

CHAPTER IV

RESULTS

This chapter discusses the results of the use of the models discussed in the previous chapter when examining the effect of foreign ownership on Thai financial institutions.

The data in this study were collected from company's financial statements and from Business Online website (BOL); they include twelve commercial banks and eight finance companies in the period 1994-2003 and twenty-five life insurance companies in the period 1995-2003. Checks were made to see whether the firms have foreign entities as majority shareholders. The level of foreign participation in all financial institutions is shown in Appendix A. This study applies the variable returns to scale model or BCC by using data envelopment analysis to assess the technical efficiency of the financial institutions. The efficiency scores are shown on an annual average basis and the efficiency scores of both domestic-owned firms and foreign-owned companies are separated into two data sets in order to determine whether the foreign-owned corporations outperformed their domestically owned counterparts.

4.1 Thailand Financial Institutions Liberalization, Deregulation and Developments

Liberalization of Financial industry in Thailand started with the acceptance of the Articles of Agreement of the International Monetary Fund (IMF), which mandated the liberalization of capital flows, deregulation in the scope of the operation of financial institutions, and partial entry of foreign competitors in the domestic financial system.

Consequently, the strictness on foreign shareholding limitation in Thai commercial banks was relaxed. On June 27, 1997 the government issued an Emergency Decree amending the Commercial Banking Act B.E. 2505 (1962) (No. 2), amended in 1979 and 1992, easing existing restrictions on foreign holdings in commercial banks and finance companies to allow 100% shareholding for foreign investors who have sound financial status and high potential to help increase management efficiency.

After deregulation, foreign investors were allowed to acquire majority shareholding in Thai banks for up to 10 years. Prior to this, a 25% shareholding limit was applied to foreign investors. After ten years, the foreign equity stake cannot be raised further, unless it is below 49%. Consequently, any subsequent capital injections into banks that have more than 49% foreign equity that take place after the 10-year period must be made by Thai investors.

As described by Montreevat (2001) and Chansarn (2005), after the financial crisis in 1997, the Bank of Thailand announced the intervention plans for 6 Thai banks and 12 finance companies. As results, Laem Thong Bank (LTB) was integrated with Radanasin Bank (RAB). The combination of RAB finally sought foreign strategic partners through a privatization process. Union Bank of Bangkok (UBB) and the 12 finance companies were consolidated with Krungthai Thanakit (KTT) in the same manner as the merger of LTB and RAB. Bangkok Metropolitan Bank (BMB) and Siam City Bank (SCIB) were recapitalized according to end-2000 LCP rules to strengthen the banks and would be privatized with loss-sharing arrangements to be proposed by new investors. Bangkok Bank of Commerce (BBC) was turned into a non-bank, AMC, owned by the Financial Institutions Development Fund (FIDF).¹ last but not the least, First Bangkok City Bank (FBCB) was integrated with Krung Thai Bank (KTB). Restructuring plan of the combined KTB was announced in August 1998.

In addition, in July 1999, Nakorthon Bank (NTB) became the 7th bank to be intervened due to having negative shareholders equity and negative tier 1. The Bank of Thailand, therefore, ordered the NTB to write down its capital in order to reduce its accumulated losses prior to the FIDF purchase of their common shares. Thereafter, the NTB was instructed to increase its capital via common shares issuance to the FIDF, of which 75% would be subsequently resold to a strategic institutional investor. In the process, weak banks were taken over while others have gone through massive recapitalization. Out of 15 Thai banks at the end of 1997, 13 Thai banks remain as shown in Appendix A. Two nationalized banks, RAB and NTB, were privatized. The Financial Services Task Force formed by fiscal and monetary authorities is mandated to develop a five-year strategy for the financial sector. On legal reforms, Thailand is in the

process of amending the Bank of Thailand Act and the new Financial Institutions Act to modernize the Thai financial system. The Currency Act is under review by the Ministry of Finance (MOF). The Deposit Insurance Act is in its fourth draft. The amendment to Bankruptcy Law and Foreclosure Law aims to facilitate corporate debt restructuring. Thailand has pursued a multipronged approach in tackling NPLs in the banking system. Foreign banks or foreign investors have also been encouraged to participate in the Thai banking system. Noticeably, foreign shareholdings have increased in Thai commercial banks.

In conclusion, as the consequence of the financial crisis and deregulation of Thai financial sector, there were several changes in Thai Banking sector. Some were merged with Thai commercial banks, while others were acquired by foreign commercial banks. For instance, the assets of Bangkok Bank of Commerce were transferred to Krungthai Bank. Union Bank was merged with Krung Thai Thanakit (a subsidiary of Krung Thai Bank) to become Bank Thai (BT). Laem Thong Bank was merged with a new state owned bank called Radanasin Bank which was later acquired by United Overseas Bank Limited (UOBR) of Singapore and then was renamed UOB Radanasin Bank Public Company Limited. Nakornthon bank was also acquired by Standard Chartered Bank of the Great Britain and then was renamed Standard Chartered Nakornthon Bank Public Company Limited (SCNB). Moreover, Thai Danu Bank was acquired by DBS Bank of Singapore and then was renamed DBS Thai Danu Bank Public Company Limited (DTDB). Accordingly, it is clear that there is a change in ownership of Thai financial sector, that is, many commercial banks became foreign. The foreign participations of Thai commercial banks are shown in Appendix A.

For the life insurance industry, the liberalization was brought about by trade agreements and other restructuring of international markets under the General Agreement on Trade and Services (GATS), which increased market opportunities for foreign firms. The opening up of the domestic market under GATS brought an inflow of foreign insurance firms and increased the competitive pressure. Inefficient insurers cannot survive long in a competitive market. As such, life insurance firms in Thailand need to be efficient to ensure their survival. In 1997, there were altogether twenty-five

life insurance companies, as shown in Appendix A. Of this number, twenty-four were registered in Thailand and one was operating as a branch of foreign company. Following the new trade agreements, by March 25, 1997, there were twelve more life insurance companies.

The Life-insurance Act B.E. 2535 (1992) states no less than 75% of the total amount of shares in a life insurance company must held by persons of Thai nationality.

Given the path towards liberalization, this study examines the impact on efficiency on Thai financial institutions of the 1997 financial liberalization. The analysis produced two sets of efficiency scores for Thai financial institutions arising out of the study of twelve commercial banks, eight finance companies and twenty-five life insurance companies operating during 1994-2003: production and intermediation approaches, generated by the Data Envelopment Analysis model or DEA. These scores are presented as annual averages of financial institutions under investigation as representative of the entire Thai financial system.

In conclusion, foreign banks and foreign finance companies are classified as companies that have foreign entities holding more than 50% of the shares; for life insurance companies, a foreign held company is simply one in which ownership is not wholly (100%) Thai, since by law no less than 75% must be Thai held.

Recall that the main hypotheses of this study are that foreign-owned financial institutions have more production and intermediation efficiency than domestic-owned and that domestically-owned financial institutions have improved in both production and intermediation efficiency after financial liberalization and deregulation.

4.2 Findings and Discussions

We separate our study into three parts. There are (1) average efficiency of Thai commercial banks using the production and intermediation approaches, (2) average efficiency of finance companies in both the production and intermediation processes and (3) the average efficiency of life insurance companies employing production approach.

4.2.1 Average Efficiency of Thai Commercial Banking

In the first section, we study the efficiency scores of twelve Thai commercial banks over the period 1994 to 2003, dividing the study into two parts: the intermediation approach and production approach. The results presenting Thai commercial bank efficiency scores for both production and intermediation processes are presented in Table 4.1 and Figure 4.1, respectively.

During 1994 to 2003, the average efficiency of Thai commercial bank in terms of intermediation process was quite stable, from a high score of 0.99 to a low of 0.97. Prior to 1998, the intermediation performance of the banking system appeared to be relatively more stable than after liberalization, with an average efficiency ranging from 0.97 to 0.99. During the six years after the financial crisis (1998-2003), the overall efficiency of Thai banking companies appeared to increase until 2003 but was never able to achieve earlier performance levels.

The results of the production process for the banking sector are shown in Table 4.2 and Figure 4.2; these suggest that the annual average efficiency of the banking system as a whole moved downward after liberalization and also suggests that the liberalization program did not fulfill its promise in terms of efficiency gains in the production process of banking. The efficiency numbers of this process have a wide range from a high of 0.96 in 1997 to a low of 0.91 in 1994.

Table 4.1 Average efficiency statistics measures of Thai banks (Intermediation Approach)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average
BBL	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
KTB	1.00	1.00	1.00	1.00	1.00	1.00	0.83	1.00	1.00	1.00	0.98
KBANK	0.96	0.95	0.92	0.88	0.90	0.82	0.91	0.90	0.86	1.00	0.91
SCB	1.00	0.98	1.00	0.92	1.00	0.91	1.00	1.00	1.00	0.89	0.97
BAY	0.98	0.92	0.93	0.90	0.85	1.00	1.00	1.00	1.00	1.00	0.96
SCIB	1.00	0.99	1.00	1.00	0.94	1.00	1.00	1.00	1.00	1.00	0.99
TMB	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
BT	0.96	1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99
BOA	1.00	1.00	1.00	1.00	0.99	1.00	1.00	0.95	1.00	1.00	0.99
DTDB	0.90	1.00	0.98	0.89	0.92	0.99	1.00	1.00	1.00	1.00	0.97
SCNB	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
UOBR	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Average	0.98	0.99	0.98	0.97	0.97	0.98	0.98	0.99	0.99	0.99	
Min	0.90	0.92	0.92	0.88	0.85	0.82	0.83	0.90	0.86	0.89	
Max	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Average Domestic	0.98	0.99	0.98	0.97	0.96	0.97	0.97	0.99	0.98	0.99	
Average Foreign	N/A	N/A	N/A	N/A	0.98	1.00	1.00	0.99	1.00	1.00	

Figure 4.1 Average technical efficiency of Thai commercial banks (Intermediation approach)

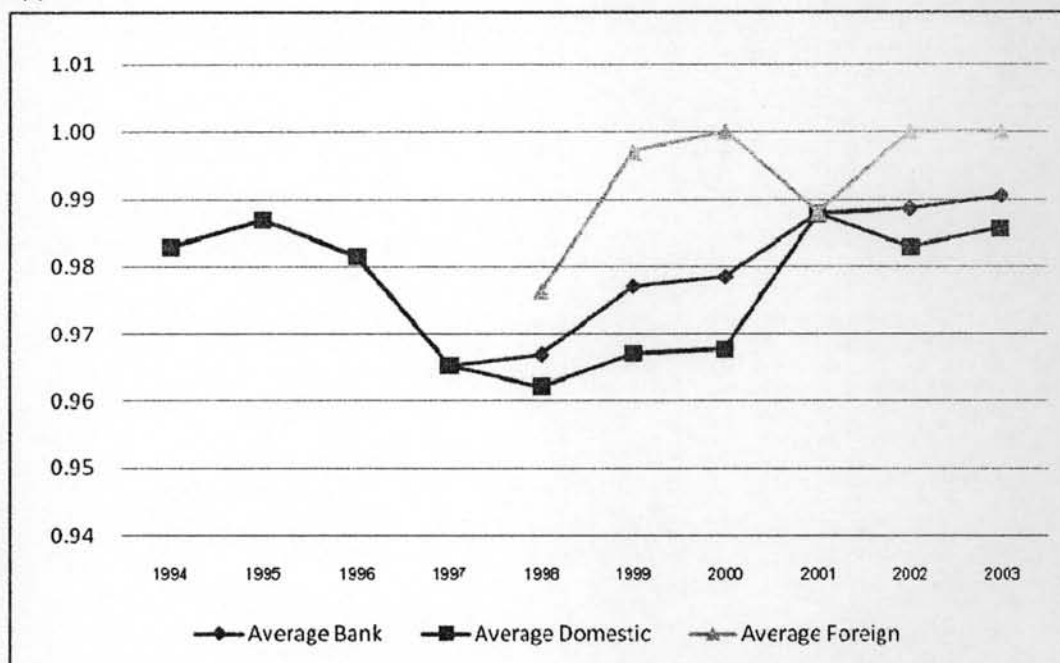


Table 4.1 shows the results of the intermediation process on Thai banking system over the period studied and reveals that the Thai banking system did have relatively improved efficiency scores in terms of intermediation. The efficiency score improved from the low in 1997 after the liberalization (1998-2003) with an average score of 0.99 compared to the efficiency score before the liberalization (1994-1997) of an average of 0.98. This suggests that the banking system performed better in its basic function: transforming deposits to loans. This was, we believe, partly resulting from the greater foreign bank participation through acquisitions that increased the competitive pressure in the banking industry and domestic banks' financial restructuring.

Banks with a 100% efficiency score included Bangkok Bank, Thai Military Bank, Standard Chartered Nakornthon Bank and UOB Radanasin Bank; the bank with the lowest efficiency score in terms of intermediation process is Kasikorn Bank.

Whilst domestic and foreign bank efficiency is comparable, as shown in Figure 4.1, we found that efficiency scores of both were improved after foreign entry to the banking sector in 1997. The efficiency scores of foreign-owned banks outperformed the efficiency scores of domestic-owned banks, which support the global advantage hypothesis that foreign banks from strong home environments may carry efficiency advantages overseas.

Figure 4.1 shows the average technical efficiency of Thai commercial banks in the intermediation approach. As there was no foreign-owned bank before liberalization or before 1997, we can only compare the efficiency of both domestic and foreign-owned after 1997. On average, overall efficiencies were improved after foreign entry in 1997. The number picked up from the lowest level of 0.97 in 1997 to the highest level of 0.99 in 2001. Average efficiency scores of domestic-owned banks showed poor performance from 1995 with some improvement after foreign entry to the market in 1997. For the foreign-owned banks, the average efficiencies are quite stable over 1998 to 2003 in a range of 0.98-1.00.

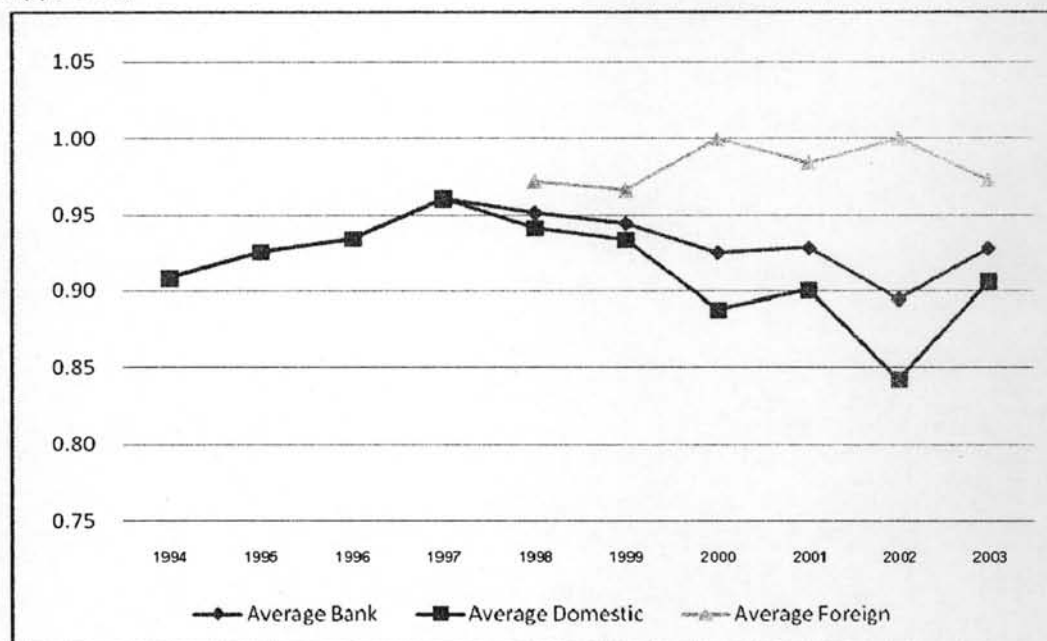
These findings answer the question whether overall bank efficiency in the intermediation approach improved after foreign entry in 1997, since on average foreign-owned banks performed better than the domestic-owned banks. Also the results

are in line with the study of Vichayanond (1995) that foreign financial institutions outperform domestic companies in developing countries.

Figure 4.2 Average efficiency statistics measures of Thai banks (Production Approach)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average
BBL	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
KTB	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00
KBANK	0.74	0.71	0.85	0.92	0.80	0.85	0.61	0.67	0.71	0.86	0.77
SCB	0.78	0.87	0.94	1.00	1.00	0.92	1.00	1.00	0.74	0.88	0.91
BAY	0.88	1.00	0.94	0.98	0.84	0.70	0.69	0.72	0.59	0.67	0.80
SCIB	0.98	0.96	0.94	0.81	0.93	1.00	1.00	1.00	1.00	1.00	0.96
TMB	1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.83	0.69	0.84	0.92
BT	0.89	0.91	0.86	1.00	0.96	1.00	1.00	0.98	1.00	1.00	0.96
BOA	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.94	1.00	1.00	0.99
DTDB	0.64	0.73	0.79	0.92	0.94	0.86	1.00	1.00	1.00	1.00	0.89
SCNB	0.99	0.93	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98
UOBR	1.00	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	0.89	0.98
Average	0.91	0.93	0.93	0.96	0.95	0.94	0.93	0.93	0.89	0.93	
Min	0.64	0.71	0.79	0.81	0.80	0.70	0.61	0.67	0.59	0.67	
Max	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Average Domestic	0.91	0.93	0.93	0.96	0.94	0.93	0.89	0.90	0.84	0.91	
Average Foreign	N/A	N/A	N/A	N/A	0.97	0.97	1.00	0.98	1.00	0.97	

Figure 4.2 Average technical efficiency of Thai commercial banks (Production approach)



The results of the production model are presented in Table 4.2. As seen in this table, the efficiency pattern of the Thai banking system fluctuated over the period. The level of efficiency increased from the beginning of the study and peaked in 1997 with an efficiency score of 0.96, but after foreign entry in 1997, the numbers decreased continuously. Before liberalization, the efficiency trends for the production process had improved from a low score of 0.91 in 1994 to a high of 0.96 in 1996, but overall efficiency trends turned downward after the liberalization and foreign entry in 1997. These findings suggest that there was no positive effect of liberalization on the production approach. The results also suggest that Bangkok Bank and Krung Thai Bank had a hundred percent efficiency over the period.

Whilst domestic-owned banks are comparable, the efficiency trends were consistent and moved in the same direction as the overall efficiency score. The numbers turned to a downward trend in 1998 after the liberalization of the banking industry and the enactment of new regulations. The scores reached the highest level of 0.96 in 1997 and then moved down to hit a low of 0.84 in 2002. Comparing foreign-owned bank scores shows that foreign-owned companies' efficiency scores were quite

stable at a high level of 0.97 to 1.00 and outperformed the efficiency level of domestic-owned banks. This may be due to greater foreign participation through acquisitions, which increases the competitive pressure in the banking industry, and also to financial restructuring of domestic banks, which increases the overall efficiency of foreign-owned banks. This may also imply that capital flow and advanced management technology from foreign participation have not affected the efficiency of production processes of Thai banks after deregulation in 1997.

Figure 4.3 Average technical efficiency of Thai commercial banks (Intermediation approach versus Production approach)

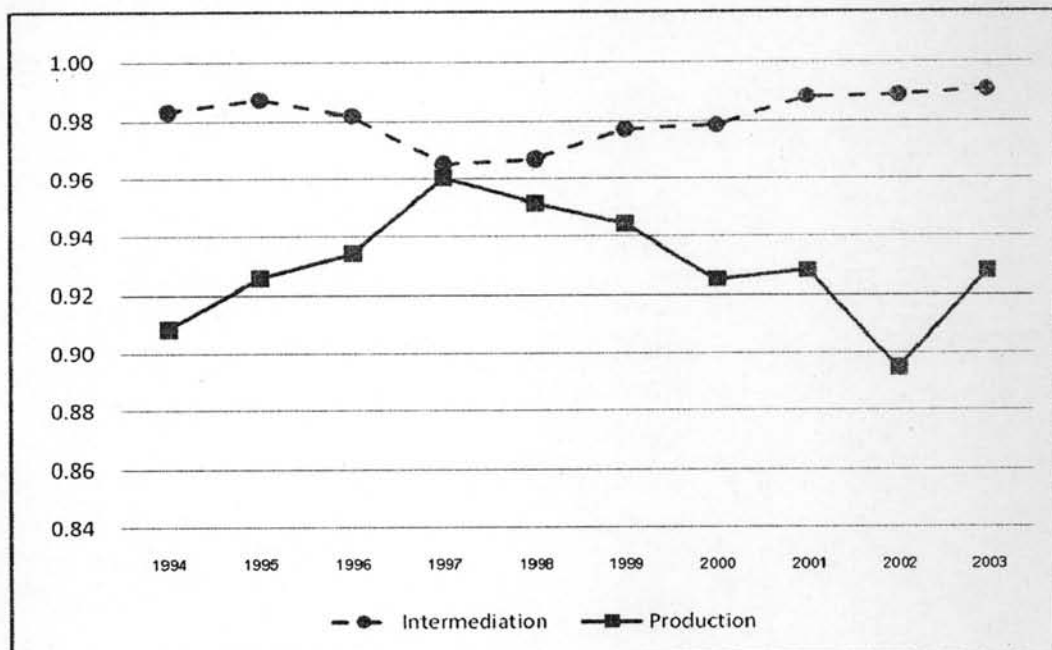


Figure 4.3 illustrates the average efficiency scores of both intermediation and production approaches. In conclusion, both processes moved in opposite directions over the period of study. For the intermediation approach, the efficiency scores moved downward from the early stages of the study until reaching a low in 1997. After liberalization and foreign investor participation in some banks, overall efficiency scores improved and turned to an upward trend until 2003, the final year of the study. These results lead one to believe that the liberalization program increased the efficiency of the Thai banking system to higher levels as anticipated.

However, the efficiency scores of the production process moved in the opposite direction to the intermediation process. The efficiency scores of the production approach improved from the beginning of the study in 1994 until reaching the highest level in 1997. But after liberalization of the banking industry was begun in mid-1997 and there was greater foreign investor participation in the banking sector, the trend of efficiency scores turned downward and moved to hit the lowest level in 2002. Efficiency then turned positive again in 2003. This was mainly due to the big drop in efficiency scores of two banks which are Bank of Ayudhya and Thai Military Bank. The efficiency score of both banks dropped on an average of 17% from previous year. The possible reason that caused the big drop of efficiency score of Thai Military Bank was from the big jump in personal expense or upped approximately 30% compared to previous year. However, the efficiency scores of both banks turned to positive again in 2003 as the declining in personal expense.

4.2.2 Average Efficiency of Thai Finance Companies

In this section, we assess the efficiency score of eight finance companies over 1993-2003 by applying the intermediation and production approaches. The results of both processes are presented in Table 4.3 and Figure 4.4, respectively. Note that before the 1998 all finance companies are assumed to be domestic-owned, as the foreign ownership was all under 49%. After liberalization in 1997, only Tisco Finance Company had foreign ownership of over 49%. The details of foreign participation in finance companies are shown in Appendix A.

Overall efficiency scores during 1994 to 2003 of finance companies in terms of intermediation process fluctuated wildly from a high 1.00 to a low 0.95. Prior to 1997, the intermediation performance of the finance companies appeared to be relatively lower than after liberalization, with an average efficiency ranging from 0.95 to 0.99. After liberalization, efficiency scores of finance companies increased until 2001 to reach earlier performance levels. But the numbers decreased again in 2002 and 2003 after foreign participation in Tisco Finance Company. On the other hand, the results of the production process for finance companies as illustrated in Figure 4.4 suggests that

the annual average efficiency of finance companies was more stable than the intermediation approach. The efficiency scores were in the range of 0.67 to 0.84.

Table 4.3 Average efficiency statistics measures of Thai finance companies (Intermediation Approach)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average
ACL	1.00	1.00	1.00	1.00	0.94	0.83	1.00	1.00	0.87	0.74	0.94
AITCO	1.00	1.00	0.94	0.92	1.00	1.00	1.00	1.00	1.00	1.00	0.99
BC	1.00	0.91	0.94	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.98
BFIT	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.99
KK	0.92	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.99
NFS	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SICCO	1.00	0.91	0.93	0.74	0.89	1.00	1.00	1.00	1.00	1.00	0.95
TISCO	N/A	N/A	N/A	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Average	0.99	0.98	0.97	0.95	0.97	0.98	1.00	1.00	0.98	0.96	
Max	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Min	0.92	0.91	0.93	0.74	0.89	0.83	1.00	1.00	0.87	0.74	
S.D.	0.03	0.04	0.03	0.09	0.04	0.06	0.00	0.00	0.05	0.09	
Average Domestic	0.99	0.98	0.97	0.95	0.97	0.98	1.00	1.00	0.98	0.95	
Average Foreign	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.00	1.00	

Figure 4.4 Average technical efficiency of finance companies (intermediation approach)

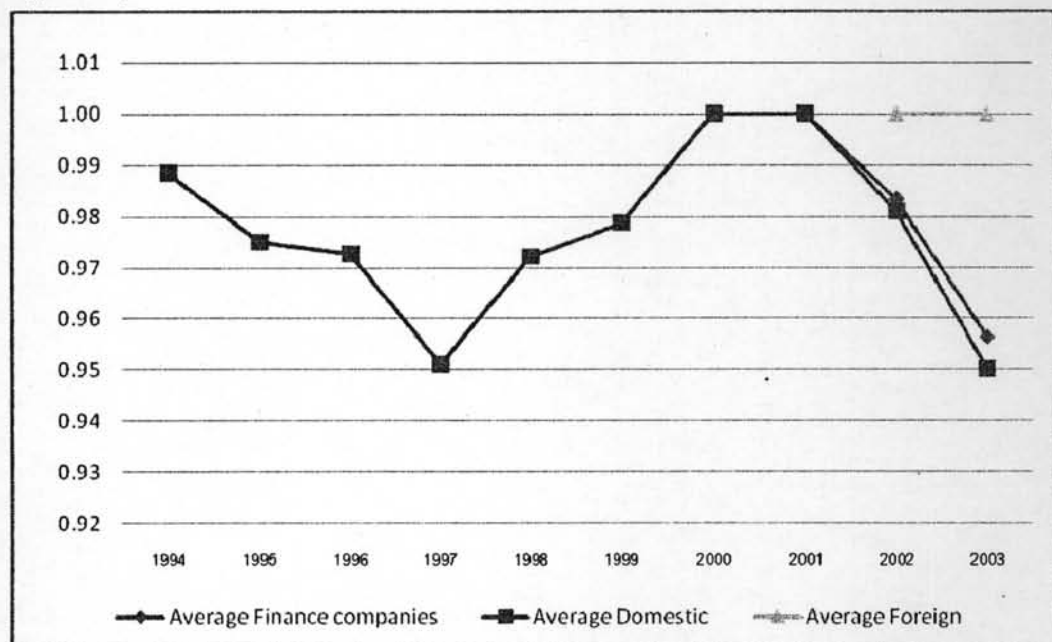


Table 4.3 and Figure 4.4 provide the results of the intermediation process of eight finance companies; the results fluctuated over the period. On average, the overall efficiency scores declined from 1994 to the lowest level in 1996, one year before liberalization of the financial sector. The overall efficiency numbers started to improve again after liberalization and deregulation. The efficiency scores fluctuated widely over the period under study, from a high of 1.00 in 2000 and 2001 to a low of 0.95 in 1997. This suggests that after liberalization of the financial sector in 1997, finance companies performed relatively well in their basic function: transforming deposits into loans, the same as the intermediation scores for the banking industry. However, the efficiency numbers turned downward again in 2002 and 2003, the year foreign investors participated in Tisco Finance Company. The overall efficiency score fell to 0.98 in 2002 and 0.96 in 2003.

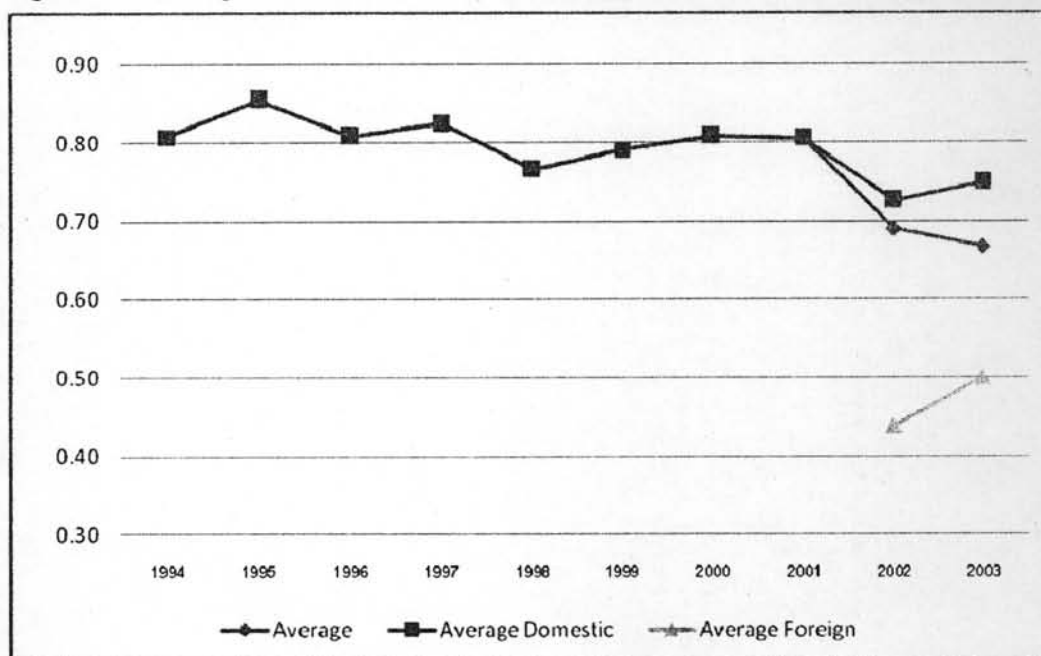
As seen in Figure 4.4 and Appendix B, only one finance company became foreign-held after foreign investors participated and raised ownership levels in 2002. The relative efficiency of a foreign company dominated the domestic company with an average efficiency of 1.00 or a 100% efficiency score. This result was in line with banking' intermediation scores as shown in Figure 4, where the efficiency score of foreign-owned companies outperformed the domestic-owned companies.

Two finance companies generated a 100% efficiency score: National Finance Co., Ltd and Tisco Finance Co., Ltd.; Asia Credit Co., Ltd had the lowest efficiency score of 0.94.

Table 4.4 Average efficiency statistics measures of Thai finance companies (Production Approach)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average
ACL	1.00	0.86	0.78	0.74	1.00	0.44	0.62	0.49	0.45	0.45	0.68
AITCO	1.00	1.00	0.79	0.81	0.79	1.00	1.00	1.00	0.58	0.65	0.86
BC	0.75	0.80	0.86	0.78	1.00	1.00	1.00	1.00	1.00	1.00	0.92
BFIT	0.50	1.00	1.00	1.00	1.00	0.64	0.67	1.00	1.00	1.00	0.88
KK	0.40	0.47	0.45	0.45	0.34	0.32	0.45	0.45	0.35	0.29	0.40
NFS	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SICCO	1.00	0.86	0.77	0.81	0.46	1.00	1.00	0.85	0.70	0.86	0.83
TISCO	N/A	N/A	N/A	1.00	0.54	0.93	0.73	0.65	0.44	0.50	0.68
Average	0.81	0.85	0.81	0.82	0.77	0.79	0.81	0.81	0.69	0.72	
Max	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Min	0.40	0.47	0.45	0.45	0.34	0.32	0.45	0.45	0.35	0.29	
S.D.	0.26	0.19	0.19	0.19	0.28	0.28	0.22	0.24	0.28	0.29	
Average Domestic	0.81	0.85	0.81	0.82	0.77	0.79	0.81	0.81	0.73	0.75	
Average Foreign	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.44	0.50	

Figure 4.5: Average technical efficiency of finance companies (Production approach)

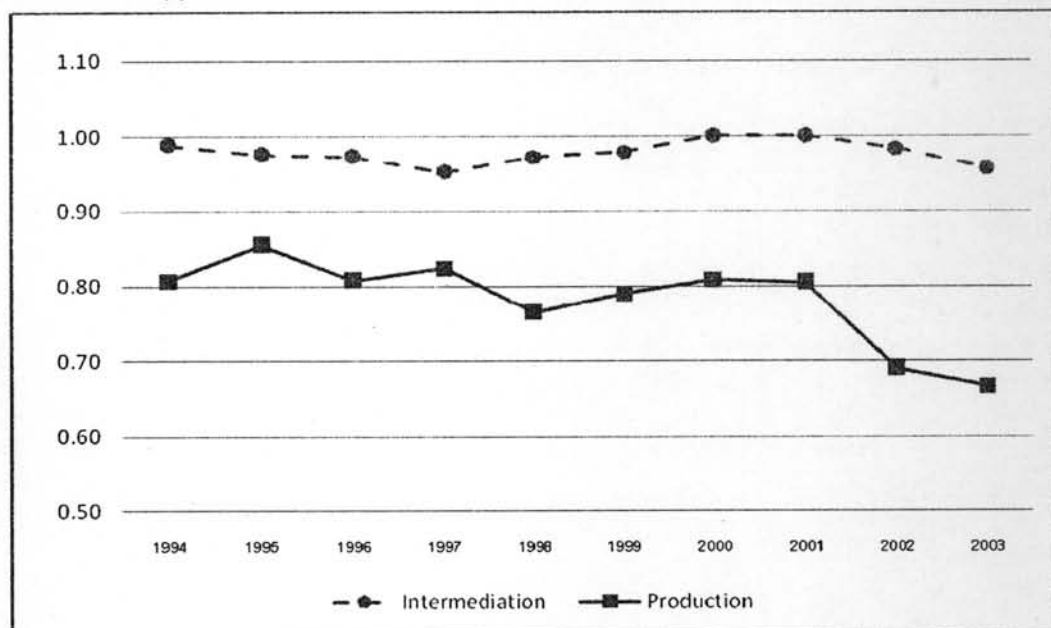


The results of the production model of finance companies are presented in Table 4.4 and Figure 4.5. As seen in Table 4.4, the efficiency pattern of the Thai finance companies was quite stable with an average efficiency score range of 0.69 to 0.82.

Similar to the intermediation approach, the efficiency trends for production functions were downward from 2001 onward; this was due to the changes in the shareholder's structure of Tisco, which became foreign-owned in 2001. We believe the lower overall efficiency score came primarily from the higher competition in the industry brought by the entry of a newcomer into the market. New entrants needed to dedicate more resources to penetrating the market while incumbents worked to protect their market share as well as invest in more resources.

Unlike the intermediation approach, the efficiency of foreign-owned finance company on production process was lower than the industry average and the average of domestic-owned companies.

Figure 4.6 Average technical efficiency of finance companies (Intermediation versus Production approach)



In summary, the trends of both intermediation and production approaches were quite similar to banks. Before industry liberalization in 1997, the efficiency trends were downward and both processes reached the lowest level in 1997, the year in which the financial crisis began. But after liberalization and deregulation was completed in 1997, the overall efficiency scores of both processes turned upward again and peaked in 2000. Then, from 2001, the efficiency scores turned downward again; we believe this

was mainly due to the higher foreign participation in Tisco that heightened competition in the industry. The efficiency score on production process of Tisco Finance dropped 32% from previous year. This was, we believe, mainly due to a big drop in deposits that down 14% year-on-year compared to the average score of finance companies that increase 2.7%. Another reason that suffered the overall efficiency was due to an increase in personal expense of Tisco Finance (up 27% year-on-year) after the new foreign investor participated in 2002.

4.2.3 Average Efficiency of Thai Life insurance Companies

In this section, we study the efficiency score of domestic-owned and foreign-owned life insurance companies. We only focus on the production approach as there is insufficient data to assess the efficiency score for intermediation approach.

The results of the production model of Thai life insurance companies are presented in Table 4.5 and Figure 4.7, respectively. As there were no changes in foreign limitations for the life insurance industry as there was for banking and finance, there will be analysis of foreign-owned life insurance companies prior to 1997. During 1994 to 2003, the average efficiency scores of life insurance companies in terms of production process show wide fluctuations, from a high 0.91 in the early stage to a low 0.35 in 2002 and this can be seen as a downward trend. Prior to 1998, the production performance of the life insurance systems appeared to be moving downward with an average efficiency ranging from 0.91 to 0.52. After liberalization, when newcomers entered the market in 1998, life insurance company efficiency increased to 0.55 in 1998 from 0.52 in 1997, although never achieving earlier performance levels. In 1999 to 2003, the efficiency scores turned back down and reached a low of 0.35 in 2002. We believe that this may be due to greater foreign participation and the entry of more life insurance companies that served to increase the competitive pressure in the life insurance industry.

The results of the production process of life insurers in Figure 4.7 suggest that the annual average efficiency of the life insurance system as a whole followed a downward trend, which also suggests that liberalization and entry of foreign companies

did not fulfill its promise in terms of efficiency gains in the production process of the life insurance industry.

Table 4.5 Average efficiency statistics measures of Thai life insurance companies (Production Approach)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average
BLA	1.00	0.79	0.28	0.28	0.29	0.33	0.52	0.27	0.47	0.47
KTAL	N/A	N/A	N/A	0.26	0.17	0.18	0.14	0.15	0.18	0.18
TPILife	N/A	N/A	N/A	1.00	1.00	0.74	1.00	1.00	1.00	0.96
TCA	N/A	N/A	N/A	1.00	0.89	1.00	0.60	0.16	0.17	0.64
TLI	1.00	1.00	0.25	0.22	0.18	0.15	0.15	0.09	0.21	0.36
TPN	N/A	N/A	N/A	N/A	N/A	0.17	0.20	0.14	0.19	0.18
SCNYL	N/A	N/A	0.31	0.43	0.48	0.27	0.22	0.12	0.21	0.29
CGULife	N/A	N/A	N/A	0.32	0.24	0.22	0.27	0.50	0.53	0.35
SSLI	N/A	N/A	N/A	0.53	0.42	0.40	0.45	0.38	0.44	0.44
OLIC	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.91	0.92
ZNLA	N/A	N/A	N/A	0.83	0.45	0.37	0.36	0.40	0.63	0.51
AZCPLife	N/A	N/A	N/A	0.68	0.53	0.45	0.34	0.33	0.39	0.45
PAC	N/A	N/A	N/A	0.33	0.30	0.25	0.32	0.31	0.21	0.29
PTSL	N/A	N/A	0.18	0.15	0.16	0.14	0.15	0.10	0.14	0.14
MTL	0.56	0.54	0.27	0.27	0.24	0.20	0.24	0.09	0.34	0.31
WALL	N/A	N/A	N/A	0.32	0.54	0.39	0.37	0.24	0.15	0.34
BMLife	N/A	N/A	N/A	0.62	0.44	0.58	0.78	0.73	1.00	0.69
SLI	N/A	1.00	1.00	1.00	1.00	0.56	0.70	0.56	0.38	0.78
SAHA	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AIA	N/A	N/A	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SEIC	N/A	N/A	0.19	0.14	0.19	0.14	0.08	0.11	0.27	0.16
ILJH	N/A	N/A	0.26	0.24	0.24	0.25	0.25	0.16	0.21	0.23
AMLC	N/A	N/A	N/A	0.75	0.90	0.33	0.17	0.14	0.15	0.41
AETNA	N/A	N/A	N/A	0.24	0.12	0.11	0.16	0.09	0.15	0.14
Average	0.91	0.89	0.52	0.55	0.51	0.43	0.44	0.35	0.43	
Max	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Min	0.56	0.54	0.18	0.14	0.12	0.11	0.08	0.09	0.14	
S.D.	0.20	0.19	0.38	0.33	0.33	0.30	0.31	0.30	0.32	
Average Domestic	1.00	1.00	0.69	0.79	0.65	0.48	0.49	0.39	0.53	
Average Foreign	0.78	0.66	0.38	0.44	0.44	0.39	0.40	0.33	0.37	

Figure 4.7 shows the results for both domestic-owned and foreign-owned life insurers. The foreign-owned life insurance companies had relatively lower efficiency

scores than domestic-owned firms, fluctuating broadly from a high of 0.78 in 1995 to a low of 0.33 in 2002, similar to domestic-owned efficiency score that moved from a high of 1.00 in 1995 and 1996 and a low of 0.39 in 2002. This suggests that the foreign-owned companies performed relatively poorly in their basic function: transforming their operating costs to net written premiums. The results are directly opposed to the global advantage hypothesis introduced by Berger et al. (2002) that foreign financial institutions are more efficient because they can reduce costs by spreading best practice policies over more resources and increase revenues through superior risk management and diversification skills.

Table 4.5 also shows that there are two insurers that have 100% production efficiency scores: American International Assurance and SAHA Life Insurance; the company with the lowest efficiency score is Prudential TS Life Assurance and ING Life Insurance, both with efficiency scores of 0.14.

In conclusion, the results suggest that foreign insurers with their global experience do not have the advantage with respect to technology and were unable to improve their efficiency scores over the period, with domestic firms outperforming the foreign issuers. However, the move downward, to decrease efficiency, shows that the life insurers experienced higher competition from deregulation and were overtaken by foreign insurers after 1997.

Figure 4.7 Average technical efficiency of life insurance companies (Production approach)

