crisis (Reynaud and Rokhim, 2005). The increase of foreign ownership that peaked around 2003 and continued until 2008 may have helped the increasing efficiency and therefore increased competition. Local banks are also consolidating after the crisis, therefore efficiency and competition may be increasing. *Third*, foreign and domestic banks would eye for the same mass target market. In the past, foreign bank and joint venture banks usually serve a very niche market and rather wholesale market. With the acquisition of large private banks by the foreign investors, the consumer credit as well as credit for the SMEs and real sectors are also served by private banks (major and minor acquired by foreign investors) on top of domestic (stated, private and regional) banks.

These findings suggest that the increase of foreign ownership would not bring an anti-competitive effect into the Indonesian banking industry; instead foreign ownerships would increase competition and hopefully the efficiency of the banking industry. However, the central banks have to ensure that the competition is healthy and thus not cause harm, especially to the local and smaller banks.

In addition, the impact of foreign penetration on banking stability is also analysed in terms of short-term risk, *Z*, against the share of foreign assets and the degree of competition & concentration by *H*, *HHI*, *k3*, and *k5*. In short-term risk management based on foreign share and competition measures, the *Z-score* measurement by Chebyshev's inequality is used. Higher *Z score* means lower short-term risk and lower *Z score* suggests higher short-term risk.

Table 7 Concentration and Risk

	Z-Score			*NPL*
	(1)	(2)	(3)	(4)
Constant	-9.3035**	-1.5313	-0.7542	9.5601***
	(3.8037)	(5.2596)	(5.8696)	(2.5360)
FO	-0.6043*	-0.5981*	-0.5666*	1.5977***
	(0.3723)	(0.3714)	(0.3694)	(0.2067)
H	104.9312***	80.56004***	85.1033***	-46.2406***
	(21.6608)	(24.4364)	(24.0609)	(10.3931)
k3		-11.4107**		
		5.3509		
k5			-11.3244**	4.3381*
			(5.8425)	(2.6510)
logTA	-0.3439	-0.2380	-0.2351	-0.2292**
	(0.1969)	(0.2026)	(0.2037)	(0.0945)
Obs	687	687	687	689
Adjusted R^2	0.2020	0.2059	0.2112	0.4395
Prob (F-stat)	0.0000	0.0000	0.0000	0.0000
Durbin-Watson	1.1030	1.0980	1.1009	0.6139

Note: *Z*-score; measure of insolvency risk; *NPL*, gross ratio of non-performing loan and total loans. ***, ** and * indicate two-tailed significance at 1%, 5% and 10% levels respectively.

Table 7 shows that competition that is denoted by variable *H*, decreases bank risk in all models that represent foreign ownership, competition concentration and control of size effect (Column (1), (2) and (3)). Hence, this study favors the "competition-stability" theory. It

may be explained that greater competition among banks means more lending opportunities, eroding market power, decreasing profit margins and resulting in discouragement in excessive bank risk-taking.

The increase of foreign ownership correlates significantly with the increase in short-term risk in the banking industry. This result confirms previous study in Philippine banking industry (Unite & Sullivan, 2003). This result may have a few meanings:

First, the entry of foreign ownership to the banking industry makes the credit market become tighter. This would induce the domestic banks to shift to take on relatively less creditworthy customers, therefore, increasing bank risk. Although one may claim that the mass market of the banking industry in Indonesia is huge, it may not be necessarily easy to capture a prudent market. On the other hand, the foreign banks usually bring new management that usually comprises foreign managers who usually do not know about the conditions in Indonesia well. This brings an asymmetrical information principle in modelling bank competition (Sengupta, 2007). Based on limited knowledge, it is possible that they may set inappropriate credit policies that lead to the increasing of NPLs. *Second*, the claim that foreign bank has advantage over domestic bank in having access to diversified international sources of liquidity, especially in time of national aggregate liquidity shortage (Dinger, 2009) is yet to be proved. The world's financial crisis in late 2007 and 2008 did not significantly affect the banking industry in Indonesia. *Third*, the central bank has to increase their surveillance in banking risk to prevent the short-term risk becoming a snow-ball that may cause systemic risk. Bank Indonesia has to be bold enough to be strict to the regulation regarding Capital Adequacy Ratio (CAR), Statutory Minimum Reserve Requirement or *Giro Wajib Minimum* (GWM) and amount of NPLs, especially with the foreign banks. Bank Indonesia has issued some regulations but the implementations are still rather difficult.

Current findings demonstrate that a more concentrated system increases the bank risk. This is indicated by the negative coefficient of *k3* and *k5*, all in significant levels. This finding suggests that a concentrated system is not suitable for the banking industry. A concentrated system means that the industry only depends on several large banks. If there is a default in one of the big banks, the whole system would suffer considerable effects.

The last column (4) shows the robustness check using non-performing loan ratio (*NPL*) to replace the *Z-score* variable that denotes risk. *NPL* reflects the credit risk of a bank as a possibility of the failure

of debtors to payback their loans. More default loan means higher risk for the short-term solvency of the banks.

The results demonstrate that the model is robust enough whereby the results is consistent from the usage of *Z-score* in column (1), (2), and (3) to the use of *NPL* in column (4) as a measure of bank risk. The increase of competition yields to decrease in *NPL*, supporting the "competition-stability" theory whereas the increase in foreign ownership suggests the increase in risks of having *NPL*. The explanation of this result is more or less similar to the *Z-score* whereby there may be increasing in credit release upon the increasing foreign ownership that may include less creditworthy portfolio.

5. Conclusion

This study uses a detailed balance sheet database for 115 Indonesian banks over the period of 6 years (2003-2008) to explore the consequences of recent increment in foreign ownership as a part of a consolidations and financial sector liberalisation process in performance, competition and banking sector fragility, in terms of insolvency risk.

In the Indonesian banking system, foreign ownership makes differences for performances variable, except *NIM*. The inflow of foreign ownership decreases performance in terms of *ROA* and *NIM* whereby no evidence of relationship is found between *CIR* and foreign ownership. In addition, this study demonstrates that foreign banks outperform domestic banks in terms of profitability (*ROA* & *NIM*) and cost-efficiency (*CIR*). Foreign banks are suggested to have well-established infrastructure and management which resulti in superiority over their domestic counterparts.

Foreign ownership makes a difference in competition by forming a tighter market competition. This may be due to the fact that foreign banks and domestic banks are now eyeing the same mass target market, thus resulting in competition of adjusting the input proxies to generate efficient output of revenue.

Finally, the increase in foreign ownership is associated with higher insolvency risk. With foreign players in the industry, the domestic banks may be pushed to give more loans which are less creditworthy to answer to the tighter credit market. All in all, foreign ownership seems to bring a favourable impact upon Indonesian banking industry, although increase in insolvency risk should be carefully observed. Some restrictive regulations can be made in order to overcome the insolvency risk. For

instance, policy makers should limit the type of foreign companies that are eligible for ownership. Furthermore, the findings of current study encourage similar developing countries to be open to foreign ownership in the banking sector.

Future study should extend the time period, particularly from the beginning of liberalisation of foreign ownership in 1999, after the issuance of the new regulation. The long-term effect of increasing foreign ownership is expected to be different according to some theories that were explained earlier. In addition, a comparison of foreign ownership between the pre-crisis and post-crisis period would give a better understanding of the role of foreign ownership in the banking industry.

Linear regression that only contains domestic banks should also be considered. This study only measures the overall performance of the system in light of increasing foreign ownership. Future study should prioritise close monitoring to the performance of domestic banks, especially the private domestic banks, on top of state-owned banks and regional development banks.

In analysing the effect on the banking industry, cross-country study may also be a good consideration. Competition and concentration are especially easier to compare if the study is done in cross-country manner. Indonesia may have similar comparison to Philippine, Thailand and Korea where foreign ownership is increasing dramatically after the economic crisis in 1997.

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