REFERENCES

Bank for International Settlements. 2005. The Basel Committee on Banking Supervision [online]. Bank for International Settlements. Available from: http://www.bis.org/bcbs/aboutbcbs.htm [May 12, 2005].

Bank of Thailand. 1992. 50 Years the Bank of Thailand: 1942-1992. Bangkok: Amarin Printing Group.

Bank of Thailand. 2004. Financial Sector Master Plan [online]. Bank of Thailand. Available from: http://www.bot.or.th/bothomepage/BankAtWork/FinInstitute/FISystemDevPlan/ENGVer/pdffile/eng.pdf [March 24, 2005].

Bank of Thailand. 2004a. Supervision Report 2003 [online]. Bank of Thailand. Available from: http://www.bot.or.th/bothomepage/BankAtWork/Financial_Supervision/SupervisionReport/SupervisionReport2003-E.htm [April 14, 2005].

Bayraktar, Nihal and Wang, Yan. 2004. Foreign Bank Entry, Performance of Domestic Banks, and Sequence of Financial Liberalization. Policy Research Working Paper Series 3416. The World Bank.

Cetorelli, Nicola and Peretto, F., Pietro. 2000. Oligopoly banking and capital accumulation. Working Paper Series WP-00-12. Federal Reserve Bank of Chicago.

Deidda, Luca and Fattouh, Bassam. 2002. Concentration in the banking industry and economic growth. Working Paper CRENoS 200202. Centre for North South Economic Research, University of Cagliari and Sassari, Sardinia.

Demirgüç-Kunt, Asli & Huizinga, Harry and Claessens, Stijn. 1999. How Does Foreign Entry Affect the Domestic Banking Market?. Policy Research Working Paper Series 1918, The World Bank.

Desai, A., Mihir, Foley, C., Fritz and Hines Jr., R., James 2004. Capital Controls, Liberalizations, and Foreign Direct Investment. NBER Working Papers 10337. National Bureau of Economic Research, Inc.

Dobson, Wendy. 2002. Further Financial Services Liberalization in the Doha Round?. International Economics Policy Briefs PB02-8. Institute of International Economics.

Francois, F., Joseph, and Eschenbach, Felix. 2002. Financial Sector Competition, Service Trade, and Growth. Tinbergen Institute Discussion Papers 02-089/2. Tinbergen Institute.

Francois, Joseph and Schuknecht, Ludger. 1999. Trade in Financial Services: Procompetitive Effects and Growth Performance. CEPR Discussion Papers 2144. C.E.P.R. Discussion Papers.

Freixas, Xavier and Rochet, Jean-Charles. 1997. Microeconomics of Banking, pp. 51-85. MIT Press.

Glaessner, Tom and Claessens, Stijn. 1999. The Internationalization of Financial Services in Asia. Policy Research Working Paper Series 1911. The World Bank.

Herberholz, Chantal. 2002. The Impact of Foreign Entry on the Thai Domestic Banking Sector. A Master Thesis, Faculty of Economics, Chulalongkorn University.

Klein, Michael A. 1971. A theory of the banking firm. Journal of Money, Credit, and Banking 3: pp. 205–218.

Monti, Mario. 1972. Deposit, credit, and interest rate determination under alternative bank objectives. Shell, Karl and Szeg¨o, Giorgio P. (eds.), Mathematical Methods in Investment and Finance, pp. 431– 454. North-Holland: Amsterdam.

Montreevat, Sakulrat. 2000. Impact of Foreign Entry on the Thai Banking Sector: Initial Stage of Bank Restructuring. Economics and Finance No. 5(2000). Institute of Southeast Asian Studies.

Neuberger, Jonathan A. and Gary C. Zimmerman. 1990. Bank pricing of retail deposit accounts and 'the California rate mystery'. Economic Review (Federal Reserve Bank of San Francisco) 0(2): pp. 3–16.

Petri, P.A. 1997. Foreign direct investment in a computable general equilibrium framework. Paper prepared for the conference, Making APEC work: Economic Challenges and Policy Alternatives, 13-14 March, Keio University, Tokyo.

Pootrakool, Kobsak, Rodprasert, Harit and Nakornthab, Don. 2004. Thai Banking Sector Liberalization under WTO and Financial Sector Master Plan. Discussion Paper DP/02/2004. Bank of Thailand.

Prasad, Eswar, Kenneth Rogoff, Shang-Jin Wei and M. Ayhan Kose. 2003. Effects of Financial Globalization on Developing Countries: Some Empirical Evidence. IMF Board Document. Washington, DC: International Monetary Fund.

Suominen, Matti. 1994. Measuring competition in banking: A two-product model. Scandinavian Journal of Economics 96(1): pp. 95–110.

Twivey, Peter. 2003. Basel II Urges More Risk Analysis [online]. Price Water House Coopers. Available from: http://www.pwc.com/Extweb/service.nsf/docid/4DB5521A7227A81ECA256E85001200BC [May 12, 2005].

Verikios, George and Zhang, Xiao-guang. 2001. Global Gains from Liberalising Trade in Telecommunications and Financial Services. Others 0110005, Economics Working Paper Archive at WUSTL.

Watanagase, Tarisa. 2004. Implementation of Basel II in Thailand [slide]. The Bank of Thailand. Securities Analysis Association.

Appendices

APPENDIX A

DETERMINING PARAMETERS

As comparative study is applied to analyze our theoretical model, some parameters have to be normalized in order to show relationships between variables. We will set these parameters according to actual values of Thailand in the forth quarter of 2004. The parameters we want to normalized are: production technology parameter (A), a number of domestic banks (N), an interbank rate (r_t), compulsory reserve requirement (μ) and rate of time preference (β), per unit managerial cost of loans ($\gamma_{K,d}$) and per unit managerial cost of deposits (γ_D).

All parameters except production technology parameter A are easy to be determined as follows: (1) N is set to 8, a number of domestic-owned banks; (2) an interbank rate is 0.0166 as an quarter average of overnight interbank rate; (3) μ is set to 6% equal to a BOT reserve requirement for commercial banks; (4) a rate of time preference is difficult to determine and irrelevant to our analysis so that it is set to a unity; (5) $\gamma_{K,d}$ will be adjusted accordingly, mostly 0.3, to exhibit a wider range or managerial cost gap; (6) per unit managerial cost of deposits is set to zero because it is not relevant to our analysis and indistinguishable between those of foreign and domestic banks.

For production technology parameter A, we estimate the equation (7) with a unity of labor supply using Thai quarterly data between 1993 and 2004. Our regression is

$$\log(GDP_t) = \alpha_0 t + \alpha_1 \log(LOAN_t) + \alpha_3 CRISIS_t + \varepsilon_0 \tag{47}$$

where GDP is quarterly GDP, $LOAN$ is an amount of private claim credit and $CRISIS$ is Thai financial crisis dummy triggering at the third quarter of 1997. It should be noted that time trend is included in the regression. The technology parameter is $A = \alpha_1 / 2$.

In the estimation, we use third-order autoregressive model and result is shown in the Table 7. From the table, the coefficient α_1 of log term of credit is equal to 0.389781.

So, dividing the coefficient by two, we can calculate the production technology parameter A equal to 0.1948905.

Table 7 The result of estimation to recover production technology parameter

Breusch-Godfrey LM test is conducted up to 7 lags to test for serial correlation. Heteroskedasticity is tested by applying White test with all cross terms. Also, White heteroskedasticity-consistent standard errors are given. Residual is tested by ADF unit root test with trend and intercept.

Variables	Coefficient	Standard Error	t-Statistic
Time Trend	0.068107	0.011964	5.692779*
Log(CREDIT)	0.389781	0.083140	4.688247*
CRISIS	-0.059977	0.005806	-10.33100*
A number of Observation	45		
Adjusted R2	0.977799		
Breusch-Godfrey LM Test Statistic	8.750985**		
White Test Statistic	7.849419**		
ADF Unit Root Test Statistic	-7.137272*		

* and ** indicate a rejection of a null hypothesis at a confident interval of 1 and 10 percent respectively.

APPENDIX B

TECHNICAL DETAIL OF EMPIRICAL ESTIMATION

We estimate two regressions (46) and (47) based on quarterly Thai data between 1993 and 2004. For each equation, three regressions are conducted with various representative of foreign participation in domestic banking market: (1) a ratio of a number of foreign banks branches and foreign-owned domestic banks to a total number of banks; (2) a ratio of asset of foreign banks branches and foreign-owned domestic banks to assets of all commercial banks; (3) a ratio of asset of foreign-owned domestic banks to assets of all commercial banks and a ratio of asset of foreign full branches to assets of all commercial banks. Because of a small number of observations, the ratios are used as proxies to save the degree of freedom.

To verify that every variable in our equations does not have unit root at the same order and that all variables are possible to be co-integrated, we conduct Augmented Dickey-Fuller unit root test with a constant and a linear trend to all variables except for dummy variables to test for a unit root and the results are shown in Table 8. We test that linear combinations of these variables are co-integrated in the next table.

Table 8 The result of Augmented Dickey-Fuller unit root test

ADF unit root test with intercept and trend is applied. Akike Information Criteria with maximum of eight lags is used to choose a lag length.

Variables	I(0)	I(1)	I(2)
LOAN	-2.105222	-2.856010	-7.640936*
GROWTH	-1.678876	-6.440197*	-6.509082*
INTB	-2.475467	-1.316619	-2.128559
INTL	-2.737663	-4.292933*	-5.467475*
Foreign Participation			
(1) Number of banks	-1.497046	-4.010468**	-5.841997*
(2) Total assets	-4.183603**	-0.661978	-3.853687**
(3.1) Foreign-owned	-0.890884	-4.390798*	-5.396756*
(3.2) Branches	-4.971402*	-0.912969	-3.671842**

*, ** and *** indicate a rejection of a null hypothesis at a confident interval of 1, 5 and 10 percent respectively.

The both regressions are estimated using ordinary-least square with distributed lagged variables of foreign participation. Akike information criteria are applied to specify a proper number of lagged terms. However, we do not choose a model with minimum Akike information criteria for one whose serial correlation cannot be corrected. White

heteroskedasticity-consistent standard errors and covariance are also reported. All regressions include autoregressive terms to alleviate the serial correlation problem. White heteroskedasticity test and Breusch-Godfrey serial correlation LM test are used to verify absences of heteroskedasticity and serial correlation. The corrected equations test statistics are shown in Table 9.

Table 9 The result of White-heteroskedasticity, serial correlation LM and ADF unit root test on residual of the regressions

The White-heteroskedasticity test is conducted with cross terms. Serial correlation LM test includes up to five lags. ADF unit root test with intercept and trend is applied on residuals of the regressions. Akike Information Criteria is used to choose a lag length.

Regression	White Test Statistic	Breusch-Godfrey LM Test Statistic	ADF Unit Root Test Statistic
(1.1)	7.713980*	10.09464**	-7.496547***
(1.2)	6.569371*	8.595003*	-5.356390***
(1.3)	9.241076*	9.116514*	-10.68629**
(2.1)	17.64377*	12.44582*	-3.797140**
(2.2)	12.79535*	14.56467**	-3.327279*
(2.3)	11.80594*	8.162063*	-3.682127**

*, ** and *** indicate an acceptance of a null hypothesis at a confident interval of 10, 5 and 1 percent respectively.

According to the table, all regressions are problems free at indicated confident intervals. Also reported in the table, augmented Dickey-Fuller unit root test confirms that our regressions are stationary and the variables have a long-run relationship. The analysis of the empirical results is discussed in the sixth chapter.

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