การวิเคราะห์ทบทวนผลกระทบจากการเข้าสู่ตลาดของธนาคารต่างชาติต่อภาคการธนาคารไทย

นางสาวชานทอล เฮอร์เบอร์โฮ

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THE IMPACT OF FOREIGN ENTRY ON THE THAI BANKING SECTOR - REVISITED

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วิทยานิพนธ์นี้วิเคราะห์การเจาะตลาดของธนาคารต่างชาติในประเทศไทย และผลกระทบต่อการสร้างมูลค่า การแพร่กระจายของนวัตกรรมทางการเงิน ตลอดจนการปล่อยกู้และเสถียรภาพทางการเงินในช่วงปีพ.ศ. 2540 ถึงปีพ.ศ. 2548 โดยใช้ข้อมูลรายไตรมาสและข้อมูลรายครึ่งปี ทั้งนี้มีการจำแนกอย่างชัดเจนระหว่าง ธนาคารลูกผสม (hybrid bank) และสาขาของธนาคารต่างชาติ (foreign branches) ผลวิจัยพบว่า ประการแรก ธนาคารลูกผสมมีการแข่งขันกับธนาคารไทย และทำให้เกิดการพัฒนาการดำเนินการของตลาดธนาคารในประเทศไทย ถึงแม้ว่าประโยชน์ด้านการสร้างมูลค่าอาจไม่ชัดเจน ประการที่สอง ธนาคารลูกผสมมีผลต่อความเป็นไปได้ที่จะนำนวัตกรรมทางการเงินมาใช้ โดยธนาคารลูกผสมเป็นส่วนหนึ่งของผู้ริเริ่มใช้นวัตกรรมดังกล่าว และประการสุดท้าย ธนาคารลูกผสมมีผลทางบวกต่อการขยายตัวของการปล่อยกู้โดยรวม แต่ขณะเดียวกันก็มีผลกระทบต่อการกระจายสินเชื่อด้วย การวิเคราะห์แสดงให้เห็นว่า รูปแบบการเจาะตลาด และรูปแบบขององค์กร ตลอดจนสัดส่วนการถือหุ้นของต่างชาติ ล้วนเป็นปัจจัยสำคัญในเรื่องนี้เช่นเดียวกัน

ผลวิจัยชี้ว่าควรมีการเปิดเสรีเรื่องสัดส่วนการถือหุ้นของต่างชาติในธนาคารที่จดทะเบียนก่อตั้งในประเทศไทยมากขึ้น แต่ควรทำแบบค่อยเป็นค่อยไป โดยมีการกำกับดูแลและควบคุมอย่างใกล้ชิดเพื่อหลีกเลี่ยงผลที่ไม่พึงประสงค์ นัยของนโยบายนี้จะเป็นประโยชน์ต่อประเทศต่าง ๆ เช่น ประเทศไทย ซึ่งต้องตัดสินใจว่าจะเปิดตลาดการเงินการธนาคารของตนให้กว้างขึ้นหรือไม่อย่างไรต่อไป

สาขาวิชา: เศรษฐศาสตร์
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ลายมือชื่อนิสิต.....Chantal Herberholz.....
ลายมือชื่ออาจารย์ที่ปรึกษา.....Somnuk Mallika.....
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4686151029 MAJOR ECONOMICS
KEY WORD: FOREIGN BANKS / VALUE CREATION / LENDING AND STABILITY / FINANCIAL INNOVATIONS / THAI BANKING SECTOR

CHANTAL HERBERHOLZ : THE IMPACT OF FOREIGN ENTRY ON THE THAI BANKING SECTOR - REVISITED. THESIS ADVISOR : ASSOC. PROF. SOTHITORN MALLIKAMAS, PH.D., THESIS COADVISOR : ASSOC. PROF. SUNTI TIRAPAT, PH.D., 231 pp. ISBN 974-14-2751-4.

This dissertation analyses foreign bank penetration in Thailand and its effects on value creation, the diffusion of financial innovations as well as lending and stability over the period 1997 to 2005 using quarterly and semi-annual data. By making a clear distinction between hybrid banks and foreign branches, the main findings with respect to the former are that the presence of hybrid banks appears to have (i) contested the position of domestic banks and improved the functioning of the domestic banking market, although it may not be unequivocally beneficial in terms of value creation, (ii) had a positive effect on the probability of adoption of financial innovations, with hybrid banks found to be early adopters, and (iii) had a beneficial effect on total loan growth, but seems to have affected the distribution of credit. The analyses show that the mode of entry and the organisational form matter as does the size of the foreign shareholding.

The findings recommend that foreign equity participation in locally incorporated banks should be further liberalised, but concomitantly suggest a phased approach accompanied by careful supervision and regulation to avoid any adverse outcomes. These policy implications are useful for countries like Thailand who have to decide whether and how to open their markets further.

Field of study: Economics
Academic year: 2006

Student's signature ...Chantal Herberholz.....
Advisor's signature .....
Co-advisor's signature .....

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“The foreign bank effect on lending by commercial banks incorporated in Thailand”). Chapter 5 is forthcoming in the Chulalongkorn Journal of Economics. I would like to thank conference participants as well as anonymous referees for their useful comments.

Last not least, I would like to thank my parents for their love and support during the past years.

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List of Abbreviations

Abbreviation	Explanation
bln	billion
ed.	edition
e.g.	exempli gratia
et al.	et alia
ibid.	ibidem
i.e.	id est
mln	million
n.a.	not available
n.d.	no date
tln	trillion
tsd	thousand
ADB	Asian Development Bank
AFAS	ASEAN Framework Agreement on Services
AIRB	Advanced Internal Ratings-Based Approach
AMA	Advanced Measurement Approach
AMC	Asset Management Corporation
ASEAN	Association of Southeast Asian Nations
ATM	Automatic Teller Machine
B2B	Business-to-Business
B2C	Business-to-Commerce
BAAC	Bank for Agriculture and Agricultural Cooperatives
BAM	Bangkok Commerce Asset Management
B.E.	Buddhist Era
BIA	Basic Indicator Approach
BIBF	Bangkok International Banking Facilities
BIMSTEC	Bay of Bengal Initiative for Multi-sectoral Technical and Economic Cooperation
BoT	Bank of Thailand
CAPM	Capital Asset Pricing Model

Abbreviation	Explanation
CBA	Commercial Banking Act
CC	Constant coefficient model
COE	Cost of equity
CPB	Crown Property Bureau
CVA	Standardised cash value added
DBS	Development Bank of Singapore
DCA	Department of Cooperative Auditing
DCP	Cooperative Promotion Department
DOI	Department of Insurance
EP	Standardised economic profit
EVA	Standardised economic value added
Ex-Im Bank	Export - Import Bank of Thailand
FE	Fixed-effects model
FDI	Foreign direct investment
FIDF	Financial Institutions Development Fund
FIRB	Foundation internal ratings-based approach
FRA	Financial Sector Restructuring Agency
FSA	Financial Services Agreement
FSAP	Financial Sector Assessment Programme
FSDP	Financial Sector Development Plan
FSMP	Financial Sector Master Plan
FTA	Free trade agreement
GATS	General Agreement on Trade in Services
GDP	Gross domestic product
GHB	Government Housing Bank
GSB	Government Savings Bank
IBF	International banking facilities
IFCT	Industrial Finance Corporation of Thailand
IMF	International Monetary Fund
ISBT	Islamic Bank of Thailand
KTC	Krungthai Card
KTT	Krung Thai Thanakit Finance and Securities plc

Abbreviation	Explanation
MLR	Minimum lending rate
MoAC	Ministry of Agriculture and Cooperatives
MoC	Ministry of Commerce
MoF	Ministry of Finance
MoI	Ministry of Industry
NII	Standardised non-interest income
NIM	Net interest margin
OEA	Cost margin
PAM	Petchburi Asset Management
PEA	Standardised personnel expenses
PIBF	Provincial International Banking Facilities
RAMC	Radhanasin Asset Management Corporation
ROA	Return on assets
ROE	Return on equity
SA	Standardised approach
SAM	Sukhumvit Asset Management
SEC	Securities and Exchange Commission of Thailand
SET	Stock Exchange of Thailand
SFI	Specialised financial institutions
SICGC	Small Industry Credit Guarantee Corporation
SMC	Secondary Mortgage Corporation
SME Bank	Small and Medium Enterprise Development Bank of Thailand
TAMC	Thai Asset Management Corporation
THB	Thai Baht
WTO	World Trade Organization

Abbreviation	Explanation
Commercial banks	
ACL	ACL Bank
BAY	Bank of Ayudhya
BBC	Bangkok Bank of Commerce
BBL	Bangkok Bank
BMB	Bangkok Metropolitan Bank
BOA	Bank of Asia
BT	BankThai
DTDB	DBS Thai Danu Bank
FBCB	First Bangkok City Bank
GEM	GE Money Retail Bank
KBank	Kasikornbank
KKB	Kiatnakin Bank
KTB	Krung Thai Bank
LHB	Land and Houses Retail Bank
LTB	Laem Thong Bank
NTB	Nakornthon Bank
RB	Radanasin Bank
SCB	Siam Commercial Bank
SCBT	Standard Chartered Bank (Thai)
SCIB	Siam City Bank
SCNB	Standard Chartered Nakornthon Bank
TBank	Thanachart Bank
TDB	Thai Danu Bank
TISCO	Tisco Bank
TMB	TMB Bank
UBB	Union Bank of Bangkok
UOBR	UOB Radanasin Bank
UOBT	United Overseas Bank (Thai)

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CHAPTER I

INTRODUCTION AND OVERVIEW

1.1. Motivation

This study is concerned with the effects of further opening the Thai banking sector to foreign direct investment. Recent years have shown rapid growth of foreign direct investment in the financial services industry in developing countries. In light of the finance-growth-nexus, it is important to understand the benefits and costs of opening up to foreign competition.

The internationalisation of financial services, i.e. the elimination of discrimination in treatment between domestic and foreign financial services providers as well as the removal of barriers to the cross-border provision of financial services (Claessens and Jansen, 2000: 3), is controversial and has been accompanied by a lively debate. Benefits that have been associated with foreign bank presence include the following:

- increased efficiency in the provision of financial services due to the introduction of sophisticated technologies and managerial practices, technology transfers between domestic and foreign banks and changes in competitive structures resulting in a decrease in monopolistic profits of domestic banks (Claessens, Demirgüç-Kunt and Huizinga, 1998: 2; Agénor 2001: 11; Goldberg, 2004: 5)
- greater employee productivity leading to a lower number of people being employed in the financial services industry earning higher salaries due to technology transfers as well as training (Goldberg, 2004: 6)
- enhanced access to international capital resulting in added investment that may increase the amount of funding available to domestic projects and

allow banking systems to recover from crises (Claessens, Demirgüç-Kunt and Huizinga, 1998: 2; Litan, Masson and Pomerleano, 2001: 2)

- increased financial stability[1] due to (i) counter-cyclical bank lending activities with respect to business cycles, monetary policy and other shocks since foreign banks rely to a lesser extent on host country funding sources and employ better screening techniques as well as (ii) flight-to-quality phenomena (Agénor 2001: 11, 12; Goldberg, 2004: 12)

- development of the institutional environment including ancillary institutions that promote the flow of information (Demirgüç-Kunt, Levine and Min, 1998: 91).

Proponents of the internationalisation of financial services argue that the above benefits from financial sector foreign direct investment may be positive for economic growth. The McKinnon-Shaw financial repression model, which has exerted considerable influence on macroeconomic policy in developing countries since 1973, emphasises that financial liberalisation[2] can increase economic growth by increasing investment and its productivity (Fry, 1995: 20-38), with financial repression being defined as "*indiscriminate distortions of financial prices"* (Fry, 1995: 20). Interest rate ceilings were initially the key instrument, but the scope has been extended to other measures such as high reserve requirements, directed credit policies and entry barriers.

On the other hand, there are costs that have been associated with foreign bank presence. These include the following:

- consolidation of the banking sector due to pressures exerted by foreign banks to merge or to cease operations may lead to higher systemic risk,

[1] Depending on the analytical context, various definitions of financial stability exist. Within the framework of this study, a useful definition of its negative counterpart is reported in Ferguson (2006), namely that "financial instability occurs when imperfections or externalities in the financial system are substantial enough to create significant risks for real aggregate economic performance", emphasising the importance of the availability and stability of credit.

[2] Financial liberalisation here refers to domestic financial deregulation, but generally also comprises capital account liberalisation and the internationalisation of financial services (Claessens and Glaessner, 1998: 3).

increased monopolistic power as well as a lower amount of loans generated (Agénor 2001: 19; Berger et al., 2002: 1-4)

- decreased financial stability due to pro-cyclical lending activities with respect to business cycles, monetary policy and other shocks (Dages, Goldberg and Kinney, 2000: 4; Agénor 2001: 19; de Haas and van Lelyveld, 2002: 5)

- decline in lending to small and medium-sized enterprises since foreign banks tend to focus on the most creditworthy borrowers leaving domestic institutions to serve more risky customers (Dages, Goldberg and Kinney, 2000: 4; Agénor 2001: 18).

These costs associated with foreign bank presence may adversely impact long-run economic growth. Critics of the McKinnon-Shaw framework demonstrate that financial liberalisation may have negative effects on economic growth. (Fry, 1995: 109-131).

The purpose of this study is to analyse and provide empirical evidence on particular aspects of the debate, namely bank efficiency, the diffusion of financial innovation as well as lending and the stability of the domestic financial system by enhancing existing and introducing new approaches.

1.2. Statement of the problem

Thailand had been relatively closed to foreign participation until 1997. Major restrictions included branching restrictions, the fact that the last bank license was granted in 1978, and the fact that foreign ownership of domestic banks had been limited. Regarding the latter, foreign entities could not hold more than 24.99 percent of paid-up registered capital or more than 24.99 percent of directorship positions (CBA B.E. 2505: 4) and entry through branches was the main mode of entry. In November 1997, following the outbreak of the financial crisis, guidelines for foreign equity participation in

locally incorporated banks[3] were announced to allow foreign investors with a sound financial status and a high potential to help increase the efficiency in the management of financial institutions to hold more than 49 percent of the shares of a financial institution for a period of 10 years, after which the amount of foreign shareholdings must fall below 49 percent of total shares (so-called grandfathering).[4] (BoT, 1997)

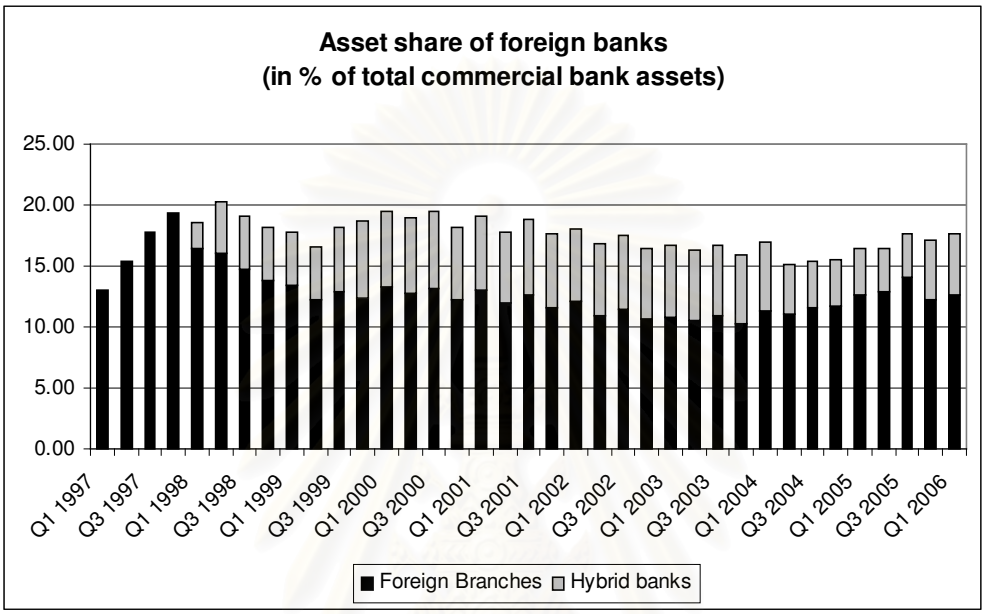
This temporary, case-by-case relaxation of restrictions on foreign equity participation in commercial banks incorporated in Thailand led to a relatively intense period of foreign bank entry through acquisitions of majority stakes in locally incorporated banks since it has given foreign banks for the first time the opportunity to compete, especially in retail banking (see Nakornthab, Pootrakool and Rodprasert, 2004: 10), on an almost level playing field with their domestic-owned counterparts. In January 1998, the Development Bank of Singapore acquired a majority stake (50.03 percent) in the Thai Danu Bank and in June 1998 ABN Amro Bank secured a 75 percent-stake in the Bank of Asia. Nakornthon Bank and the Radanasin Bank were acquired by Standard Chartered Bank (75 percent) and United Overseas Bank (75 percent) in September and November 1999 respectively. (ADB, 1999: 53; Nakornthab, Pootrakool and Rodprasert, 2004: 10)

Following these acquisitions, the share of total commercial banking system assets under direct foreign control increased from 13 percent in March 1997 (THB 776.3 bln) to 18 percent (THB 1.5 tln) at the end of March 2006 as shown in Figure 1, while the deposit share of foreign banks increased from 2 percent in March 1997 (THB 76.9 bln) to 12.5 percent (THB 803.7 bln) in March 2006. Whereas assets under direct foreign control doubled, deposits under direct foreign control increased almost tenfold, reflecting the operating restrictions imposed on foreign branches (see Section 2.3 for a discussion). Since the acquired banks were small and medium-sized banks, foreign branches and hybrid banks have remained rather minor players in Thailand

[3] See Appendix A.
[4] The ceiling on foreign ownership of domestic banks was temporarily raised from 25 percent to 49 percent and then to 100 percent as part of Thailand's 34-month IMF Stand-by Arrangement. (Dobson and Jacquet, 1998: 42) It is noteworthy that on 31 July 2003 Thailand repaid its outstanding obligations to the IMF ahead of schedule.

compared to the transition economies of Central and Eastern Europe, where foreign bank market shares reached on average almost 64 percent in 2003. (Claeys and Hainz, 2006: 3)

Figure 1 Asset share of foreign banks in Thailand: 1997 – 2006



Source: own calculations based on data obtained from the BoT and the SET

After the introduction of a comprehensive Financial Sector Master Plan (FSMP) at the beginning of 2004, which despite having reorganized the licensing system did not address the future of foreign majority equity holdings[5], two hybrid banks were resold in 2004: one to a domestic-owned bank, the other to one of the remaining hybrid banks.[6] Concomitantly, however, the concept of the hybrid bank was implicitly extended to include retail banks.

These events make Thailand an interesting country to study, given that prior research (Montreevat, 2000; Montreevat and Ramkishen, 2001; Herberholz, 2002; Chantapong, 2005 among others) indicates a beneficial

[5] This indicates that hybrid banks continue to be considered Thai banks, operating under special regulations, rather than foreign banks despite their ownership structure.
[6] The DBS sold its majority stake in the DTDB to the TMB in 2004 and the two institutions as well as the IFCT were subsequently merged. Also in 2004, ABN Amro Bank sold its majority stake in the BOA to the UOBR. The two entities were merged to create UOBT.

impact of foreign bank entry in Thailand and give rise to questions regarding appropriateness and / or comprehensiveness of approaches chosen in these studies.

Liberalisation of market access proceeds on the premise that foreign bank entry is beneficial for the host country (Claessens, Demirgüç-Kunt and Huizinga, 2000, p. 117) and further research is clearly warranted.

1.3. Objective of the study

The objective of this study is to shed light on the manifold questions surrounding the impact of foreign bank entry by investigating how foreign ownership and foreign bank presence have affected commercial banks incorporated in Thailand. In particular, this study aims at

(i) examining the foreign bank effect on value creation in commercial banks incorporated in Thailand by

- conducting efficiency comparisons of foreign-owned and domestic-owned commercial banks incorporated in Thailand and
- analysing the effects of foreign bank presence on commercial banks incorporated in Thailand

using value-based performance measures such as economic profit, Economic Value Added® and cash value added and to compare the results with those obtained using traditional measures as proxies for efficiency,

(ii) analysing the foreign bank effect on the diffusion of financial innovations in Thailand by

- conducting comparisons of foreign-owned and domestic-owned commercial banks incorporated in Thailand and

- analysing the effects of foreign bank presence on commercial banks incorporated in Thailand,

the focus being on adoption of innovations in the form of transactional internet banking and organisational restructuring and

(iii) assessing the foreign bank effect on lending by commercial banks incorporated in Thailand as well as financial stability by

- analysing differences in lending behaviour between domestic-owned and foreign-owned commercial banks incorporated in Thailand,

- examining the effects of foreign bank presence on lending behaviour of commercial banks incorporated in Thailand

in terms of the growth rate of total lending and lending classified by economic sector relative to total commercial bank lending and

- testing the bank lending channel hypothesis to examine if foreign-owned banks incorporated in Thailand are less responsive to changes in monetary policy than their domestic counterparts.

The first objective focuses on the argument that foreign bank presence may enhance efficiency in the provision of banking services and attempts to contribute to existing literature by introducing a value-based approach, which to the best of my knowledge has not been used yet. The second objective targets the argument that foreign bank presence improves the quality and availability of banking services. To the best of my knowledge, this is the first study that links foreign bank presence and foreign ownership to the diffusion process of financial innovation as well as attempts to quantify the foreign bank effect on the quality and availability of banking services. The third objective addresses concerns that foreign bank entry may decrease total lending and/or affect the distribution of credit with respect to specific lending areas resulting in a redistribution thereof and that foreign bank entry may decrease the stability of domestic bank credit. It thus attempts to add to the relatively scarce

literature on the foreign bank effect on lending and offers an explicit focus on lending classified by economic sector.

Results on the impact of foreign bank presence are valuable and allow to identify the effect of existing policies as well as guide the formulation of future policies toward foreign banks.

1.4. Scope of the study

This country case study focuses on commercial banks in Thailand with retail banking activities. Foreign banks thus primarily comprise hybrid banks, i.e. those commercial banks incorporated in Thailand which are majority-owned by a foreign block-holder. Foreign bank presence generally also includes cross-border activities as well as foreign branches. Depending on the mode of entry (de novo, merger or acquisition) as well as the organisational form (branch, subsidiary or representative office), the distribution of the impact that may arise from foreign bank presence will differ. Whereas cross-border activities and foreign branches rather focus on wholesale banking operations, subsidiaries typically engage in operations at the retail level since a local retail banking network partially relies on funding from local depositors. Another purpose of narrowing down the scope is to acknowledge the fact that only hybrid and domestic-owned commercial banks incorporated in Thailand operate on an almost level playing field.

The drawback, however, is that banking through foreign branches is not captured, which may in turn lead to an underestimation of foreign bank presence. Some foreign branches, most notably Citibank, have forcefully expanded their activities beyond the wholesale segment and foreign branches will thus also be considered, albeit on the basis of aggregate data only since bank-level data are not available on a quarterly (semi-annual) basis over the period 1997 (restrictions on foreign equity holdings were relaxed in November 1997) to 2004 (the first exit of a foreign majority block-holder occurred in the second quarter 2004) and 2005 (the latest available data) respectively.

1.5. Outline

Following this introductory chapter, Chapter 2 provides an overview of the Thai banking sector and presents key indicators, focusing on the period 1997 to date. The evolution of foreign bank presence and the role of foreign banks are discussed, followed by sections on rehabilitation measures initiated in response to the 1997 crisis, the first FSMP, WTO obligations as well as the New Basle Capital Accord as they are relevant for this study.

Chapter 3 is the first empirical chapter of this study and it examines the foreign bank effect on value creation in commercial banks incorporated in Thailand. It also presents a review of the literature that focuses on efficiency comparisons of domestic and foreign banks as well as bank efficiency spillovers associated with foreign bank entry and a theoretical discussion of value-based versus traditional accounting based performance measures. The presentation of the methodology is followed by a discussion of the estimation results. Chapter 3 concludes with a summary.

Chapter 4 is the second empirical chapter of this study and it focuses on the foreign bank effect on the diffusion of financial innovations in Thailand. Following an introductory section, prior research on the foreign bank effect on the quality and availability of financial services provision as well as the inter-firm diffusion of financial innovation is presented. A theoretical discussion of financial innovations and their diffusion precedes the sections on methodology and estimation results as well as the chapter summary.

Chapter 5 is the third empirical chapter of this study. It deals with the foreign bank effect on lending by commercial banks incorporated in Thailand and starts with a review of the literature on the impact of foreign banks on lending as well as financial stability. A theoretical background of the identification issue inherent in studies that analyse lending behaviour as well as the bank lending channel hypothesis is presented before developing the model as well as discussing the estimation results. Chapter 4 also concludes with a summary.

Chapter 6 is the final chapter of this study and it offers concluding remarks, highlighting the major findings of the study leading to policy recommendations. The study ends with discussing its limitations and indicating the path for future research.

CHAPTER II

THE THAI BANKING SECTOR IN TRANSITION

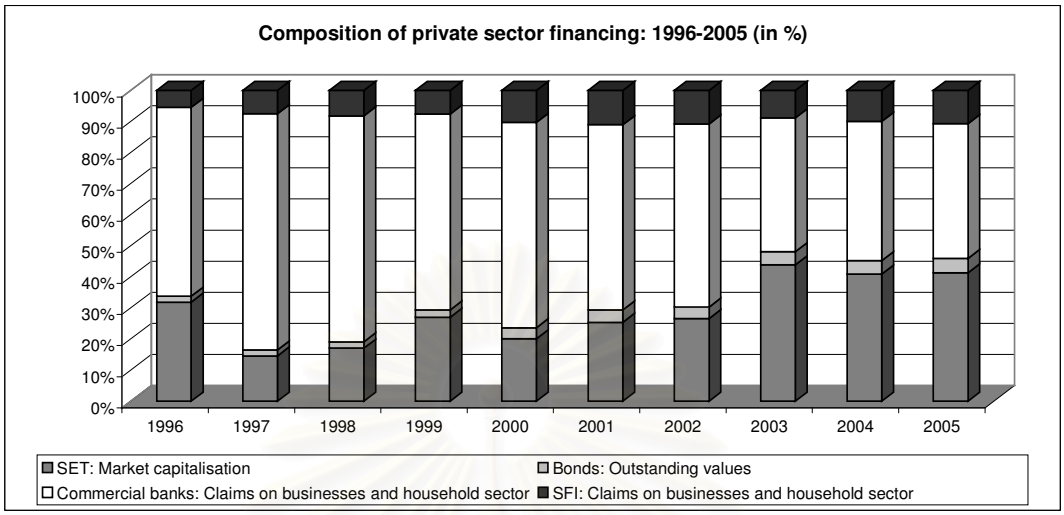
2.1. Introduction

The finance-growth-nexus as well as the causality question of whether financial development stimulates long-run economic growth or vice versa have been fiercely debated. Theoretical and empirical research tend to support the view that financial sector development accelerates long-run economic growth.[7] Levine (1993:1, 1996: 229) identifies five services that affect capital accumulation and economic efficiency. In particular, financial systems (i) facilitate transactions, (ii) ease risk management, (iii) mobilise and pool savings, (iv) produce information and allocate funds, and (v) monitor firm managers after providing finance, all of which are crucial for the channelling of resources to their most productive uses and maintaining long-run economic growth. (Levine, 2004: 5)

Disyatat and Nakornthab (2003: 2) and Disyatat (2004: 94) among others note that Thailand's growth in the late 1980s and early 1990s would not have been possible without the development of the financial system and that weaknesses in the financial sector played a major role in the 1997 financial crisis, underpinning the importance of financial sector development. The fact that Thailand's financial structure has traditionally been bank-based –despite a trend toward disintermediation of lending activities in recent years- as shown in Figure 2 recommends a focus on the Thai commercial banking sector, which has experienced a deep transformation in recent years due to pressures to pursue financial liberalisation, the 1997 financial crisis as well as financial innovations.

[7] For an excellent review of the literature on finance and growth see Levine (2004).

Figure 2 Composition of private sector financing: capital markets, commercial banks and specialised financial institutions (SFI)



Source: own calculations based on data obtained from the BoT

Chapter 2 aims at documenting and discussing Thailand's unique banking system structure and recent changes as well as providing the background against which the models employed in Chapters 3 to 5 have been developed.

2.2. Overview of the Thai financial system

The structure of the Thai financial sector has substantially changed since the 1997 financial crisis as illustrated in Table 1, which shows number and assets of the four major players, namely banks, SFI, non-bank financial institutions and capital markets. (Disyatat, 2004: 95).

The government has chosen a policy of promoting stability through consolidation of domestic financial institutions (Hoontrakul and Walker, 2001: 113), suggesting the presence of economies of scale in financial services[8],

[8] Okuda and Rungsomboon (2004: 22) confirm the presence of economies of scale in commercial banks in Thailand.

while ensuring contestability, especially in the banking sector.[9] (Chaipravat and Hoontrakul, 2001: 35)

Table 1 The evolution of the Thai financial system

	first est.	Dec-96			Dec-05			Regulators
		number	assets (THB mln)	% of GDP	number	assets (THB mln)	% of GDP	
Banking sector								
Commercial banks / 1								
Locally incorporated		15	5,046,650	109.45	16	7,396,046	104.11	
Domestic-owned	1906	15	5,046,650	109.45	12	7,006,970	98.63	BoT
Hybrid	1998	0	0	0.00	2	389,076	5.48	BoT
Foreign branches	1888	18	592,077	12.84	18	981,254	13.81	BoT
Subsidiary	2005	0	0	0.00	1	n.a.	n.a.	BoT
Retail banks	2005	0	0	0.00	1	9,316	0.13	BoT
Representative offices / 2	n.a.	40	0	0.00	22	0	0.00	BoT
Restricted bank	2002	0	0	0.00	0	0	0.00	BoT
IBF / 3	1993	48	1,197,562	25.97	22	76,966	1.08	BoT
SFI								
GSB	1913	1	237,442	5.15	1	691,793	9.74	MoF / BoT
GHB	1953	1	213,994	4.64	1	558,503	7.86	MoF / BoT
BAAC	1966	1	216,879	4.70	1	571,441	8.04	MoF / BoT
Ex-Im Bank	1993	1	34,624	0.75	1	75,877	1.07	MoF / BoT
SME Bank	1992	1	1,899	0.04	1	55,816	0.79	MoF / MoI / BoT
IFCT	1959	1	174,698	3.79	merged with TMB Bank in 2004			
SMC	1997	1	n.a.	n.a.	1	5,058	0.07	MoF / BoT
SICGC	1985	1	n.a.	n.a.	1	n.a.	n.a.	Mof / MoI
ISBT	2002	1	n.a.	n.a.	1	6,122	0.09	MoF / BoT
Non-bank financial institutions								
Finance companies	1969	91	1,824,292	39.56	10	208,449	2.93	BoT
Credit foncier companies	1969	12	8,516	0.18	4	2,104	0.03	BoT
Credit card companies	1991	n.a.	n.a.	n.a.	12	n.a.	n.a.	BoT / 6
Agricultural co-operatives / 4	1916	3530	34,180	0.74	3748	6,508	0.09	DCP / DCA / MoAC
Savings co-operatives / 4	1946	1240	254,400	5.52	1490	478,595	6.74	
Life insurers	1929	25	164,560	3.57	25	618,210	8.70	MoC
Capital markets								
SET market capitalisation	1975	n.a.	2,457,931	53.31		5,105,114	71.86	SEC
Public bonds outstanding	1933	n.a.	336,922	7.31		2,719,156	38.28	SEC
Private bonds outstanding	1992	n.a.	149,176	3.24		576,893	8.12	SEC
Securities companies / 2	1953	22	32,347	0.70	41	104,187	1.47	SEC
Asset Management Comp. / 5	1975	12	247,156	5.36	15	963,806	13.57	SEC

/ 1 Data for 1996 n.a.; data as of March 1997

/ 2 Data for 1996 n.a.; data as of December 1997

/ 3 BIBF lending

/ 4 Data for 2005 n.a.; data as of December 2003

/ 5 Net asset values

/ 6 The BoT started to issue circulars to regulate credit card companies in 2002. (Devakula, 2006: 1)

Pawnshops and informal moneylenders omitted.

Source: compiled from data obtained from the BoT, SET, SEC, DoI and DCA

[9] There are different views on the optimal degree of competition in the financial sector. The traditional view in favor of competition is based on the industrial organization literature according to which a small number of financial institutions results in output (prices) below (above) the perfectly competitive level. (Allen and Gale, 2000: 233)

Banking sector

Until 2004, the Thai banking sector comprised commercial banks, representative offices of banks incorporated abroad, restricted banks and IBF, with commercial banks having been separated into locally incorporated banks (i.e. domestic-owned banks incorporated in Thailand (hereafter referred to as domestic banks) and hybrid banks) and branches of banks incorporated abroad (hereafter referred to as foreign branches). Under the 2004 FSMP, the licensing system was completely overhauled and a single presence policy introduced. Since 2004, two types of licenses have been issued to deposit-taking financial institutions incorporated in Thailand, namely the commercial bank license and the retail bank license, and two types of foreign bank licenses were introduced, namely the subsidiary license and the full branch license.[10]

Commercial banks

In general, commercial banks are allowed to undertake the business of commercial banking, defined as "*the business of accepting deposits of money subject to withdrawal on demand or at the end of a specified period and of employing such money in one or several ways such as: (a) granting of credits, (b) buying and selling of bills of exchange or any other negotiable instrument, (c) buying and selling of foreign exchange*" (CBA B.E. 2505, Section 4: 1).[11] All commercial banks are required to obtain a license granted by the MoF. With the exception of foreign branches, commercial banks have to be established as limited public companies. (CBA B.E. 2505, Section 5: 3) While the banking system had 15 domestic banks and 18 foreign branches at the beginning of 1997, it comprised 12 domestic banks, 2 hybrid banks, 1 retail bank, 1 subsidiary and 18 foreign branches in December 2005 as shown in Table 1.[12] The ratio of total assets of commercial banks to nominal GDP has only slightly fallen from 122 percent to 118 percent over the period 1997 to 2005, and the commercial banking sector has thus remained the most

[10] See Section 2.5 for details.
[11] The scope of business has been continually expanded.

important constituent of the financial system. The largest four commercial banks have traditionally dominated the commercial banking sector, with a combined market share of 52 percent in terms of assets in December 2005 indicating that the oligopolistic nature of the sector has remained unchanged. Entry had been highly restrictive and no new banking license was granted between 1978 and 1996 (Traisorat, 2000: 7) indicating the absence of a credible threat of competition through entry. Following the introduction of the first FSMP in 2004, however, three new commercial bank licenses and four retail bank licenses have been issued to existing finance companies under the new regulations to upgrade their operations, of which all but two have already started operations.[13]

Representative offices

The economic turmoil in the aftermath of the financial crisis led some foreign banks to close their representative offices in Thailand, which function as liaison offices and are restricted to non-income generating activities, decreasing the number of representative offices from 40 at the beginning of 1997 to 22 at the end of 2005 as shown in Table 1.

Restricted banks

The restricted bank license was introduced in 1999 and although it permitted the operation of commercial banking business in general, it placed certain restrictions on the scope of activities. (Fitch Ratings Ltd., 1999) Between 1999 and 2004, it was only granted to one finance company, which established Thanachart Bank in 2002. However, this was the first license issued to a domestic entity for more than two decades. In 2004, Thanachart Bank was eventually allowed to operate foreign exchange services and

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[12] In the wake of the 1997 financial crisis, however, several foreign branches (ING Bank N.V., Fortis Bank (Bangkok) and Credit Lyonnais among others) decided to close their operations in Thailand.

[13] Tisco Finance, Asia Credit and Kiatnakin Finance have been granted commercial bank licenses, whereas AIG Finance (Thailand), a member of the American International Group, Land and Houses Credit Foncier, GE Money (Thailand) and Thai Keha Credit Foncier have been granted retail bank licenses. (BoT, 2005: 37) Tisco Bank, Kiatnakin Bank and ACL Bank started operations on 1 July 2005, 3 October 2005 and 23 December 2005 and Land and

checking accounts and its restricted bank license upgraded into a commercial bank license.

IBF

IBF, which comprise BIBF and PIBF, are offshore banking facilities. They were established in 1993 as part of the capital account liberalisation process[14]. Due to regulatory and tax advantages (such as reduced corporate income tax and exemption from special business tax as well as withholding tax (Vichayanond, 2000: 8)) the establishment of especially the BIBF led to a rapid expansion of (mostly short-term[15]) foreign bank loans into Thailand. An IBF license primarily allows the conduct of international banking business, but also permits other activities such as investment banking. (BoT, 1999: 50) IBF have primarily been engaged in transactions that involve borrowing in foreign currency from abroad and (i) lending in foreign currency to Thai residents (out-in transactions) or (ii) lending in foreign currency to non-residents (out-out transactions). Given that domestic interest rates were higher than foreign interest rates, out-in transactions increased dramatically prior to the crisis as depicted in Figure 3, exposing borrowers, many of which used the funds for investments in non-traded sectors, to exchange rate and maturity risks. When the THB depreciated substantially after the BoT decided to float the currency on July 2, 1997, borrowers were unable to roll-over short-term loans and/or service their foreign currency denominated debt, amplifying the problems in the Thai financial system. IBF licenses were granted to commercial banks incorporated in Thailand, foreign branches and on a stand-alone basis to Thai and foreign applicants. Under the provisions of the first FSMP tax benefits for

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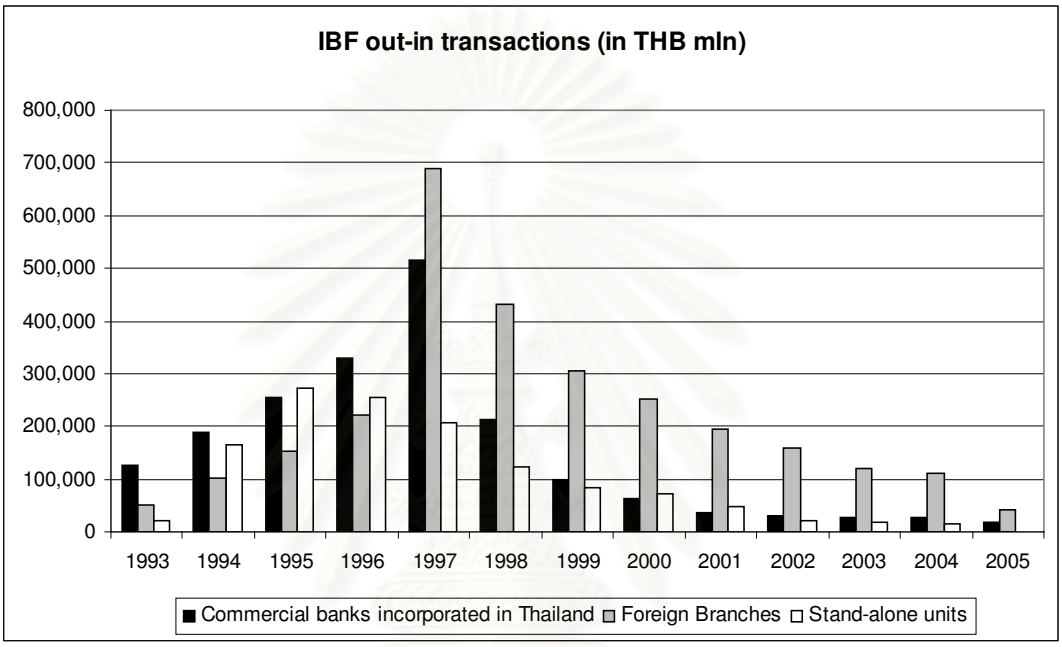
Houses Retail Bank and GE Money Retail Bank, a wholly owned subsidiary of General Electric, on 19 December 2005 and 6 January 2006 respectively.

[14] Capital account liberalisation began in the 1980s with a partial relaxation of restrictions on FDI and portfolio investment as well as foreign exchange controls. In 1990, Thailand assumed IMF Article VIII obligations and removed foreign exchange restrictions on current account related transactions. From 1991 onward, Thailand began to ease foreign exchange restrictions on capital account related transactions. (Alba, Hernandez and Klingebiel, 1999: 17)

[15] This was partially due to the risks weights recommended by the 1988 Basle Accord, which favour short-term loans.

out-in transactions were abolished[16] as were stand-alone IBF. The number of IBF licenses subsequently decrease from 48 at the beginning of 1997 to 22 at the end of 2005.[17] BIBF lending at the end of 2005 amounted to a mere 1.1 percent of nominal GDP compared to 26 percent in 1997 as shown in Table 1.

Figure 3 IBF out-in transactions



Source: own calculations based on data obtained from the BoT

Specialised financial institutions

Although commercial banks remain the most important sector of the financial system, capital markets, especially public bonds, and SFI have started to play an increasing role in recent years. There are currently eight SFI, with the largest three, namely GHB, BAAC and GSB[18], which constitute 93 percent of all SFI assets, being active in mobilising deposits, providing agricultural and housing financing as well as financing for small and medium sized enterprises. The remaining five SFI are considerably smaller and were

[16] Due to inter alia excess liquidity in the system and low interest rates it was no longer deemed necessary to attract foreign capital through tax advantages. (Kasikorn Research Centre, 2004)
[17] The last IBF license was returned in October 2006 and IBF ceased to exist.
[18] Only these three SFI as well as the ISBT are permitted to take deposits from the public. (BoT, 2005: 11)

set up to serve more specific goals such as providing trade finance (Ex-Im Bank), supporting small and medium-sized enterprises (SME Bank and the SICGC), developing a secondary mortgage market (SMC) and offering Islamic banking services (ISBT). The increase in public debt as well as lending by SFI in recent years has been closely linked to the Thaksin government's populist policies, which constituted a large pillar of the economic system termed "Thaksinomics"[19]. SFI have increasingly served as a vehicle for government initiatives, raising inter alia concerns of unfair competition with commercial banks. (Disyatat, 2004: 100) The GSB alone has for example supported the government's People's Bank Programme, the National Village and Urban Community Fund Programme, the Asset Capitalisation Programme and the People's Debt Restructuring Programme. (Udyanin, 2004: 11-13) Claims on the government, on the business and household sector and on non-financial public enterprises of the three largest SFI increased from 11 percent of nominal GDP in 1996 to 21 percent of nominal GDP in 2005, reflecting their increasing importance.

Non-bank financial intermediaries

Finance and credit foncier companies

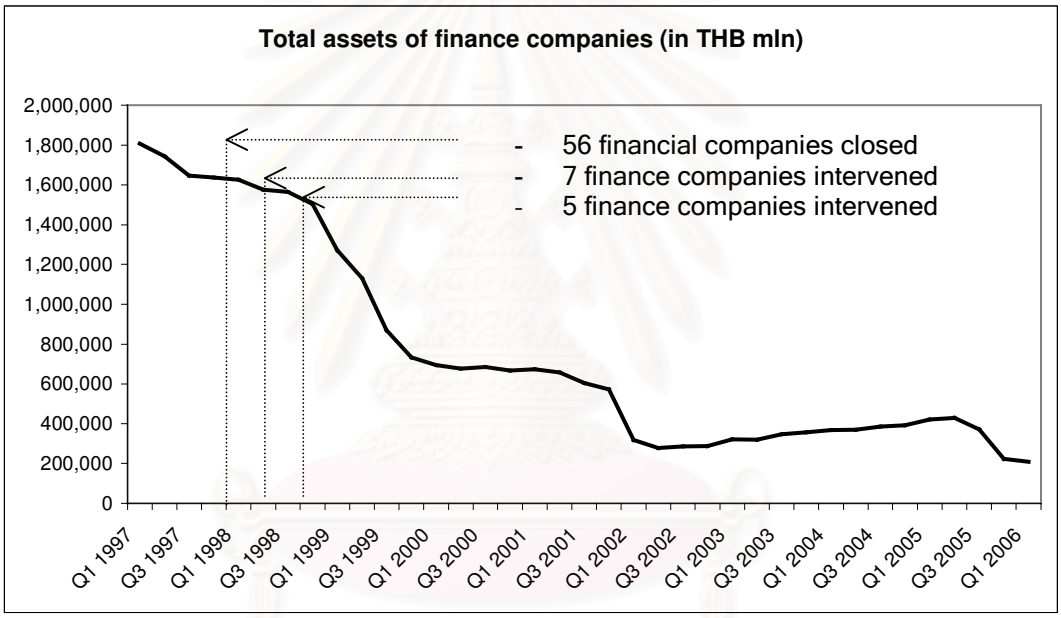
Prior to the 1997 crisis, finance companies[20] were the second largest group of financial institutions. Many finance companies were affiliates of commercial banks and provided services that banks were not allowed to undertake or focused on high risk, high return consumer finance. (ADB, 1999: 40) Assets were concentrated in the real estate sector and stock market margin lending and declining asset values from the end of 1996 onward

[19] The term Thaksinomics was first used by journalists in Thailand in 2001. (Phongpaichit, n.d.: Endnote 2, 12) A peaceful coup d' état led by General Sonthi Boonyaratglin successfully overthrew the Thaksin government on September 19, 2006. The coup was unique in the sense that it was driven by the following motives, namely restoring unity among the people, returning power to the people as well as dealing with wide-spread corruption allegations against the Thaksin government, and thus enjoyed overwhelming support of the people.

[20] Finance companies initially comprised finance and securities companies as well as finance companies, both of which are not permitted to accept deposits from the public. To enhance supervision, all finance cum securities companies had to separate their finance business from securities business by December 31, 1999 (April 30, 2000 in certain cases). (Securities and Exchange Commission, 1999)

resulted in runs on finance companies. (Santiprabhob, 2003: 9) To restore public confidence, the authorities decided to suspend the operations of a total of 58 finance companies in June and August 1997, out of which only two were allowed to resume operations in December 1997. Also, some foreign financial institutions were allowed to become majority shareholders in a number of finance companies as well as credit foncier companies, such as GE Money Finance, Citicorp Finance (Thailand), AIG Finance (Thailand) and Asia Credit. (Nakornthab, Pootrakool and Rodprasert, 2004: 11)

Figure 4 Total assets of finance companies: 1997 – 2006



Source: : own calculations based on data obtained from the BoT

Following the closure of 56 finance companies in 1997[21] and in light of the "one-presence-policy" introduced by the 2004 FSMP, non-bank financial

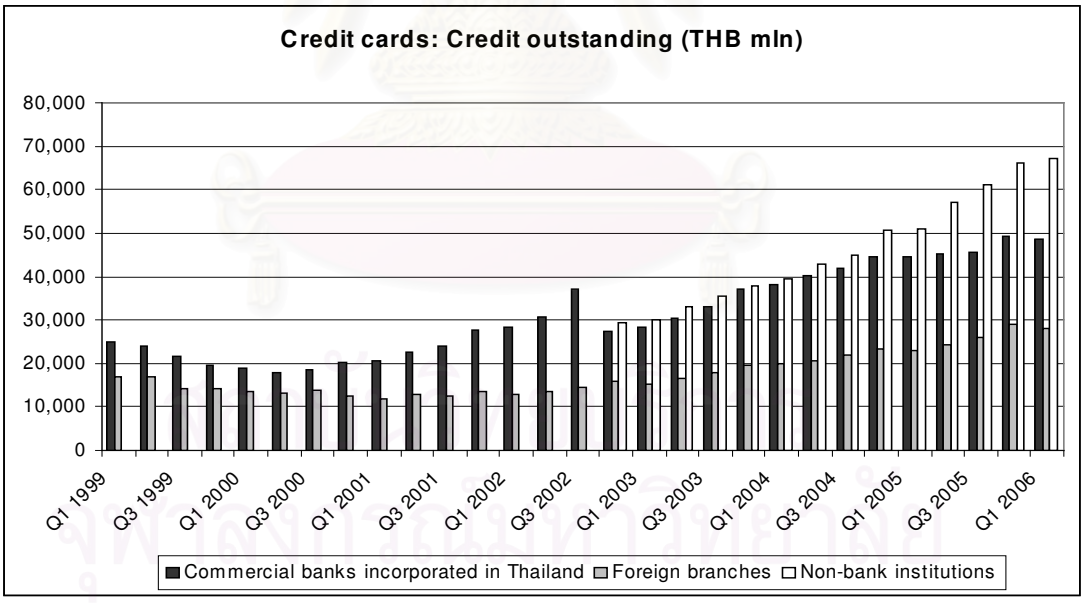
[21] Their assets of THB 851,000 mln were subsequently liquidated by the FRA, which was established in October 1997 by the Emergency Decree on Financial Sector Restructuring B.E. 2540 as an independent body to deal with finance companies whose operations were suspended in June and August 1997. Also in 1997, the Asset Management Corporation was established as a bidder of last resort and RB was set up as a "good bank" to bid and assume for the assets of the closed finance companies in 1998. Core assets of THB 600,244 mln were sold to foreigners (50 percent), the Asset Management Corporation (33 percent) and Thai bidders (17 percent). The FRA had almost accomplished its mission in 2002, with 80 percent of all assets auctioned off. Net recoveries of THB 218,056 mln were distributed to creditors between November 2000 and mid-2002, reflecting an average recovery rate of 27 percent. (Santiprabhob, 2003: 47-48)

institutions, especially finance and credit foncier companies[22], play a minor role in today's financial system as shown in Figure 4, which tracks the decline in total assets of finance companies over the period 1997 to 2006. While there were 91 finance companies and 12 credit foncier companies pre-crisis, only 10 finance companies and 4 credit foncier companies are still operating today. Their total assets amounted to a mere 3 percent of GDP in 2005 compared to 40 percent at end-1996 as shown in Table 1.

Credit card companies

The credit card business has rapidly expanded in recent years as shown in Figure 5. The emergence of –mostly foreign-owned[23]- non-bank credit card companies after the outbreak of the financial crisis and their focus on low-income households, led to concerns about an unsustainable indebtedness. (Devakula, 2006: 1)

Figure 5 Credit cards: Credit outstanding: 1999 – 2006[24]



Source: : own calculations based on data obtained from the BoT

[22] Credit foncier companies were originally set up as niche providers of mortgage financing for housing projects but later ventured into general consumer finance and syndicated loans to commercial developers.
[23] Foreign-owned credit card companies are for example Aeon Thana Sinsap, GE Capital (Thailand) and Cetelem. (Nakornthab, Pootrakool and Rodprasert, 2004: 11)
[24] Data on non-bank credit card companies are only available from Q4 2002 onward.

Since non-bank credit card companies are non-deposit taking institutions, the BoT did not have the authority to regulate them. In 2002, however, supervision of all credit card providers was vested in the Bank of Thailand. (Devakula, 2006: 1) Despite tighter regulations such as minimum income requirements for cardholders, credit outstanding of non-bank credit card companies more than doubled from 2002 to 2006 and stood at 0.9 percent of nominal GDP at end-2005.

Agricultural and savings co-operatives

There are six different co-operatives[25] operating in Thailand, with agricultural and savings co-operatives being the most important ones. Agricultural co-operatives were set up to serve people engaged in agriculture. In addition to providing basic banking services, they provide agricultural products, promote appropriate farm practices and disseminate know-how and enable members to market products together. The savings co-operatives on the other hand serve members who have the same occupation or live in the same community. Their size and share in the financial sector has remained relatively small and total assets stood at 6.8 percent of nominal GDP at year-end 2005 as shown in Table 1.

Life insurance companies

Although the number of insurance companies has remained at 25 since the end of 1996 as shown in Table 1, the ownership structure has considerably changed since a number of large foreign insurance companies such as Allianz of Germany, Nationwide Global of the United States of America and MLC of Australia have teamed up with Thai companies.[26] At the end of December 2005 life insurance companies incorporated in Thailand (foreign branches) had total assets of THB 320,622 mln (THB 297,588 mln) compared to THB 98,043 mln (THB 66,518 mln) at year-end 1997. (DOI) The largest three life insurers, namely A.I.A., Thai Life Insurance and Ayudhya

[25] These are agricultural co-operatives, land settlement co-operatives, fisheries co-operatives, consumer co-operatives, thrift and credit co-operatives (savings co-operatives) and service co-operatives.

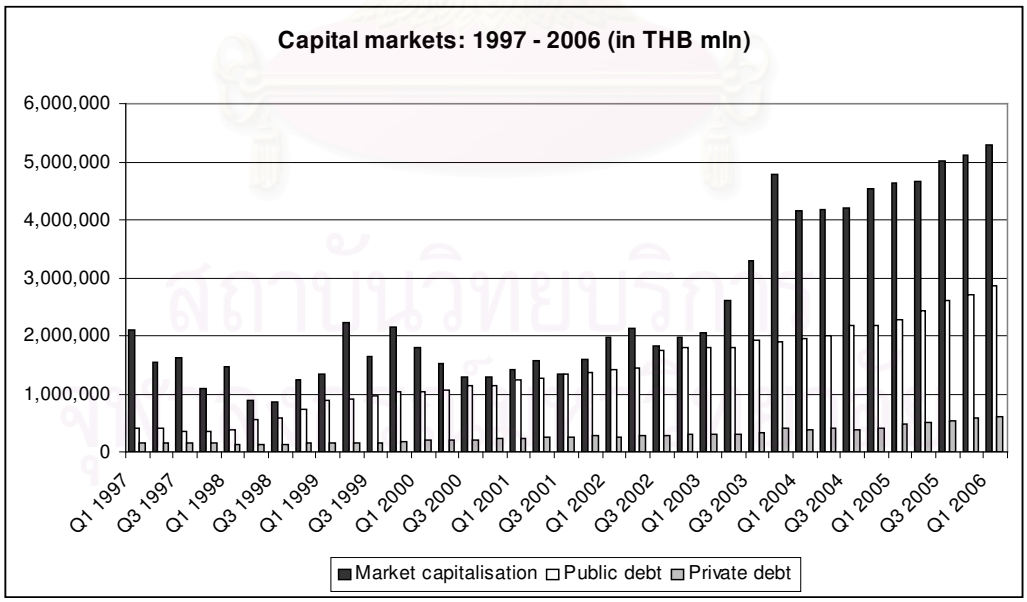
Allianz C.P. Life, held a market share in terms of direct premiums of 70.3 percent at the end of 2005.

Capital markets and related companies

Capital markets

As shown in Table 1, market capitalisation almost doubled since 1996 and reached THB 5.1 tln at the end of 2005. Over the same period, private bonds outstanding increased almost fourfold and public bonds more than sevenfold, reflecting that firms have increasingly used the bond market as an alternative source of financing in response to the credit crunch they faced in the aftermath of the 1997 crisis and the need of the government to finance budget deficits after having run consecutive budget surpluses from 1990 to 1996 as shown in Figure 6.[27] The value of public and private outstanding bonds increased from 11 percent of nominal GDP in 1996 to 46 percent in 2005 as shown in Table 1.

Figure 6 Capital markets: 1997 – 2006



Source: : own calculations based on data obtained from the BoT

[26] Under the 1992 Insurance Laws, foreigners are not allowed to hold more than 25 percent of a Thai insurance company. Exemptions are possible though.

Securities companies

Securities companies are allowed to conduct most investment banking activities such as securities brokerage, dealing, underwriting, custodial services, giving investment advice and granting margin loans. The number of securities companies increased from 22 at year-end 1997 to 41 at year-end 2005 as shown in Table 1. Foreign ownership of locally incorporated securities companies was considerably liberalised, resulting in an increase in foreign shareholdings.[28]

Asset management companies

Asset management companies establish investment funds, pool the resources of many small investors by selling them shares and use the proceeds to buy securities in accordance with the investment policy of each fund as approved by the SEC. (BoT, 1999: 23) As of end-1997 there were 79 close-end funds and 129 open-end funds compared to 65 and 500 at end-2005. Based on their main investment strategies, as of end-1997 (2005) there were 128 (145) equity funds, 68 (262) fixed-income funds and 11 (140) mixed funds that invest in both equity and debt instruments.

2.3. Role of foreign banks in the Thai banking sector

Turning to foreign banks, commercial banking in Thailand actually commenced with the establishment of a branch of a foreign bank, namely the Hong Kong and Shanghai Banking Corporation, in 1888 (Fitch Ratings, 1998a: 13) and foreign banks played a significant role until World War II, when most foreign banks were closed, resulting in a shift from a foreign-bank

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[27] As reported in Nakornthab and Subhaswasdikul (2003: 9) the increase in the volume of public bonds was led by the MOF's re-capitalization bonds for the FIDF.

[28] Thailand's commitments under AFAS allow foreign equity shareholding of up to 100 percent of paid-up capital compared to 49 percent under the GATS. (Ramkishen and Sen, 2002: 4) See Section 2.7 for an introduction to GATS. At the end of 2006, the SEC resolved to liberalise the securities industry and announced that from January 1, 2012 onward applications for so-called "single licenses", which permit the conduct of the full range of securities business, as well as "boutique licenses" for specific securities business will be

dominated system to a domestic-bank dominated system. (Traisorat, 2000: 6-7) After World War II, foreign banks resumed their operations and new foreign and domestic banks were set up. In the late 1970s, however, entry became highly restrictive as mentioned earlier. Eventually, 7 foreign banks were granted licenses to operate branches in Thailand in November 1996 as part of GATS obligations. (Bangkok Bank, 1997: 3) Although foreign branches are allowed to undertake the business of commercial banking, they have been exposed to substantial operating and other restrictions such as a limitation of a maximum of three branches, with automatic teller machines (ATM)[29] being regarded as branch, limited hiring of foreign professionals and a withholding tax on the repatriation of profits. (Dobson and Jacquet, 1998: 42; BoT, 1996: 53). As reported by inter alia Kasikorn Research Centre (2004), foreign branches thus generally focus only on certain types of businesses, which require specific skills, such as foreign exchange, underwriting of debentures, custodian services and cash management.

Prior to November 1997, foreign participation in locally incorporated banks was limited as mentioned in Section 1.2. In the wake of the financial crisis, the ceiling on foreign ownership of domestic banks has been temporarily raised to 100 per cent of paid-up registered capital on a case-by-case basis for a period of 10 years to facilitate restructuring of the financial sector. Since further liberalising foreign equity investment in locally incorporated banks in 1997 has given foreign banks for the first time the opportunity to compete on an almost level playing field, four locally incorporated banks were acquired by foreign banks in 1998 and 1999 respectively. Upon acquisition of majority stakes in locally incorporated banks, foreign parent banks immediately addressed those areas exhibiting the strongest weaknesses such as risk management, information technology and products and services. In 2000, the DTDB became the first bank to sell a significant portion of its non-performing loans to third parties, namely Global

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accepted, which is expected to facilitate entry and reduce the cost of licensing since licenses are limited at present. (Kasikorn Research Centre, 2006)

Thai Property Co. and National Finance, and effectively cleared its balance sheet. (DTDB, Annual Report 2000: 7). Expatriate personnel was temporarily recruited to reorganise management structures, restructure operations and introduce a strong performance ethic. Key positions were permanently filled with foreign experts.[30] Despite their small size, the four hybrid banks, led by BOA, were thus able to secure a first-mover advantage in certain areas. Within a short period of time, these banks introduced weekend banking and extended banking hours, expanded distribution channels, upgraded and redesigned branches and offered customised solutions. Two of these so-called hybrid banks, however, have already been resold since then: one to a domestic-owned bank, the other to one of the remaining hybrid banks.

In addition, foreign participation in four domestic banks has reached up to 49 percent. (Jittamai, Nakornthab and Posayananda, 2005: 37) Some of these private domestic banks, however, have placed internal restrictions on the size of individual shareholdings and foreign banks have mostly participated as non-strategic investors, with control of operations vested in the Thai controlling or strategic partner.[31]

Foreign-owned assets in commercial banks incorporated in Thailand (calculated as the ratio of the sum across all banks of the assets of each bank multiplied by the percentage of equity held by foreigners to total bank assets as at year-end[32]) increased from 38 percent at the end of 1997 to 46 percent at the end of 2005. Whereas the asset share of foreign branches decreased from 21 percent to 12 percent, the asset share of foreign banks in locally incorporated banks increased from 17 percent to 34 percent as illustrated in Figure 7.

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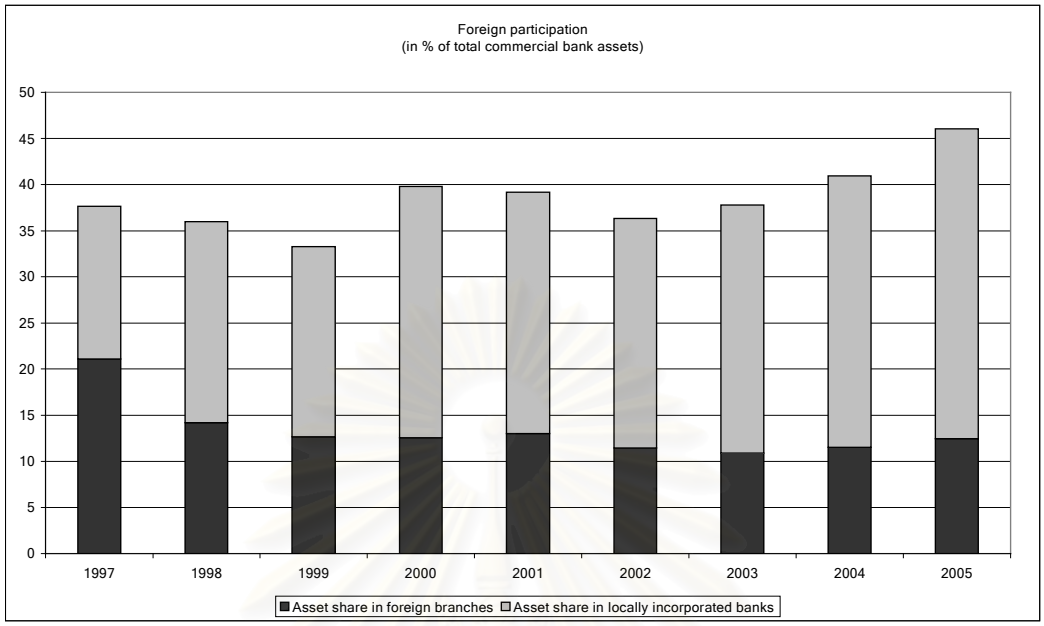
[29] ATM operations of foreign branches are only permitted provided that the foreign branch (i) joins the ATM pools operated by Thai banks, or ii) operates it within its own premises or (iii) shares the facilities with other commercial banks in Thailand. (WTO)

[30] See Herberholz (2002: 76-93).

[31] The SET's definition of strategic shareholders includes shareholders who have a holding of above 5% of votes. Note that the DBS held 18.5 percent of TMB as of November 10, 2006. See also footnotes 34 and 46. Foreign board directors were appointed in some cases to reflect the changed shareholder structure.

[32] This foreign penetration measure is inter alia used by Mathieson and Roldós (2001: 17).

Figure 7 Foreign-owned assets in commercial banks incorporated in Thailand



Source: own calculations based on data obtained from the BoT and SET (Mega International Commercial Bank excluded due to data unavailability)

The 2004 FSMP introduced two types of foreign bank licenses, namely subsidiaries of foreign banks and full branches of foreign banks (BoT, 2004: 5-6)[33] Hybrid banks are not addressed by the FSMP, which indicates that they continue to be considered Thai banks, operating under special regulations, rather than foreign banks, despite their ownership structure. The concept of the hybrid bank, however, has implicitly been extended to retail banks. Shareholders in the remaining two hybrid banks, namely SCBT and UOBT, as well as in the hybrid retail bank, GE Money Retail Bank[34], will eventually be grandfathered.

[33] Société Générale International Banking Facility and UFJ International Banking Facility were subsequently granted full branch licenses, whereas the International Commercial Bank of China (renamed Mega International Commercial Bank on 21 August 2006) was granted a subsidiary license. In compliance with the "one presence policy" (see Section 2.5), Standard Chartered Bank bought all remaining shares in SCNB, integrated its Standard Chartered Bank Bangkok Branch into SCNB and renamed the new entity SCBT on October 1st, 2005. After the acquisition of BOA in 2004, UOB announced the merger of UOBR and BOA as well as the creation of the new entity UOBT in November 2005.

[34] In January 2007, GE Capital International Holdings finalised the purchase of a 25 percent equity stake in BAY. Under the plan, GEM's banking assets will be merged into BAY to create synergies and the retail bank license returned to the BoT. (Bangkok Post, May 31, 2006; August 18, 2006; October 31, 2006; January 4, 2007)

2.4. Rehabilitation measures and resolution of non-performing loans following the 1997 crisis

The Thai government has taken a number of market-based and state-led rehabilitation measures over the past years. Although the operations of 58 finance companies were suspended in June and August 1997, the authorities did not initially intervene in any banks to avoid further decreases in public confidence and a deepening of the crisis. However, when BMB's condition deteriorated in November 1997 and liquidity support through the FIDF became unsustainable, the BoT intervened to write-down capital and change management.[35] This intervention approach was a major change from the suspension approach chosen for finance companies as reported in Santiprabhob (2003: 17), which may be partially explained by the fact that finance companies are not allowed to take direct deposits from the public, but raise funds through the issuance of promissory notes with large denominations and borrowings from other financial institutions. Between November 1997 and July 1999, the BoT intervened in another 5 banks and 12 finance companies as shown in Table 2.

Table 2 Chronology of government interventions in commercial banks[36]

Bank	Date of intervention	Date of resolution	Resolution
BBC	May-96	Oct-Dec 98	all performing assets and liabilities acquired by KTB
		Dec-98	closed
BMB	Nov-97	Jan-98	offered for sale
		Apr-02	merged with SCIB
SCIB	Feb-98	Feb-98	offered for sale
			(almost 48 percent still held by FIDF in March 2006)
FBCB	Feb-98	Nov-98	merged into KTB
LTB	Aug-98	Aug-98	integrated with RB
		Nov-99	sold to United Overseas Bank
UBB	Aug-98	Jan-99	UBB and 12 intervened finance companies consolidated with KTT to form BT
NTB	Jul-99	Sep-99	sold to Standard Chartered Bank

Source: compiled from SET quarterly reports, ADB (1999: 53), Santiprabhob (2003: 19)

[35] The Emergency Decree Amending the CBA B.E. 2505 (No. 3) B.E. 2540 provided the legal basis for the BOT to intervene.

With the aim of facilitating and accelerating the sale of four intervened banks, namely BMB, SCIB, LTB and NTB, the FIDF entered into loan transfer, profit / loss sharing and / or yield maintenance schemes as shown in Table 3. The loan transfers generally comprised the transfer of a pre-determined non-performing assets pool to a state-led AMC[37], in exchange for promissory notes issued by the AMC and guaranteed by the FIDF. Should the bank continue to manage the pool it would receive a management fee. Stand-alone yield maintenance schemes typically involved half-yearly payments of the difference between actual yields on non-performing assets and their carrying cost for a period of five years, whereas stand-alone profit / loss sharing agreements typically provided protection from potential losses from non-performing loans, with the gain or loss being shared at the end of a five-year period in accordance with the criteria set out in the agreement.

Table 3 Loan transfer, profit/loss sharing and/or yield maintenance schemes

			Arrangement				
Bank	Date of agreement	Start of implementation	Scope	LT	PL	YM	LM
SCNB	Q3 1999	Q3 1999	Non-performing assets	No	Yes	Yes	SCNB
UOBR	Q4 1999	Q4 1999	Classified loans	Yes	Yes	No	UOBR
KTB	Q2 2000	Q3 2000	Loans of KTB and FBCB which are more than 12 months overdue	Yes	No	No	KTB
BT	Q3 2000, Q1 2001	Q4 2000	Non-performing assets transferred from UBB and 12 finance companies	No	Yes	Yes	BT
SCIB	Q1 2001	Q2 2001	Non-performing loans	Yes	No	No	SCIB
BMB	Q2 2001	Q2 2001	Non-performing loans	Yes	No	No	BMB
LT: loan transfer agreement PL: profit/loss sharing agreement YM: yield maintenance agreement LM: loan management							

Source: compiled from SET quarterly reports (in Herberholz, 2002: 34)

[36] BMB and SCIB were initially supposed to be sold to foreign strategic partners. However, despite interest from foreign investors such as HSBC, no final agreement could be reached.
[37] During 1998 and 2002, four state-led AMC were set up to buy non-performing loans from BBC, KTB, BMB, SCIB and RB, namely Bangkok Commerce Asset Management (BAM), Sukhumvit Asset Management (SAM), Petchburi Asset Management Company (PAM) and Radhanasin Asset Management Company (RAMC). (Pasadilla and Terada-Hagiwara, 2004: 22)

In an effort to prepare for privatization, KTB was also allowed to transfer non-performing assets to a state-led AMC in September 2000 as depicted in Table 3. This asset transfer was the fourth round of re-capitalization[38] and involved a transfer of THB 519.4 bln in non-performing loans in exchange for non-transferable five-year bonds guaranteed by the FIDF (which accounted for 32 percent of KTB's total assets) as reported in Santiprabhob (2003: 34, 36).[39] The approach chosen for BT, which will eventually be privatized among small shareholders, differed as shown in Table 3. Due to its smaller size, BT's non-performing loans were kept on the balance sheet as a covered asset pool, with future losses being guaranteed by the FIDF. (Santiprabhob, 2003: 39)

In addition, the government issued an emergency decree in June 2001 to set up the TAMC to buy non-performing assets from banks against 10-year bonds issued by the TAMC and guaranteed by the FIDF. Losses in connection with assets purchased from private banks are split under a loss-sharing formula. (Vichayanond, 2001: 18; Fitch Ratings, 2002: p. 6) The TAMC purchased most of its assets in the fourth quarter of 2001. Further purchases took place in the third quarter of 2002. The emergency decree imposed penalties on private financial institutions that refused to sell non-performing assets and eight domestic and hybrid banks have entered into an agreement with the TAMC, namely BAY, BBL, BT, KTB, KBank, TMB, SCB and BOA. As of June 2003, the TAMC had purchased THB 784.4 bln in non-performing assets, with a disposal rate (ratio of assets disposed over book value of acquired assets) of 73.5 percent and a cash recovery rate (ratio of recovered cash over book value of transferred assets) of 1.81 percent as of June 2003. (Pasadilla and Terada-Hagiwara, 2004: 14, 34)

After having tightened regulations regarding the accrual of interest in 1997, the BoT introduced new loan classification and provisioning rules, collateral appraisal standards as well as restructuring guidelines for non-performing loans in 1998 to reflect the true value of non-performing loans and

[38] Whereas the first round of re-capitalization in February 1998 involved a cash injection, the subsequent two rounds in December 1998 and August 1999 involved debt-equity-conversions. (Santiprabhob, 2003: 34)

induce financial institutions to realize losses.[40] To facilitate the necessary re-capitalization of banks, two capital support schemes were introduced in August 1998. Under the Tier-1 capital scheme, the government injected Tier-1 capital in the form of 10-year non-tradable government bonds for preferred shares, subject to stringent conditions and safeguards (e.g. right to change existing management, new capital enjoying preferred status over existing shareholders). Under the Tier-2 capital scheme, the government injected Tier-2 capital in the form of 10-year non-tradable government bonds for subordinated debt, if certain performance-based criteria were met. (Santiprabhob, 2003: 27) Only two banks, namely SCB and TMB, entered the Tier-I capital support schemes, which expired in November 2000, demonstrating the reluctance of banks to accept a dilution of ownership. Some private banks preferred to re-capitalize on their own by issuing hybrid capital, which combined preferred shares with subordinated debt, since it allowed them to protect the interests of existing shareholders. In light of the high level of non-performing loans, several private AMC were established between 1998 to 2001 to purchase and manage non-performing assets from their parent institution. Since these AMC were set up as subsidiaries, the transferred non-performing loans remained on the consolidated balance sheet.

To conclude, Thailand used three different approaches to solve the problem of non-performing loans[41] and facilitate credit intermediation, namely private and public decentralized approaches (private and state-led AMC) as well as a centralized approach (TAMC). None of these approaches, however, has been unequivocally effective and many questions regarding transfer pricing and recoveries remain. Nevertheless, they have helped to reduce the amount of non-performing loans in locally incorporated banks as evidenced in

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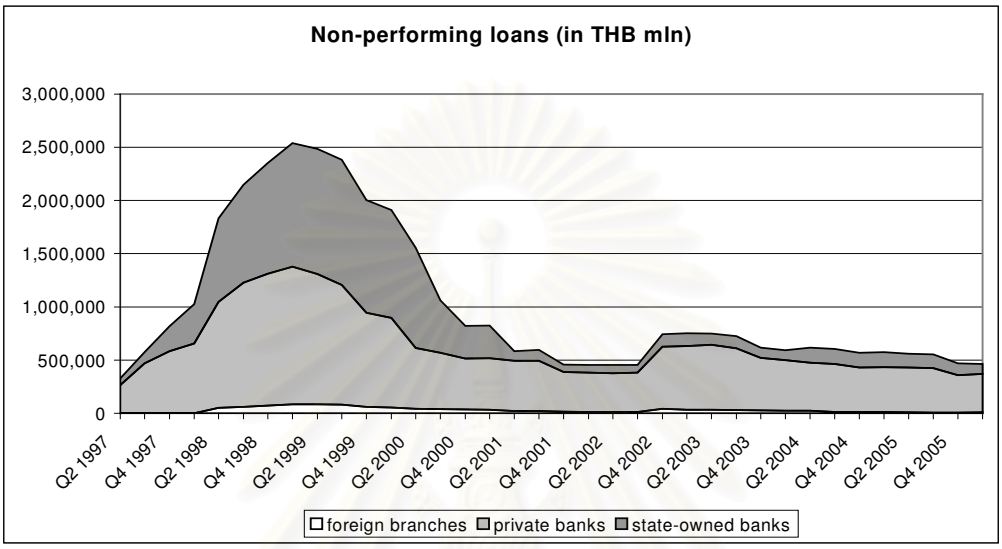
[39] See Chapter 5 in Santiprabhob (2003) for an excellent summary of the re-capitalization of KTB.

[40] See (Herberholz, 2002: 29-31) for a discussion thereof. The BoT plans to apply International Accounting Standard No. 39 (IAS 39), which would inter alia affect loan loss provisionings by using the present value of estimated future cash-flows instead of the appraised collateral value, from 2008 onward. (Kasikorn Research Centre, 2006a)

[41] Since the legal framework was one of the major obstacles to the resolution of non-performing loans, a total of eleven structural reform laws (see Hoontrakul and Walker, 2001: 127-129 for a review) were passed, the most important ones being the Bankruptcy Court Act, the Amendment of the Bankruptcy Act and the Amendments to the Civil Procedure Codes.

the decline of non-performing loans from THB 2,557,279 mln (46.8 percent of total loans) in May 1999 to THB 466,495 mln (8.1 percent of total loans) in March 2006 as shown in Figure 8.

Figure 8 Non-performing loans classified by financial institutions group[42]



Source: compiled from SET Quarterly Reports, BoT

The financial sector restructuring measures resulted in a significant decrease in family ownership as shown in Table 4.

Table 4 Family ownership of commercial banks incorporated in Thailand

Bank	controlling interest pre-crisis	foreign share Q2 1997	status year-end 2001	foreign share Q4 2001	foreign share Q4 2005
BBL	Sophonpanich Family	23.9	widely held	47.7	46.9
BAY	Rattanarak Family	20.3	Rattanarak Family	22.9	31.5
KBank	Lamsam Family	24.7	widely held	48.4	48.1
TMB	Thai Armed Forces	23.5	Thai Armed Forces (26%)	5.4	33.7
SCB	CPB	24.2	CPB (14%), Sanwa Bank (10%)	40.4	52.5
SCIB	Mahadamrongkun Family	24.2	intervened by FIDF	0.0	24.9
UBB/BT	Chansrichawla Family	19.8	intervened by FIDF	0.4	5.9
KTB	MoF, FIDF	14.4	FIDF	3.0	15.8
BOA	Phatrapraisit Family	6.1	sold to ABN Amro Bank	79.9	97.6
TDB/DTDB	Tuchinda Family	9.4	sold to Development Bank of Singapore	62.1	-
NTB/SCNB/SCBT	Wanglee Family	3.6	sold to Standard Chartered Bank	75.0	99.8
LTB/UOBR/UOBT	Chonwichan Family	17.0	sold to United Overseas Bank	75.0	100.0
FBCB	Charoen Siriwattanaphakdi	n.a.	merged with KTB	n.a.	n.a.
BBC	Jalichandra Family	n.a.	partially acquired by KTB	n.a.	n.a.
BMB	Techaphaibun Family	n.a.	merged with SCIB	n.a.	n.a.

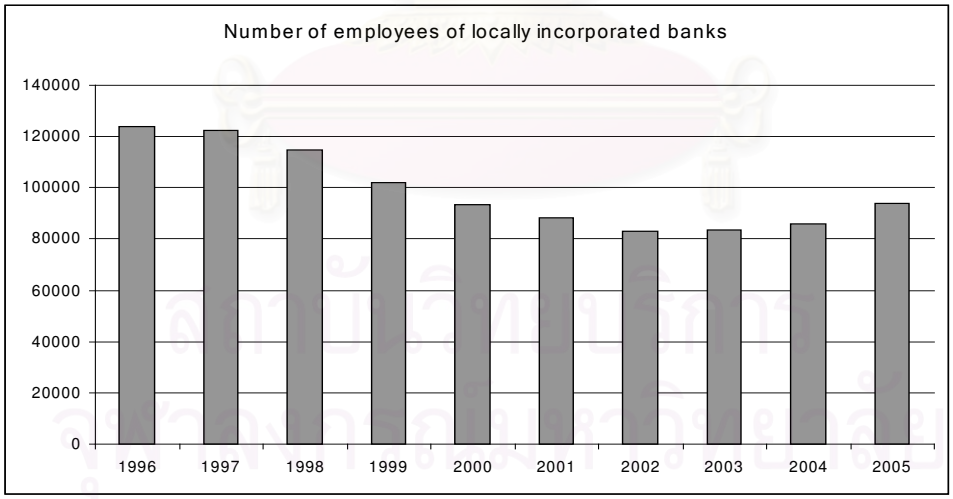
Source: compiled from the BoT and the SET

[42] Note that non-performing loans are loans classified as substandard, doubtful, doubtful of loss and loss. Data for the period Q2 1997 to Q1 1998 does not include data for BBC and FBCB since data are not available. Aggregate non-performing loan data for foreign branches have been published since Q2 1998.

Despite an upper limit on shareholdings of 5 percent per person (including related parties), equity ownership was highly concentrated in the hands of large families, which in many cases had founded the bank and controlled daily operations.[43] Although family ownership has decreased, family, corporate and government connections continue to be of importance and some private banks managed to protect interests of pre-crisis shareholders although they can no longer be considered family-run companies.

Financial sector restructuring measures considerably affected employment in the commercial banking sector. The absorption of FBCB by KTB, for example, resulted in all FBCB staff becoming KTB employees, which together with the integration of BBC staff led to approximately one third of all KTB staff of 18,169 at the end of 1999 being redundant. (Herberholz, 2002: 81) Also, under the amalgamation of UBB, KTT and the 12 finance companies, no employees of the merged companies were initially made redundant.

Figure 9 Number of employees of locally incorporated banks



Source: compiled from various issues of Commercial Banks in Thailand, BBL

[43] In addition, commercial banks are neither allowed to hold shares in any other commercial bank nor more than 10 percent of total shares of limited companies. However, exemptions are possible. (CBA B.E. 2505, Section 12(6): 10) When the restrictions on foreign equity participation were relaxed, locally incorporated banks were permitted to hold up to 100 percent of total shares in other financial institutions for a period of ten years, with the option of extension.

As pressures to address overstaffing problems and downsize personnel expenses emerged, the number of employees in the commercial banking sector decreased from 124,088 at year-end 1996 to a low of 83,239 at year-end 2002, before increasing to 93,774 in 2005 as shown in Figure 9 above.

2.5. Financial sector master plan

Thailand has sought to implement financial liberalisation through a series of three-year Financial System Development Plans (FSDP). The first FSDP (1990 - 1992) primarily aimed at deregulating and liberalising interest rates, foreign exchange transactions and the scope of activities of financial institutions. (ADB, 1999: 40) The main objectives of the second FSDP (1993 – 1995) were to mobilise savings, increase access to financial services and develop Bangkok into a regional financial centre by establishing the IBF. (ADB, 1999: 41) The third FSDP (1996 – 1998) was launched, but put on hold due to the IMF economic programme that commenced in 1997 and during the course of which Thailand has undergone major financial reforms.

Financial liberalisation was again one of the key motivations underlying the formulation of the first FSMP, as endorsed by the Council of Ministers in January 2004, that has set the course for medium-term (5 to 10 years) development of the Thai financial sector. (BoT, 2003: 59-60) The FSMP consists of three major pillars as shown in Figure 10, developed in three stages from January 2002 to June 2003.

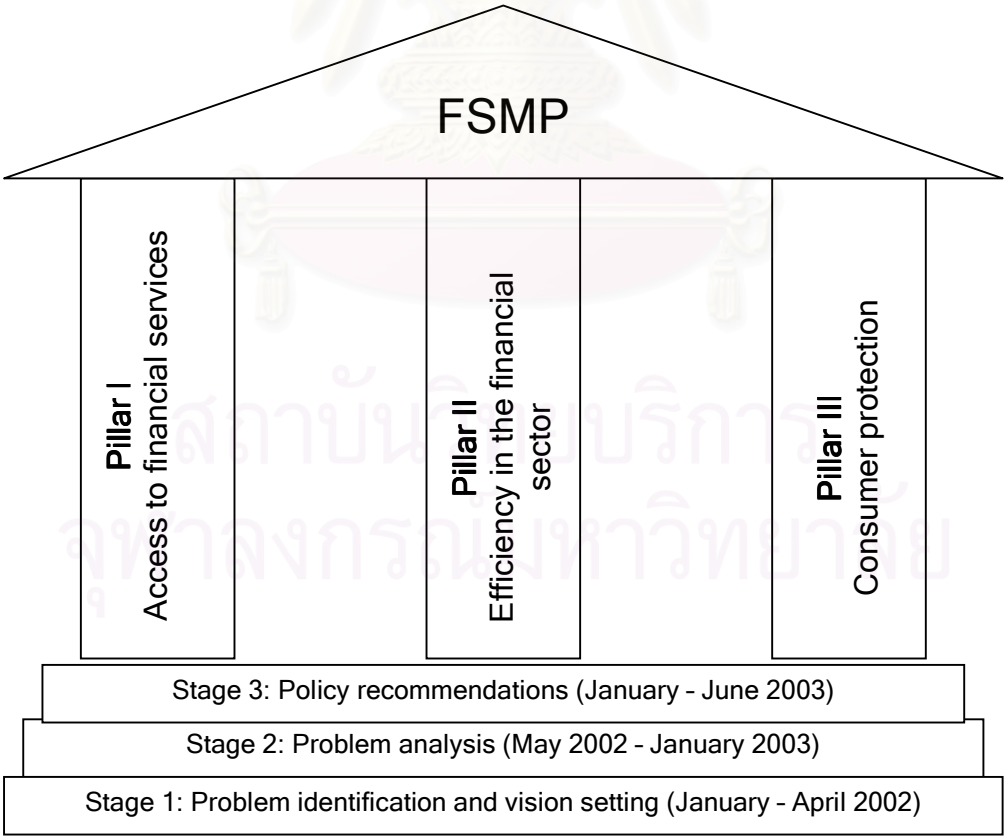
In terms of access to financial services, the FSMP aims at increasing grass-root financial services to better service low-income households. To this purpose, the BAAC is being transformed into a rural development bank and financial institutions are actively encouraged to engage in micro-finance. (BoT, 2004: 3)

Efficiency in the financial sector is being enhanced through a rationalised structure and role of financial institutions as well as a streamlined regulatory framework. Given that different types of institutions offered essentially the same services, the following two types of licenses to replace all

existing ones were introduced for Thai deposit-taking institutions (BoT, 2004: 5):

- commercial bank license (permits provision of all types of financial services to all groups of customers, except insurance underwriting and equity securities brokering, trading and underwriting; minimum Tier-I capital: THB 5 bln)
- retail bank license (permits the provision of the same services as the commercial bank license to retail customers and small and medium-sized enterprises, except operations related to foreign exchange and derivatives; minimum Tier-I capital: THB 250 mln; a retail bank may apply for an upgrade after three years).

Figure 10 The three pillars of the FSMP



Source: compiled by author

To create a level playing field, finance companies and credit foncier companies are given the opportunity during the first three years after announcing the FSMP to apply for a retail bank license or merge with at least one other finance or credit foncier company and apply to become a commercial bank. (BoT, 2004: 35) These rationalisation efforts partially explain the substantial consolidation in the sector as illustrated in Table 1. After the first three years and subject to a favourable economic environment, a retail bank may apply for an upgrade to a commercial bank and new investors may apply for new bank licenses. (BoT, 2004: 4)

To restructure foreign financial institutions in Thailand, two types of licenses were introduced, namely:

- subsidiary (scope of business: commercial banking; branches: one branch inside Bangkok and metropolitan areas and three branches outside; minimum registered and paid-up capital: THB four bln)

- full branches (scope of business: commercial banking; branches: none; minimum capital requirement[44]: THB three bln)[45] (BoT, 2004: 5)

Foreign branches could apply to upgrade to a subsidiary or merge with a finance or credit foncier company to upgrade to a subsidiary. Stand-alone IBF were given the choice to upgrade to a full branch or merge with a finance or credit foncier company to upgrade to a subsidiary. (BoT, 2005: 35) After the first three years and subject to favourable economic conditions, new banking licenses may be issued to new foreign investors to increase competition and efficiency in the sector. (BoT, 2004: 5) Although these licenses were designed to expand the role of foreign financial institutions in the Thai banking sector

[44] Foreign branches do not have equity accounts, but are required to maintain assets in Thailand in accordance with CBA (B.E. 2505, Section 6: 5) as amended by the CBA B.E. 2522 and various Notifications of the BoT (No. PhorNorSor. (21) Wor. 25/2548 dated 7 December 2005; No. PhorNorSor. (21) Wor. 32/2549 dated 8 February 2006; No. ThorPorTor. ForNorSor. (21) Wor. 965/2549 dated 17 July 2006 among others).

[45] "Branches" are commonly "*entities which are integral parts of the foreign parent bank and thus lack separate legal status*" and "subsidiary" to "*legally independent entities wholly or majority-owned by a bank incorporated in another country*". (Cornford, 2004: 8) However, this new classification of legal entities through which banking services are supplied may be misleading since the branching restrictions they face are almost indistinguishable from the status quo despite the fact that subsidiaries, unlike branches, are generally deemed oriented toward retail banking (Clarke et al., 2001: 30).

(BoT, 2004a: 60), they basically seem to maintain the status quo. As noted by Kasikorn Research Centre (2004), although the subsidiary status may be beneficial for operations, few changes in the business strategies of foreign banks are expected. Foreign financial institutions with either a subsidiary or a full branch will not be able to compete with locally incorporated banks due to substantial branching restrictions, unless they choose to enter into co-operative agreements with locally incorporated banks.[46]

The first FSMP also introduced a "one presence policy" for Thai and foreign banks, thus requiring a financial conglomerate to have only one form of financial institution to mobilise savings from the public, further encouraging mergers among domestic institutions.

For the purpose of this study, it is particularly interesting that the fate of the hybrid banks has not been addressed. This gives rise to questions regarding (i) the motives underlying this decision as well as (ii) appropriateness and / or comprehensiveness of approaches chosen in previous studies that indicate a beneficial impact of foreign bank entry in Thailand (Chantapong, 2005; Okuda and Rungsomboon, 2004, 2004a and Herberholz, 2002 among others) as mentioned in Chapter 1. Given that the BoT plans to further liberalise the financial sector (BoT, 2004a: 60), the first FSMP may only signal the beginning of changes, especially since the provision of financial services is part of ongoing FTA negotiations. The BoT eventually announced in January 2007 that the second FSMP, which is expected to broaden the scope of activities and include measures to prepare existing institutions for new domestic and foreign entry, will be implemented at the end of the year. (Bangkok Post, January 4, 2007)

[46] See footnote 34 for details about the co-operation between GE Capital International Holdings and BAY. BT announced in August, 2006 plans to sell a 24.99 percent stake as part of a capital increase to the private equity firm Newbridge, the Asian investment arm of Texas Pacific Group, one of the world's largest private equity firms. The capital increase would dilute the FIDF's shareholding to 30 percent from 48.98 percent at present. The subscription agreement was signed in January 2007, with share issue and sale expected to be finalized by March 2007. (Bangkok Post, August 29, 2006; January 4, 2007)

Besides rationalising and consolidating existing financial institutions, measures to increase the efficiency of the financial sector also include provisions to streamline the regulatory framework. Major areas addressed are co-operation among supervisory authorities, problems of the credit bureaus[47], regulations for opening and closure of bank branches, limitations on expatriate staff as well as directed lending, introduction of new products and services (which facilitates the transition towards a universal banking system), risk management, good governance and last not least exit procedures and prompt corrective actions. (BoT, 2004a: 67)

Regarding consumer protection, the measures stipulated in the FSMP require financial institutions to establish clear procedures to handle customer complaints and promote the flow of information by addressing disclosure standards. (BoT, 2005: 33). The most significant measure, however, will be the replacement of the current blanket guarantee with a limited deposit insurance to increase market discipline and reduce moral hazard. Thailand has been working on this transition since it issued the First Letter of Intent to the IMF on 14 August 1997. Even though, Thailand does not have an explicit deposit insurance scheme, the government has always provided assistance to depositors of failed financial institutions. In the late 1970s depositors of failed Raja Finance were reimbursed 20 percent of the principal and in the mid 1980s depositors of failed institutions were paid in full over a 10-year period. (Wesaratchakit, n.d.: 2) In August 1997, the BoT announced that the FIDF would provide liquidity support for all remaining financial institutions as well as fully protect eligible depositors and creditors of suspended financial institutions[48]. (ADB, 1999: 48) This implicit deposit insurance system has been administered by the FIDF since 1985.[49]

[47] See Section 2.6 for a discussion of the problems associated with the two credit bureaus.
[48] Promissory notes from the suspended finance companies were exchanged for promissory notes from KTT. (Santiprabhob, 2003: 12)

2.6. Credit bureaus

The idea of establishing a credit bureau in Thailand commenced with the third FSDP. When the financial crisis hit in 1997, efforts were, however, suspended. In its Letters of Intent to the IMF the BoT eventually committed itself to establishing a credit bureau to enable a full exchange of information among creditors and allowing all banks as well as finance companies and trade creditors to participate. Two credit bureaus, namely the Thai Credit Bureau and the Central Credit Information Services, were set up early 2000. (Kitsin, 2004: 4) 49 percent of the Thai Credit Bureau were owned by the GHB, the remaining 51 percent by a Thai technical partner. Central Credit Information Services was 50 percent owned by commercial banks and 50 percent owned by Thai and foreign technical partners. The Credit Information Business Act was drafted in 2000, but the final version was not passed before the end 2002, coming into effect in March 2003. (Kitsin, 2004: 12) However, due to legal uncertainties, both bureaus suspended operations for 3 months during the second quarter of 2003 and asked the Credit Information Protection Committee to clarify the law. Both credit bureaus resumed operations in June 2003. (Kitsin: 2004: 14) By law, members must submit negative information (i.e. all accounts with at least one three-month spell of overdue payments within the past 12 months as well as credit card accounts that were closed involuntarily). To reduce overlaps between the two credit bureaus, Thai Credit Bureau and the Central Credit Information Services were eventually merged and the National Credit Bureau started services in June 2005. Due to the problems associated with setting up functioning credit bureaus, credit information sharing services have remained dormant and their establishment will thus not be further considered within the framework of this study. The major challenge for the newly established National Credit Bureau is to collect reliable and complete information in a transparent manner and to gain confidence from participants.

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[49] Protected institutions currently have to pay 0.2 percent of total liabilities semi-annually to

2.7. WTO obligations for banking services

WTO-driven financial liberalization has started with the inclusion of financial services in the multilateral trade negotiations of the Uruguay Round (1986-1994) and negotiations on the GATS were completed in 1993. (Kireyev, 2002: 4) A two-year interim agreement on financial services, however, could only be reached in 1995. In 1997, after lengthy horse-trading, WTO members finally reached agreement on a set of specific commitments on market access and national treatment, the so-called Fifth Protocol on Financial Services or FSA, which came into effect in 1999. (Kireyev, 2002: 6)

GATS defines four modes of delivery of internationally traded services, namely (i) cross-border supply of services (mode1), (ii) consumption abroad (mode 2), (iii) commercial presence (mode 3) and (iv) presence of natural persons (mode 4). (Dobson and Jacquet, 1998: 72) The key articles in the GATS regarding the scheduling of commitments are Article XVI (on market access) and Article XVII (on national treatment[50]).

In response to the financial crisis, Thailand engaged in autonomous liberalization. Foreign ownership thresholds have temporarily been lowered to allow foreign banks to take control of ailing locally incorporated banks and facilitate their restructuring as discussed earlier. While Thailand agreed to open its markets as required by WTO rules, its commitments under GATS –like those of many other countries- have just bound the status quo. (Dobson and Jacquet, 1998: 325)

Thailand's specific commitments[51] are -subject to horizontal commitments[52]- as follows: (WTO)[53]

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the FIDF.

[50] National treatment refers to treatment no less favorable than that granted to domestic service providers. (Cornford, 2004: 5)

[51] Specific commitments stipulate limitations that apply to a specific service activity.

[52] Horizontal commitments stipulate limitations that apply to all sectors included in the schedule.

[53] The data covers the period January 1995 to December 1999 and does not include data on current negotiations. The discussion is limited to banking and other financial services.

- modes 1 and 2: no limitations on market access and national treatment for *financial advisory* and *financial data processing* activities; unbound for all other services[54]

- mode 3[55]: limitations on market access and national treatment

    - none for *representative offices of banks*

    - none for existing *foreign bank branches* under present shareholding structure; new establishment subject to license approved by the MoF with the consent of the Cabinet

        - restrictions on ATM operations[56]

        - branching restrictions (existing foreign banks which already had the first branch office in Thailand prior to July 1995 permitted to open no more than two additional branches)[57]

        - no restrictions for participation in cheque clearing and settlement system

    - *locally incorporated banks*: market access is limited to acquisition of shares of existing banks (maximum foreign equity participation limited to 25 per cent of paid-up registered capital; combined shareholding of an individual and his/her related persons restricted to 5 per cent or below of a bank's paid-up registered capital; at least three-fourths of the directors must be Thai nationality)[58]

[54] As reported in Nakornthab, Pootrakool and Rodprasert (2004: 38) Thailand did not commit itself under modes 1 and 2 (especially e-banking) inter alia due to the inadequate legal infrastructure.
[55] The commitments under mode 3 comprise the limitations on different types of legal entities.
[56] See footnote 29.
[57] Foreign branches with a license to operate a branch in Thailand were allowed to apply for allowance to establish two additional branches (one outside Bangkok Metropolis and its adjacent provinces; one in Bangkok or adjacent areas) from July 1996 to August 1996. (BoT: 1996: 53)
[58] The MoF upon recommendation of the BoT may relax these limits temporarily as mentioned earlier should this for example be deemed necessary to improve the condition of a commercial bank. Such an equity participation will be allowed for a period of up to ten years, with foreign shareholders being grandfathered after this period.

Further commitments exist for IBF, finance companies, credit foncier companies, securities companies, asset management companies, financial leasing services, factoring services as well as credit, charge and debit cards.[59]

- mode 4: no limitations on market access and national treatment except that the following limitations are placed on the number of foreign personnel:
  - representative office: not more than 2 foreigners
  - foreign branch: not more than 6 foreigners
  - BIBF (PIBF): not more than 4 (2) foreigners
  - foreign branch with IBF license: not more than 8 foreigners.

  Further commitments exist for finance companies, securities and asset management companies.[60]

In accordance with the built-in agenda of the Uruguay Round, successive rounds of negotiations have started in 2000 when the FSA has only been nine months in force. (Sauvé and Steinfatt, 2001: 353) Negotiations took place in Cancun (2003), Geneva (2004) and Hong Kong (2005).[61] Thailand among other countries has submitted an initial offer as well as a revised offer. Both, initial and revised offers, however, are not publicly available although several offers by other member countries have been de-restricted.

Thailand's financial sector liberalisation not only involves multilateral negotiations within the WTO but also within ASEAN[62] and BIMSTEC as well as bilateral negotiations with trade partners. The latter had been on the rise in recent years, the most prominent being the US-Thailand FTA negotiations, which started in 2004 and also include greater market access to the services

[59] See Services Database at www.wto.org.
[60] See footnote 59.
[61] Summaries of these negotiations are available at www.wto.org.
[62] See Ramkishen and Sen (2002) for a discussion on AFAS.

sector. The negotiations have been suspended, however, following the 2006 Thai coup d'état. Besides, developments in other countries, most notably in Central and Eastern Europe as well as Latin America, increase pressures to engage in competitive liberalisation. As such, the BoT recognises that further liberalisation of the financial sector is unavoidable, however, in light of Thailand's past liberalisation experiences future steps will be taken gradually to give some protection to domestic institutions and in line with the reforms introduced by the FSMP. (BoT, 2003: 59-60)

2.8. The New Basle Capital Accord

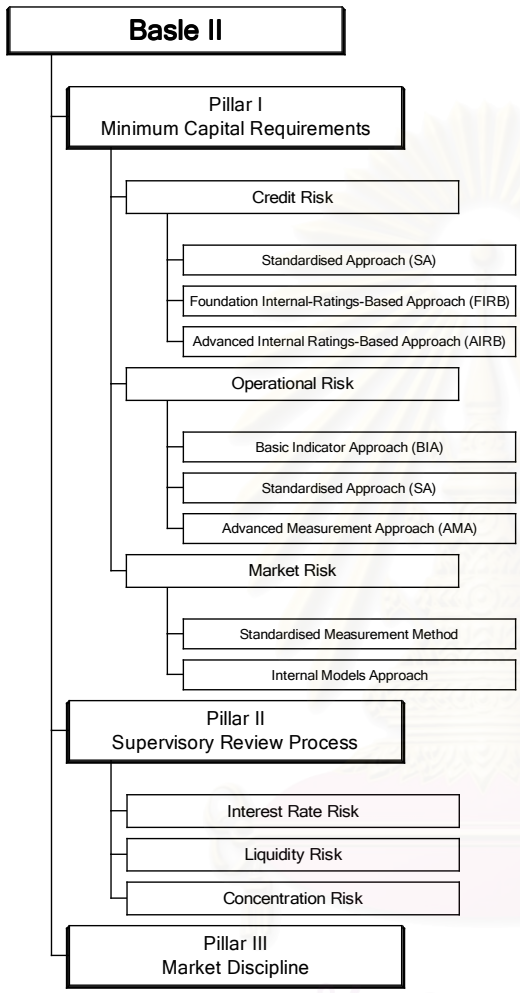
In recent years, international organisations such as the Basle Committee and the IMF have sought to bring regulatory and supervisory standards all over the world to international best-practices, with financial standards being assessed through programmes such as the Financial Sector Assessment Programme (FSAP)[63] and the Report on Standards and Codes (ROSC). At the core of these best-practices standards is the development of the New Basle Capital Accord or Basle II, which has been negotiated since 1999 when the first round of proposals for revising the Basle Capital Accord of 1988 was published. Additional proposals for consultation were released in January 2001 and April 2003 and quantitative impact studies related to proposals conducted. (Basle Committee on Banking Supervision, 2006: 16)

Basle II retains key elements of the 1988 Basle Capital Accord, including the general requirement for banks to hold total capital equivalent to at least 8 percent of risk-weighed assets (the regulatory requirement of the BoT is 8.5 percent at present), the basic structure of the 1996 Market Risk Amendment regarding the treatment of market risk as well as the definition of eligible capital. The revised framework comprises three pillars, namely

[63] Thailand participates in the FSAP of the IMF and the World Bank, which is aimed at assessing strengths and weaknesses of the financial sector as well as issuing recommendations. The initial assessment is scheduled to be available in 2007.

minimum capital requirements, supervisory review and market discipline, as shown in Figure 11.

Figure 11 Basle II framework



source: compiled by author

The real innovation of Basle II lies in Pillar I, which focuses on the calculation of minimum capital requirements for credit, operational and market risk and defines eligible regulatory capital. To calculate minimum capital requirements for credit risk, banks have a choice between two broad methodologies, namely the Standardised Approach (based on external credit assessments) and the Internal Ratings-based Approach (based on internal rating systems and subject to regulatory approval) to overcome the “one-size-fits-all” problems associated with the 1988 Basle Accord. Under Pillar I, the risk sensitivity of minimum capital requirements is expected to be much

greater and the risk weights to reflect more accurately the risk-reducing effects of guarantees, credit derivatives and securitization. To calculate operational risk charges, banks also face three choices of increasing sophistication. The BoT intends to make all approaches, namely SA, FIRB and AIRB for credit risk and BIA, SA and AMA for operational risk, available to commercial and retail banks. (BOT, 2005: 43) Whereas implementation of the simpler approaches (SA and FIRB as well as BIA and SA) is expected to start at the end of 2008, implementation of the more advanced approaches (AIRB and AMA) is expected to begin at the end of 2009. (BOT, 2005: 43) All banks will be subject to transitional arrangements from December 2007 requiring them to run parallel calculations for one or two years depending on the approach chosen.

Pillar II discusses four key principles of the supervisory review, risk management guidelines, supervisory transparency and accountability. Under Pillar II, banks are required to maintain capital above the minimum requirement to cover risks that are not captured under Pillar I such as interest rate risk, liquidity risk and concentration risk. The BoT started preparations (such as setting up infrastructure, data and risk management systems) for the implementation of Pillar II at the beginning of 2004. (BoT, 2005: 43)

Pillar III requires banks to disclose more information about regulatory capital, credit quality risk measurement and management practices. These disclosures are aimed at increasing the flow of information in financial markets and improving market discipline. The BoT requires banks to disclose information that has material effects on their financial position and is releasing further guidelines to strengthen market discipline. (BoT, 2005: 43)

Taken together, these three pillars provide a broad and complex set of financial standards. Although the final Basle II framework is expected to be available for implementation at the end of 2006 (for simpler approaches) and 2007 (for the most advanced approaches) (Basle Committee on Banking Supervision, 2006: 1), the framework should be seen as a work in progress. Apart from technical discussions, one of the major concerns regarding Basle II is that it will unfairly impact the competitive environment and create competitive inequities. First, banks that are able to adopt advanced

approaches may lower their capital charges on certain activities as well as overall regulatory capital requirements compared with other banks. These lower regulatory capital charges could place other banks, especially smaller banks or as in the case of Thailand banks without a foreign majority block-holder or strategic foreign partner, at a competitive disadvantage. Second, the new framework may favour particular classes of banks such as for example the retail banks in Thailand since Basle II recommends lower capital charges for residential mortgage as well as retail and small business loans. The core business of the newly founded Land and Houses Retail Bank for example, which is a subsidiary of Thailand's leading residential developer, Land and Houses, are mortgage loans, which carry a 35 percent risk weight under the new framework compared to 50 percent previously.

What competitive impact Basle II will have on the banking industry remains to be seen, however, its upcoming implementation seems to have had an effect on the design of the FSMP as well as the phased approach taken with respect to the internationalisation of financial services in Thailand.

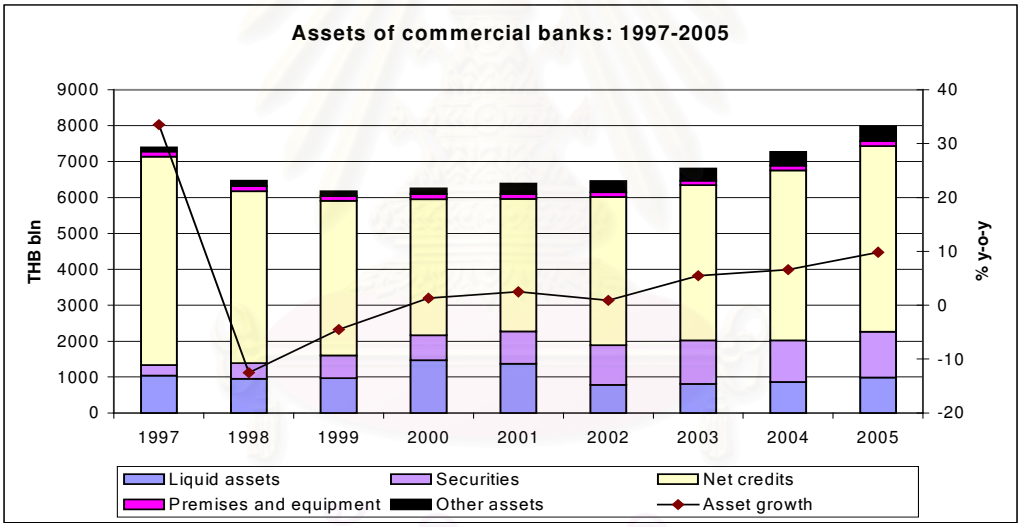
2.9. Key indicators of commercial banks

As of December 2005, commercial banks, which comprise locally incorporated banks and foreign branches, held 12 percent of assets in liquid form, had invested 16 percent in securities and 65 percent in loans, compared to 14 percent, 4 percent and 78 percent at year-end 1997. Around 1.8 percent (2 percent) was held as premises and equipment as well as other assets at year-end 2005 (1997). Asset growth declined sharply in 1998 due to the financial crisis, but assets increased by 10 percent year-on-year at the end of 2005, which, however, is still far below the year-on-year change of 34 percent in 1997 as depicted in Figure 12. Investment in securities has played an increasingly important role, which is partly due to notes received for transferring non-performing loans to the TAMC as well as the substantial growth in the domestic bond market. Even though the liquid assets to deposit ratio fell from 24 percent in December 1997 to 16 percent in December 2005,

it remained well above the minimum of 6 percent required by the BoT, which indicates a high degree of excess liquidity prevalent in the sector. The proportion of loans to deposits declined from 136 percent at the end of 1997 to 85 percent at the end of 2005.

Over the period, foreign branches on average held 17 percent of their assets in liquid form, invested 17 percent in securities and 61 percent in loans, compared to 15 percent, 12 percent and 67 percent for locally incorporated banks. Whereas premises and equipment of foreign branches accounted on average for 0.3 percent of total assets, these accounted for 2.3 percent in locally incorporated banks, which reflects the branching restrictions foreign banks face.

Figure 12 Assets of commercial banks



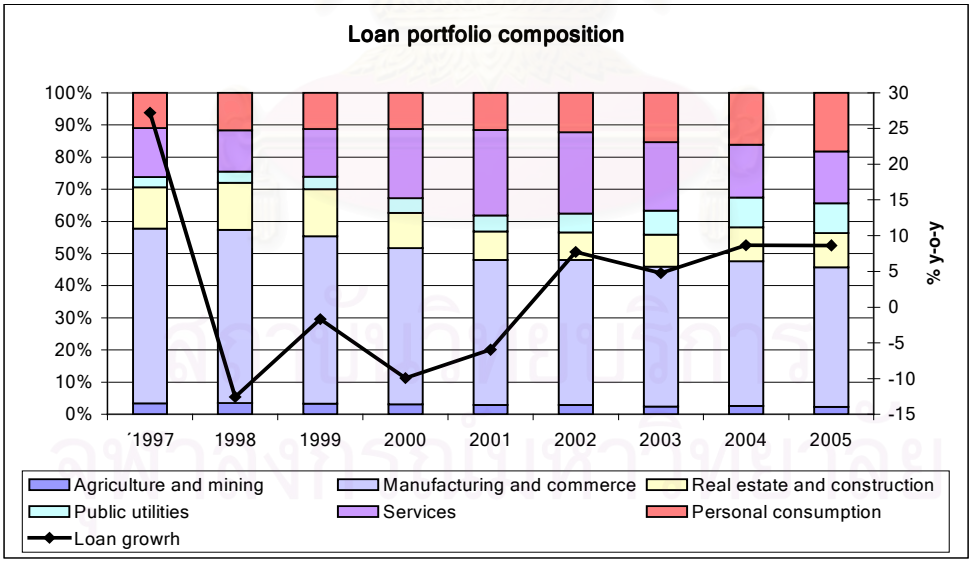
Source: own calculations based on data obtained from the BoT

Turning to loan portfolio composition, loans outstanding increased to THB 5.7 tln in 2005, representing a year-on-year increase of 9 percent which is, however, still below pre-crisis levels. As shown in Figure 13, the majority of loans are granted to manufacturing and commerce, services and personal consumption. Loans for personal consumption increased by 60 percent over the period and reached THB 1 tln in 2005. Similarly, loans to public utilities increased substantially from THB 188 bln in 1997 to THB 525 bln in 2005. Lending to real estate and construction reached a low of THB 383 bln in 2001

before increasing to THB 603 bln in 2005, which is far below the THB 752 bln granted in 1997. Lending to agriculture and mining as well as manufacturing and commerce decreased substantially and have not reached pre-crisis levels yet.

Although the asset structure of locally incorporated banks and foreign branches appears to be similar on first sight, differences become visible when looking at credits classified by economic sector. Whereas locally incorporated banks on average devoted 46 percent of their loan portfolio to manufacturing and commerce, 19 percent to services and 14 percent for personal consumption, foreign branches lent 63 percent of their loan portfolio to manufacturing and commerce, 17 percent to services and 7 percent for personal consumption over the period 1997 to 2005. Lending to real estate and construction and agriculture and mining accounted for 12 percent and 3 percent of the loan portfolio of locally incorporated banks, compared to 5 percent and 2 percent in foreign branches.

Figure 13 Loans of commercial banks



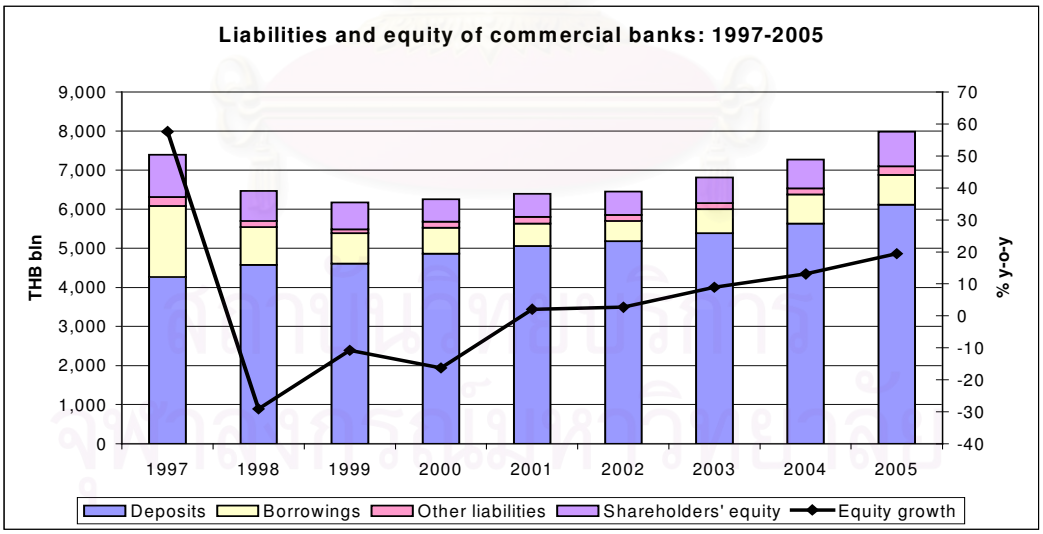
Source: own calculations based on data obtained from the BoT

As reported in Nakornthab, Pootrakool and Rodprasert (2004: 34), foreign branches focus on medium and larger loans with a size of THB 100 mln to THB 5 bln and are hardly active in granting loans of THB 20 mln or less

as well as loans exceeding THB 5 bln, which again may reflect the operational restrictions foreign branches face.

The proportion of deposits to total liabilities and equity increased from 58 percent at the end of 1997 to 77 percent at the end of 2005, while borrowings, which also comprise liabilities due to financial institutions and raised in money markets as well as securities sold under repurchase agreements, decreased from 25 percent to 10 percent, reflecting the decline in IBF activities.[64] Meanwhile, equity declined sharply in 1998, 1999 and 2000 due to the high levels of non-performing loans in the system, but has recovered since then as shown in Figure 14. The BIS Tier-I capital ratio of 10.02 percent of risk-weighed assets at the end of 2005 was well above the minimum of 4.25 required by the BoT. Similarly the total BIS capital ratio of 14.19 at the end of 2005 shows that overall the capital constraint was not binding, which was true for the entire period 1997 to 2005 according to *year-end* data for the commercial banking system *as a whole*.

Figure 14 Liabilities and equity of commercial banks



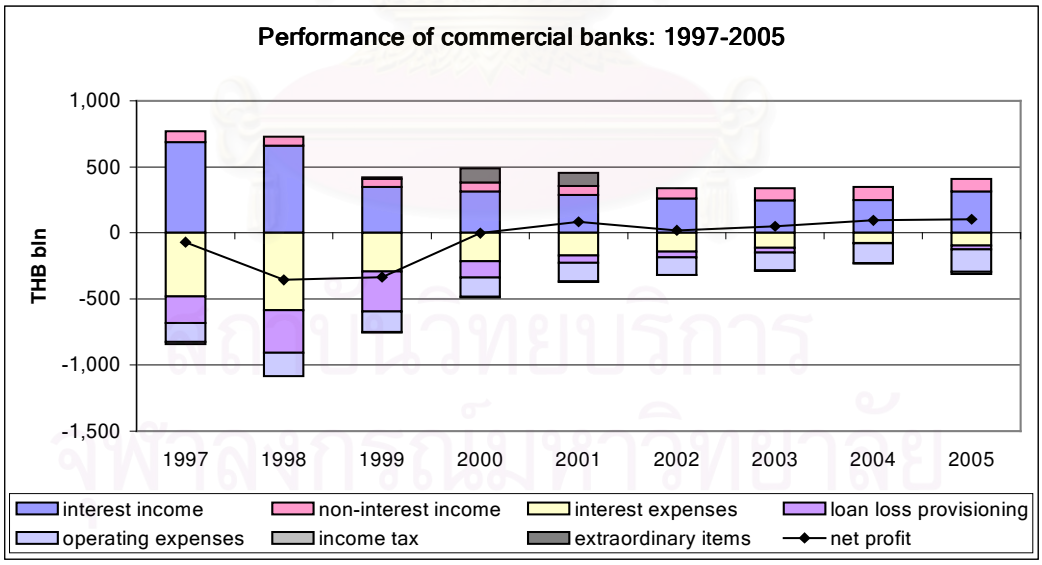
Source: own calculations based on data obtained by the BoT

[64] It is noteworthy that deposits have a very concentrated size distribution. 89 percent of deposit accounts had a balance of less than THB 50,000 at year-end 2005, their value, however, only amounted to 4 percent of total deposits. (calculation based on data in BBL (2006: 18).

The structure of liabilities seems to reflect the uneven playing field foreign branches are exposed to. Whereas the ratio of deposits to total liabilities and equity of locally incorporated banks was on average 81 percent, it was a mere 33 percent for foreign branches over the period 1997 to 2005, which reflects the stringent branching restrictions foreign branches face. The ratio of borrowings to total liabilities and equity of foreign branches is consequently much higher for foreign branches (on average 21 percent) than locally incorporated banks (on average 11 percent). The total BIS capital ratio of foreign branches was on average 18.30 percent, which was higher than that of locally incorporated banks and far above the minimum requirement of the BoT for foreign branches of 7.5 percent.

2005 marked the fifth consecutive year that commercial banks earned net profit, with net profit reaching THB 103 bln due to inter alia decreases in loan loss provisions as shown in Figure 15.

Figure 15 Performance of commercial banks
(income items: positive values, expense items: negative values)

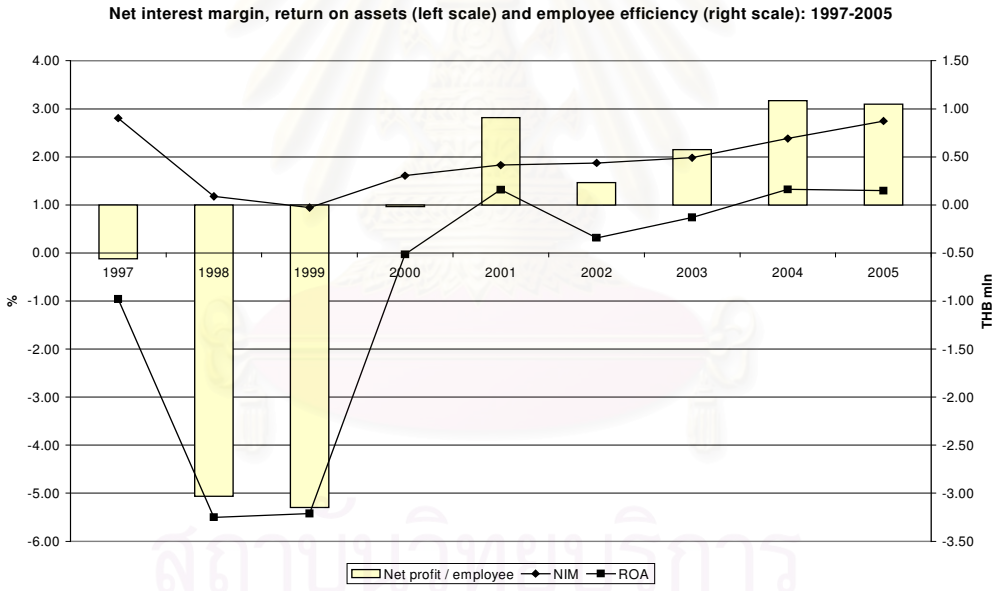


Source: own calculations based on data obtained from the BoT

Since 1999, non-interest income, which comprises fee-based income as well as gains and losses from investment, has increased, except in 2005 when it decreased from THB 97 bln to THB 94 bln. Operating expenses, almost one third of which are personnel expenses, continued to rise since 2002.

As shown in Figure 16, the net interest margin (calculated as net interest income in percent of total assets) decreased from 2.81 percent in 1997 to a low of 0.95 percent in 1999 before increasing again to 2.75 percent, which is below pre-crisis level. Similarly, ROA (ROE (not shown in Figure 16)) was 1.29 percent (11.70 percent) in 2005 after having reached a low of -5.5 percent in 1998 (-48.83 percent in 1999 respectively). Employee efficiency has increased over recent years, with the ratio of net interest income to the number of employees (not shown in Figure 16) having increased from THB 1.64 mln per person in 1997 to THB 2.22 mln per person in 2005. Similarly, the ratio of net profit to employees has improved substantially since 1997 and reached THB 1.05 mln per employee in 2005.

Figure 16 Net interest margin, return on assets and employee efficiency



Source: own calculations based on data obtained from the BoT

A comparison of locally incorporated banks and foreign branches shows that the latter on average outperformed the former in terms of ROA (on average 0.5 percent for foreign branches and -1.02 percent for locally incorporated banks), NIM (on average 2.73 percent for foreign branches and 1.82 percent for locally incorporated banks) as well as employee efficiency.

2.10.Summary

Although foreign entry has not only affected Thai commercial banks but also other financial institutions, most notably securities companies, the overview of the Thai financial system shows that commercial banks have remained its major constituent over the period 1997 to 2005 despite increasing disintermediation, which justifies a focus on the Thai commercial banking sector for the purpose of this study.

Whereas foreign bank entry into developed countries is usually driven by a desire of financial institutions to diversify their activities and increase their minimum scale of operations, foreign bank entry into developing countries is often the direct consequence of a relaxation of the restrictions on foreign equity participation aimed at re-capitalising weak institutions and strengthening the domestic financial system. This is also true in the case of Thailand, where the financial crisis created a one-time opportunity for foreign investors to acquire majority stakes in locally incorporated banks, albeit for a period of ten years only after which their stake will be grandfathered.

Market entry through acquisitions of majority stakes in commercial banks incorporated in Thailand can be viewed as part of the so-called “third wave” of expansion of international banks. Whereas the first and second internationalisation waves, which took place in the nineteenth century and the 1960s respectively, were rather wholesale oriented, the third wave during the second half of the 1990s is generally characterised by a more frequent use of market access through locally incorporated banks, resulting in a retail banking orientation. (Herrero and Simón, 2003: 3) Depending on the mode of entry, the organisational form as well as the size of the shareholding, the impact of foreign entry will consequently differ. Since foreign banks entered the Thai market through the establishment of full branches and subsidiaries as well as via the purchase of minority (non-strategic and strategic) and majority stakes in locally incorporated banks, it is possible to make a clear distinction between different forms of foreign bank presence.

Hence, the “trial period” of foreign majority equity holdings in locally incorporated banks, which is approaching its end, together with the different forms of bank presence make Thailand a particularly good country to study.

The fact that liberalisation of foreign ownership was one of the first measures to start re-capitalisation of locally incorporated banks, makes it difficult to assess the impact of greater foreign competition on commercial banks incorporated in Thailand. Apart from the liberalisation of foreign ownership, restructuring measures consisted of interventions by regulatory authorities, capital support schemes and the various approaches to solve the problem of non-performing loans, all of which had a substantial impact on the performance of commercial banks. Concomitantly, the financial infrastructure as well as financial regulations, most notably in the form of the first FSMP, have significantly changed and affected competitive structures. This chapter has sought to provide insights into the dramatic changes the sector has undergone in recent years as well as the dynamic environment it is exposed to, which is essential to understanding the degree of internationalisation of financial services and the impact of foreign bank presence. As such, this chapter provides the background against which the models are developed in the following three chapters.

CHAPTER III

THE FOREIGN BANK EFFECT ON VALUE CREATION IN COMMERCIAL BANKS INCORPORATED IN THAILAND

3.1. Introduction

Liberalising foreign equity investment in locally incorporated banks is generally expected to be beneficial for the domestic banking system[65], yet its effects are highly controversial and manifold. Research on foreign bank entry and its presumed benefits primarily deals with bank efficiency spillovers and so far has been dominated by the analysis of traditional performance measures such as net interest margin, cost margin and return on assets or equity, which are directly derived from banks' financial statements. However, these traditional performance measures may be inappropriate indicators of the competitiveness and efficiency of banking sectors since they do not, or not adequately, reflect value creation. In an attempt to counter the shortcoming, this study focuses on value-based measurement approaches which allow analyses of success or failure in creating value for shareholders and implicitly for stakeholders, by considering bank-specific risk preferences as well as inadequacies of generally accepted accounting principles. Most value-based performance measures are based on the concept of economic profit and thus acknowledge that bank capital has an opportunity cost.

Against this background, this chapter aims at (i) analysing if hybrid banks differ from domestic banks and (ii) examining the effects of foreign bank presence on commercial banks incorporated in Thailand, using value based performance measures such as economic profit, Economic Value Added® and cash value added and to compare these results with those obtained using traditional performance measures.

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[65] See inter alia Levine (1996).

3.2. Efficiency comparisons of domestic and foreign banks and bank efficiency spillovers associated with foreign bank entry: a review of the literature

Although there are several related lines of research concerned with the impact of foreign bank entry on domestic financial systems, existing literature on foreign bank entry primarily deals with efficiency comparisons of domestic and foreign banks as well as competitive pressures exerted by foreign banks and their impact on financial sector efficiency, with most early studies being focused on developed countries. Since then, however, studies have been extended to developing countries and the results are found to differ between developed and developing countries. Interestingly, most studies reviewed point to an improvement in financial sector efficiency.

In a pioneer study, Claessens, Demirgüç-Kunt and Huizinga (1998) examine the extent of foreign ownership in national banking markets and provide an empirical study of how foreign bank entry affects the operation of domestic banks, in both developed and developing countries, using bank-level data for 80 countries. Efficiency comparisons between foreign and domestic banks reveal that the functioning of foreign relative to domestic banks is very different in developing and developed countries, with foreign banks achieving higher (lower) profitability and net interest margins than domestic banks in developing (developed) countries.[66] The authors provide empirical evidence that a larger foreign ownership share of banks reduces profitability and overhead costs (scaled by the volume of business) of domestic banks, which is interpreted to mean that foreign bank entry improves the functioning and efficiency of national banking markets, with positive welfare implications for consumers. Moreover, the number of entrants rather than their market share matters, which indicates that foreign banks affect local bank competition upon entry rather than after having gained substantial market share. These findings are supported by Claessens and Glaessner (1998), who study the relationships between the openness of eight Asian financial markets and

institutional quality, financial sector fragility and costs of financial services provision. Their empirical results indicate that a negative relationship between net interest margins and the share of foreign banks exists as well as between net interest margins and overhead costs (scaled by the volume of business) and the openness indicator for banking services. However, in contrast to the findings of the afore-mentioned study, there is a positive relationship between profitability and foreign bank presence. The fact that increased foreign bank presence goes together with greater profitability and lower net interest margins suggests that openness encourages banks to reduce costs and diversify their income by relying to a greater extent on fee-based income. Lensink and Hermes (2003) extend the methodology developed by Claessens, Demirgüç-Kunt and Huizinga (1998) and examine whether the short-run relationship between foreign bank entry and domestic bank behaviour depends on the level of economic development, using bank-level data for 48 countries. Their finding is that at lower levels of economic development foreign bank entry is associated with increasing costs and net interest margins for domestic banks in the short-run, while at higher levels of development costs, net interest margins and profits are either not or negatively associated with foreign bank entry. This is interpreted to mean that at lower levels of economic development spill-over effects of banking techniques and practices trigger an increase in costs, which leads to an increase in net interest margins since domestic banks continue to enjoy market power, which enables them to pass on increased costs to their clients. The authors acknowledge that in the long-run foreign bank entry may increase competition and affect costs and net interest margins negatively. Bayraktar and Wang (2004) also extend the methodology developed by Claessens, Demirgüç-Kunt and Huizinga (1998) and investigate the impact of foreign bank entry on the performance of domestic banks in 30 countries over the period 1995 to 2002 as well as how this relationship is affected by the sequence of financial liberalisation. The authors find that foreign bank entry has significantly improved domestic bank competitiveness in countries which liberalised their stock market first and that countries that liberalised their

[66] See also Demirgüç-Kunt and Huizinga (1998).

capital account have benefited less. Levine (2003) examines the impact of restricting foreign bank entry on net interest margins across 47 countries in 1999 and finds that restricting foreign bank entry boosts net interest margins. Interestingly, the author finds that foreign bank presence is not significantly correlated with net interest margins, which highlights the importance of contestability (as proxied by the fraction of commercial banking applications from foreign banks that are denied by the regulatory authorities). Entry restrictions on domestic banks, however, are not significant.

Although indicative, cross-country studies provide conclusions that hold on average across a group of countries and thus cannot be considered as supportive evidence for any particular country. The following country-case studies, based on the methodology developed by Claessens, Demirgüç-Kunt and Huizinga (1998), who employ traditional accounting-based performance measures as proxies for efficiency, however, support the general findings of the cross-country studies. Using bank-level data, Denizer (2000) finds that foreign bank entry into the Turkish banking market had the effect of reducing overhead costs (scaled by the volume of business) in the domestic banking system, implying increasing efficiency and resource utilisation, and that foreign banks increase competition and erode domestic bank profitability. Similarly, Barajas, Salazar and Steiner (2000), Pastor, Pérez and Quesada (2000), Clarke et al. (1999) and Farnoux, Lanteri and Schmidt (2004) with their country case studies on financial sectors in Colombia, Spain, Argentina and Poland respectively, provide further evidence of a beneficial impact of foreign bank entry on the efficiency of domestic banking markets.

Shifting the focus to Asia, Sullivan and Unite (2001) also provide evidence of a beneficial impact of foreign bank entry on Philippine commercial banks. The authors find that the foreign number share is negatively related to interest rate spreads and profits of domestic banks that are affiliated with a business group. Foreign bank entry is further associated with decreases in operating expenses, but increasing risk-taking in the form of a deterioration of loan portfolios, which is interpreted to mean that domestic banks are forced to lend to less creditworthy customers due to increased competition from foreign

banks. An analysis of the impact of foreign bank entry on the Thai domestic banking sector, using bank-level data for twenty consecutive calendar quarters from the second quarter 1997 onwards (Herberholz (2002)), gives supportive evidence that (i) hybrid banks are more efficient than their domestic-owned counterparts in terms of profitability, and (ii) that foreign bank entry reduces the net interest margin and profitability in the domestic banking system and thus contributes to greater efficiency in the sector.[67] In contrast to the findings in Claessens, Demirgüç-Kunt and Huizinga (1998), the asset share of hybrid banks rather than the number share determines competitive conditions. Okuda and Rungsomboon (2004a) investigate the impact of foreign bank entry on Thai domestic banks using a panel of 17 commercial banks from 1990 to 2002. The authors find that an increase in foreign bank presence leads to a rise in overhead expenses and a decline in profits supporting the findings in Herberholz (2002). Increases in foreign bank presence, however, are found to lead to increases in interest rate spreads of domestic banks. Kim and Lee (2004) analyse if increased foreign participation led to enhanced efficiency and increased stability in the Korean domestic banking sector. Their empirical results indicate that increases in foreign bank participation through the opening of branches lead to greater cost efficiency in domestic banks. Foreign-owned locally incorporated banks, however, are found to have lower profits, which the authors interpret as a sign of these banks' commitments to address asset quality problems. Detragiache and Gupta (2004) conduct efficiency comparisons between foreign and domestic banks. However, they do not find differences between domestic and foreign banks in Malaysia, but between all banks specialising in Asia and foreign banks not specialised in Asia, with the latter outperforming the former. The authors further find that credits and deposits of foreign banks (especially those not specialised in Asia) contracted less than those of domestic banks, indicating that foreign banks were perceived as a safe haven.

[67] Note that the asset share of hybrid banks turned out to be positively related to overhead expenses over total assets, being interpreted as an indicator of the pressures exerted on domestic banks to restructure their operations, *initially* leading to higher overhead expenses. (Herberholz, 2002: 100)

Summarising, most existing empirical studies on bank efficiency spillovers either follow the approach developed by Claessens, Demirgüç-Kunt and Huizinga (1998) and focus on traditional performance measures as indicators of the degree of competition and proxies for efficiency or apply efficient frontier estimation methods [68] to conduct efficiency comparisons between domestic and foreign banks and/or analyse the impact of foreign bank entry on domestic banking sectors.[69]

Country-case studies on financial liberalisation in Thailand in general that apply efficient frontier estimation methods are for example Leightner and Lovell (1998), Intarachote and Williams (2002), Okuda and Rungsomboon (2004) and Chantapong (2005), with the latter two studies being of particular interest since these also consider hybrid banks. Okuda and Rungsomboon (2004) estimate cost functions of locally incorporated banks and foreign branches over the period 1990 to 2002. They find that the production technologies for foreign branches are distinct from those of locally incorporated banks and suggest that foreign branches primarily focus on advanced services in investment banking and private banking, whereas locally incorporated banks focus on traditional retail banking services. Moreover, their findings imply that foreign acquisitions of locally incorporated banks led to greater cost efficiency. Foreign investors in hybrid banks are reported to have introduced efficient banking techniques such as advanced techniques in loan management, asset liability management, and management information services as well as adopted new systems for recruitment, promotion and staff

[68] According to Berger and Humphrey (1997: 4-13) there are five major measurement techniques to estimate efficiency based on frontier efficiency analysis, which basically differ in the specification of the functional form for the cost, standard or alternative profit or production relationship among inputs, outputs and environmental factors (i.e. the underlying efficiency concept) and in the assumptions regarding inefficiencies and random error. It is noteworthy that -despite a large body of literature- no consensus exists on how to define inputs and outputs of financial firms. Berger and Humphrey (1997: 30-33) compare different output measures. Under the production approach banks are thought of as producing services, with deposits being considered output and interest paid on deposits excluded from bank costs, with inputs and outputs being measured in physical quantity. Under the intermediation approach banks are assumed to intermediate funds between surplus and deficit units, with deposits being viewed as inputs and interest paid on deposits included in bank costs. The asset approach is a variant of the intermediation approach and assumes that liabilities are inputs and assets output.

[69] Claessens and Laeven (2003), however, relate a competitiveness measure (based on the Panzar and Rosse methodology) to indicators of countries‘ banking system structures (including foreign bank penetration) and regulatory regimes.

training. In addition, hybrid banks are found to focus on fee-based services. The authors conclude that "*foreign majority acquisition of Thai domestic banks is likely to improve the functioning of the domestic banking market, which ultimately results in positive welfare implications for their customers. Accordingly, the impact of increased foreign participation has evidently been positive*." Finally, the results indicate the presence of economies of scale, in locally incorporated banks and foreign branches implying that an increase in operational size could improve cost efficiency. Chantapong (2005) compares the cost efficiency of locally incorporated banks and foreign branches in Thailand over the period 1995 and 2003 and analyses the effect of foreign bank entry through acquisitions of locally incorporated banks by foreign banks after the 1997 crisis. In contrast to the afore-mentioned study, the author finds that the unit costs of production of locally incorporated banks and foreign branches are indistinguishable, although the two types of banks are also found to focus on different banking activities. Furthermore, the unit costs of production of hybrid banks (referred to as merged banks) are found to be higher than those of domestic banks and foreign branches. Regarding the effects of foreign bank entry through acquisitions of locally incorporated banks, the estimation results indicate that foreign bank entry has improved the cost efficiency of domestic banks and led to greater competition in the banking industry.

The following studies are descriptive assessments of the impact of foreign bank entry. Montreevat and Ramkishen (2001) briefly examine recent trends in the Thai banking system and find that the entry of foreign banks has been a catalyst for change in domestic banks, inter alia altering corporate governance structures, improving operational efficiency and introducing new technologies and skills. The authors note that they are not able to undertake a systematic evaluation of cost structures and efficiency levels of the Thai banking system since they assume that the presumed benefits have not materialised yet.[70] Montgomery (2003) finds that the presence of foreign banks in Indonesia, Korea, Malaysia and Thailand is larger than anticipated once foreign branches are accounted for, but lower than in other emerging

economies. Foreign banks in most of these countries are shown to perform worse than their domestic counterparts in terms of the three accounting-based ratios return on equity, cost to income ratio and the ratio of problem loans to total loans. The stability of foreign bank lending is found to be dependent on the mode of entry, with cross border claims of foreign banks being most volatile, followed by foreign bank branch lending. The author suggests that foreign entry via fully-owned subsidiaries or joint ventures should be preferred to branch-based entry. Alves and Paula (2006) find that increases in foreign bank penetration have neither improved macroeconomic efficiency in Argentina nor in Brazil, but have had some positive effect on microeconomic efficiency in Brazil.

3.3. Efficiency proxies: theoretical background

Following Young and O'Byrne (2001: 427) the main existing performance metrics can be classified into four categories, namely residual income measures, residual income components, market-based measures and cash-flow measures. [71]

Since several definitions of value exist, this section starts with a definition of the various concepts analogous to Helfert (2003: 392):

The *book value* of an asset or a liability is the stated value in the balance sheet as of a specific date. Financial statements are governed by rules that follow the principles of: (i) objectivity, (ii) matching and revenue recognition and (iii) consistency. (Pratt, 2003: 81-86) The two main exceptions to these principles are referred to as (i) materiality, i.e. immaterial transactions need not to be accounted for, and (ii) conservatism, i.e. in case of significant uncertainty about the value of a transaction, the most conservative approach should be taken, which may lead to a subjective understatement of assets, overstatement of liabilities, accelerated recognition of losses and/or delayed recognition of revenues. (Pratt, 2003: 87-88)

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[70] See also Montreevat (2000).

The *market value* of an asset or liability, on the other hand, is the amount at which an asset exchanges when it is traded in an organised market or when the value is negotiated privately between the parties and it should approximate the asset‘s present value at that time. However, market values as opposed to economic values are subject to individual preferences.

Economic value refers to the ability of an asset to generate cash-flows and it is derived by calculating the present value of future free cash-flows. Accordingly, the economic value of common shares, i.e. shareholder value, can be defined as the present value of future free cash-flows, discounted at the company’s cost of capital, plus the present value of the ongoing value of the business plus any non-operating assets less the amount of long-term debt outstanding. (Helfert, 2003: 413)

Against this background, the four categories of performance metrics are introduced in the ensuing paragraphs.

Residual income measures

Traditional accounting only reflects the cost of some forms of capital such as debt on the income statement, whereas the cost of equity (COE) is not included. Residual income measures are calculated by subtracting all capital costs from operating profit (either measured on the basis of accrual accounting figures or cash-flows) and inter alia comprise economic profit, Economic Value Added® [72] and cash value added[73]. These measures, denominated in monetary terms, attempt to quantify for each period the amount of value that has been created (or destroyed).

[71] The authors’ category “traditional income measures“ is omitted since measures such as net income and earnings per share can be classified as “residual income components“.
[72] EVA® is a registered trademark of Stern Stewart & Company.
[73] CVA here refers to the concept developed by the Boston Consulting Group.

Economic profit and economic value added

The most basic version among the residual income measures is economic profit[74]. As financial institutions create value on the liabilities side of the balance sheet, debt should not be considered a source of capital, implying that the equity approach as opposed to the entity approach is appropriate. (Copeland, Koller and Murrin, 2000: 131, 429, 430; Damodaran, 1999: 576) Under the equity approach, economic profit is calculated as: [75]

$$\text{economic profit} = \text{net income} - \text{equity} \times \text{cost of equity}$$

and

$$\text{standardised economic profit (EP)} = \text{economic profit} * 100 / \text{total assets}$$

where net income refers to net income available to common shareholders (which includes the cost of debt and preferred stock as well as minority interest in consolidated subsidiaries (Bloxham, 2003: 112)). The Capital Asset Pricing Model (CAPM) is commonly used for estimating the COE and it can generally be expressed as follows (Copeland, Koller and Murrin, 2000: 215; Pratt, 1998: 72):

$$COE = E(R_i) = R_f + \beta_i [E(R_m) - R_f]$$

where $E(R_i)$ denotes the expected rate of return on asset i, R_f the risk-free rate of return, β_i the beta on asset i, $E(R_m)$ the expected rate of return on the market portfolio and $[E(R_m) - R_f]$ consequently the equity risk premium for the market. To use the CAPM, the following three inputs are thus needed: (i) the risk-free rate, which is generally proxied by the yield-to-maturity of a government bond, with no default risk and no reinvestment risk (Copeland,

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[74] Note that economic profit is sometimes considered synonymous with EVA®. This approach is not followed here since the basic concept of economic profit, first introduced by Alfred Marshall, differs from EVA®, with the latter being subject to adjustments.

[75] Net income may be considered a noisy indicator since interest expenses include interest paid on liabilities other than deposits. In addition to being easier to use, however, the conceptual reason for using the equity approach is that the deposit franchise given by the government to the bank allows it to create value on the liabilities side of the balance sheet if the cost of issuing deposits is less than the cost of borrowing an equivalent amount in the open market. (Copeland, Koller and Murrin, 2000: 428-429)

Koller and Murrin, 2000: 215; Pratt, 1998: 35, 58; Damodaran A., 2002: 155), (ii) beta, the sensitivity of the return on an asset with respect to the return on the overall stock market, with beta being defined $\beta_i = \sigma_{im} / \sigma_m^2$, where σ_{im} is the covariance between asset i's return and the market return and σ_m^2 is the variance of the market return.[76] (Brealey and Myers, 2006: 176) and (iii) the equity risk premium, which is defined as the excess return on the market, i.e. the expected return over and above the return available on a risk-free asset, with calculation commonly being based on historical data over a long time period (Copeland, Koller and Murrin, 2000: 216; Pratt, 1998: 61, 63).

Since obtaining a local risk free rate based on the yield-to-maturity of a government bond is difficult in the case of Thailand due to a lack of data availability, following Damodaran (n.d.) among others, this study uses the rate that the largest and safest firms in the market pay on their borrowings in THB, i.e. the so-called minimum lending rate (MLR). The BoT defines the MLR as "*the interest rate at which the lending commercial bank charges its most creditworthy major borrowers on loans with pre-specified repayment schedules*". (BoT, 2006: 63)[77] The systematic risk, beta, is estimated for each quarterly period using the SET index as proxy for the return on the overall stock market.

Economic profit as opposed to traditional performance measures reflects the opportunity cost to all capital providers, including equity investors, and as such is a more appropriate proxy for efficiency. However, net income and equity are taken from financial statements as prepared in accordance with generally accepted accounting principles. Generally accepted accounting principles, however, are based on principles of conservatism and materiality as mentioned earlier, with the interpretation of rules leaving room for earnings management.

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[76] A common approach to calculate beta is to perform a regression analysis. By regressing a company's stock returns against those of a stock market index, beta (the slope of the regression line) can be obtained, with the choice of the appropriate time period required for estimation being entirely subjective. This approach is followed here although the estimation of beta for commercial banks incorporated in Thailand is complicated by insufficient historical price information for some banks. Moreover, the estimation of beta for hybrid banks is also based on historical data and thus includes time spans during which these banks were domestic banks.

[77] Alternatively, local bank deposit rates could be used as risk-free rates. (Damodaran, n.d.)

Economic value added is a variant of economic profit, with adjustments being made to correct for perceived inadequacies of standard financial reporting practice. Based on Uyemura et al. (1996) and Damien et al. (1997), economic value added under a bottom-up equity approach[78] is calculated as follows:

economic value added

= *adjusted* net income – *adjusted* equity x cost of equity

and

standardised economic value added (EVA)

= economic value added*100 / total assets

where net income again refers to net income available to common shareholders. For the calculation of economic value added –analogous the calculation of EP- adjusted equity is measured at the end of period t-1 and adjusted net income at the end of period t. A multitude of accounting adjustments are suggested by the literature, however, as reported by Uyemura et al. (1996: 101, 102) and Damien et al. (1997: 8-12), these can be narrowed down to five adjustments of net income and equity at most. Balance sheet and income statement items concerned are (i) loan loss reserves and loan loss provisioning (net income should include actual chargeoffs (recoveries) instead of subjective loan loss provisionings; loan loss reserves should be considered economic capital), (ii) taxes (to account for deferred tax balances), (iii) extraordinary items (to account for non-recurring events), (iv) securities (to acknowledge that the corresponding liabilities of marked-to-market securities are not marked-to-market and that securities have historically been used to smooth earnings), and (v) goodwill (non-cash charge).[79] EVA is a performance measure that explicitly charges for the use of equity and thus implicitly reflects bank-specific risk preferences and is not

[78] Note that Damien et al. (1997: 7) use a top-down approach.

[79] Note that due to a lack of data availability no adjustments for deferred taxes and goodwill are made in this study. Moreover, securities gains and losses should be excluded from net income, but amortised against it over the remaining lives of the securities that were sold. (Uyemura et al., 1996: 102) Due to a lack of data, however, securities gains and losses are

bound by generally accepted accounting standards. An increase in EVA is interpreted to mean that shareholder value has been created (Young and O'Byrne, 2001: 83). Again, the CAPM is used to estimate the cost of equity.

To summarise, EVA measures the surplus value created on capital employed in monetary terms. It is a performance measure that (i) explicitly charges for the use of capital and thus implicitly reflects risk and (ii) is not bound by generally accepted accounting standards.

Cash value added[80]

Cash value added was developed in an attempt to improve economic value added by using cash-flows instead of earnings (thus inter alia removing the effect of depreciation inherent in economic value added) and it is defined as follows (Martin and Petty, 2000: 128):

cash value added

= cash-flow to equity – sinking fund depreciation – equity charge

and

standardised cash value added (CVA) = cash value added*100 / total assets

where sinking fund depreciation[81] refers to the periodic investment that must be made to obtain a sum equal to the original cost of the depreciable assets at the end of the assets' life (Martin and Petty, 2000: 121; Damodaran, 1999: 878, 879), cash-flow to equity to net cash-flow from operating activities before changes in operating assets and liabilities and the equity charge equals the product of equity and the COE.

In contrast to economic profit and economic value added, cash value added completely removes the influence of accrual accounting and links performance measurement to the ability of a company to generate cash-flows.

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removed from net income and included in equity in this study. Note further that in this study the marginal tax rate is assumed to be 30%.

[80] Cash value added refers to the concept developed by the Boston Consulting Group as mentioned in footnote 73, which is based on their cash-flow return on investment approach.

Residual income components[82]

Residual income components are building blocks of residual income and include inter alia net interest margin, ratio of non-interest income and total assets, ratio of personnel expenses and total assets, cost margin, return on assets and return on equity. Since these traditional proxies for efficiency are subject to the accounting methods chosen by management and fail to account for the COE, they do not capture fundamental determinants of value creation.

The net interest margin measures the spread between what is paid to providers of funds and what is received from users of funds. As such it focuses on the conventional lending and borrowing activities of banks. It is noteworthy that –as pointed out by Demirgüç-Kunt and Huizinga (1998: 7)- a reduction in net interest margins does not necessarily signal improved efficiency as generally assumed. For instance, a reduction in net interest margins may simply reflect a higher loan default rate since interest payments on non-performing loans are not forthcoming. Failure to suspend the accrual of interest on non-performing loans, on the other hand, will result in an overstatement of the net interest margin. The net interest margin is defined as follows:

net interest margin (NIM) = net interest income*100 / total assets[83]

Non-interest income has become an increasingly important source of revenue since it is generally less capital-intensive and allows diversification of earnings. Major categories of non-interest income are fees and commissions, trading gains and losses and income from subsidiaries or affiliates. (Golin, 2001: 148) Increases in non-interest income, however, might be short-term in nature and thus do not necessarily contribute to value creation. The corresponding performance measure can be expressed as:

standardised non-interest income (NII)

= non-interest income*100 / total assets

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[81] Note that sinking fund depreciation is also referred to as economic depreciation.
[82] Vittas (1991) offers a discussion of the use and misuse of bank operating ratios.
[83] Alternatively, average or earning assets have been used as denominator in the literature.

Overhead expenses comprise personnel expenses and other non-interest expenses and reflect expenses associated with traditional deposit and loan operations as well as any other operations. As such, standardised overhead expenses, referred to as cost margin (Golin, 2001: 134), can be interpreted as an indicator of operating efficiency. Again, decreases in the cost margin might be short-term in nature and thus do not necessarily contribute to value creation. Focusing on personnel expenses only, may allow an assessment of labour practices and organisational structures as well as implicitly investments in technology, which is not labour-intensive such as information technology. Two measures commonly used are:

cost margin (OEA) = overhead expenses*100 / total assets

and

standardised personnel expenses (PEA)

= personnel expenses*100 / total assets

Return on assets measures the company's operating efficiency in employing its assets. Return on assets, however, may be distorted by loan loss provisionings, extraordinary items as well as changes in the capital structure. Regarding the latter, comparing return on assets to the cost of capital, however, results in comparing an accrual accounting rate of return to an economic rate of return. (Rappaport, 1998:21) Return on assets is defined as:

return on assets (ROA) = net income*100 / total assets

Return on equity differs from ROA by the degree of leverage, i.e. the equity multiplier, which is the ratio between equity and assets. Compared to ROA, return on equity can easily be manipulated by changing the equity multiplier. Analogous to ROA, return on equity may be seriously distorted by extraordinary items as well as failure to account for the COE. For instance, a decrease in equity might contribute to value creation (e.g. replacement of

equity by debt to benefit from the tax benefit), but not necessarily so since risk may increase concomitantly. Return on equity is calculated as:

return on equity (ROE) = net income*100 / total equity[84]

To recapitulate, ROA and ROE both fail to account for risk. Using ROA or ROE in excess of the COE as indicators of value creation would account for risk, but inter alia fail to correct for inadequacies of generally accepted accounting principles as explained above.

To conclude, residual income components, despite being widely used as proxies for efficiency have serious shortcomings, such as distortions from accounting methods and failure to account for the COE. The important advantage of residual income measures, however, is that they are easier to calculate and observe and thus often readily available.

Market-based measures

Market-based measures, which comprise the price-earnings ratio, total return to shareholders and market value added are based on stock prices and reflect market expectations of future value-creating growth.

The price-earnings ratio is a simple approximation of the market's current judgement of company risk versus past and prospective earnings performance. (Helfert, 2003: 137) The price-earnings ratio is calculated as:

price-earnings ratio = market price per share / earnings per share

Total shareholder return incorporates share price appreciation (or depreciation), which reflects the present value of all changes in expectations of future years' cash-flows, and dividends received over the time period selected for analysis and it is calculated as follows (Jarrell and Morin, 2000: 332):

$$\text{total shareholder return} = [P_1\text{-}P_0 / P_0] + [D/P_0]$$

where $[P_1\text{-}P_0 / P_0]$ denotes capital gains and $[D/P_0]$ the dividend yield. Total shareholder return thus reflects all management decisions such as dividend changes, share repurchases and acquisitions. (Jarrell and Morin, 2000: 333) The main drawbacks of the measure are that (i) it does not indicate whether value has been created unless it is compared to the COE, and (ii) important elements such as market and sector movements are outside of management's control. (Copeland, Koller and Murrin, 2000: 59)

Market value added is the difference between the market value and book value of a company. Assuming that the market and book values of debt are identical, market value added can be expressed as follows (Jarrell and Morin, 2000: 320):

$$\text{market value added} = \text{market value of equity} - \text{book value of equity}$$

where market value of equity is market capitalization, i.e. the stock price multiplied by the number of outstanding shares. Under the EVA equity approach the market value of equity (V) can be expressed as:

$$V = \text{equity employed}_{t=0} + \sum_{t=1}^{n} \text{economic value added}_t / (1+COE)^t$$

Subtracting equity employed (i.e. the book value of equity), yields an alternative expression for market value added, namely that market value added equals the present value of future economic value added. Thus, market value added reflects the market's expectations regarding future economic value added, as opposed to the single historical economic value added mentioned earlier. Calculating market value added, however, generally requires a careful judgement about how representative current share values

[84] It is also common to use average shareholders' equity to incorporate changes such as stock repurchases. Since there are usually several types of stock outstanding, a return to the holders of common shares may also be calculated. (Helfert, 2003: 130, 131)

are. (Helfert, 2003: 445) The major drawbacks of market value added are (i) that it does not consider dividends and thus does not capture free cash-flow to equity[85] and (ii) that important elements are outside of management's control.

Although market based proxies for efficiency offer distinct advantages over residual income components, they cannot be tested in this study since market data are not available for a number of commercial banks due to the government interventions discussed in Section 2.4 and subsequent suspensions of trading.

Cash-flow measures

Cash-flow measures aim at circumventing the impact of accrual accounting and link performance measurement to the ability of a company to generate cash-flows. These proxies for efficiency explicitly acknowledge that value creation is a function of operating cash-flows, the economic lives of assets and the cost of capital.

Shareholder value is the economic value of equity based on forecast data (Rappaport, 1998: 49) and it can be expressed as corporate value less debt, with corporate value being defined as the sum of (i) the present value of free cash-flow to equity estimated for each period of the forecast horizon, (ii) the residual value (which represents the present value of the company attributable to the period beyond the forecast period) and (iii) the present value of non-operating assets (i.e. marketable securities and other investments that can be converted to cash and are not essential for operating the business such as excess real estate and over-funded pension plans). (Martin and Petty, 2000: 57) Whereas shareholder value shows the total economic value resulting from the forecasted scenario, shareholder value added[86] addresses the change in value over the forecast period to provide a

[85] Free cash-flow to equity represents the cash-flow left over for equity investors only - after debt payments have been made and reinvestment needs have been met.
[86] The shareholder value added approach was introduced by Alfred Rappaport.

periodic measure of performance. (Rappaport, 1998: 49) Shareholder value added for each period over the forecast horizon is calculated as follows:

$$\text{shareholder value added}$$

$$= (\text{PVX of CF})_t + (\text{PV of RV})_t - (\text{PVX of CF})_{t-1} + (\text{PV of RV})_{t-1}$$

where PVX denotes cumulative present value, CF free cash-flow to equity, PV present value and RV residual value.

Apart from the fact that forecasting free cash-flow to equity is sensitive to the underlying assumptions and highly subjective, the major drawback of shareholder value added as a proxy for efficiency in the context of this study, however, is that it reflects value created in each period of the planning period (i.e. it is entirely future-oriented), not for historic periods, and thus it is not a suitable performance measure for the task at hand.

Cash-flow return on investment (CFROI)[87] is an average real internal rate of return earned on operating assets. It is a historical measure based on actual gross cash-flows and derived as follows (Martin and Petty, 2000: 117):

$$\text{gross operating assets} = CF_1 / (1+CFROI)^1 + CF_2 / (1+CFROI)^2 + \ldots$$

$$+ CF_n / (1+CFROI)^n + \text{terminal value} / (1+CFROI)^n$$

where CF denotes the periodic gross cash-flow, and n the asset life. CFROI calculation requires four inputs, namely (i) gross operating assets (defined as book value of existing assets plus accumulated depreciation – adjusted for inflation), (ii) periodic gross cash-flows (earned in the current period on gross operating assets; defined as the sum of after-tax operating income and non-cash-charges such as depreciation) [88], (iii) the expected life of the assets in place at the time of the original investment, aimed at reflecting the earning life of the investments and (iv) non-depreciating asset release in the final year of

[87] Cash-flow return on investment was originally developed by Holt Consulting, which was then acquired by the Boston Consulting Group. (Jarrell and Morin, 2000: 328)

[88] Note that the CFROI measures only the performance for the specific period. The CFROI for the next period would be based on that period's gross cashflow, assuming for computational

asset life (defined as the portion of the initial investment that is not depreciable, adjusted for inflation). (Damodaran, 2002: 878) To maintain period-to-period comparability of CFROI, balance sheet and income statements are used for the same period. Although cash-flows taken from the income statement for a period should be matched with the end-of-period asset base for the prior period, it is argued that this approach would result in substantial errors due to acquisitions and divestments during the period. (Madden, 1999: 108) Calculation of CFROI from financial statements is very complex, which constitutes a major criticism of the CFROI metric. A CFROI that exceeds the inflation-adjusted cost of capital is viewed as a sign that value has been created.

The multi-period CFROI can be converted into a less sophisticated single-period measure as follows (Martin and Petty, 2000: 118-121):

single-period CFROI = sustainable cash-flows*100 / gross operating assets

where sustainable cash-flows are equivalent to periodic gross cash-flows as defined above less sinking fund depreciation. The single-period CFROI will equal the multi-period CFROI only if the multi-period CFROI is equal to the reinvestment rate used for sinking fund depreciation. (Martin and Petty, 2000: 118-121)

The CFROI metric, which is conceptually based on an entity approach, seems to be appropriate for capital-intensive companies only. (Madden, 1999: 328; Copeland, Koller and Murrin: 2000: 183) Unlike manufacturing firms that invest in fixed assets, financial institutions invest in intangible assets. Capital expenditures under the common interpretation (Miller, 1995: 207-239) are thus only a minor item in a financial institution's statement of cash-flows, since investments in future growth are rather included in operating expenses, and depreciation is consequently also very low. Also, working capital comprises most of a financial institution's balance sheet items. (Damodaran, 2002: 578; Young and O'Byrne, 2001: 45, 55) Thus, apart from questions of data availability arising from the detailed inputs required, CFROI seems to be a

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reasons that the same level of gross cashflow will be generated over the expected life of the assets.

questionable performance measure for financial institutions. Besides, an increase in CFROI may not necessarily indicate that value has been created since (i) CFROI may be increased by reducing gross operating assets, (ii) CFROI may be increased with value being decreased if the increase in CFROI is gained at the expense of future growth and (iii) an increase in the spread between CFROI and the cost of capital may decrease value if the present value effect of a higher cost of capital dominates the increase in CFROI. (Damodaran, 2002: 882, 883)

In contrast to economic value added, however, CFROI is strictly cash-flow based, with adjustments being made to account for inflation, and whereas economic value added is distorted by the depreciation effect, CFROI removes the influence of accrual accounting and it reflects the complete life of the asset.

The cash-flow measure cash value added[89] focuses on the difference between the cash-flow required to amortise an investment (operating cash-flow demand (OCFD)) and actual operating cash-flows (OCFA) generated in each period. (Helfert, 2003: 445) Under this approach investments are divided into (i) non-strategic investments (replacement investments that do not increase capacity and thus should be considered as costs) and (ii) strategic investments (investments that increase capacity), with the focus being on the latter investment category. (Ottosson and Weissenrieder, 1996: 2) The net present value concept is used to calculate cash value added, with the net present value of the OCFD being spread over the investments' economic lives. (Weissenrieder, 1997: 11, 14; Helfert, 2003: 267-269) As reported by Ottosson and Weissenrieder (1996: 5), the relationship between the two concepts can be stated as follows:

$$NPV(investment)$$

$$= PV(OCFA_{1...n}) - investment = PV(OCFA_{1...n}) - PV(OCFD_{1...n}) = PV\,(CVA_{1...n})$$

[89] Cash value added here refers to the concept developed by Erik Ottosson and Frederik Weissenrieder, with Cash Value Added® being a registered trademark of FWC AB.

where OCFA is defined as the sum of earnings before depreciation, interest and tax, working capital changes and non-strategic investments, and OCFD reflects the cost of capital, expressed in monetary terms. Computation of OCFD requires the following steps (Ottosson and Weissenrieder, 1996: 5): (i) identification of the initial cost of each strategic investment, (ii) estimation of the economic life of strategic investments and (iii) determination of the cash-flow annuity. Which investments to consider as value creating strategic investments depends on the nature of operations and is subjective. Strategic investments could be for example research and development investments and investments in advertising and promotion. The analysis is not restricted to future cash-flows, but also permits the use of historic cash-flows.

An OCFA in excess of the OCFD is considered an indicator of value creation. The main drawback of this measure is that it requires information on the company's asset base which may be impossible to acquire.[90]

To conclude, in addition to the traditional proxies for efficiency, NIM, NII, OEA, PEA and ROA[91], this study uses three value-based measures (all categorized as residual income measures) as proxies for efficiency in an attempt to overcome perceived inadequacies associated with the former. As discussed above, EP reflects the opportunity cost to all capital providers including equity investors and is thus an improvement over residual income components that do not include the COE. Since EP is bound by standard financial reporting practice, EVA is used as alternative efficiency proxy, with the data taken from financial statements being subject to adjustments to simulate cash-flows. However, since the decision whether to undertake an adjustment is subjective and may require inside information, the Boston Consulting Group's cash value added concept will also be employed since it uses cash-flows instead of net income and thus removes the effect of depreciation as well as the subjectivity inherent in EVA. Since financial institutions, unlike manufacturing firms, do not heavily invest in fixed assets, depreciation, however, is rather low.

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[90] See Black, Davies and Wright (2001: 83) for a discussion.
[91] Return on equity is not used in this study due to substantial adjustments in equity levels over the period under consideration.

Table 5 Comparison of performance measures

	Main advantages	Main disadvantages
Residual income components (traditional performance measures)	- easy to calculate - readily available	- do not charge for the cost of equity - are bound by accounting standards
Residual income measures:		
Economic profit	charges for the use of equity	is bound by accounting standards
Economic value added	- charges for the use of equity - uses adjusted net income and adjusted capital	- suffers from subjectivity inherent in adjustments - does not remove depreciation effect
Cash value added	- charges for the use of equity - cash-flow based	- does not account for current period credit losses and recoveries
Market-based measures	are based on stock prices and thus reflect market expectations	- important factors are outside of management's control - for the purpose of this study: data unavailability
Cash-flow measures	cash-flow based	for the purpose of this study: data unavailability

As noted above, market-based measures, which reflect market expectations of future value-creating growth, are not employed in this study due to a lack of market data. Also, cash-flow measures such as shareholder value added, multi-period cash-flow return on investment, and cash value added as developed by Ottosson and Weissenrieder (1996) are not appropriate measures within the framework of this study. Shareholder value added is based on forecast, not historical data and cash value added as developed by Ottosson and Weissenrieder (1996) suffers from a lack of available data. Calculation of the multi-period cash-flow return on investment is impeded by negative gross cash-flow to equity in some periods. The single-period cash-flow return on investment could be calculated, however, the measure is not employed since it is conceptually similar to the cash value added concept developed by the Boston Consulting Group, with both approaches using sustainable cash-flows as input. A comparison of performance measures is given in Table 5.

3.4. Methodology

In this section, the regression model is developed, the estimation technique chosen and hypotheses formulated that allow an assessment of the possible impact of foreign bank presence on value-creation in commercial banks incorporated in Thailand.

3.4.1. Regression model and estimation technique

To examine differences between domestic and hybrid banks as well as to analyse the effects of foreign bank presence on commercial banks, value-based proxies of efficiency are used in addition to traditional ones to overcome inadequacies associated with the latter. Based on the models developed by Claessens, Demirgüç-Kunt and Huizinga (1998) and Denizer (2000) two sets of panel data regressions will be estimated. The first set uses a panel that comprises 12 commercial banks incorporated in Thailand, namely BAY, BBL, BT, KBANK, KTB, SCB, SCIB, TMB, BOA, DTDB, SCNB and UOBR[92], and the second set uses a panel of 8 banks that excludes those four banks that were acquired by foreign investors. Since the number of banks is relatively small and identification of individual banks is of importance, Wald tests[93] are performed to test whether there are bank-specific effects. (Verbeek, 2004: 351) If the null hypothesis of no bank-specific effects cannot be rejected, a constant coefficient model (CC) is used, with all parameters, including the intercept, assumed constant in both the cross-section and time dimensions ($\beta_{kit} = \beta_k$ for all i and t, k = 0,...,K).[94] If the null hypothesis of no bank-specific effects, however, can be rejected a fixed effects model (FE) is used, in which the intercept terms vary over individual banks with all

[92] BMB, TBANK, TISCO, KKB, ACL, LHB and GEM are not included since sufficient data are not available.

[93] The test statistic to test the null hypothesis of no individual effects (H_0: $\beta_{01} = \beta_{02} = ... = \beta_{0N}$) is: $F_{N-1,\ NT-N-K+1} = (ESS_1-ESS_2)/(N-1) / (ESS_2)/(NT-N-K+1)$, where ESS_1 and ESS_2 are the error sum of squares using the CC and the FE, respectively. (Mátyás and Sevestre, 1992: 30-34) These test results are not reported but available upon request.

parameters, except the intercept, assumed constant in both the cross-section and time dimensions ($\beta_{0it} = \beta_{0i}$ for all t, and $\beta_{kit} = \beta_k$ for all i and t, k = 1,...,K). Using a FE, the following equations are estimated:[95]

1st set of regressions:	$DV_{it} = \beta_{0i} + \beta_1 FO_{it} + \beta_2 FS_t + \beta CV_{it} + \varepsilon_{it}$	(3.1)
2nd set of regressions:	$DV_{it} = \beta_{0i} + \beta_1 FS_t + \beta CV_{it} + \varepsilon_{it}$	(3.2)

where DV_{it} denotes the dependent variable for bank i at time t, FO_{it} the foreign ownership variable for bank i at time t, and FS_t the measure of foreign bank presence at time t. CV_{it} is a vector of explanatory variables to control for other factors with the elements in β being indexed as β_3 (β_2 in the second set of regressions) to β_K. β_{0i} are the individual effects, β unknown parameters and ε_{it} the error term. ε_{it} is assumed to be independent and identically distributed over individuals and time, with mean zero and variance σ_ε^2 ($\varepsilon_{it} \sim IID(0, \sigma_\varepsilon^2)$).

To deal with potential non-stationarity of the data series, two panel data unit root tests are used, namely Levin, Lin and Chu (2002), which is found to suit panels of moderate size[96], as well as Im, Peseran and Shin (2003). Whereas the former tests the null hypothesis that each individual time series contains a unit root against the alternative hypothesis that each time series is stationary (Levin and Lin, 1993: 2; Levin, Lin and Chu (2002: 2), the latter allows for individual unit root processes by combining individual unit root tests to derive panel-specific results. (Im, Peseran and Shin, 2003: 2). Due to the inflexibility of major approaches for testing for a unit root in panel data (see Choi, 2001: 249-251; Verbeek, 2004: 368-372), both, Levin, Lin and Chu (2002) and Im, Peseran and Shin (2003) tests are employed. If the null hypothesis of a unit root cannot be rejected for a data series, the regression(s)

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[94] Variables are indexed by an i for the individual bank (i = 1,...,N) and a t for the time period (t = 1,...,T).

[95] Alternatively CC: 1st set: $DV_{it} = \beta_0 + \beta_1 FO_{it} + \beta_2 FS_t + \beta CV_{it} + \varepsilon_{it}$, 2nd set: $DV_{it} = \beta_0 + \beta_1 FS_t + \beta CV_{it} + \varepsilon_{it}$.

[96] Panels of moderate size are panels with N between 10 and 250 and T between 25 and 250. (Baltagi, 2005: 241)

will be estimated in first differences (denoted by Δ, the first-difference operator). All panel unit root tests developed depend crucially upon the way in which the number of cross-sections and the number of time periods tend to infinity. Since this study uses a small yet reasonable number of cross-sections, but a relatively modest time dimension, stationarity testing may have very limited power.

Standard errors are corrected for heteroscedasticity to allow robust estimation.

3.4.2. Variables and hypotheses

To gain insights into possible efficiency spillovers associated with foreign bank presence two sets of regressions are run as explained in the previous section. Whereas the first set of regressions includes the whole sample, the second set includes only those banks that have remained domestically-owned throughout the period. Traditional measures (see Claessens, Demirgüç-Kunt and Huizinga (1998) among others) as well as performance-based measures are used as alternative proxies for efficiency of bank intermediation and indicators of the degree of competition. Variable definitions are given in Table 6 and Table 7 below. [97]

Table 6 Dependent variables: Traditional and value-based measures

Alternative dependent variables	
I. Traditional measures	
NIM_{it}	net interest margin: net interest income in percent of total assets for bank i at time t [98]
NII_{it}	standardised non-interest income: non-interest income in percent of total assets for bank i at time t
OEA_{it}	cost margin: overhead (i.e. non-interest) expenses in percent of total assets for bank i at time t

[97] Data compiled from profit and loss statements has been transformed to represent 3-month periods.

[98] Interest income includes dividend income (excluding income from subsidiaries) as data on interest income alone is not available for all banks. Dividend income, however, appears to have been of minor importance.

PEA_{it}	standardised personnel expenses: personnel expenses in percent of total assets for bank i at time t
ROA_{it}	return on assets: net income in percent of total assets for bank i at time t
II. Value-based measures[99]	
EP_{it}	standardised economic profit: economic profit in percent of total assets for bank i at time t
EVA_{it}	standardised economic value added: economic value added in percent of total assets for bank i at time t
CVA_{it}	standardised cash value added: cash value added (based on the concept developed by the Boston Consulting Group) in percent of total assets for bank i at time t

Independent variables include a foreign ownership dummy variable (FO) to capture the effect of foreign ownership (see Denizer, 2000: 398 among others). Second, the asset share of foreign banks is used as measure of foreign bank presence (see Claessens, Demirgüç-Kunt and Huizinga, 1998: 6-7 among others).[100] Four alternative measures of foreign bank presence are used, which differ in their computation of asset shares of foreign banks. Third, a set of bank-specific regressors is included in order to control for bank characteristics other than foreign ownership. Fourth, control variables that are relevant for domestic and foreign banks are included as reported in Table 7 below.

Table 7 Independent variables

Independent variables	
FO_{it} (+)[101]	foreign ownership dummy variable for bank i at time t which takes the value of one if at least fifty percent of the bank's shares are owned by a foreign block-holder[102] (hybrid bank)
Alternative measures of foreign bank presence (FS)	
$FMSH_t$ (-)	assets of foreign banks (where foreign banks refer to hybrid banks) in percent of total commercial bank assets at time t

[99] See Section 3.3 for an explanation of value-based measures. Sample calculations for EVA and CVA are given in Appendices B and C.

[100] Following inter alia Pastor, Pérez and Quesada (2000: 321), only the asset share of foreign banks in the system (not their number share as suggested by Claessens, Demirgüç-Kunt and Huizinga (1998: 6-7)) is used.

[101] The expected sign is negative when using OEA or PEA as dependent variable.

[102] A controlling stake is commonly assumed if a shareholder's participation exceeds 50 percent. (Bank for International Settlements, 2003: 12) As reported in Khanthavit, Polsiri and Wiwattanakantang (2003: 5), the SET, however, defines a controlling shareholder as a shareholder who directly or indirectly owns more than 25 percent of a company's votes. See footnote 31.

$FMSA_t$ (-)	assets of foreign banks (where foreign banks refer to hybrid banks and foreign branches) in percent of total commercial bank assets at time t
$FMSB_t$ (-)	assets of foreign banks (where foreign banks refer to foreign branches) in percent of total commercial bank assets at time t
$FOBA_t$ (-)	the sum across all banks of the assets of each bank multiplied by the percentage of equity held by foreigners in percent of total commercial bank assets (Mathieson and Roldos, 2001: 27)
Other control variables[103]	
OEA_{it} (-)	cost margin for bank i at time t; used in regressions with NIM and NII as dependent variables, since overhead expenses are assumed to be passed on to consumers as reported in Claessens, Demirgüç-Kunt and Huizinga (1998: 19)
SO_{it} (-)[104]	state ownership dummy variable for bank i at time t, which takes the value of one if at least fifty percent of its shares are owned by the government; used to account for differences in business motives and goals (see for example Barajas, Salazar and Steiner, 2000: 374)[105]
LA_{it} (+/-)[106]	liquid assets[107] in percent of total assets for bank i at time t; used as an indicator of excess liquidity (see for example Haber and Musacchio, 2005: 10)
NPL_{it} (-)[108]	non-performing loans in percent of total loans for bank i at time t; aimed at capturing bank health (see for example Dages, Goldberg and Kinney, 2000: 6; Barajas, Salazar and Steiner 2000: 373)[109]

[103] Several studies create a crisis dummy variable based on Caprio and Klingebiel (2003), who define a banking crisis as a period during which much or all of bank capital in a country is exhausted. The authors acknowledge that "the dates attached to the crises reviewed here are those generally accepted by finance experts familiar with the countries, but their accuracy is difficult to determine. [...] Similarly, it is not always clear when a crisis is over." According to their study, Thailand experienced a banking crisis from 1983 to 1987 and from 1997 to present (i.e. 2002, when the study was finalised). (Caprio and Klingebiel, 2003: 3) Since the latter covers most of the period considered in this study, a specific crisis dummy variable is not employed.

[104] The expected sign is positive when using OEA or PEA as dependent variable.

[105] See Sapienza (2002: 4-5) for an overview of the debate on the role of state-ownership in banking.

[106] The expected sign is negative when using NIM, NII, OEA or PEA as dependent variable and ambiguous otherwise.

[107] Liquid assets comprise cash, interbank and money market items and securities purchased under resale agreements (reverse repos). It is noteworthy that in some cases increases in interbank and money market items stem from compensation (in the form of promissory notes guaranteed by the FIDF) received for the transfer of non-performing assets under profit/loss sharing and/or yield maintenance schemes. Depending on the terms and conditions, these promissory notes were either included in interbank and money market items, held to maturity securities or loans.

[107] See footnote 104.

[108] See footnote 104.

[109] Due to substantial adjustments in equity levels over the period and quarters with negative equity, the equity-to-assets ratio is not included as a control variable despite regulatory minimum capital requirements.

DA_{it} (+)	customer deposits in percent of total assets for bank i at time t; used to capture funding patterns (see for example Dages, Goldberg and Kinney, 2000: 6; Denizer, 2000: 12-13)
INT_t (+/-)	nominal interest rate at time t, which is proxied by averaged 14-days repurchase rates since the 14-days repurchase rate has been the key policy rate set by the BoT; used to account for changes in monetary policy (see for example Denizer, 2000: 13; Vittas, 1991: 9)
$CMSFI_t$ (-)[110]	growth rate of the sum of outstanding loans of SFI[111] and new issuance of securities at time t; aimed at accounting for the increasing importance of SFI in financing government projects as well as the increasing importance of capital markets
$GDPCAPG_t$ (+)	growth rate in real per capita GDP at time t; to account for the macroeconomic setting (see for example Demirgüç-Kunt and Huizinga, 1998: 30)

The +/- signs in parentheses state a priori expectations. +, -, +/- denote an expected positive, negative and ambiguous association with the dependent variable

The first set of regressions is used to examine (i) whether foreign ownership matters in the determination of the dependent variables, controlling for other factors and (ii) how foreign bank presence affects commercial banks incorporated in Thailand, in terms of value creation, controlling for other factors. Regarding the latter, a decrease in value creation in commercial banks incorporated in Thailand could be interpreted to mean that the competitive pressures exerted through foreign bank presence force incremental returns in the Thai commercial banking sector to the COE, thus indicating an increase in efficiency in financial intermediation. Regarding the first question, while competition or greater market contestability may drive incremental returns to the COE, new strategies, knowledge and technologies introduced by foreign investors as well as presumed funding advantages (i.e. ownership advantages using the terminology of the eclectic theory on foreign direct investment[112]) may earn incremental returns in excess of the COE, indicating a possibility for efficiency-enhancing restructuring through sales of domestic banks to foreign banks.

[110] See footnote 104.
[111] These SFI are the GSB, GHB, BAAC, Ex-Im Bank and the SME Bank.
[112] See Caves (1982) for an introduction. Note that the global advantage hypothesis (as opposed to the home-field advantage hypothesis) (see Berger et al., 2000: 2-3) is based on these ownership advantages.

The results obtained using value-based performance measures are then compared with those obtained using traditional performance measures. Regarding the latter, increases in foreign bank presence are expected to reduce NIM (i.e. the gap between what the ultimate saver receives and what the ultimate investor has to pay for funds)[113] as well as NII[114] and ROA (i.e. excessive profits associated with imperfectly competitive markets are expected to eventually disappear), reflecting increases in contestability. Increases in foreign bank presence are also expected to lead to a reduction in OEA and PEA, which in turn would indicate more efficient management and organisational structures. While increases in contestability may lower NIM, NII, OEA, PEA and ROA in commercial banks incorporated in Thailand, the operational and technological edge associated with foreign investors as well as presumed funding advantages may earn higher NIM, NII and ROA. It follows that the foreign ownership dummy variable is expected to be negatively related to OEA and PEA as hybrid banks are expected to employ more sophisticated managerial and operational structures outweighing any informational disadvantages they may have (e.g. information on customers, business conditions, policy changes as reported by Claessens, Demirgüç-Kunt and Huizinga, 1998: 10).

The second set of regressions seeks to answer the same question as in (ii) on the previous page, but focuses on domestic banks.

Summarising, the following main hypotheses are tested:

1st set of regressions:	H_0: $\beta_1 = 0$, $\beta_2 = 0$ and H_A: $\beta_1 > 0$ ($\beta_1 < 0$ in the case of OEA or PEA being the dependent variable), $\beta_2 < 0$
2nd set of regressions:	H_0: $\beta_1 = 0$, and H_A: $\beta_1 < 0$

where H_0 denotes the null hypotheses and H_A the alternative hypotheses.

[113] As suggested by the industrial organization literature, intermediation spreads are higher when banks have higher market power.

[114] Claessens, Demirgüç-Kunt and Huizinga, (2000: 131) suggest that a reduction in non-interest income would indicate that competition of foreign banks particularly affects non-lending activities of domestic banks.

As noted by Claessens, Demirgüç-Kunt and Huizinga (2000: 117), liberalisation of market access through locally incorporated banks generally proceeds on the premise of foreign bank entry being beneficial for the domestic financial system and the relationship should thus also hold once value creation for shareholders and thus implicitly stakeholders is considered.

3.4.3. Descriptive statistics

Before running the regressions, descriptive statistics of domestic and hybrid banks are briefly examined. When a locally incorporated bank was acquired in quarter T, it is considered a domestic bank for all quarters up to and including T-1 and a hybrid bank for quarter T as well as all subsequent quarters in which it was majority-owned by a foreign block holder. Before averaging across the time period 1997Q2 to 2005Q4, values are averaged across cross-sections in each quarter.

Table 8 shows these average values of traditional as well as value-based measures for domestic and hybrid banks and differences between them are visible. On average, hybrid banks earned higher NIM than their domestic-owned counterparts and performed better in terms of NII and ROA. Hybrid banks on average also performed better in terms of EP and CVA as expected and similar in terms of EVA. However, hybrid banks on average incurred higher OEA and PEA than domestic banks. The averaged values of the liquid assets ratio are similar across domestic and hybrid banks. Domestic banks on average had higher non-performing loans than hybrid banks. Consistent with the literature, hybrid banks rely to an -albeit only slightly- lesser extent on deposits as a funding source.

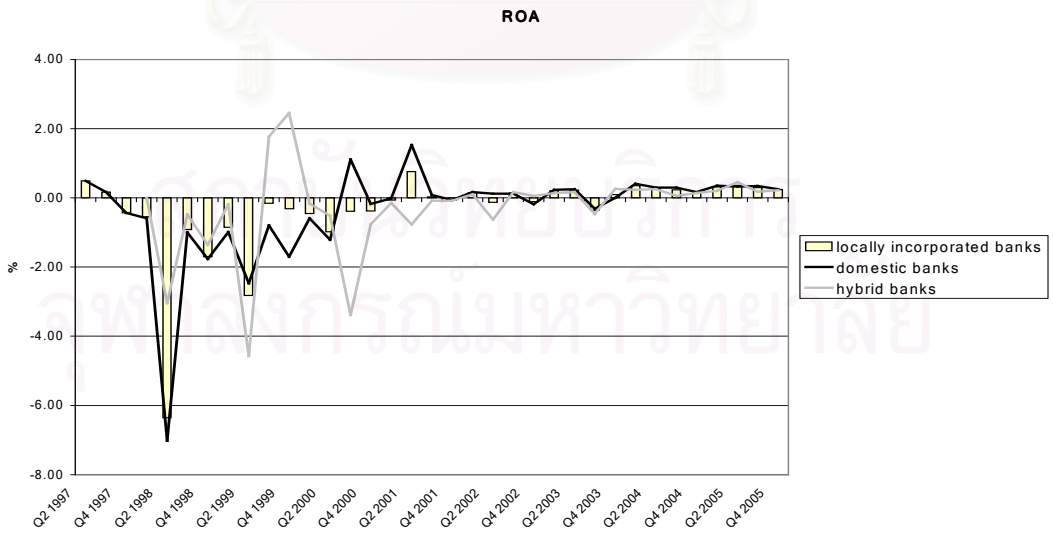
Table 8 Average values of selected variables

	domestic banks	hybrid banks
NIM	0.38	0.61
NII	0.26	0.29
OEA	0.59	0.83
PEA	0.17	0.28
ROA	-0.36	-0.31
EP	-0.49	-0.44
EVA	-0.63	-0.62
CVA	-0.06	-0.02
LA	13.70	13.76
NPL	22.87	18.10
DA	80.22	77.25

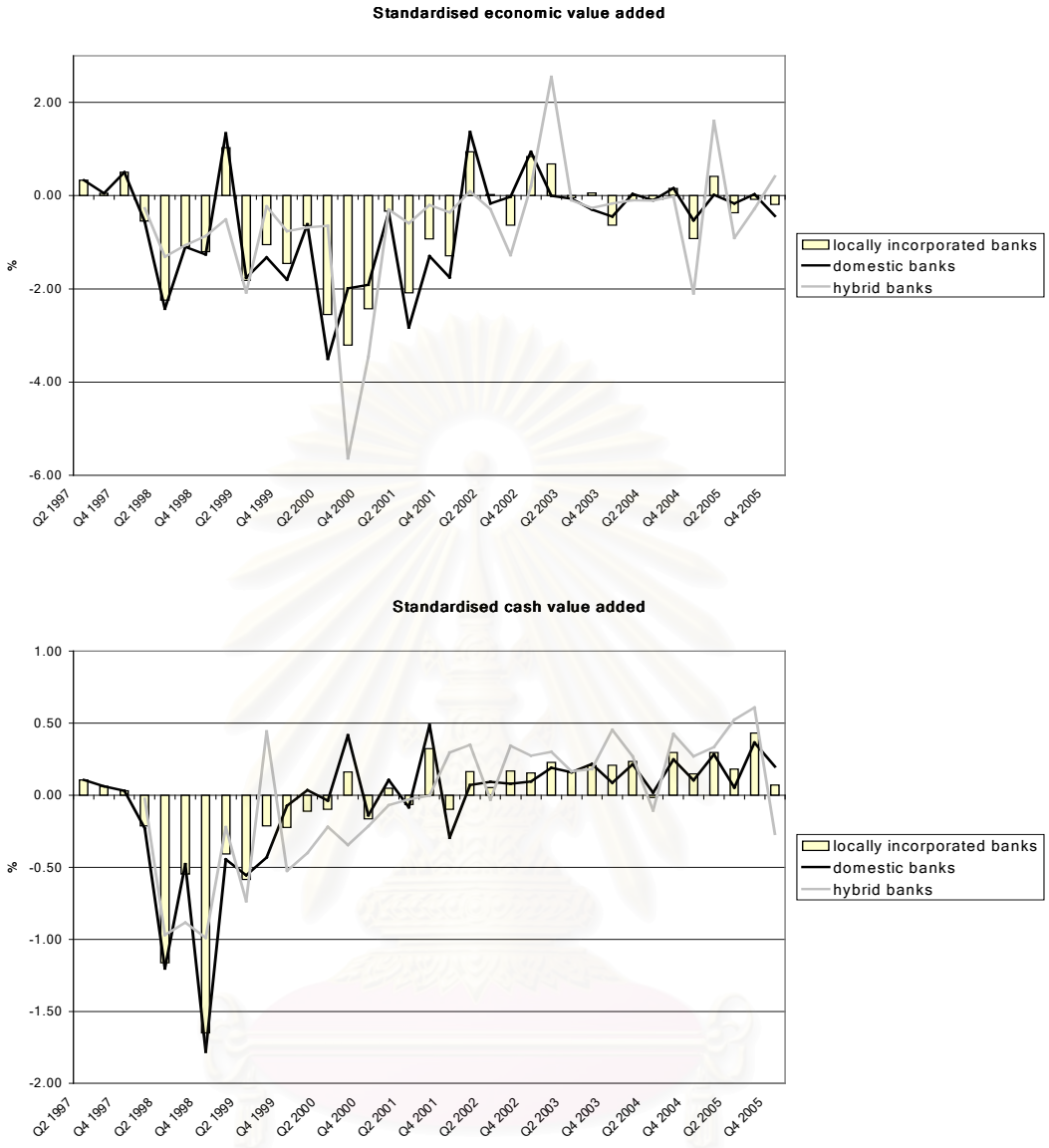
source: own calculations based on data obtained from the SET

Focusing on the measures ROA, economic value added and cash value added, Figure 17 clearly shows the effects of the crisis as well as differences between these proxies as discussed in Section 3.3, especially the treatment of chargeoffs and recoveries, which are not reflected on the income statement, but computed under the economic value added approach on the basis of loan loss reserves and provisionings.[115]

Figure 17 Return on assets, economic value added and cash value added



[115] See Appendix B for details.



source: own calculations based on data obtained from the SET and the BoT

Further summary statistics are presented in Appendix D.

3.4.4. Data

The foreign bank effect will be analysed in the context of the Thai commercial banking sector, the focus being on the mode of entry in form of acquisitions of locally incorporated banks by foreign banks over the period

1997 to 2005. Although foreign branches are generally wholesale-oriented, some foreign branches (most notably Citibank) have expanded their activities into the retail segment. However, foreign branches may be considered on the basis of aggregate data only, since bank-level data are not available on a quarterly basis.

The data used consist of quarterly (i) bank-level data from financial statements for 12 commercial banks incorporated in Thailand[116], (ii) stock market data and (iii) selected aggregate data as explained below. Bank-level and stock market data are obtained from the SET's Listed Company Info, the SET's information systems, R-SIMS and I-SIMS, as well as the SET Market Analysis and Reporting Tool (SETSMART), which contain quarterly reports of individual banks.[117] Whereas other studies use unconsolidated financial statements to ensure consistency, in this study both consolidated and unconsolidated financial statements are used, with unconsolidated financial statements only being referred to if consolidated financial statements are not available. Using unconsolidated financial statements would be misleading, especially due to the establishment of subsidiary AMC by several banks. Data on SFI, aggregate assets of foreign branches as well as the 14-days repurchase rate are obtained from the BoT. MLR data are compiled from the International Financial Statistics published by the IMF.

3.5. Estimation results

The estimation results are reproduced in Tables 9 to 12. Tables 9 and 10 in Section 3.5.1. show the results of the first set of regressions, which uses data for 12 locally incorporated banks for the period 1997:2 to 2004:1, given

[116] Banks included are BBL, BAY, SCB, KBANK, TMB, BT (created through the amalgamation of UBB, KTT and 12 finance companies in 1998), KTB, SCIB (merged with BMB in 2002), BOA (ABN Amro Bank until 2004; now UOB), DTDB (DBS until 2004; merged with TMB and IFCT), SCNB (now SCBT) and UOBR (now UOBT; the former LTB was renamed RB in 1998).
[117] Data on non-performing loans are not available for all banks for the third quarter 1997 and the first quarter 1998. For these missing data, data averaged across prior and following periods are used to create a balanced panel. Also due to a lack of disclosure, data on non-

that the first exit of a hybrid bank occurred in 2004:2. The results of the second set of regressions are given in Tables 11 to 12 in Section 3.5.2. The second set of regressions uses data for commercial banks that have remained domestically-owned throughout the period 1997:2 to 2005:4, which allows a focus on the impact of foreign bank presence on domestic banks. In all tables, blank cells indicate that the specific explanatory variable was not included in that regression.

3.5.1. First set of regressions

The first set of regressions given in (3.1) uses 336 observations. First, the asset share of hybrid banks (FMSH) is used as foreign penetration measure to acknowledge that only hybrid and domestic banks compete on an almost level playing field and to disentangle the effects of hybrid banks from those of branches. The estimation results are reported in Table 9 and presented in column per dependent variable.

The asset share of hybrid banks appears to have had a significant impact on the NIM, PEA and ROA and enters with the expected negative sign, supporting earlier findings (see for example Claessens, Demirgüç-Kunt and Huizinga (1998: 14) and Denizer (2000: 15-16), who inter alia report that increases in the share of foreign banks (number share in the former case and number and asset share in the latter case) lead to lower cost margins and return on assets of domestic banks as well as Barajas, Salazar and Steiner (2000: 377), who in addition find that foreign entry also lowers net interest margins).

In addition, the asset share of hybrid banks is found to be significantly and negatively associated with EP and CVA as expected, with the economic magnitude of the latter, however, being considerably less, but not EVA. The coefficient, however, enters with the expected negative sign, but the R squared of 0.06 indicates a very poor fit of the regression. This results seems

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performing loans for the second and fourth quarter 1997 were partially obtained from Fitch Ratings (1998: 22). The remaining data were obtained from the BoT.

to be somewhat driven by the fact that under the economic value added concept loan loss provisionings are -in contrast to the cash value added concept- replaced by a net charge-off of the current period estimate of losses on loans, aimed at recognising risks on a real time instead of an anticipated basis as discussed in Section 3.3.

Table 9 Estimation results: Bank efficiency and foreign bank presence (1st set of regressions)

Foreign bank penetration measure is FMSH, the asset share of hybrid banks.

	NIM CC		NII FE		OEA FE		PEA FE	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
FMSH	-0.1536 ***	0.0436	-0.0002	0.0100	-0.0026	0.0248	-0.0168 ***	0.0044
FO	0.0772	0.0606	0.1489 ***	0.0513	0.0955	0.2226	0.1037 ***	0.0271
SO	-0.1247	0.1617	0.2851 ***	0.0814	-0.1392	0.2243	-0.0092	0.0169
OEA	0.1442	0.2120	0.0086	0.0238				
LA	-0.0050 **	0.0022	-0.0027 ***	0.0008	0.0008	0.0023	-0.0007 ***	0.0002
NPL	-0.0117 ***	0.0024	-0.0024 ***	0.0006	0.0033 *	0.0019	0.0003	0.0003
DA	0.0103	0.0070	-0.0003	0.0020	0.0192 **	0.0094	0.0022 **	0.0010
INT	-0.0395 **	0.0160	-0.0027	0.0028	0.0163	0.0118	-0.0026 **	0.0012
CMSFI	0.0050	0.0051	-0.0004	0.0007	0.0042	0.0027	0.0008 **	0.0003
GDPCAPG	0.0093	0.0109	-0.0034	0.0024	0.0031	0.0067	0.0010	0.0010
R-squared	0.1588		0.3019		0.1904		0.6196	
F-statistic	6.1346 ***		6.4648 ***		3.7044 ***		25.6589 ***	
	ROA FE		**EP** FE		**EVA** CC		**CVA** FE	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
FMSH	-0.4657 *	0.2553	-0.4527 *	0.2571	-0.2062	0.1490	-0.0792 **	0.0379
FO	1.9589	1.3322	1.9569	1.3426	-0.2843	0.3707	0.3960 **	0.2011
SO	2.6831 *	1.5098	2.6969 *	1.5204	-0.7846	0.5033	-0.2666	0.3329
LA	0.0552 **	0.0281	0.0548 *	0.0283	-0.0184	0.0151	-0.0004	0.0044
NPL	-0.0380 ***	0.0097	-0.0376 ***	0.0098	0.0008	0.0113	-0.0097 ***	0.0028
DA	-0.0943 *	0.0523	-0.0910 *	0.0525	-0.0568	0.0567	-0.0045	0.0091
INT	-0.1670 *	0.0853	-0.1690 **	0.0858	-0.0720	0.0540	-0.0393 ***	0.0124
CMSFI	-0.0352 ***	0.0096	-0.0361 ***	0.0097	-0.0151 *	0.0080	-0.0121 ***	0.0034
GDPCAPG	0.0545	0.0344	0.0537	0.0346	0.0284	0.0376	-0.0132	0.0097
R-squared	0.2767		0.2729		0.0584		0.3172	
F-statistic	6.0243 ***		5.9129 ***		2.2454 **		7.3173 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. CC denotes the constant coefficient model and FE the fixed effects model. Regarding the latter, the regressions also include bank dummy variables which are not reported. Constant terms are also not reported. All regressions are estimated with heteroskedasticity-consistent standard errors.

The foreign penetration measure is also insignificant with respect to NII and OEA, but enters with the expected negative sign. The insignificant negative association with respect to OEA is particularly interesting since Herberholz (2002: 69) reports a significant and positive relationship between

the asset share of hybrid banks and OEA, which is interpreted as an indicator of the pressures exerted on locally incorporated banks to restructure their operations, *initially* leading to higher overhead expenses.

The foreign ownership dummy variable is significant and positively related to NII and PEA as well as CVA, but insignificant with respect to the remaining measures. The positive relationship between foreign ownership and PEA is contrary to expectations and may reflect early retirement schemes as well as pay-outs to encourage staff departures (Herberholz, 2002: 194), which are short-term in nature, but also indicate that hybrid banks have sought to recruit highly qualified personnel.[118]

Turning to the remaining control variables, the state ownership dummy variable only appears to have had a significant impact on NII, ROA and EP. Its positive sign may suggest that the advantages associated with government interference (for example non-performing loan resolution, capital adequacy support and funding advantages due to stronger support ratings) outweigh disadvantages (such as for example government-imposed lending policies[119] and directions to absorb insolvent banks).

The variable liquid assets in percent of total assets is significant and positively related to ROA and EP, which may reflect that liquid assets are usually of high quality, thus carrying lower interest rates and requiring lower loan loss provisions, with the latter effect outweighing the former. The coefficient of the liquid assets ratio enters with a significant and negative sign with respect to the NIM as well as NII, the latter reflecting that liquid assets typically do not earn fee-income. The results also show a significant negative relationship between liquid assets (scaled by total assets) and PEA reflecting that holding a liquid assets portfolio is one of the most basic banking transactions and consequently not labour-intensive.

The non-performing loans ratio is highly significant and negatively associated with NIM, NII, ROA, EP and CVA as expected since interest on

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[118] Note that Chantapong (2005: 20) also finds that unit labour costs of hybrid banks were higher than those of their domestic-owned counterparts after the financial crisis. Moreover, the author finds that unit labour costs of foreign branches were lower than those of domestic banks.

[119] KTB and SCIB for example are required to grant loans to the Oil Fund at pre-set rates of interest. (Nidhiprabha, 2005: 51)

non-performing loans is not forthcoming. Moreover, the non-performing loans ratio is significant and positively related to OEA, which indicates that non-performing loans need to be renegotiated, restructured and require more complex administrative procedures.

The significant and positive relationship between the variable deposits in percent of total assets and OEA and PEA as well as its significant and negative relationship with ROA (which is consistent with the findings in for example Denizer, 2000: 14) and EP indicates that the high maintenance and salary expenses associated with a large branch network, which has been pivotal for attracting deposits, may outweigh the funding advantages deposits enjoy over other sources of funds (Demirgüç-Kunt and Huizinga, 1998: 14).

The nominal interest rate is significant with respect to NIM, PEA, ROA, EP and CVA and enters with a negative sign, perhaps reflecting that banks generally have more interest rate sensitive liabilities than assets.

The results further show a significant and positive association between the growth rate of the sum of lending by SFI and the issuance of securities and PEA, which may reflect increasing competition in recruiting qualified personnel as reported by Jittamai, Nakornthab and Posayananda (2005: 42). This argument gains further support by the coefficient's negative association with ROA, EP, EVA and CVA.

The growth rate of per capita GDP turns out to be statistically insignificant, which is contrary to the findings in the literature (see for example Denizer, 2000: 15).

In light of existing operating restrictions, foreign branches have only focused on certain lines of business, which require specific skills such as foreign exchange, underwriting of debentures, custodian services and cash management (Kasikorn Research Centre, 2004) as mentioned earlier. Nevertheless, as reported by Kasikorn Research Centre (2003a) foreign branches have the highest ratio of corporate customers and "*some have shown considerable potential in penetrating and seizing larger market shares from Thai commercial banks. They have, for instance, networks overseas and stronger sources of funding from their parent banks, greater capabilities in technology and more experienced personnel transferred from the parent*

organizations, higher adaptability due to leaner organizations, etc. At present, their most outstanding products include credit card loans, personal loans, E-products, financial consulting services, etc.", with Citibank being one of the most noteworthy examples of a foreign branch that has successfully expanded its activities beyond the wholesale segment. To acknowledge and appraise any potential benefits derived from the presence of foreign branches a composite foreign penetration measure, FMSA, which denotes the asset share of hybrid banks and foreign branches is introduced.[120] The estimation results are reported in Table 10.

Table 10 Estimation results: Bank efficiency and foreign bank presence (1st set of regressions)

Foreign bank penetration measure is FMSA, the asset share of hybrid banks and foreign branches.

	△ NIM CC		△ NII CC		△ OEA CC		△ PEA CC	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
△FMSA	-0.0260	0.0274	0.0085	0.0137	0.0090	0.0314	-0.0112 ***	0.0037
FO	0.1029 *	0.0619	0.0199	0.0289	-0.1245	0.0796	0.0028	0.0105
SO	0.1107	0.3015	0.0292	0.0337	-0.1142	0.0778	-0.0009	0.0104
△OEA	0.4605	0.3615	-0.0005	0.0210				
△LA	0.0004	0.0076	-0.0023	0.0027	-0.0030	0.0052	-0.0005	0.0007
△NPL	0.0037	0.0095	-0.0005	0.0012	-0.0192 ***	0.0060	0.0001	0.0008
△DA	-0.0251 **	0.0117	0.0026	0.0024	0.0246 ***	0.0095	0.0052 **	0.0021
△INT	0.0083	0.0389	0.0019	0.0055	-0.0141	0.0143	0.0006	0.0016
△CMSFI	0.0075	0.0046	-0.0009	0.0006	0.0034 *	0.0019	0.0010 ***	0.0002
△GDPCAPG	0.0157	0.0116	-0.0035	0.0021	0.0015	0.0054	0.0013 *	0.0007
R-squared	0.0752		0.0264		0.1610		0.2696	
F-statistic	2.5463 ***		0.8482		6.6956 ***		12.8796 ***	
	△ ROA CC		△ EP CC		△ EVA CC		△ CVA CC	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
△FMSA	-0.5744 *	0.3114	-0.5868 *	0.3135	0.1189	0.2126	-0.0264	0.0459
FO	0.4230	0.4739	0.4251	0.4812	0.2920	0.4617	0.1300	0.0901
SO	0.8605	0.5827	0.8521	0.5949	0.2801	0.6388	0.0744	0.1714
△LA	0.1836 **	0.0777	0.1873 **	0.0797	0.0227	0.0394	0.0440 **	0.0182
△NPL	0.0257	0.0518	0.0279	0.0532	0.0744 ***	0.0282	0.0239 **	0.0104
△DA	-0.2045 *	0.1191	-0.2061 *	0.1198	-0.2484 ***	0.0882	-0.0174	0.0130
△INT	0.0011	0.1100	-0.0002	0.1111	-0.0758	0.0755	0.0286	0.0287
△CMSFI	-0.0315 ***	0.0077	-0.0324 ***	0.0078	-0.0119 *	0.0071	-0.0077 ***	0.0026
△GDPCAPG	0.0615 *	0.0315	0.0609 *	0.0319	0.0214	0.0336	-0.0079	0.0082
R-squared	0.2342		0.2346		0.1369		0.1833	
F-statistic	10.6686 ***		10.6954 ***		5.5361 ***		7.8295 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. CC denotes the constant coefficient model. Constant terms are not reported. All regressions are estimated with heteroskedasticity-consistent standard errors. Dependent and independent variables in first differences (denoted Δ) (except the dummy variables) to correct for unit root problem.

[120] Note that only few studies distinguish between different types of foreign banks.

Using the change in the composite foreign penetration measure FMSA shows a negative relationship between the change in the foreign penetration measure and ΔPEA, ΔROA and ΔEP as well as a positive association between the foreign ownership dummy variable and ΔNIM. Interestingly, the coefficient of the change in the composite foreign penetration measure is not significantly associated with ΔNII, given that foreign branches have focused on specific lines of business that primarily generate fee-based income. According to Kasikorn Research Centre (2005), foreign branches were found to focus mainly on corporate customers for their payment services as evidenced in their increased income from cash management and custodian services, while locally incorporated banks placed greater emphasis on retail customer services over the period 1997 to 2004 due to their ability to expand branches and ATM networks. In addition, Kasikorn Research Centre (2006b) found that over the period 1998-2005, non-interest income of locally incorporated banks on average grew 2.11 percent, whereas non-interest income of foreign branches, which accounted for more than half of total income, on average grew 8.27 percent over the same period. The authors further reported that the ratio of securities custodial fees, letter of credit fees and other fees and service charges in addition to gains on foreign exchange and other income to assets of locally incorporated banks lagged that of foreign branches due to foreign branches' expertise in corporate customer services and international trade products.

Running auxiliary regressions, with the asset share of foreign branches (FMSB) as foreign penetration measure, does not reveal any significant association between FSMB and NII either, although the coefficient enters with the expected negative sign.[121] The foreign penetration measure turns out to be significant with respect to NIM, PEA and EVA. Whereas in the case of the latter its coefficient enters with the expected negative sign (the R squared of 0.07, however, is very low and indicates a poor fit of the regression), it enters with a positive sign with respect to the former. The results are reported in Appendix E.

As reported in Section 2.3., foreign participation in four private banks, most of which have placed internal restrictions on the size of shareholdings, has reached up to 49 percent over the period under consideration. These foreign shareholders mostly participate as non-strategic investors, with control of operations being vested in the Thai controlling or strategic partner. Nevertheless, to address concerns that foreign entry may have an impact on the potential role of equity markets for disciplining banks, an alternative measure of foreign bank penetration, namely the ratio of the sum across all banks of the assets of each bank multiplied by the percentage of equity held by foreigners to total commercial bank assets (Mathieson and Roldos, 2001: 27), denoted FOBA, is employed. Although increases in non-strategic foreign equity holdings may lead to increasing enforcement of shareholders' rights and orientation towards shareholder value, the results as reported in Appendix F reveal that the change in the foreign penetration measure is insignificant with respect to all measures, but the change in EVA where it enters with an unexpected positive sign.[122]

3.5.2. Second set of regressions

The second set of regressions given in (3.2) uses 280 observations. Analogous to Section 3.5.1., the asset share of hybrid banks (FMSH) is first used as foreign penetration measure. The estimation results are reported in Table 11 and presented in column per dependent variable.

The asset share of hybrid banks turns out to be significant in explaining NIM, PEA, ROA, EP and CVA in domestic banks. Moreover, the coefficient of the foreign penetration measure enters in all cases with the expected negative

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[121] The author would like to thank an anonymous referee for suggesting to use FMSB as alternative foreign penetration measure.

[122] Due to a lack of data availability, year-end data or data for the third quarter 1997 are used for missing quarters in 1997. The equations are estimated in first differences since the foreign penetration measure was found to exhibit a unit root. These test results are available upon request.

sign. These findings confirm the results obtained in Section 3.5.1., with the economic magnitude of the effects, however, being less.

Turning to control variables, the state ownership dummy variable is significant and positively associated with NII, but negatively associated with EVA and CVA, which does not support the findings above and casts doubt over the advantages associated with state ownership stated earlier.

Table 11 Estimation results: Bank efficiency and foreign bank presence (2nd set of regressions)

Foreign bank penetration measure is FMSH, the asset share of hybrid banks.

	NIM CC		NII FE		OEA FE		PEA FE	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
FMSH	-0.1445 ***	0.0342	0.0029	0.0106	-0.0077	0.0208	-0.0154 ***	0.0046
SO	-0.1293	0.1466	0.2242 ***	0.0651	0.0661	0.1542	-0.0125	0.0149
OEA	0.3221	0.4479	0.0244	0.0340				
LA	0.0064	0.0051	-0.0034 **	0.0014	0.0039	0.0028	0.0001	0.0003
NPL	-0.0100 ***	0.0035	-0.0030 ***	0.0007	0.0052 ***	0.0017	0.0007 *	0.0004
DA	0.0107	0.0089	-0.0036	0.0025	0.0262 **	0.0120	0.0028 *	0.0015
INT	-0.0324 *	0.0178	-0.0039	0.0030	0.0257 ***	0.0099	-0.0006	0.0007
CMSFI	0.0091	0.0075	-0.0006	0.0010	0.0023	0.0026	0.0007 *	0.0004
GDPCAPG	0.0132	0.0103	-0.0029	0.0024	0.0063	0.0041	0.0023 ***	0.0008
R-squared	0.1431		0.3218		0.2713		0.3925	
F-statistic	5.0113 ***		7.7982 ***		6.5532 ***		11.3712 ***	
	ROA FE		**EP** FE		**EVA** CC		**CVA** CC	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
FMSH	-0.2287 ***	0.0818	-0.2097 **	0.0824	-0.1923	0.1335	-0.0786 **	0.0347
SO	0.9300	0.7288	0.8976	0.7352	-0.7658 *	0.4174	-0.1813 *	0.1000
LA	0.0566 *	0.0334	0.0577 *	0.0337	-0.0656 *	0.0384	0.0170 **	0.0080
NPL	-0.0382 ***	0.0092	-0.0375 ***	0.0092	0.0116	0.0140	-0.0101 ***	0.0034
DA	-0.0672	0.0653	-0.0647	0.0655	-0.0526	0.0731	0.0025	0.0076
INT	-0.1196 *	0.0645	-0.1200 *	0.0647	-0.0543	0.0538	-0.0302 ***	0.0110
CMSFI	-0.0246 ***	0.0088	-0.0251 ***	0.0089	-0.0106	0.0108	-0.0065 **	0.0030
GDPCAPG	-0.0082	0.0222	-0.0090	0.0224	0.0069	0.0392	-0.0085	0.0085
R-squared	0.3018		0.2939		0.1097		0.2362	
F-statistic	7.6076 ***		7.3256 ***		4.1745 ***		10.4741 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. CC denotes the constant coefficient model and FE the fixed effects model. Regarding the latter, the regressions also include bank dummy variables which are not reported. Constant terms are also not reported. All regressions are estimated with heteroskedasticity-consistent standard errors.

The positive relationship between liquid assets in percent of total assets and ROA as well as EP again indicates that liquid assets tend to be of high quality with low associated loan loss provisioning requirements. In

addition, its coefficient enters with a significant and positive sign with respect to CVA, but a negative sign with respect to EVA. Analogous to the first set of regressions, its coefficient enters with a negative sign with respect to NII. The result with respect to NIM, however, does not confirm the significant negative association obtained from running the first set of regressions, but shows an insignificant positive relationship.

The non-performing loans ratio is significant and negatively associated with the NIM, NII, ROA, EP and CVA as expected since interest on non-performing loans is not forthcoming. Its coefficient is significant and positively related to OEA and PEA, which again indicates that non-performing loans tend to be labour-intensive.

The variable deposits over total assets is significantly related to OEA and PEA, where it enters with the expected positive sign, reflecting the high maintenance and salary expenses associated with a large branch network.

The nominal interest rate is negatively associated with NIM, ROA, EP and CVA, but positively associated with OEA.

The results further show a significant and positive association between the growth rate of the sum of lending by SFI and the issuance of securities and PEA, which may again indicate increased competition in recruiting qualified personnel. Underlining this is the coefficient's negative association with ROA, EP and CVA.

The growth rate of per capita GDP turns out to be significant and -as to be expected- positively related to PEA.

Analogous to Section 3.5.1, FMSA, which denotes the asset share of hybrid banks and foreign branches, is alternatively used as foreign penetration measure to acknowledge any potential benefits derived from the presence of foreign branches. The estimation results are reported in Table 12.[123]

Using the broad foreign penetration measure (FMSA) shows that foreign bank presence appears to have had a significant impact on NIM, PEA, ROA, EP and EVA, but not CVA, which is contrary to the findings above.

[123] Due to the longer time dimension, it was possible to refrain from using first differences.

Table 12 Estimation results: Bank efficiency and foreign bank presence (2nd set of regressions)

Foreign bank penetration measure is FMSA, the asset share of hybrid banks and foreign branches

	NIM CC		NII FE		OEA FE		PEA FE	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
FMSA	-0.0835 ***	0.0176	0.0014	0.0082	-0.0037	0.0173	-0.0089 **	0.0040
SO	-0.1635	0.1514	0.2269 ***	0.0627	0.0589	0.1423	-0.0263 **	0.0128
OEA	0.3031	0.4489	0.0242	0.0342				
LA	0.0067	0.0050	-0.0034 **	0.0015	0.0039	0.0029	0.0001	0.0003
NPL	-0.0094 **	0.0037	-0.0030 ***	0.0008	0.0053 ***	0.0018	0.0008 *	0.0005
DA	0.0052	0.0093	-0.0034	0.0023	0.0258 **	0.0116	0.0019	0.0014
INT	0.0058	0.0111	-0.0046 **	0.0023	0.0275 **	0.0111	0.0032 **	0.0013
CMSFI	0.0089	0.0076	-0.0006	0.0010	0.0023	0.0026	0.0007 *	0.0004
GDPCAPG	0.0159	0.0107	-0.0029	0.0023	0.0065	0.0042	0.0025 ***	0.0009
R-squared	0.1219		0.3216		0.2710		0.3424	
F-statistic	4.1630 ***		7.7919 ***		6.5419 ***		9.1658 ***	
	ROA FE		**EP** FE		**EVA** CC		**CVA** FE	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
FMSA	-0.2176 **	0.0921	-0.2075 **	0.0929	-0.3324 **	0.1565	-0.0173	0.0317
SO	0.7673	0.7024	0.7525	0.7080	-0.8143 *	0.4269	-0.2176	0.1940
LA	0.0609 *	0.0341	0.0620 *	0.0344	-0.0564	0.0389	0.0100	0.0101
NPL	-0.0344 ***	0.0087	-0.0338 ***	0.0088	0.0188	0.0161	-0.0103 ***	0.0035
DA	-0.0783	0.0673	-0.0747	0.0674	-0.0576	0.0705	-0.0115	0.0088
INT	-0.0545	0.0505	-0.0595	0.0507	0.0157	0.0494	-0.0193 **	0.0082
CMSFI	-0.0253 ***	0.0089	-0.0258 ***	0.0090	-0.0121	0.0110	-0.0066 **	0.0029
GDPCAPG	-0.0063	0.0225	-0.0074	0.0226	0.0056	0.0394	-0.0080	0.0083
R-squared	0.3008		0.2940		0.1206		0.2756	
F-statistic	7.5732 ***		7.3305 ***		4.6456 ***		6.6972 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. CC denotes the constant coefficient model and FE the fixed effects model. Regarding the latter, the regressions also include bank dummy variables which are not reported. Constant terms are also not reported. All regressions are estimated with heteroskedasticity-consistent standard errors.

In light of the first FSMP which ended the almost thirty-year old moratorium on new full commercial banking licenses, the results may simply be driven by a general market liberalisation effect. To verify robustness of the coefficient of the foreign penetration measures, the three firm concentration ratio (CR3) is included as control variable in the second set of regressions, which uses data over the period 1997:2 to 2005:4.[124] As the variable CR3 is introduced, the change in the coefficient of the foreign penetration measure

[124] All variables are used in first differences to correct for the high correlation between FMSH and CR3.

FMSH additionally becomes significant with respect to ΔOEA, where it enters with a positive sign. Interestingly, the change in the foreign penetration measure is not significantly associated with ΔCVA, although its coefficient enters with the expected negative sign. With the inclusion of the change in the three firm concentration ratio, the fit of the regressions, however, only improves when using ΔNIM and ΔEVA as dependent variable. Furthermore, it is noteworthy that increases in the change in the three firm concentration ratio appear to have led to increases in ΔNIM as well as ΔNII and decreases in ΔEVA as well as ΔCVA in locally incorporated banks, with the magnitude of the effect exceeding that of the asset share of hybrid banks. Using the alternative composite foreign penetration measure and introducing the three firm concentration ratio confirms the results above. In addition, the three firm concentration ratio is found to be significantly associated with PEA, ROA, EP and CVA, where it enters with a negative sign. The results are reported in Appendices H and I.

Although intuitively appealing, the asset share of new domestic entrants analogous to Barajas, Salazar and Steiner (2000: 374), could not be employed as a further robustness check since the data exhibit a unit root that could not be corrected.[125]

Running auxiliary regressions and using the asset share of foreign branches (FMSB), does not only reveal a significant *positive* relationship between the foreign penetration measure and NIM as well as PEA, but also with respect to CVA. The results are reported in Appendix G.

Finally, using the ratio of the sum across all banks of the assets of each bank multiplied by the percentage of equity held by foreigners to total commercial bank assets (FOBA) as foreign penetration measure to address concerns that foreign entry may have an impact on the potential role of equity markets for disciplining banks, the results, which are reported in Appendix J, do not reveal a significant association between the change in the foreign

[125]It is noteworthy that TBANK was granted full commercial bank status in 2004 only and that none of the new full commercial and retail banks started operations prior to 2005.

penetration measure and the change in the dependent variable, with the exception of ΔEVA. The coefficient, however, enters again with a positive sign.

3.6. Interpretation of estimation results and summary

This chapter aims at contributing to existing literature by using a value-based measurement approach in the context of foreign bank entry. The results obtained from running both sets of regressions suggest that ceteris paribus increases in the asset share of hybrid banks have tended to decrease net interest margins, personnel expenses (scaled by total assets) and return on assets, supporting the findings in earlier studies. These negative relationships reflect greater contestability in the sector, with potentially positive welfare implications for depositors and borrowers. Decreases in net interest margins reflect a narrowing of the gap between what the ultimate saver receives and what the ultimate investor has to pay for funds, decreases in personnel expenses (scaled by total assets) efforts taken to address overstaffing problems prevalent in the sector[126] and to introduce sophisticated operational structures and processes, whereas decreases in return on assets indicate a reduction of excessive profits associated with oligopolistic markets. Following Claessens, Demirgüç-Kunt and Huizinga (2000: 130) this is interpreted to indicate an increase in efficiency in financial intermediation.[127]

Furthermore, the results from running both sets of regressions suggest that ceteris paribus increases in the asset share of hybrid banks have also tended to decrease standardised economic profit, which accounts for bank-specific risk preferences by levying a charge for the use of equity, as well as standardised cash value added, which in addition is not bound by standard accounting principles. This negative relationship between the asset share of hybrid banks and economic profit as well as cash value added (all scaled by

[126] The number of employees of banks incorporated in Thailand decreased from 124,088 as of December 1996 to 93,774 as of December 2005 as mentioned earlier.
[127] Note that the relationship between increased competition, lower profits and enhanced efficiency is not unambiguous (see for example Hellmann, Murdock and Stiglitz, 2000: 148).

total assets) appears to confirm expectations and reflects competitive pressures exerted by hybrid banks, which have tended to reduce excessive profits associated with oligopolistic markets and forced incremental returns in locally incorporated banks toward the cost of equity. The negative relationship between the asset share of hybrid banks and standardised economic value added, however, turns out to be statistically insignificant, which is primarily driven by the fact that under the economic value added concept loan loss provisionings are -in contrast to the cash value added concept- replaced by a net charge-off of the current period estimate of losses on loans to recognise risks on a real time instead of an anticipated basis. As such, the statistically insignificant association between the asset share of hybrid banks and standardised economic value added casts some doubt over the presumed benefits of opening up as does the fact that once the three firm concentration ratio is introduced, the negative relationship between the asset share of hybrid banks and standardised cash value added turns out to be insignificant. With respect to the former, it is also important to keep in mind that the calculation of EVA suffers from a lack of data as reported in footnote 79.

Once the potential effects of the presence of foreign branches are considered by introducing the composite foreign penetration measure, the results obtained from running both sets of regressions only confirm the findings above with respect to personnel expenses (scaled by total assets), return on assets and standardized economic profit. In addition, the results from the second set of regressions reveal a significant and negative association between the composite foreign penetration measure and the net interest margin as well as standardised economic value added.

The results further show that foreign ownership has some impact on the dependent variables. All else being equal, the results from the first set of regressions show that hybrid banks appear to earn higher non-interest income and cash value added (all scaled by total assets) than their domestic counterparts, but incurred higher personnel expenses (scaled by total assets). The latter perhaps reflects early retirement schemes as well as pay-outs to encourage staff departures and in addition may suggest that hybrid banks have sought to attract highly qualified personnel. The net employment effect

thus may be that fewer people are employed at higher wages as suggested in Goldberg (2004: 7). Given the positive relationship between the foreign ownership dummy variable and standardised cash value added, which charges for the use of equity and is not bound by general accounting principles, the results are interpreted to mean that foreign ownership has on average had some beneficial effect on value creation, and the argument that banking sector efficiency may be enhanced through sales of domestic banks to foreign investors gains some support. Once the broad foreign penetration measure FMSA is introduced, hybrid banks, however, are ceteris paribus only found to be more efficient than their domestic-owned counterparts in terms of net interest margins.

To conclude, the findings suggest that foreign bank presence is not only beneficial in terms of traditional performance measures, but also in terms of economic profit. The results with respect to standardised economic value added and cash value added, however, indicate that foreign bank presence may not be unequivocally beneficial. Furthermore, the economic magnitude of the effect, is considerably less in the case of cash value added (scaled by total assets) than return on assets and standardised economic profit, underlining the importance of using a proxy for efficiency that is based on value-based measurement approaches.

The results further suggest that foreign entry through the acquisition of local banks has a stronger and more beneficial impact on the efficiency of locally incorporated banks than through the establishment of branches. Moreover, the results also suggest that a majority stake is of importance.

Furthermore, given that hybrid banks are still small relative to domestic banks, the results suggest that foreign bank presence has contributed to disciplining incumbent banks by increasing contestability. As noted by Kasikorn Research Centre (2004), the "*FSMP may be just the beginning for changes in the Thai financial system before financial liberalization, a major change that may begin in the near future after FTA negotiations*". Foreign banks have so far not captured a major share of commercial banking sector

assets due to (i) lack of opportunity of foreign branches to develop the branch network needed (with the exception of co-operative endeavours with locally incorporated banks as witnessed recently) and (ii) the exit inducement inherent in the Guidelines for Equity Holdings in Financial Institutions.

The results discussed above imply that efforts should be directed towards creating and gradually introducing a carefully designed level playing field for domestic and foreign banks.

However, the results discussed above must be interpreted cautiously since isolation of the effects of foreign bank presence from the manifold changes in the Thai financial sector as discussed in Chapter 2 is not a straightforward task. In addition, the data requires shifts from levels to first differences which results in some instability across the regressions. Nevertheless, whereas the difference form model specification rather captures changes in foreign bank presence (i.e. new foreign bank entry), the level form model specification captures foreign bank presence.

CHAPTER IV

THE FOREIGN BANK EFFECT ON THE DIFFUSION OF FINANCIAL INNOVATIONS IN THAILAND

4.1. Introduction

To make further progress in understanding the effects of foreign bank entry, this chapter advances in areas that have so far been treated as not quantifiable, such as the quality and availability of banking services as well as organisational restructuring. Foreign banks may contribute to improving the quality and availability of financial services in the domestic market by (i) directly introducing new techniques, technology and products, and (ii) indirectly by exerting pressures on domestic institutions to improve (Levine, 1996: 239). By exerting competitive pressures, foreign bank entry may in addition also trigger restructuring processes and changes in corporate culture within existing domestic institutions.

A framework for systematically analysing and quantifying these effects of foreign bank entry does not exist in literature as yet and so far they have only been implicitly considered in studies that examine efficiency comparisons of domestic and foreign banks and/or analyse the impact of foreign entry on financial sector efficiency. Direct measures are often not readily available and -if they are- suffer from a lack of accessible data. Drawing on the literature on financial innovation, the approach chosen is based on analyses of inter-firm patterns of adoption of financial innovations, the focus being on transactional internet banking and organisational restructuring. The idea of linking ownership to the diffusion process of innovations is not new, the novelty, however, is to introduce foreign bank entry as a determinant thereof and to analyse the diffusion of an organisational innovation. Although technological innovations, especially in the form of electronic banking, are generally a global phenomenon and cannot be solely attributed to foreign bank entry, foreign banks are often found to have initially taken the lead. (Denizer, 2000: 18) Analogously, organisational restructuring and changes in corporate culture

may be crisis-induced in the case of Thailand. The competitive pressures exerted by foreign banks (and other non-bank financial institutions) along with the rapid changes in IT, however, have forced financial institutions to innovate as well as to adopt innovations.

The objective of this chapter is to analyse the foreign bank effect on the diffusion of financial innovations in Thailand, the focus being on innovations in the form of transactional internet banking and organisational restructuring.

4.2. Literature review

This chapter seeks to establish a link between two lines of research, namely the literature on the effects of foreign bank entry on the quality and availability of financial services provision and the literature on the inter-firm diffusion of financial innovations, both of which are briefly reviewed in the following sections.

4.2.1. Foreign banks and the quality of financial services provision

The direct impact of foreign bank entry on the quality and availability of financial services and organisational restructuring has been widely neglected by existing literature and only some descriptive assessments are available.

Levine (1996) examines the role that foreign banks can play in promoting growth-enhancing financial development and inter alia argues that easing restrictions on foreign bank entry should improve the pricing and also the quality and availability of financial services by (i) directly introducing new and better know-how, training procedures, technology and products to the domestic market and (ii) indirectly by exerting pressures on domestic institutions to improve operations. Regarding the latter, the author links foreign

bank entry to five financial services identified as being crucial determinants of economic growth -namely facilitating transactions and risk management, mobilising savings, allocating funds and monitoring firm managers- and concludes that foreign bank entry may improve transaction services (e.g. payment systems) and risk management mechanisms (e.g. enhanced credit assessment procedures and information gathering techniques), intensify competition of mobilising domestic resources, promote better resource allocation as well as improve monitoring of management performance. In a country-case study on the impact of foreign bank entry on the efficiency of the Turkish banking sector over the period 1980 to 1997, Denizer (2000) also mentions that foreign banks had a strong impact on credit evaluation and marketing as well as improved recruitment and staff quality. While acknowledging that technological and electronic banking developments are a global phenomenon, which is not directly attributable to foreign bank entry alone, the author argues that foreign banks initially took the lead in this area. Focusing on Thailand, Montreevat and Ramkishen (2001) find that the entry of foreign banks has been a catalyst for change in domestic banks, inter alia altering corporate governance structures, improving operational efficiency and introducing new technologies and skills. Another analysis of the impact of foreign bank entry on the Thai domestic banking sector (Herberholz, 2002) inter alia assesses the effects of foreign bank entry on the quality and availability of commercial banking services, the role of foreign entry in triggering restructuring processes and changes in corporate culture, as well as the development of ancillary institutions that promote the flow of information. The impact of foreign bank entry is shown to be most felt in areas such as product innovation, technology, marketing, operational processes and human resources.

4.2.2. Inter-firm diffusion of financial innovations

The following studies are empirical analyses of the adoption of innovations by financial institutions. Due to the absence of accessible data,

few quantitative studies of financial innovations and the inter-firm diffusion thereof exist and most studies use data on automated teller machines (ATM). Some studies link the adoption of new technologies to ownership (although not foreign ownership) and market structure, however, none of the existing studies reviewed considers foreign bank entry a determinant of the diffusion process of financial innovations.

The studies reviewed either combine panel data and time-to-event data or use cross-sectional data and assume duration to be conditional on some explanatory variables (covariates) observed at a point in time.

In one of the early studies, Hannan and McDowell (1984) use annual observations of ATM adoptions in the US and bank and market characteristics for the period 1971 to 1979 to examine the relationship between the decision to adopt ATM and its determinants. Their results from estimating a duration model show that larger banks, banks operating in more concentrated local banking markets and banks that are part of a bank holding company exhibit a higher conditional probability of adoption. The wage rate prevailing in the market as well as the ratio of demand deposits to total deposits also tended to have a positive impact on the conditional probability of adoption, with the regulatory environment found to be of importance as well. Similarly, Sharma (1993) examines the impact of firm characteristics, market structure and state regulations on the adoption of ATM in the US over the period 1971 to 1979 using a grouped duration data framework and annual intervals. Firm size, ownership by a bank holding company, location, deposit growth and the proportion of prior adopters in the market are found to increase the likelihood of adoption by non-adopters, whereas market concentration is found to increase the hazard rate only if a small proportion of firms in the market are using ATM. State-regulations prohibiting or restricting branching, but allowing stand-alone ATM are found to increase the conditional probability of adoption. The effect of the covariates is shown to change across different phases of ATM diffusion (generally defined as: phase I: adoption by innovators, phase II: adoption by the majority and phase III: adoption by laggards).

Harianto and Pennings (1992) investigate the propensity of banks in the US to adopt video banking, using a logit model and data for the period

1977 to 1987. The main finding is that prior experience in information technology and inter-firm linkages are conducive to innovation. Akhavein et al. (2001) examine the diffusion of innovation in the form of credit scoring models for small business lending in the US over the period 1993 to 1997, using annual data. The results obtained from estimating a duration model of technology adoption with time-varying covariates indicate that larger banks and banking institutions located in the New York Federal Reserve district were early adopters. In addition, estimation of the tobit model shows that organisations with fewer separately chartered banks but more branches also belong to the circle of early adopters.

Turning to internet banking, Furst, Lang and Nolle (2002) use a logit model to identify factors affecting the adoption of internet banking in the US in the late 1990s. The key bank characteristics explaining which banks have chosen to offer internet banking are size, membership in a bank holding company, location of the bank in an urban area, age, expenses for premises and fixed assets and non-interest income (the latter scaled by net operating revenue). Corrocher (2002) analyses the determinants of the adoption of internet banking within the retail segment of the Italian banking sector, using semi-annual data over the period 1995 to 1999. The author estimates duration models of technology adoption with time-invariate covariates and finds that large banks -up to a certain size- tend to adopt the technology more quickly than small banks, with medium-sized banks being the earliest adopters. Banks incurring high personnel costs also tend to be among the early adopters. Profitability as an indicator for liquidity constraints turns out to be insignificant. The results further indicate a positive relationship between the number of ATM and the conditional probability of internet banking adoption. Banks with a large branch network and a high share of interest income tend to be slow in adoption, the former being interpreted to mean that banks perceive internet banking as a substitute of traditional banking rather than as a complement and the latter being interpreted to mean that a high share of interest income signals a strong focus on basic transactions and consequently a low degree of innovativeness. The conditional probability of adoption of internet banking turns out to be lower for commercial banks and co-operative

banks than for savings banks, which underlines the importance of ownership. Regarding the demand side, the number of internet users in the region of operation of the bank is also positively related to the conditional probability of internet banking adoption.

4.3. Technology transfers between domestic and foreign banks: theoretical background and the case of Thailand

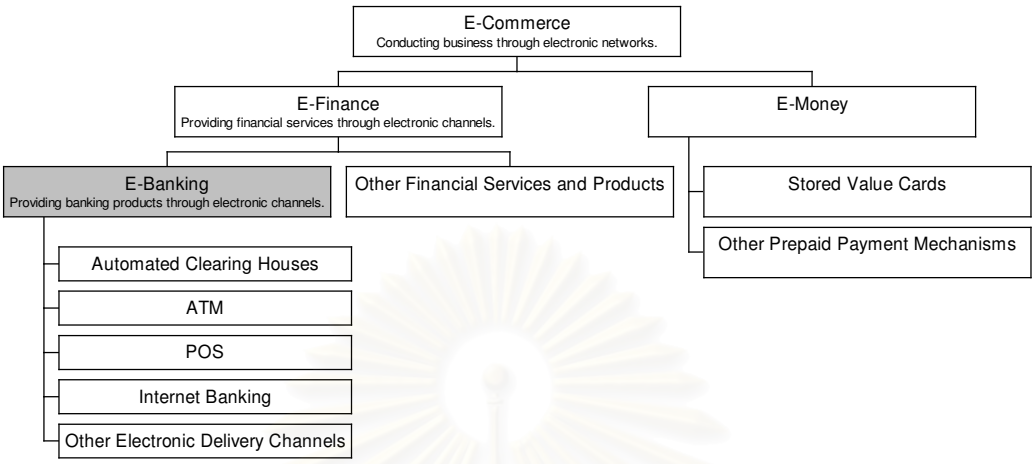
Financial innovations can be classified as (i) new ways of designing financial contracts (e.g. introduction of negotiable certificates of deposits), (ii) new production processes (e.g. introduction of credit scoring models), (iii) organisational innovations, and (iv) technological innovations (e.g. the introduction of e-banking). (Sinkey, 2002: 31-38; Frame and White, 2002: 3) Whereas the former dominated past financial innovations, the latter characterise the current round of financial innovations.

Internet banking

Technological innovations in the financial services industry have primarily taken place in the form of e-banking[128], the major components being (i) automated clearing houses, (ii) ATM, (iii) point-of-sale (POS) terminals and (iv) internet banking as shown in Figure 18. (Sinkey, 2002: 71-85)

[128] Electronic banking, or e-banking, is defined as "*the use of electronic methods to deliver traditional banking services using any kind of payment media*" (Fullenkamp and Nsouli, 2004: 7).

Figure 18 Electronic banking



Source: Nsouli and Schaechter (2002)

Internet banking has evolved from dial-up home banking services using banks‘ proprietary software and -at a later stage- off-the-shelf home financial software packages (often referred to as PC banking). (Frei, 1997: 14-16) Dial-up home banking services using banks‘ proprietary software enable customers to access services such as maintaining electronic chequebook registers and personal budgets, transferring funds and paying invoices, obtaining quotations as well as buying and selling securities. Off-the-shelf home financial software packages such as Microsoft Money offer similar services, however, an intermediary acts between the bank and its customers. Although financial software, either proprietary or off-the-shelf, offers a broad range of services, customers and banks operate systems that do not or not fully interact, with the processing often running in batch-mode. Internet banking, on the other hand, represents a move to an open environment, which allows the bank to operate in real-time, reducing overlaps. (Centeno, 2003: 5-6) Internet services offered by banks have evolved from simple access and informational services to a full range of transactional banking services. As an alternative remote delivery channel, internet banking improves operational procedures, reflected in increased speed and convenience and decreased

cost[129], as well as strengthens the interaction between a bank and its customers and it can thus not only be seen as a technological innovation, but also as a process innovation. Furthermore, as banks also use the internet to offer new services, which are only available online, such as customised financial information menus and real-time brokerage, internet banking can also be viewed as a product innovation. (Corrocher, 2002: 3)

All commercial banks incorporated in Thailand have invested in internet banking services as an alternative remote delivery channel and combined electronic delivery channels with “bricks and mortar” delivery channels such as full branches, kiosk and mini-branches to become “bricks and clicks” banks, in line with the prevailing view of internet banking being a complement rather than a substitute.[130]

Figure 19 shows that despite massive branch re-positioning programmes the number of branches of commercial banks in Thailand increased from 3,853 at the end of 1999 to 4,231 at the end of 2005, while the number of ATM, which were introduced in Thailand in 1982, nearly tripled over the same period to reach 15,784 at the end of 2005. Book update machines also increased significantly in 2004. (BoT, 2006: 46) The marked year-on-year increase in branches and ATM can be partially attributed to the establishment of new banks. However, locally incorporated banks have continued to invest heavily in ATM and ATM seem to be considered a substitute for counter services since bank branches have increasingly become smaller in size and their focus has shifted to advisory services. (BoT, 2006: 47) Fees from ATM and e-banking systems as well as from the introduction of new e-products and services are expected to support future growth in non-interest income. (Kasikorn Research Centre, 2006b) Besides, mini-branches (so-called sub-branches) in strategic locations such as shopping centres, office buildings and tourist attractions have been increasing.

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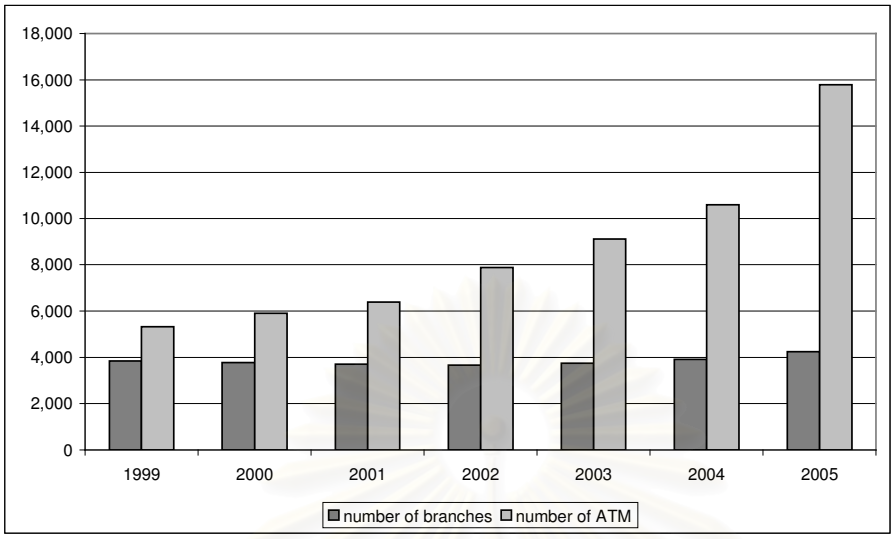
[129] Whereas a teller transaction costs THB 50 per branch visit, the same transaction via an ATM costs THB 17 and via internet banking THB 5. (Bangkok Post, 7 February 2002)

[130] Other remote delivery channels are phone banking, mobile banking, electronic payment cards (credit, debit and stored-value cards), ATM, PC banking, personal digital assistant banking and interactive digital TV banking (iDTV). (Centeno, 2003)

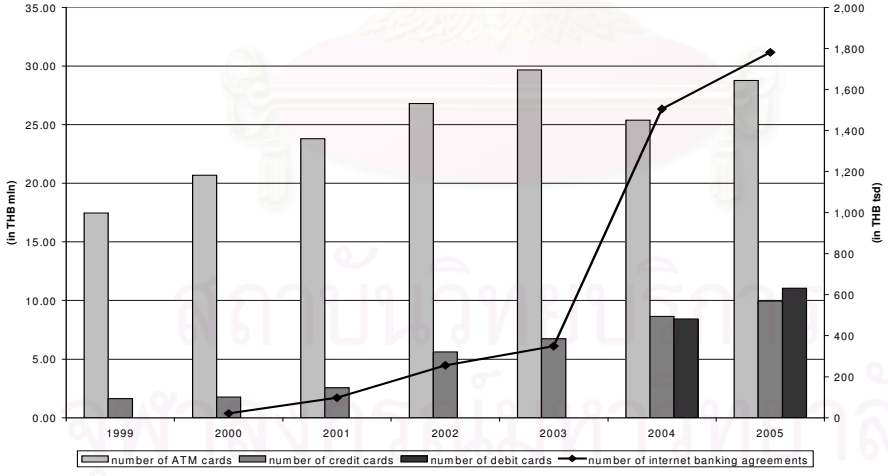
Figure 19 Institutional infrastructure



source: own representation based on data obtained from the BoT

Over the same period, the number of payment cards increased from 19,095,005 to 38,711,083 as shown in Figure 20.

Figure 20 Number of payment cards and internet banking agreements[131]



source: own representation based on data obtained from the BoT

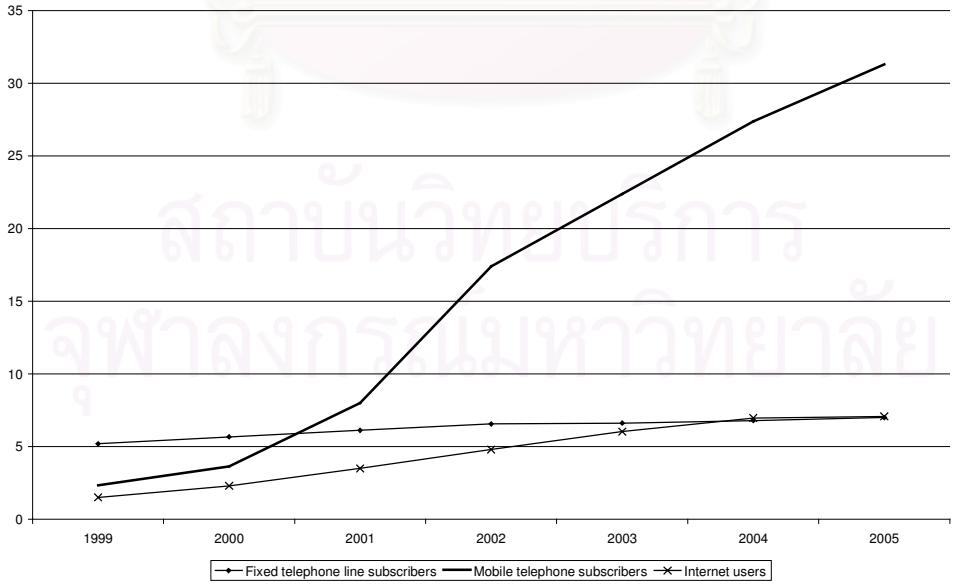
[131] Note that the number of payment cards at the end of 2005 is preliminary and that the data include non-bank institutions since 2002. Data on the number of internet banking agreements have only been compiled since 2000 and data on debit cards since 2004. (BOT, 2006: 88, 91). Note that the fall in ATM cards in 2004 resulted from statistical adjustments.

As reported by the BoT (2006: 50) there were 9.96 mln credit cards issued in the market at the end of 2005, of which 4.97 mln cards were issued by commercial banks and 4.98 million by non-bank institutions such as KTC, Krungsriayudhya Card, Cetelem (Thailand), Aeon Thana Sinsap, Diner's Club (Thailand) and American Express (Thai).

The number of internet agreements increased from 21,102 at the end of 2000 to 348,965 at the end of 2003 and then jumped to 1,504,385 at year-end 2004 and 1,780,431 at the end of 2005 as shown in Figure 20, which reflects the increased quality of services, while the value of transactions increased from THB 0.3 bln at the end of 2000 to THB 638 bln at the end of 2003 before reaching THB 1,139.2 bln at year-end 2004 and increasing more than double in 2005 (THB 2,722.4 bln).

Regarding the technological infrastructure, the proportion of landline phone subscription equalled 11 percent of the total population or 7 mln subscribers as shown in Figure 21. The penetration rate of mobile phones on the other hand reached 50 percent or 31.3 mln people in 2005 compared to a mere 5.9 percent or 3.6 mln in 2000.

Figure 21 Technological infrastructure (mln)



source: own representation based on data obtained from the BoT

The number of internet users increased from 1.5 mln in 1999 to 7.1 mln in 2005, thus reaching a penetration rate of 11.4 percent. Despite this increase, the level of internet subscription in Thailand is still relatively low compared to 60 percent in Korea and 34 percent in Malaysia (BoT, 2006: 54) indicating the potential for the development of internet banking services.

The services offered by commercial banks incorporated in Thailand have evolved from purely informational to advanced transactional functions. Whereas informational web sites may be operated without permission of the BoT, transactional web sites require prior approval. (BoT, 2000) Most commercial banks incorporated in Thailand now offer comprehensive internet banking packages allowing customers to conduct a range of banking transactions such as balance inquiries, fund transfers, payments for products and services and loan applications from wherever they have access to the internet. Foreign-owned BOA was the first bank in Thailand to launch internet banking services in the form of B2B and B2C e-commerce, namely Asia Cyber Banking, in 1999, giving it a head-start in terms of information technology and targeting affluent customers, and its sophisticated financial portal web site www.BankAsia4u.com was eventually launched in September 2000. (BOA, 12 September 2000: Press Release; BOA, Annual Report 2002: 18) Although SCB had ventured into e-commerce services in 1998, its own internet banking service at www.scbpark.com was only launched in November 1999 and SCB Easy Banking one year later.[132] (SCB, Annual Report 1998: 29, 1999: 35, 2000: 34) In 1999 BOA was the first bank to launch supermarket branches, offering all regular banking services but requiring fewer staff due to state-of-the-art technology and operation stations in BTS skytrain stations.[133] (Bangkok Post, 22 April 1999; BOA, Annual Report 1999: 15) It was also the first bank to apply for permission to extend banking hours, to launch weekend banking, to introduce a queuing system and to initiate a branch redesign and refurbishing displaying a new customer-oriented approach to service. (BOA, Annual Report 1999:16; TDRI, 2003: 89) In line with the afore-mentioned,

[132] Note that SCB, however, was the first bank in Thailand to introduce informational internet banking in 1996. (Ongkasuwan, 2002: 5)

BOA has aggressively launched new customised products and services such as “Preferred Banking Services” targeting affluent customers and “ASIA Senior” targeting customers above 45 years of age and it was also the first bank to offer bancassurance products (BOA, Annual Report 1999: 16, 17, 2002: 6), which is particularly noteworthy, given that pre-crisis, few domestic banks targeted individual customers for anything but traditional deposit collection to fund corporate lending. As such BOA in effect initiated a shift from “one-size-fits-all” concepts to customised solutions, segmenting customers and leveraging existing relationships through cross-selling via new and expanded delivery channels. DTDB was among the first to upgrade key systems in 1999 and replaced 120 ATM nation wide to offer ATM with an internet interface.[134] (Bangkok Post, 2 July 1999, 4 May 1999) In 2001, BOA again became the first bank to offer wireless application protocol services. (Bangkok Post, 10 April 2001)

As one of the progressive domestic bank, KBank launched a controversial, but successful marketing campaign in 2000 to promote the bank’s e-services. A total of eight e-girls were selected to represent the bank’s e-phone, e-ATM, e-mobile phone, e-commerce, e-info, e-savings account, e-cash card and e-banking centre. (Bangkok Post, 4 April 2000) In addition, KBank started to market its services through direct sales teams in 2001. (Bangkok Post, 10 November 2001) In 2003, KBank and the international coffee chain Starbucks opened the first coffee banking service in Asia to rejuvenate conducting banking transactions and to promote e-banking services. (KBank, 2003: Press Release)

As stated by SCB (Annual Report 1999: 22) “*a more liberalised financial system with new foreign banks incorporated in Thailand, caused every bank in Thailand to prepare for a tougher competitive environment. [...] In the future Thai banks with foreign ownership would be very competent as*

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[133] The cost of setting up branches in supermarkets was estimated to be sixty percent lower than those of conventional branches. (Bangkok Post, 22 April 1999)

[134] In 2000, DTDB became the first bank to sell a significant portion of its non-performing loans at market price to third parties as mentioned in section 2.3., thus radically clearing its balance sheet allowing a refocus on core activities.

they possess financial ready-made solution and better experience. Foreign banks incorporated in Thailand had been maintaining their readiness and high business potential. They, however, lacked the domestic network. In the future such foreign banks would be more prominent competitors due to the takeover of Thai banks with branch network. As a result every bank would have to adopt various marketing strategies by not only launching new but also well-differentiated services to attract customer interest. In the long run the competition in Thai banking system could well be tougher and subsequently all banks would have to undergo extensive improvement of work procedures to enhance efficiency. In addition more investment in new technology would also be needed."

Organisational restructuring

Organisational innovations cover a broad spectrum, which runs from the recreation of a financial institution through e.g. the redesign of branch delivery systems or the redesign of organisational structures to the creation of a virtual bank. Since 1997, all commercial banks incorporated in Thailand have initiated numerous organisational restructuring processes, however, for the purpose of this study, the focus is on major restructuring programmes, consisting of a reorganisation in new business groups and improvements in reporting structures. In 1998, the BOA again took the lead and became the first bank post-crisis to initiate a redesign of its organisational structures aimed at upgrading them to global standards following its acquisition by ABN Amro. Similarly, the DTDB dedicated the first year after its acquisition by the DBS to restructuring and upgrading its internal infrastructure, rather than expanding operations. (Bangkok Post, 5 October 1999) It inter alia introduced a top management open door policy and thus flattened established hierarchies. (DTDB, Annual Report 2000: 7) Similarly, UOBR and SCNB launched re-branding and restructuring programmes in 1999 and early 2000 respectively. In an attempt to pave the way for privatisation, KTB announced the

introduction of seven independent profit centres at the end of 1998[135], with each being supervised by a president, as part of a comprehensive restructuring plan. (Bangkok Post, 28 December 1998) KBank reorganised its operations into eight groups[136] in 1999, each headed by an executive vice-president, to improve management structures. (Bangkok Post, 26 March 1999) Also in 1999, SCB reorganised its operations into six business groups on the basis of customer focus and function.[137] (SCB, Annual Report 1999: 35, 36) Similarly, BT, TMB, BAY, BBL and SCIB restructured their operations over the period.

Despite these enormous changes in operational processes and organisational structures it is interesting that only three locally incorporated banks, namely SCB, KBank and BBL, are ranked among the top 25 banks in Asia in terms of corporate governance by Credit Lyonnais Securities Asia Limited. (Nidhiprabha, 2005: 30) Hybrid banks are reported to have performed particularly poorly on the issue of fairness towards minority shareholders, given that they are majority-owned by a foreign block-holder. (Nidhiprabha, 2005: 35) Apart from this, the relationship between size and the conduct of good banking practice might play a role as suggested by Nidhiprabha (2005: 30). Regarding the low ranking of locally incorporated banks in general, Nidhiprabha (2005: 33) points out that although the BoT issued new guidelines in 2002 regarding the composition of boards and the establishment of independent committees (such as audit, compensation, nominating, risk management and governance committees), many locally incorporated banks failed to establish these.

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[135] Namely (i) asset management unit, (ii) retail banking unit, (iii) business banking unit, (iv) corporate banking unit, (v) business development unit, (vi) corporate services, and (vii) unit to serve new ventures and subsidiaries. (Bangkok Post, 28 December 1998)

[136] Namely (i) wholesale business, (ii) retail business, (iii) credit management, (iv) systems, (v) finance and control, (vi) compliance and internal audit, (vii) corporate secreteriat, and (viii) human resources. The reorganisation was considered the bank's largest since 1993. (Bangkok Post, 26 March 1999)

[137] Namely (i) corporate banking, (ii) international banking and markets, (iii) retail banking and SME, (iv) IT and processing service, (v) risk management and corporate service, and (vi) asset management.

4.4. Methodology

In this section, the regression model is developed, the estimation technique chosen and hypotheses formulated that allow an assessment of the possible impact of foreign bank presence on the diffusion of financial innovations in Thailand.

4.4.1. Regression model and estimation technique

The foreign bank effect on the inter-firm diffusion of financial innovations in Thailand is analysed using a logit model to examine the determinants of the probability of adoption of the innovation.

Although a single data generation process can either produce count, binary or duration data, the choice of data may have important consequences for the estimation results.[138] Whereas duration models are in general more appropriate models for cross-sectional data or a combination of panel data and (cross-sectional) time-to-event data (which would be limited to 12 or 8 observations in this case), binary data allow a straightforward exploitation of both the cross-sectional and the time series dimension underlying the data.[139]

The pooled logit model is specified as follows (Wooldridge, 2002: 458): [140]

$$P_{it} = \text{Prob}\,(y_{it} = 1 \mid x_{it}) = F(z) = \frac{\exp(z)}{(1 + \exp(z))}$$

with z being defined as

$\beta_0 + \beta_1 FO_{it} + \beta_2 FS_t + \beta CV_{it}$ in the first set of regressions, (4.1)

$\beta_0 + \beta_1 FS_t + \beta CV_{it}$ in the second set of regression (4.2)

and x_{it} denoting the explanatory variables.

[138] Count data are not discussed here in light of the number of cross-sections.

[139] Note that a duration model was used alternatively in Herberholz (2006). The results basically confirm the results obtained from estimating the logit model, however, interpretation of the results is not straightforward and the logit model is thus preferred here.

[140] Variables are indexed by an i for the individual bank (i = 1,...,N) and a t for the time period (t = 1,...,T).

P_{it} denotes the probability of having $y_{it} = 1$ at time t given x_{it}. y_{it} is the binary dependent variable ($y_{it} = 1$ if bank i had adopted the innovation in quarter t and 0 if not). CV_{it} is a vector of explanatory variables to control for other factors and β a vector of unknown parameters, with the elements in β being indexed as β_3 (β_2 in the second set of regressions) to β_K.[141] All parameters are assumed constant in both the cross-section and time dimensions ($\beta_{kit} = \beta_k$ for all i and t, k = 0,...,K). Following Wooldridge (2002: 482), the log-likelihood function can be formulated as:

$$\log L = \sum_{i=1}^{N} \sum_{t=1}^{T} [y_{it} \log F(z) + (1- y_{it}) \log (1-F(z))]$$

The models are estimated by maximum-likelihood. Variable definitions are given in Section 4.4.2.

4.4.2. Variables and hypotheses

To examine the possibly different probability of adoption of hybrid and domestic banks as well as the impact of foreign bank presence on the probability of adoption of the innovation, two sets of regressions are run. In addition to running regressions for the whole sample (1st set of regressions), regressions for those banks that remained domestically-owned are run separately (2nd set of regressions). As mentioned above, the binary dependent variable y_{it} assumes the value of 1 if bank i had adopted the innovation in quarter t and 0 if not. Independent variables include a foreign ownership dummy variable to capture the effect of foreign ownership. The foreign ownership dummy variable, however, is only used in the first set of regressions. Second, the asset share of foreign banks is used as measure of foreign bank presence, with four alternative measures of foreign bank presence being employed, which differ in their computation of asset share of

[141] The formulation of the binary choice model assumes that the error term in the latent response function is independently, identically distributed and is independent of the explanatory variables.

foreign banks. Third, a set of bank-specific regressors is included in order to control for bank characteristics other than foreign ownership. Fourth, a control variable that is relevant for domestic and foreign banks is included. Variable definitions are given in Table 13.

Table 13 Variable definitions

Independent variables	
FO_{it} (+)	foreign ownership dummy variable for bank i at time t which takes the value of one if at least fifty percent of the bank's shares are owned by a foreign block-holder[142] (hybrid bank)
Alternative measures of foreign bank presence	
$FMSH_t$ (+)	assets of foreign banks (where foreign banks refer to hybrid banks) in percent of total commercial bank assets at time t
$FMSA_t$ (+)	assets of foreign banks (where foreign banks refer to hybrid banks and foreign branches) in percent of total commercial bank assets at time t
$FMSB_t$ (+)	assets of foreign banks (where foreign banks refer to foreign branches) in percent of total commercial bank assets at time t
$FOBA_t$ (+)	the sum across all banks of the assets of each bank multiplied by the percentage of equity held by foreigners in percent of total commercial bank assets
Other control variables[143]	
SOI_{it} (-)	state ownership dummy variable for bank i at time t which takes the value of one if at least fifty percent of the bank's shares are owned by the government; used to account for differences in business motives and goals
LA_{it} (+)	liquid assets in percent of total assets of bank i at time t; to account for liquidity constraints (see for example Akhavein et al., 2001: 7 on the issue of liquidity constraints; the authors, however, use return on equity as proxy, an approach that is not followed here to avoid potential endogeneity problems)
DA_{it} (+)	deposits in percent of total assets of bank i at time t; to account for their role in the production process, with increases in deposits expected to make adoption of innovations more likely to expand capacity (see for example Sharma, 2000: 7)
NPL_{it} (-)	non-performing loans in percent of total loans of bank i at time t; aimed at capturing bank health since healthy institutions may be better positioned to adopt innovations
PEX_{it} (+)	personnel expenses in percent of non-interest expenses of bank i at time t; to account for the labour-saving potential (see for example Corrocher, 2002: 15; contrary to the afore-mentioned

[142] See footnote 102.

[143] Contrary to the literature (see Frame and White, 2002: 6 among others), a size variable is not included since all hybrid banks are small banks. A proxy for innovative environment such as the number of ATM cannot be included either, due to a lack of quarterly data. For the same reason, it is also not possible to control for the technological infrastructure.

	study, non-interest expenses instead of total assets are used as scaling variable in an attempt to circumvent potential endogeneity problems)
BRA_{it} (+/-)	ratio of number of branches to total assets (in THB 10 bln) to capture branch intensity, with the expected sign being ambiguous (see for example Corrocher, 2002: 15)
$GDPCAPG_t$ (+/-)	growth rate of real per capita GDP at time t; used to control for macroeconomic conditions, with unstable macroeconomic conditions expected to be associated with faster adoption of innovations to reduce risk (see for example Frame and White, 2002: 7)

The +/- signs in parentheses state a priori expectations. +, -, +/- denote an expected positive, negative and ambiguous association with the dependent variable.

It has been argued that foreign banks may contribute to improving the quality and availability of financial services in the domestic market by (i) directly introducing new techniques, technology and products and (ii) indirectly by exerting pressures on domestic institutions to improve (Levine, 1996: 239). By exerting competitive pressures, foreign bank presence may in addition also trigger restructuring processes and changes in corporate culture within existing domestic institutions. In line with these claims, which to the best of my knowledge have not been backed empirically yet, it is expected that increases in foreign bank presence exert a positive effect on the probability of adoption.

The following main hypotheses are tested:

1st set of regressions:	H_0: $\beta_1 = 0$, $\beta_2 = 0$ and H_A: $\beta_1 > 0$, $\beta_2 > 0$
2nd set of regressions:	H_0: $\beta_1 = 0$, and H_A: $\beta_1 > 0$

where H_0 denotes the null hypotheses and H_A the alternative hypotheses.

4.4.3. Descriptive statistics

Although foreign-owned BOA was the first bank in Thailand to launch internet banking services in the form of B2B and B2C e-commerce in 1999, SCB was the first to offer a transactional web site that allows customers to at least conduct balance inquiries and make fund transfers. Hybrid banks adopted the innovation in the course of the year 2000, with SCNB having

taken the lead in the second quarter of the year 2000. Both, BT and SCIB lagged behind, having adopted the innovation in the fourth quarter of 2003 and 2004 respectively. BOA was the first bank to engage in a major organisational restructuring in the wake of the 1997 financial crisis, followed by KTB and KBank. Table 14 shows the number of adopters per quarter.

Table 14 Number of adopters

Number of adopters per quarter			
transactional internet banking		major organisational restructuring	
Q4 1999	1 SCB	Q4 1998	1 BOA
Q2 2000	2 KBANK, SCNB	Q1 1999	2 KBANK, KTB
Q3 2000	2 BOA, UOBR	Q2 1999	1 DTDB
Q4 2000	2 DTDB, TMB	Q3 1999	1 SCB
Q3 2001	1 BAY	Q4 1999	1 UOBR
Q4 2001	1 KTB	Q1 2000	3 TMB, SCNB, BT
Q1 2002	1 BBL	Q4 2000	1 BAY
Q4 2003	1 BT	Q3 2001	1 BBL
Q4 2004	1 SCIB	Q2 2002	1 SCIB
12		12	

The remaining descriptive statistics can be found in Appendix K.

4.4.4. Data

The foreign bank effect will be analysed in the context of the Thai commercial banking sector, the focus being on the mode of entry in form of acquisitions of established banks by foreign banks over the period 1997 to 2005. Foreign branches are again considered on the basis of aggregate data only since bank-level data are not available on a quarterly basis.

The data used consist of quarterly (i) bank-level data from financial statements for 12 commercial banks incorporated in Thailand[144] and (ii) selected aggregate data as explained below. Bank-level data are obtained from the SET's Listed Company Info, the SET's information systems, R-SIMS and I-SIMS, as well as SETSMART, which contain quarterly reports of

[144] See footnote 116.

individual banks.[145] Whereas other studies use unconsolidated financial statements to ensure consistency, both consolidated and unconsolidated financial statements are used here, with unconsolidated financial statements only being referred to if consolidated financial statements are not available. Data on adoption of the new technology (i.e. transactional internet banking (transactional web sites that allow customers to at least conduct balance inquiries and make fund transfers) and organisational restructuring) were compiled from banks' web sites, annual reports, press releases and telephone interviews. Since data on adoption was compiled from several (including non-official) sources, they should be understood as indicative. It is assumed that regulatory approval of transactional web sites was given on an objective basis.

4.5. Estimation results

The first set of regressions uses quarterly data for 12 locally incorporated banks over the period 1997:2 to 2004:1, given that the first exit of a hybrid bank occurred in 2004:2, and the second set of regressions uses data for those 8 locally incorporated banks that have remained domestic-owned throughout the period. To acknowledge that only hybrid and domestic banks compete on an almost level playing field and to disentangle the effects of hybrid banks from those of branches, the asset share of hybrid banks (FMSH) is first used as foreign penetration measure. Subsequently, an alternative foreign penetration measure is introduced, namely FMSA, to capture any potential benefits derived from the presence of foreign branches. The estimation results from running both sets of regressions are presented in column per dependent variable.

4.5.1. First set of regressions

Using the asset share of hybrid banks as foreign penetration measure and focusing on the probability of adoption of internet banking (organisational

[145] See footnote 117.

restructuring), the estimation results are reported in the upper panel of column I (II) in Table 15. Alternatively, the asset share of hybrid banks and foreign branches is used as foreign penetration measure, with the results regarding the probability of adoption of internet banking (organisational restructuring) being reported in the lower panel of column I (II) in Table 15.

Adoption of internet banking

The estimation results in Table 15 from (4.1) show a statistically significant and positive coefficient on the asset share of hybrid banks (FMSH), which, ceteris paribus, indicates that increases in foreign bank presence have tended to make adoption of internet banking more likely.

Table 15 Estimation results: Adoption of financial innovations (1st set of regressions)

	I		II	
	IB LOGIT		**OR** LOGIT	
	Coefficient	Std. Error	Coefficient	Std. Error
FMSH	1.330 ***	0.454	1.776 ***	0.291
FO	2.083 ***	0.679	2.096 ***	0.590
SO	-5.852 ***	0.920	0.196	0.554
LA	-0.008	0.014	-0.023	0.016
DA	0.376 ***	0.068	-0.008	0.045
NPL	-0.179 ***	0.028	-0.055 ***	0.012
PEX	-0.004	0.008	0.004	0.005
BRA	-0.104	0.116	-0.226 *	0.119
GDPCAPG	0.045	0.046	0.010	0.042
Log likelihood	-78.750		-89.893	
LR statistic	298.919 ***		269.576 ***	
	IB LOGIT		**OR** LOGIT	
	Coefficient	Std. Error	Coefficient	Std. Error
△FMSA	-0.360 ***	0.125	-0.335 ***	0.124
FO	0.984 ***	0.293	1.868 ***	0.400
SO	-1.972 ***	0.426	-0.108	0.313
△LA	-0.066 ***	0.024	-0.030	0.033
△DA	-0.011	0.034	-0.040	0.036
△NPL	-0.024	0.016	-0.110 ***	0.026
△PEX	0.001	0.003	-0.001	0.003
△BRA	-0.237	0.224	0.270	0.249
△GDPCAPG	-0.012	0.021	-0.020	0.022
Log likelihood	-182.940		-172.700	
LR statistic	77.285 ***		80.656 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. Constant terms are not reported. Dependent and independent variables in the lower panel in first differences (denoted Δ).

The foreign ownership dummy variable is also statistically significant and its coefficient enters with the expected positive sign, indicating that hybrid banks tended to adopt internet banking faster.

The statistically significant negative coefficient on the state-ownership dummy variable is consistent with a priori expectations and indicates that state-owned banks have tended to be less likely to adopt internet banking, probably reflecting that procurement tends to be more difficult for state-owned banks.

The estimation results further reveal a statistically significant and positive relationship between deposits (as a percentage of total assets) and the probability of internet banking adoption as expected, highlighting the importance of deposits as a banking input under the intermediation approach.

Also in line with expectations, the estimation results further suggest that healthy banks have been more likely to adopt internet banking since healthy institutions may simply be better positioned to adopt innovations.

Using the asset share of hybrid banks and foreign branches (FMSA) as foreign penetration measure reveals a statistically significant, but unexpected negative coefficient on the change of the alternative foreign penetration measure. In light of the branching restrictions foreign branches face, this result is surprising, but may reflect that locally incorporated banks and foreign branches do not compete in the same lines of business, especially given that transactional web sites as defined in this study are rather focused on the retail market.[146] The foreign ownership dummy variable is again of statistical significance and its coefficient enters with the expected positive sign.

Regarding control variables, the estimation results confirm the statistically significant and negative coefficient on the state ownership dummy variable. Furthermore, the change in liquid assets (scaled by total assets) is found to be significantly and negatively associated with the probability of internet banking adoption, which is counterintuitive, but consistent with the literature. In addition, this negative association may reflect that in some cases

increases in interbank and money market items stem from compensation received for the transfer of non-performing assets under certain profit/loss sharing and/or yield maintenance schemes.

Running auxiliary regressions with the asset share of foreign branches (FMSB) as foreign penetration measure confirms these results and reveals a significant, but negative relationship between the foreign penetration measure and the probability of internet adoption. The results are reported in Appendix L.

To acknowledge that foreign investors not only acquired majority stakes in locally incorporated banks but also minority stakes, another alternative measure of foreign bank presence, namely the ratio of the sum across all banks of the assets of each bank multiplied by the percentage of equity held by foreigners to total commercial bank assets, is used. The results are reported in Appendix M and reveal that the change in the foreign penetration measure is significant, but enters with a negative sign with respect to the probability of internet banking adoption.[147]

Adoption of organisational restructuring

The estimation results in Table 15 from (4.1) show that the foreign penetration measure FMSH is of statistical significance and enters with the expected positive sign, which indicates that increases in foreign bank presence have tended to make adoption of organisational restructuring more likely. The foreign ownership dummy variable is also statistically significant and its coefficient enters with the expected positive sign. This indicates that hybrid banks have tended to be more likely to adopt organisational restructuring than their domestic-owned counterparts, as expected.

Regarding control variables, bank health as well as branch intensity turn out to be statistically significant and the coefficients of both variables, non-performing loans (in percent of total loans) as well as the ratio of

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[146] An analysis of the adoption of internet banking services for corporate customers would be interesting, but is not feasible due to a lack of data.
[147] See footnote 122.

branches to total assets, have a negative sign, the latter indicating that banks with a large branch network tended to be less likely to adopt organisational restructuring.

Using the alternative foreign penetration measure to acknowledge any potential benefits derived from the presence of foreign branches shows that the change in the asset share of hybrid banks and foreign branches (ΔFMSA) is statistically significant, its coefficient, however, enters with an unexpected negative sign.

To check robustness, auxiliary regressions using the asset share of foreign branches (FMSB) as foreign penetration measure are run and the results confirm a negative association between the foreign penetration measure and the probability of adoption of organisational restructuring. The estimation results are presented in Appendix L.

Using the ratio of the sum across all banks of the assets of each bank multiplied by the percentage of equity held by foreigners to total commercial bank assets to acknowledge that foreign participation in four private banks has reached up to 49 percent over the period, does not show a statistically significant association between the change in the foreign penetration measure and the probability of adoption of organisational restructuring as shown in Appendix M.

4.5.2. Second set of regressions

Using the asset share of hybrid banks as foreign penetration measure and focusing on the probability of adoption of internet banking (organisational restructuring) in domestic banks, the estimation results are reported in the upper panel of column I (II) in Table 16. Alternatively, the asset share of hybrid banks and foreign branches is used as foreign penetration measure, with the results with respect to the probability of adoption of internet banking

(organisational restructuring) being reported in the lower panel of column I (II) in Table 16

Adoption of internet banking

Focusing on those banks that remained domestically owned throughout the period, the estimation results in Table 16 from (4.2) basically confirm the findings from the first set of regressions and show a significant and positive association between the asset share of hybrid banks (FMSH) and the probability of internet banking adoption, interpreted to mean that increases in foreign bank presence have tended to make adoption of internet banking more likely.

Table 16 Estimation results: Adoption of financial innovations (2nd set of regressions)

	I		II	
	IB LOGIT		**OR** LOGIT	
	Coefficient	Std. Error	Coefficient	Std. Error
FMSH	0.275 **	0.126	1.010 ***	0.179
SO	-3.256 ***	0.577	0.777	0.546
LA	-0.080 **	0.034	-0.073 ***	0.022
DA	0.241 ***	0.046	0.027	0.042
NPL	-0.095 ***	0.023	-0.086 ***	0.014
PEX	-0.008	0.007	0.000	0.006
BRA	-0.356 ***	0.117	-0.443 ***	0.128
GDPCAPG	0.064	0.039	0.048	0.040
Log likelihood	-104.018		-96.354	
LR statistic	179.611 ***		167.324 ***	
	IB LOGIT		**OR** LOGIT	
	Coefficient	Std. Error	Coefficient	Std. Error
FMSA	-0.762 ***	0.183	-0.478 ***	0.147
SO	-3.570 ***	0.642	0.497	0.440
LA	-0.038	0.034	-0.017	0.020
DA	0.290 ***	0.047	0.151 ***	0.029
NPL	-0.057 ***	0.021	-0.040 ***	0.011
PEX	-0.010	0.010	-0.005	0.005
BRA	-0.248 **	0.113	-0.310 ***	0.095
GDPCAPG	0.059	0.042	0.074 *	0.040
Log likelihood	-96.752		-118.758	
LR statistic	194.144 ***		122.515 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. Constant terms are not reported.

Also consistent with the findings above, state-owned banks have been less likely to adopt internet banking. The coefficient of the variable liquid assets (in percent of total assets) is statistically significant, but enters again with an unexpected negative sign. Increases in deposits (in percent of total assets) have tended to make adoption of internet banking more likely as expected. The variables non-performing loans (in percent of total loans) as well as branch intensity are both statistically significant and enter with the expected negative sign. The latter result suggests that internet banking is viewed as a substitute rather than a complement for branch activities, analogous ATM as mentioned in Section 4.3. The remaining variables turn out to be statistically insignificant.

Using the asset share of hybrid banks and foreign branches as foreign penetration measure (FMSA), confirms the findings obtained from running the first set of regressions and reveal a statistically significant, but negative association between the foreign penetration measure and the probability of adoption of internet banking. Running auxiliary regressions, using the asset share of foreign branches (FMSB) as foreign penetration measure, confirms this negative association. The estimation results are reproduced in Appendix N.

To verify robustness of the coefficient of the foreign penetration measures, analogous Section 3.5.2. the three-firm concentration ratio is included as control variable in the second set of regressions. As the variable ΔCR3 is introduced, however, the coefficients of the foreign penetration measures ΔFMSH and alternatively FMSA enter with a significant *negative* sign. In addition, the change in the three-firm concentration ratio is significant and *negatively* associated with the probability of internet banking adoption when using ΔFMSH as foreign penetration measure. It is noteworthy that the data require a shift from levels to first differences. Regarding interpretation, as mentioned earlier, whereas the difference form model specification rather captures changes in foreign bank presence (i.e. new foreign entry), the level form model specification captures foreign bank presence. The results are reported in Appendix O.

To acknowledge that foreign investors not only acquired majority stakes in locally incorporated banks but also minority stakes, the ratio of the sum across all banks of the assets of each bank multiplied by the percentage of equity held by foreigners to total commercial bank assets, is used as alternative foreign penetration measure. The results, which are reproduced in Appendix P, reveal that the change in the foreign penetration measure is insignificant with respect to the probability of internet banking adoption.[148]

Adoption of organisational restructuring

The estimation results in Table 16 from (4.2) also confirm the results obtained from the first set of regressions with respect to the probability of adoption of organisational restructuring and show a positive association between the asset share of hybrid banks (FMSH) and the probability of adoption of organisational restructuring by domestic banks.

Statistically significant determinants of the probability of adoption of organisational restructuring are the variables liquid assets (in percent of total assets), non-performing loans (in percent of total loans) as well as branch intensity.

In accordance with the findings in Section 4.5.1, the asset share of hybrid banks and foreign branches (FMSA) is significant, but negatively associated with the probability of adoption of organisational restructuring. These results are confirmed when using the asset share of foreign branches as foreign penetration measure (FMSB) as reported in Appendix N.

To verify robustness, the three-firm concentration ratio is included as control variable. However, the sign of the coefficients of the foreign penetration measures ΔFMSH and FMSA turns out to be *negative*. The change in the three-firm concentration ratio is significant and *negatively* associated with the probability of adoption of organisational restructuring when using ΔFMSH as foreign penetration measure. However, CR3 turns out to be *positively* associated with the probability of adoption of organisational

[148] See footnote 122.

restructuring in the level form model specification with FMSA as foreign penetration measure. The results are reported in Appendix O.

Finally, the ratio of the sum across all banks of the assets of each bank multiplied by the percentage of equity held by foreigners to total commercial bank assets is used as alternative foreign penetration measure. The results in Appendix P confirm that the change in this foreign penetration measure is insignificant with respect to the probability of the adoption of organisational restructuring.[149]

4.6. Interpretation of results and summary

This chapter examines the diffusion of two major financial innovations, namely transactional internet banking and organisational restructuring, across commercial banks incorporated in Thailand and attempts to contribute to the financial innovation literature as well as the literature concerned with foreign bank entry by linking foreign bank presence and foreign ownership to the diffusion process.

The analysis using a logit model suggests that ceteris paribus increases in the asset share of hybrid banks appear to have increased the probability of adoption of either innovation. The results further show that ceteris paribus foreign ownership has had a positive effect on the probability of adoption of either innovation.

State ownership is found to have a negative effect on the probability of adoption of internet banking, as expected. Whereas deposits and liquid assets (all scaled by total assets), non-performing loans (scaled by total loans) as well as branch intensity are found to be important determinants of the probability of adoption of internet banking and organisational restructuring, personnel expenses (in percent of non-interest expenses) turn out to be statistically insignificant in all regressions.

[149] See footnote 122.

The estimation results further suggest that the mode of entry and the organisational form matter since the asset share of foreign branches is interestingly found to be negatively associated with the probability of adoption of either innovation, underlining that foreign branches and hybrid banks do not compete in the same lines of business. Moreover, the estimation results imply that a majority stake is of importance.

To conclude, the findings give some supportive evidence that foreign banks may indeed increase the quality and availability of financial services by (i) directly introducing new technology and procedures to the domestic market and (ii) indirectly by exerting pressures on domestic institutions to improve operations as predicted by the literature. Estimating the model in first differences which allows a focus on changes in foreign bank presence (i.e. new foreign bank entry) instead of foreign bank presence, however, yields adverse outcomes.

Last not least, the results discussed above must be interpreted with caution since isolation of the effects of foreign bank presence from the manifold changes in the Thai financial sector as discussed in Chapter 2 is not a straightforward task as mentioned before. In addition, due to data unavailability it is neither possible to control for the technological infrastructure nor for the innovativeness of the environment, both of which are identified by the literature as important determinants of the probability of adoption of financial innovations. Hence, it may be misleading to attribute increases in the probability of adoption of especially the technological innovation to increased foreign bank presence. Besides, the study would benefit greatly from a comparison with other, more restricted countries. Nevertheless, the argument gains some support from the finding that foreign ownership appears to have had a positive effect on the probability of adoption of either innovation.

Besides, market shares in terms of internet banking service fees or expenses for organisational restructuring would be more appropriate dependent variables, given the number of cross-sections as well as the time dimension. These data, however, are not available on a quarterly basis.

Moreover, the analysis is impeded by a lack of data availability for other major innovations such as the adoption of ATM, electronic card services and branch re-engineering programmes.

CHAPTER V

THE FOREIGN BANK EFFECT ON LENDING BY COMMERCIAL BANKS INCORPORATED IN THAILAND

5.1. Introduction

The analyses in the previous chapters show that increases in foreign bank presence appear to have increased competition and efficiency, which may translate into welfare gains for the economy. Any gains from temporarily liberalising market access, however, may be offset by a negative foreign bank effect on lending and the stability of the domestic financial system.

Evidence of a foreign bank effect on lending and the stability of domestic financial systems is limited and it has not been possible to draw firm conclusions yet.

On the one hand, there are for example concerns that (i) foreign banks may attract the most creditworthy borrowers, leading to excessive risk-taking (Dages, Goldberg and Kinney, 2000: 4) and/or a decrease in lending by domestic banks to sectors foreign banks focus on, which in turn may result in a decrease in total lending (Scher and Weller, 1999: 2), (ii) foreign bank entry may lead to an undesirable redistribution of credit and a crowding out of some borrowers (Dages, Goldberg and Kinney, 2000: 4), (iii) foreign bank entry may induce mergers among domestic banks resulting in large banks which tend to engage in transactions lending rather than relationship lending, which may indirectly lead to a crowding out of some borrowers (Berger et al., 2002: 1-4) and (iv) foreign banks may have a tendency to withdraw from host countries during adverse economic conditions, thus decreasing the stability of domestic bank credit (Dages, Goldberg and Kinney, 2000: 4; de Haas and van Lelyveld, 2002: 5).

On the other hand, there are arguments indicating a positive foreign bank effect on lending by domestic banks. Foreign bank entry may for example (i) improve access to and availability of credit if foreign banks enjoy funding advantages and/or use sophisticated banking technologies and

procedures (McKinnon, 1973: 29, 170; Brainard, 1990: 175-176; Levine, 1996: 238; Peek and Rosengren, 2000: 150; de Haas and van Lelyveld, 2002: 5 among others) and may thereby also contribute to domestic bank credit stability, (ii) enhance lending procedures of domestic banks (Scher and Weller, 1999: 2) and (iii) induce domestic banks to seek market niches such as lending to small and medium-sized enterprises (Clarke et al., 2001: 5; Berger, Klapper and Udell, 2001: 6, 8). Some of the afore-mentioned arguments and counter-arguments have so far remained unsupported by empirical evidence.

This chapter aims at providing further country-case evidence of a foreign bank effect on lending by (i) analysing differences in lending behaviour between hybrid and domestic banks, (ii) examining the foreign bank effect on lending behaviour of commercial banks incorporated in Thailand in terms of the growth rate of total lending and lending classified by economic sector and (iii) testing the bank lending channel hypothesis to examine if hybrid banks are less responsive to changes in monetary policy than their domestic-owned counterparts. The first two objectives address concerns that foreign bank entry may decrease total lending and/or affect the distribution of credit with respect to specific lending areas and may result in a redistribution thereof. The third objective on the other hand deals with concerns that foreign bank entry may decrease the stability of domestic bank credit.

5.2. Foreign banks and lending as well as financial stability: a literature review

In contrast to the microeconomic perspective of the literature reviewed in the previous two chapters, this line of research focuses on a macroeconomic perspective and is concerned with the impact of foreign bank entry on lending and the stability of the domestic banking sector. According to the literature on financial liberalisation, foreign banks are expected to enjoy funding advantages and/or introduce sophisticated lending procedures and

foreign banking expertise and thereby increase the supply of credit. The empirical evidence to date, however, is ambiguous at best.

Scher and Weller (1999) inter alia investigate the impact of multinational banks on credit supply as well as on financial stability in developing economies. The authors find that domestic banks reduce their commercial loans in response to increased competition, particularly in those market segments multinational banks focus on, such as lending to multinational corporations, large domestic corporations and high net worth individuals. The negative response of commercial loans to increased lending by multinational banks, however, seems to be strong enough to lower total credit only when lending by multinational banks is relatively small. The authors report a positive impact of increased lending by multinational banks when lending by multinational banks is relatively large, which, however, does not appear to translate into more total credit suggesting that lending by multinational banks does not compensate for the decrease in lending by domestic banks. Similarly, in a recent study of foreign banks in poor countries, Detragiache, Gupta and Tressel (2006) find that a stronger foreign bank presence results in less credit to the private sector. Moreover, the authors find that more foreign bank penetration is associated with slower credit growth and less access to credit.

In a country-case study on Mexico, Haber and Musacchio (2005) inter alia find that the contraction in credit to the private sector is not related to foreign entry. Focusing on Argentina, Berger et al. (2001) inter alia empirically test hypotheses that large banks, foreign banks and distressed banks face barriers in providing credit to informationally opaque small businesses using firm-level and bank-level data as of the end of 1998. Their results support the suggestions in Scher and Weller (1999) with respect to the distribution of credit and show that informationally opaque small businesses tend to receive less credit from large banks and foreign banks. However, these findings do not allow further interpretation since foreign bank presence may result in a welfare-improving segmentation of the market should small domestic banks increase their exposure to this market niche in a sustainable way. Similarly, Dell'Ariccia and Marquez (2001), show in a theoretical model that foreign

banks initially attract those borrowers who can signal their quality to outside lenders, whereas their domestic-owned counterparts focus on more opaque borrowers, with whom they have had a long-term relationship (captured borrowers). Clarke et al. (2002) find that small foreign banks in Argentina, Chile, Columbia and Peru devoted a smaller share of lending to small enterprises than small domestic banks, however, the results also suggest that large foreign banks have devoted a larger share to small enterprises than large domestic banks in Chile and Columbia. Furthermore, the growth rate of real lending to small enterprises is shown to be higher for large foreign banks than large domestic banks in Argentina and Chile.

Using survey data of entrepreneurs in developing countries, Clarke, Cull and Soledad Martinez Peria (2001) show that firms are less credit-constrained in countries with more foreign bank participation. Similarly, Giannetti and Ongena (2005) find that foreign bank presence in Eastern European economies benefits all firms, with the impact being stronger for large firms and firms less likely to be involved in connected lending.

Focusing on the stability of total lending, Dages, Goldberg and Kinney (2000) examine the lending behaviour of foreign and domestic banks in Argentina and Mexico. They find that foreign banks exhibited stronger and less volatile loan growth compared to domestic banks. In the case of Argentina, the loan portfolio composition (i.e. personal loans, mortgages, commercial, government and other loans) of foreign and domestic private banks and the responsiveness of lending to economic signals is found to be similar, whereas in the case of Mexico the result is shown to hold for foreign and domestic banks with lower levels of impaired assets, suggesting that bank health and lending objectives rather than foreign ownership matter. Crystal, Dages and Goldberg (2001), Peek and Rosengren (2000) and de Haas and van Lelyveld (2002) among others support the claim that foreign banks are relatively stable lenders to emerging markets. The findings of Peek and Rosengren (2000) and de Haas and van Lelyveld (2002), for example, show that foreign banks do not have a tendency to cut and run during adverse economic times. Although cross-border claims are shown to be more sensitive to economic instability, decreases in cross-border claims during some periods

were found to be more than offset with the rise in foreign bank penetration through acquisitions of local subsidiaries or expansion of credit supply by existing subsidiaries of foreign banks.

Arena, Reinhart and Vazquez (2006) take the analysis a step further and compare the sensitivity of inter alia loan growth rates to monetary conditions across domestic and foreign banks. Assuming that foreign banks are less financially constrained than their domestic counterparts, the authors find weak evidence that foreign banks have a lower sensitivity of credit to monetary conditions relative to their domestic competitors. The results are interpreted as supporting the existence of supply-side effects in the credit market as well as the positive contribution of foreign banks to credit stability in emerging economies in Asia and Latin America.

5.3. Theoretical background

Since the focus of this chapter is on lending, it is important to briefly discuss the identification issue, which involves distinguishing the credit supply from the credit demand function. In light of the third objective, an introduction to the bank lending channel is subsequently presented.

5.3.1. Credit supply and credit demand

To resolve the identification problem, it is important to distinguish between three factors that influence financial sector credit, namely (i) observed and expected economic activity, which determines the demand for credit, and regarding credit supply (ii) the ability to lend (which for example may be constrained by the level of deposits) and (iii) the willingness to lend (which is closely related to the bank's assessment of risk). (Ghosh and Ghosh, 1999: 3; Barajas and Steiner, 2002: 5 among others) Barajas and Steiner (2002) estimate separate credit supply and demand functions to examine the slowdown in bank credit to the private sector in Latin America. To distinguish credit supply from credit demand, lending capacity, defined as the sum of

bank deposits net of reserves in the case of the financial system and plus foreign liabilities in the case of deposit money banks, is used as control variable in the credit supply function since it affects banks' ability to lend, but not the demand for credit. (Barajas and Steiner, 2002: 31) In addition, the authors include the ratio of non-performing loans to total loans as well as the ratio of loan-loss provisions to non-performing loans, both of which are deemed specific to the supply function. To reflect the macroeconomic environment, quarterly GDP measures, manufacturing production indices, the output gap and the expected inflation rate are included. The reasoning is that credit demand and credit supply are expected to be positively related to these present and expected conditions, the latter in the sense that changes in economic activity tend to affect the creditworthiness of borrowers. (Barajas and Steiner, 2002: 31-32) Furthermore, the authors include interest rates on deposits and on government securities as proxies for the opportunity cost of bank credit of lenders and borrowers. (Barajas and Steiner, 2002: 32)

Turning to the case of Thailand, Ghosh and Ghosh (1999) investigate the possibility of a credit crunch in Indonesia, Korea and Thailand during the period 1997 to 1998, using monthly data. The authors estimate a credit supply function, which depends on deposit rates, lending capacity (defined as the minimum of (i) total liabilities and net worth minus required reserves and liquidity requirements minus cash in vault minus capital and (ii) maximum amount of credit implied by capital adequacy requirements) and the level of economic activity (current output) as well as a credit demand function, which depends on real lending rates and indicators of current and expected economic activity (current output, output gap, stock market index and inflation). While acknowledging that non-performing loans would be likely to reduce banks' willingness to lend, these are not included due to data unavailability. With respect to Thailand, the main finding is that although there was excess demand for credit in late 1996, the decline in credit demand eventually outstripped the fall in real private sector credit supply. Similarly, Nakornthab and Subhaswasdikul (2003) analyse the role of credit supply and demand factors in the post-crisis credit contraction, using monthly data over the period 1993 to 2002. The authors use two approaches, namely the

disequilibrium framework introduced above and a micro-level analysis of selected individual banks to overcome the lack of data on non-performing loans and loan loss provisions. Whereas the supply of private credit (adjusted for loan write-offs and net loan transfers to AMC) is assumed to depend on lending capacity (defined as the minimum of the (i) sum of the banking system's deposits and other liabilities less required liquid assets and (ii) maximum amount of credit implied by capital adequacy regulations, which was the former), the deposit rate, the lending rate, manufacturing production, the stock market index as well as a crisis dummy variable, the demand function is assumed to depend on the lending rate, the stock market index, manufacturing production, the output gap, consumption as well as expected investment. The deposit rate, the stock market index, the output gap as well as expected investment, however, turn out to be statistically insignificant. The results suggest that the initial collapse in bank credit in early 1998 was mainly supply driven and that from the second half of 1998 onward both supply and demand factors played a significant role in determining post-crisis credit movements. Furthermore, the availability of loanable funds as well as non-performing loans are found to have played an important role in the early stage of the contraction period only.

Rather than estimating separate credit demand and supply functions, a reduced form equation is estimated in this chapter. To resolve the identification issue, a macroeconomic variable is included to control for credit demand effects, with the bank-specific variables reflecting credit supply effects. It is implicitly assumed that domestic and hybrid banks face identical demand functions.

5.3.2. Monetary policy transmission: bank lending channel

In light of the third objective of this chapter, namely to examine if hybrid banks are less responsive to changes in monetary policy than their domestic-

owned counterparts, the bank lending channel is briefly discussed in this section.

Mishkin (1996: 2-15) identifies the following mechanisms through which the monetary policy of central banks affects real activity: (i) the interest rate channel, (ii) other asset price channels (the exchange rate channel and the equity price channel) and (iii) the credit channels (bank lending channel and the balance sheet channels). The bank lending channel hypothesis addresses the impact of monetary policy changes on banks' credit supply and assumes (i) that banks are financially constrained in the sense that there is no perfect substitutability of deposits with other sources of external funds to compensate for a shortfall in deposits caused by contractionary monetary policy and (ii) that bank-dependent borrowers exist. (Mishkin, 1996, p. 9) The hypothesis stipulates that banks decrease lending in response to a negative shock to deposits and, given banks' special role as lenders, this decrease in lending will cause a decrease in investment spending, which in turn reduces aggregate output.[150] Thus, the bank lending channel hypothesis states that monetary policy may have an effect on the supply of bank credit. (Arena, Reinhart and Vazquez, 2003: 5) Under the bank lending channel hypothesis, monetary policy will have a greater effect on small and medium-sized enterprises which are more likely to be bank-dependent than on large enterprises that have access to alternative sources of funding.[151] (Mishkin, 1996: 9) An additional reason that small and medium-sized enterprises may be particularly hard hit can be derived from the flight-to-quality effect, which refers to banks not only responding to monetary restrictions by reducing lending, but also by shifting their focus towards borrowers that are perceived to be more creditworthy.

Empirical evidence on the identification of a bank lending channel of transmission has been ambiguous. The crucial issue in analysing the bank lending channel hypothesis again is to separate credit supply effects from

[150] Due to reserve requirements, banks are not able to proportionately increase deposit rates, which leads to depositors reallocating their portfolios away from deposits toward higher-yielding assets. (Arena, Reinhart and Vazquez, 2003: 3, 4)

[151] Small and medium-sized enterprises are often discouraged to issue debt due to (i) the high costs associated with a listing and (ii) the high yields investors would demand to compensate them for the risk.

credit demand effects. On the one hand, contractionary monetary policy may lead to firms and households demanding less credit since fewer investments are undertaken, on the other hand, however, it may lead to banks becoming reluctant to lend.

Kashyap and Stein (1997: 7) deal with this identification issue by assuming that some banks are more financially constrained than others in the sense that they cannot easily access alternative sources of external funds to compensate for the decline in deposits. Should this assumption hold, cross-sectional differences in the response of individual banks to monetary policy must exist. More liquid banks for example can draw on their reserves of cash and securities, whereas less liquid bank might be forced to shrink their loan supply. (Kashyap and Stein, 1997: 7-8) Also, larger banks which enjoy access to alternative forms of financing should be less sensitive to changes in monetary policy than smaller banks. Smaller banks, on the other hand, might maintain more liquid assets due to their inability to access alternative sources of financing. Similarly, less capitalised banks are likely to find it more difficult to access alternative sources of funds than well-capitalised banks. (Kashyap and Stein, 1997: 26)

Apart from these three factors, size, liquidity and capitalisation, which are commonly used in related literature, ownership is also an important bank characteristic that captures differences in financial constraints across banks. In other words, foreign banks in host countries are likely to be less financially constrained than their domestic-owned counterparts since they have access to upstream funding from their parent institution and/or international capital markets. Foreign banks often benefit from either an explicit or implicit guarantee from their parent institution as evidenced in the support ratings assigned by international rating agencies. Even in the absence of an explicit guarantee, support may be forthcoming if necessary due to the parent institution's reputation being at stake (provided, of course, that the parent institution has sufficient resources). Factors used to assess the parent institution's degree of commitment are (i) the strategic intention behind being present in the market, (ii) the degree of control over the board and senior management, (iii) a name association and (iv) the size of the equity

participation. Consequently, foreign banks should be less susceptible to the bank lending channel and foreign bank entry could thus lead to increased stability in domestic credit markets.

5.4. Methodology

In this section, the regression model is developed, the estimation technique chosen and hypotheses formulated that allow an assessment of the possible impact of foreign bank entry on lending by commercial banks incorporated in Thailand.

5.4.1. Regression model and estimation technique

To analyse differences in lending behaviour between hybrid and domestic banks and the foreign bank effect on total lending by commercial banks incorporated in Thailand as well as lending to different economic sectors, two sets of panel data regressions are estimated. The first set uses data for 12 commercial banks incorporated in Thailand, whereas the second set excludes those four banks that were acquired by foreign investors. Wald tests[152] are performed to test whether there are bank-specific effects. If the null hypothesis of no bank-specific effects cannot be rejected, a constant coefficient model (CC) is used, with all parameters, including the intercept, assumed constant in both the cross-section and time dimensions ($\beta_{kit} = \beta_k$ for all i and t, k = 0,...,K).[153] If the null hypothesis of no bank-specific effects, however, can be rejected a fixed effects model (FE) is used, in which the intercept terms vary over individual banks with all parameters, except the intercept, assumed constant in both the cross-section and time dimensions

[152] See footnote 93.
[153] Variables are indexed by an i for the individual bank (i = 1,...,N) and a t for the time period (t = 1,...,T).

($\beta_{0it} = \beta_{0i}$ for all t, and $\beta_{kit} = \beta_k$ for all i and t, k = 1,...,K). Using a FE, the following equations are estimated in first differences:[154]

1st set of regressions:	DV_{it}	$= \beta_{0i} + \beta_1 FO_{it} + \beta_2 FS_t + \beta CV_{it} + \varepsilon_{it}$	(5.1)
2nd set of regressions:	DV_{it}	$= \beta_{0i} + \beta_1 FS_t + \beta CV_{it} + \varepsilon_{it}$	(5.2)

where DV_{it} is a measure of lending behaviour for bank i at time t, FO_{it} the foreign ownership dummy variable for bank i at time t, and FS_t a measure of foreign bank penetration at time t. CV_{it} is a vector of explanatory variables to control for other factors with the elements in β being indexed as β_3 (β_2 in the second set of regressions) to β_K. β_{0i} are the bank-level fixed effects, β unknown parameters and ε_{it} the error term. ε_{it} is assumed to be independent and identically distributed over individuals and time, with mean zero and variance σ_ε^2 ($\varepsilon_{it} \sim IID(0, \sigma_\varepsilon^2)$). Variable definitions are given in Section 5.4.2.

The third regression is closely related to Arena, Reinhart and Vazquez (2006, 2004, 2003) and aims at testing the bank lending channel hypothesis or, more specifically, examining if hybrid banks are less responsive to changes in monetary policy than their domestic-owned counterparts, assuming that hybrid banks are less financially constrained than domestic banks. Using data for 12 locally incorporated banks, the sample is simply split by bank ownership, using the foreign ownership dummy variable (denoted FO) to interact with each independent variable as suggested in Arena, Reinhart and Vazquez (2003: 11,16). In line with the first set of regressions, the following equation is estimated in first differences using a CC model:[155]

[154] Two panel data unit root tests are employed, namely Levin, Lin and Chu (2002) and Im, Peseran and Shin (2003). Since the null hypothesis of a unit root cannot be rejected for some data series, all regressions are estimated in first differences. First-difference operators omitted.

[155] The Wald test results do not allow rejection of the null hypothesis of no individual effects indicating that the CC is to be preferred over a FE model. First-difference operators omitted.

3^{rd} regression: (5.3)

$$TLG_{it} = \beta_0 + \beta_1 GDPCAPG_t + \beta_2 GDPCAPG_t*FO_{it} + \beta_3 INT_t + \beta_4 INT_t*FO_{it} + \beta_5 LA_{it} + \beta_6 LA_{it}*FO_{it} + \beta_7 NPL_{it} + \beta_8 NPL_{it}*FO_{it} + \beta_9 DA_{it} + \beta_{10} DA_{it}*FO_{it} + \beta_{11} CMSFI_t + \beta_{12} CMSFI_t*FO_{it} + \beta_{13} SOI + \beta_{14} ATS_{it} + \beta_{15} MERGER + \varepsilon_{it},$$

where TLG_{it} denotes total loan growth for bank i at time t and INT_t the monetary policy indicator at time t. β_0 denotes the intercept, β_1 ... β_{15} unknown parameters and ε_{it} an error term. Variable definitions are given in Section 5.4.2.

Standard errors are corrected for heteroscedasticity to allow robust estimation.

5.4.2. Variables and hypotheses

To examine the possibly different lending behaviour of hybrid and domestic banks as well as the impact of foreign bank entry on lending behaviour, two sets of regressions are run. In addition to running regressions for the whole sample (1^{st} set of regressions), regressions for those banks that remained domestically owned are run separately (2^{nd} set of regressions). Two categories of dependent variables are employed to address concerns that foreign bank entry decreases total lending (the dependent variable being total loan growth of bank i at time t) and/or affects the distribution of credit with respect to specific lending areas (the dependent variable being loans of bank i to economic sector j at time t relative to total commercial bank loans at time t) and may result in a redistribution thereof. Variable definitions are given in Table 17.

Table 17 Variable definitions: Dependent variables

Alternative dependent variables	
TLG_{it}	total loan growth for bank i at time t[156] computed as (total $loans_{it}$ - total $loans_{it-1}$)/total $loans_{it-1}$

[156] Calculations use gross loans before deduction of allowance for possible loan losses and excluding accrued interest receivables due to regulatory changes of loan classification

AGR_{it}	loans of bank i at time t classified as Agriculture and Mining in percent of total commercial bank loans at time t
MAC_{it}	loans of bank i at time t classified as Manufacturing and Commerce in percent of total commercial bank loans at time t
REC_{it}	loans of bank i at time t classified as Real Estate and Construction[157] in percent of total commercial bank loans at time t
UTS_{it}	loans of bank i at time t classified as Utilities and Services (including lending to financial institutions) in percent of total commercial bank loans at time t
HL_{it}	loans of bank i at time t classified as Housing Loans in percent of total commercial bank loans at time t[158]
OL_{it}	loans of bank i at time t classified as Other Loans in percent of total commercial bank loans at time t

First, a foreign ownership dummy variable (FO) is included as independent variable to capture the effect of foreign ownership. The foreign ownership dummy variable, however, is only used in the first set of regressions and the third regression. Second, the lending share of foreign banks is used as measure of foreign bank penetration, with four alternative measures of foreign bank penetration being employed, which differ in their computation of lending shares of foreign banks. Third, a set of bank-specific regressors is included in order to control for bank characteristics other than foreign ownership. Fourth, control variables that are relevant for domestic and foreign banks are included as reported in Table 18.

Table 18 Variable definitions: Independent variables[159]

Independent variables	
FO_{it} (+)	foreign ownership dummy variable for bank i at time t which takes the value of one if at least fifty percent of the bank's shares are owned by a foreign block-holder (hybrid bank)
Alternative measures of foreign bank presence[160]	
$FLSH_t$ (+)	loans of foreign banks (where foreign banks refer to hybrid banks) in percent of total commercial bank lending at time t

standards and provisioning requirements as well as the treatment of accrued interest receivables over the period.

[157] This category primarily comprises pre-financing of property developers.

[158] This category primarily comprises post-financing for purchasers of housing.

[159] When using lending classified by economic sector as dependent variable, some a priori expectations are ambiguous.

[160] When examining lending classified by economic sector, the ratio of loans of foreign banks to economic sector j at time t and total commercial bank loans to economic sector j at time t is used as foreign penetration measure and the a priori expectations hold for those market segments foreign banks do not focus on.

$FLSA_t$ (+)	loans of foreign banks (where foreign banks refer to hybrid banks and foreign branches) in percent of total commercial bank lending at time t
$FLSB_t$ (+)	loans of foreign banks (where foreign banks refer to foreign branches) in percent of total commercial bank lending at time t
$FOBL_t$ (+)	the sum across all banks of the loans of each bank multiplied by the percentage of equity held by foreigners in percent of total commercial bank loans
Other control variables	
SOI_{it} (+)	state ownership dummy variable for bank i at time t which takes the value of one if at least fifty percent of the bank's shares are owned by the government; used to account for differences in lending motives (see for example Dages, Goldberg and Kinney, 2000: 5) since lending motives of state banks are likely to differ from those of private banks due to government-imposed objectives, which may not be in accordance with profit-maximisation
LA_{it} (-)	liquid assets in percent of total assets for bank i at time t; used as an indicator of excess liquidity (see for example Haber and Musacchio, 2005: 10)
NPL_{it} [161] (-)	non-performing loans in percent of total loans for bank i at time t; aimed at capturing bank health (see for example Dages, Goldberg and Kinney, 2000: 6; Barajas and Steiner, 2002: 32)
DA_{it} (+)	customer deposits in percent of total assets for bank i at time t; used to capture funding patterns and proxy lending capacity (see for example Dages, Goldberg and Kinney, 2000: 6; Weller, 2001: 15, 17; Barajas and Steiner, 2002: 31)
ATS_{it} (-)	dummy variable for bank i at time t that takes the value of one if assets are transferred to state-led AMC and zero otherwise; additional variable specific to the supply function analogous to the variable FOBAPROA – IPAB promissory notes (the Mexican version of FIDF promissory notes issued as part of rehabilitation measures) in percent of total assets in Haber and Musacchio (2005: 14)[162]
$MERGER_{it}$ (+)	dummy variable for bank i at time t that takes the value of one if another bank was merged into it and zero otherwise; used to capture the effect of mergers on lending capacity (Clarke et al., 2002: 11)

[161] Due to substantial adjustments in equity levels over the period, net worth is not included as a control variable but instead proxied by the ratio of non-performing loans over total loans for bank i at time t. Besides, bank financial distress is an important determinant of credit availability as evidenced by the credit crunch in Thailand in the aftermath of the Thai financial crisis. (Berger, Klapper and Udell, 2001: 1, 8; Ito and Pereira da Silva, 1999: 8; Hancock et al., 1995: 663) Note that Nakornthab and Subhaswasdikul (2003: 40) find that the level of non-performing loans appears to have been a major obstacle to loan growth during the early stages of the crisis only.

[162] It is noteworthy that Nakornthab and Subhaswasdikul (2003: 4, 35) use aggregate and bank-level data on private credit, adjusted for loan write-offs and net loan transfers to AMC. These data, however, are not publicly available.

INT_t (-)	nominal interest rate at time t, which is measured by averaged 14-days repurchase rates; used to proxy the opportunity cost of lending (see for example Weller, 2001: 4)
$GDPCAPG_t$ (+)	growth rate of real per capita GDP at time t; used to capture credit demand as well as borrowers' creditworthiness (see for example Arena, Reinhart and Vazquez, 2003: 11; Barajas and Steiner, 2002: 31; Weller, 2001: 4; Kashyap and Stein, 1997: 11)[163]
$CMSFI_t$ (-)	growth rate of the sum of outstanding loans of specialised financial institutions (SFI) and new issuance of securities at time t; aimed at accounting for the increasing importance of SFI in financing government projects[164] as well as the increasing importance of capital markets as reported in Nakornthab and Subhaswasdikul (2003: 9)
The +/- signs in parentheses state a priori expectations. +, -, +/- denote an expected positive, negative and ambiguous association with the dependent variable.	

The first set of regressions seeks to address the questions (i) Does the lending behaviour of hybrid banks differ from that of their domestic-owned counterparts, controlling for other factors? and (ii) What is the foreign bank effect on lending by commercial banks incorporated in Thailand, controlling for other factors? The second set of regressions aims at analysing the foreign bank effect on lending by *domestic* banks, controlling for other factors.

Both sets of regressions thus address concerns that foreign bank presence decreases total lending and/or affects the distribution of credit with respect to specific lending areas and may result in a redistribution thereof. With respect to the former, increases in foreign bank presence are expected to lead to increased total loan growth since foreign banks are expected to have funding advantages and/or introduce sophisticated lending procedures

[163] When examining lending classified by economic sector, the growth rate of real GDP by industry j is used as control variable, except in the cases of HL_{it} / OL_{it} (loans of bank i at time t classified as Housing Loans / Other Loans in percent of total commercial bank loans at time t) being the dependent variable due to a lack of data availability / unit root problem. In these cases, growth in real per capita GDP is employed.

[164] The GSB alone has for example implemented the government's People's Bank Programme, National Village and Urban Community Fund Programme, Asset Capitalisation Programme and People's Debt Restructuring Programme. Claims on the government, on the business and household sector and on non-financial public enterprises of the largest three SFI increased from 11 percent of nominal GDP in 1997 to 21 percent of GDP at year-end 2005 as reported in Chapter 2.

and foreign banking expertise.[165] With respect to the latter, analogous Clarke et al. (1999: 5), foreign banks are expected to focus on specific areas where they have a comparative advantage, thus exerting competitive pressures on domestic banks that vary across specific market segments. Domestic banks are expected to have increased their lending exposure to those market segments foreign banks do *not* focus on, such as lending to the agricultural sector and pre-financing of property developers.

The following main hypotheses are tested:[166]

1st set of regressions:	H_0: $\beta_1 = 0$, $\beta_2 = 0$ and H_A: $\beta_1 > 0$, $\beta_2 > 0$
2nd set of regressions:	H_0: $\beta_1 = 0$, and H_A: $\beta_1 > 0$

where H_0 denotes the null hypotheses and H_A the alternative hypotheses.

The third regression addresses concerns that foreign bank penetration may decrease the stability of domestic bank credit and analyses the responsiveness of growth in total lending to monetary policy changes across domestic and hybrid banks. Variable definitions are given in Table 18. Under the bank lending channel hypothesis, the responsiveness of loan growth to changes in monetary policy is expected to be higher for domestic banks since these are assumed to be more financially constrained.

The following main hypothesis is tested:

3rd regression:	H_0: $\beta_3 = \beta_4$, and H_A: $\lvert \beta_3 \rvert > \lvert \beta_4 \rvert$

where H_0 denotes the null hypotheses and H_A the alternative hypotheses.

[165] As reported in Suwanaporn (2006), for example, hybrid banks improved the credit approval process by separating credit analysis and approval from customer relations.

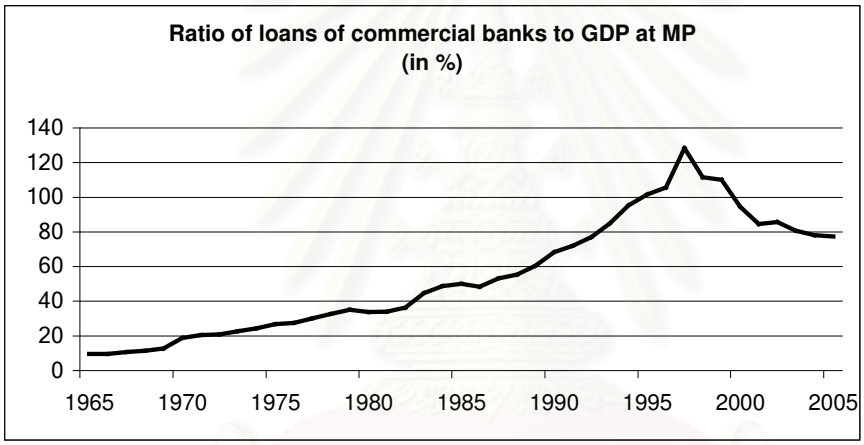
[166] When using lending classified by economic sector as dependent variable, the hypotheses with respect to (i) β_1 in the first set of regressions is tested for market segments hybrid banks have a comparative advantage in and (ii) β_2 (β_1) in the first (second) set of regressions is tested for market segments foreign banks do not focus on.

5.4.3. Commercial bank lending in Thailand and descriptive statistics

Before running the regressions, descriptive statistics of domestic and hybrid banks are briefly examined.

Thailand's financial structure has remained bank-based in the aftermath of the Thai financial crisis as mentioned earlier with a high level of bank dependent borrowers.

Figure 22 Loans of commercial banks to GDP at current prices: 1965 - 2005



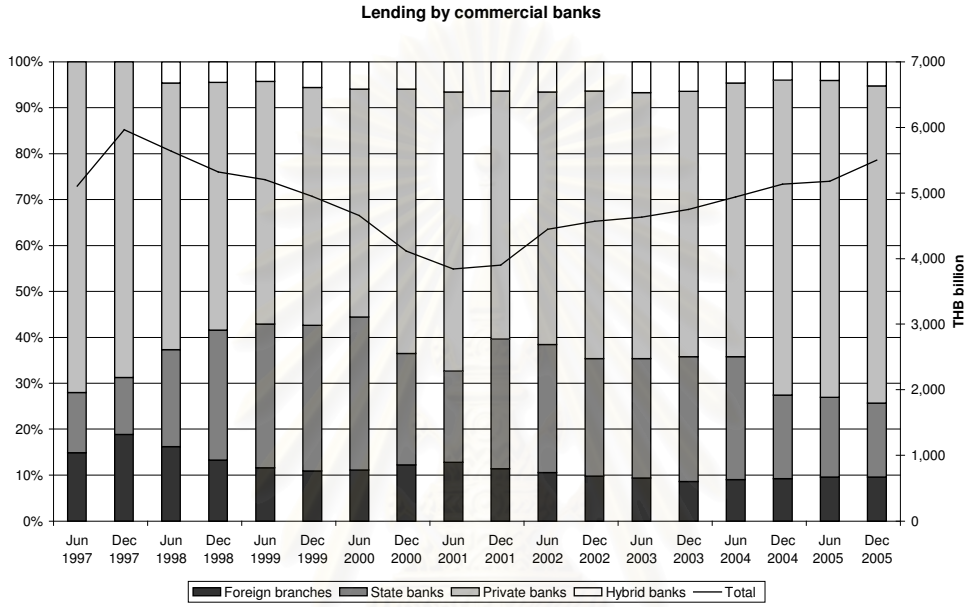
source: own calculations based on data obtained from the BoT

Figure 22 above shows the evolution of the ratio of total commercial bank loans to nominal GDP, a measure of the size of the commercial banking sector relative to the overall economy. The ratio of loans of commercial banks to GDP at market prices increased from 9.7 percent in 1965 to 128.3 percent in 1997 before falling to 77.4 percent in 2005, the latter being partially due to the transfer of non-performing assets to state-led asset management corporations.[167]

Lending by private banks decreased in the wake of the 1997 financial crisis as shown in Figure 23, inter alia due to reclassifications resulting from

changes in ownership. However, these banks have remained the most important suppliers of credit, followed by state banks, with lending having picked up in 2002.

Figure 23 Lending by commercial banks: June 1997 – December 2005



source: own calculations based on data obtained from the SET

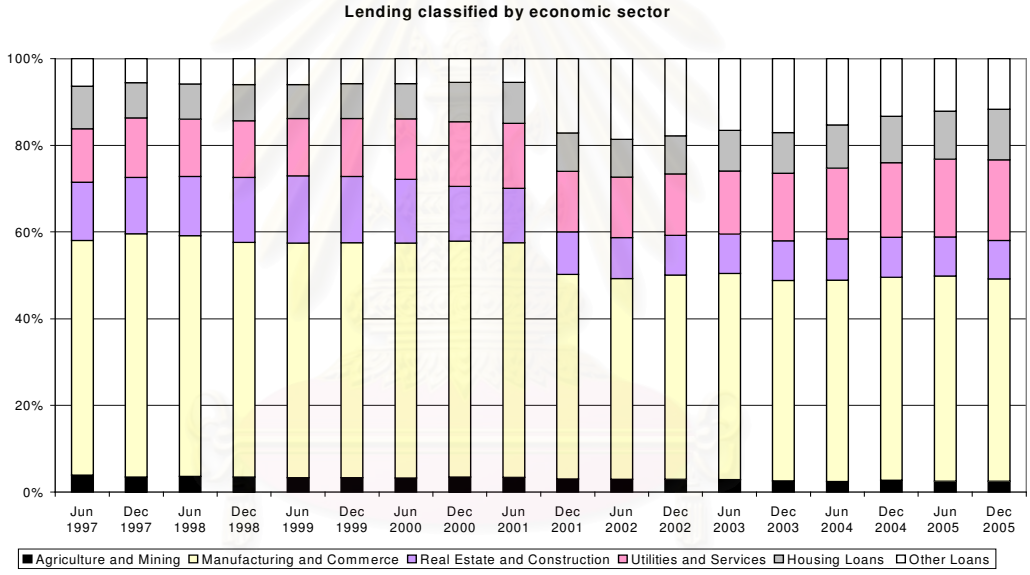
The increase in lending by state banks in the wake of the financial crisis was primarily due to nationalisation of FBCB, BMB, SCIB, LTB and UBB in 1998, whereas the decrease in lending in the second half of 2000 and the first half of 2001 was primarily due to the transfer of non-performing assets to state-led asset management corporations. The decrease in lending in the second half of 2004 resulted from the reduction of the stake in SCIB to below 50 percent (see Section 2.4).[168] Lending by foreign branches contracted and has only recently started to recover, which may indicate that foreign branches had a tendency to withdraw following the financial crisis. In contrast to foreign branches, lending by hybrid banks slightly increased until 2004, when the DTDB was merged with the TMB and the IFCT. The sum of lending by hybrid

[167] The book value of cumulative transfers of non-performing assets to state-led asset management corporations as of 31 December 2002 amounted to THB 718 billion or 13 percent of nominal GDP. (Fung et al., 2004: 59)
[168] The FIDF reduced its stake in BT to below 50 percent in the fourth quarter of 2002.

banks and foreign branches reached a peak of 20.5 percent of total commercial bank lending in the second half of 2001 before decreasing to 14.9 percent at year-end 2005.

Figure 24 tracks the evolution of loans of commercial banks to Agriculture and Mining, Manufacturing and Commerce, Real Estate and Construction, Utilities and Services, Housing Loans and Other Loans as a percentage of total commercial bank lending over the period June 1997 to December 2005.

Figure 24 Lending classified by economic sector relative to total commercial bank lending: June 1997 – December 2005



source: own calculations based on data obtained from the SET and the BoT

The lending share of loans classified as Agriculture and Mining declined from 4 percent in the first half of 1997 to 2.5 percent at year-end 2005 and the lending share of loans classified as Manufacturing and Commerce declined from a peak of 56.1 percent in the second half of 1997 to a low of 46.2 percent in the first half of 2002. Having peaked at the end of June 1999 at 15.5 percent, the lending share of loans classified as Real Estate and Construction has since then declined to 8.9 percent at the end of 2005. In contrast to the above, the lending share of loans classified as Utilities

and Services and Housing Loans increased over the period 1997 to 2005 from 12.3 percent to 18.5 percent and 9.8 percent to 11.7 percent respectively. The lending share of all remaining loans labelled Other Loans dramatically increased from 5.5 percent as of June 2001 to 17.2 percent in December 2001, primarily due to compensation received by KTB for assets transferred to SAM at the end of September 2000.[169]

As shown in Table 19 lending by foreign branches was concentrated in the manufacturing and commerce sector, underlining that foreign branches generally tend to lend to large firms to overcome any informational disadvantages they may have.

Table 19 Averaged loan portfolio composition (in percent): June 1997 – December 2005

		Private banks	State banks	Hybrid banks	Foreign branches
1.	Agriculture & Mining	2.88	4.05	2.41	1.51
2.	Manufacturing & Commerce	51.77	38.59	41.26	62.75
3.	Real Estate & Construction	13.82	13.79	8.85	4.83
4.	Utilities & Services	13.85	14.62	11.37	24.34
5.	Housing	10.75	6.72	12.87	0.92
6.	Others	6.88	22.23	23.22	5.65

source: own calculations based on data obtained from the SET

Despite focusing on the manufacturing and commerce sector as well, hybrid banks on average allocated only 41 percent of their loan portfolios to this sector, but 13 percent to the housing sector and 23 percent to loans classified as Other Loans compared to 1 percent and 6 percent for foreign

[169] In September 2000 THB 519.4 bln and THB 198.1 bln of distressed assets, interest receivables and allowance for bad debt and doubtful accounts were transferred to SAM in exchange for THB 321 bln 5-year promissory notes guaranteed by the FIDF. The transfer

branches. Foreign branches focused more on lending to Utilities and Services, which enjoys comparatively low risk weights. Foreign banks on average allocated less of their loan portfolios to Agriculture and Mining as well as Real Estate and Construction than domestic banks.

Descriptive statistics for all variables are presented in Appendix Q.

Although sufficient data on lending classified by client bases is not available for the entire period, it is noteworthy that Nidhiprabha (2005: 43) found that loans to related political parties as a percentage of total loans of hybrid banks were extremely low over the period 2000 to 2003 compared with those extended by domestic banks. In addition the author reports that TMB is strongly associated with insider lending.

5.4.4. Data

Since this study focuses on banks with retail banking activities, foreign bank presence primarily refers to lending by hybrid banks. Foreign bank penetration generally also includes cross-border lending as well as lending through foreign branches. Depending on the mode of entry as well as the organisational form, the composition of borrowers and consequently the distribution of the impact across borrowers that may arise from foreign bank entry will differ. Whereas cross-border lending and lending through foreign branches rather captures foreign bank penetration into wholesale bank operations, lending through subsidiaries typically includes foreign operations at the retail level since a local retail banking network would rely on funding from local depositors and also grant loans to small and medium-sized enterprises as well as individuals. Another purpose of narrowing down the scope is to acknowledge the fact that only hybrid and domestic banks operate on an almost level playing field.

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price was subject to three rounds of repricing, which ended in May 2001. (KTB, Annual Report 2001: 22)

The drawback, however, is that lending through foreign branches is not captured, which in turn leads to an underestimation of foreign bank presence. Some foreign branches have forcefully expanded their lending activities beyond the wholesale segment and lending through foreign branches will thus also be considered, albeit on the basis of aggregate data only since bank-level data are not available on a quarterly (semi-annual) basis as mentioned earlier.

Whereas data on total lending by commercial banks incorporated in Thailand are available on a quarterly basis, data on lending classified by economic sector are only available on a semi-annual basis. The quarterly (semi-annual) data cover the period 1997:2 to 2005:4 (June 1997 to December 2005) and comprise bank-level data for 12 commercial banks incorporated in Thailand.[170]

Data on total commercial bank lending, commercial bank lending by economic sector and other bank-level data are obtained from the SET's Listed Company Info, the SET's information systems, R-SIMS and I-SIMS, as well as SETSMART, which contain quarterly reports of individual banks.[171] Whereas other studies use unconsolidated financial statements to ensure consistency, in this study, both consolidated and unconsolidated financial statements are used, with unconsolidated financial statements only being referred to if consolidated financial statements are not available. Using unconsolidated financial statements would be misleading, especially due to the establishment of subsidiary AMC by several banks. All remaining data have been obtained from the BoT.

5.5. Estimation results

The estimation results are reproduced in Tables 20 to 23. First, total loan growth is used as dependent variable. Table 20 in Section 5.5.1. shows the results from the first set of regressions given in (5.1) (which uses quarterly data for 12 locally incorporated banks over the period 1997:2 to 2004:1, given

[170] See footnote 116.
[171] See footnote 117.

that the first exit of a hybrid bank occurred in 2004:2) as well as the second set of regressions given in (5.2) (which uses quarterly data for 8 commercial banks that have remained domestic-owned throughout the period 1997:2 to 2005:4 and thus allows a focus on the impact of foreign bank entry on domestic banks).

Second, lending classified by economic sector is used as dependent variable. Both sets of regressions are again estimated using semi-annual data. The estimation results are presented in Tables 21 and 22.

Third, in Section 5.5.3. the bank lending channel hypothesis is tested, using quarterly data for all 12 locally incorporated banks over the period 1997:2 to 2004:1. The estimation results from (5.3) are reported in Table 23.

5.5.1. Total loan growth

To acknowledge that only hybrid and domestic banks compete on an almost level playing field and to separate the effects of hybrid banks from those of foreign branches, the lending share of hybrid banks (FLSH) is used as foreign penetration measure in columns I and III of Table 20. Subsequently, in columns II and IV of Table 20, the alternative foreign penetration measure FLSA is introduced to capture any potential benefits derived from the presence of foreign branches. The estimation results from running both sets of regressions are presented in column per dependent variable.

First set of regressions

The results with respect to the first set of regressions given in (5.1) show that -as expected- the change in the lending share of hybrid banks (ΔFLSH) is of statistical significance and positively related to the change in the growth rate of total lending by commercial banks incorporated in Thailand, giving supportive evidence of a beneficial foreign bank effect on lending. The coefficient of the foreign ownership dummy variable, however, is not only statistically insignificant, but also enters with an unexpected negative sign.

Among the control variables, the change in the liquid assets ratio is significant and negatively associated with the change in total loan growth, simply reflecting that banks which tie up their assets in liquid assets grant fewer loans. The coefficient of the change in deposits (scaled by total assets) is statistically significant, but enters with an unexpected negative sign, which is counterintuitive, but not contrary to the findings in the literature (see for example Weller, 2001: 17). The significant and negative coefficient of the change in the growth rate of the sum of outstanding loans of SFI and new issuance of securities reflects the increasing importance of SFI in financing government projects as well as the increasing importance of capital markets.

Table 20 Estimation results: Total loan growth and foreign bank presence

This table reports estimation results from both sets of regressions using a constant coefficient model and total loan growth as dependent variable.

	I		II		III		IV	
	FIRST SET OF REGRESSIONS				SECOND SET OF REGRESSIONS			
	△ TLG CC		△ TLG CC		△ TLG CC		△ TLG CC	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
△FLSH	5.607 *	2.868			5.253 **	2.497		
△FLSA			2.811 **	1.332			2.552	1.573
FO	-2.524	3.133	-2.430	3.149				
SO	-7.580	5.874	-7.483	5.903	-3.603	5.357	-3.322	5.321
△LA	-1.998 ***	0.439	-2.008 ***	0.440	-2.161 ***	0.685	-2.218 ***	0.691
△NPL	-0.163	0.163	-0.151	0.163	-0.165	0.215	-0.168	0.214
△DA	-2.416 **	1.057	-2.248 **	1.029	-4.238 ***	1.451	-4.112 ***	1.453
ATS	-11.134 **	5.115	-10.011 *	5.327	-13.299 **	5.193	-12.328 **	5.303
MERGER	82.992 **	32.335	85.041 **	33.168	51.883 **	23.776	52.024 **	24.750
△INT	-0.749	0.511	-1.077 **	0.535	-0.696	0.613	-1.065	0.669
△CMSFI	-0.118 *	0.068	-0.118 *	0.070	-0.098	0.064	-0.104	0.066
△GDPCAPG	0.273	0.308	0.164	0.285	0.440	0.282	0.358	0.272
R-squared	0.365		0.363		0.448		0.455	
F-statistic	16.325 ***		16.185 ***		21.164 ***		19.116 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. Constant terms are not reported. All regressions are estimated with heteroskedasticity-consistent standard errors.

The coefficients of the dummy variables to account for transfers of non-performing loans to AMC and mergers are significant and enter in the case of the former with an expected negative and in case of the latter an expected positive sign. Analogous Clarke et al. (2002: 14) these dummy variables should be considered as controlling for temporary disequilibria following asset transfers and mergers to enable more reliable estimation. The coefficients of the change in non-performing loans (scaled by total loans), the change in the

nominal interest rate, the change in growth in real per capita GDP as well as the state ownership dummy variable are not of statistical significance.

Using a broad measure of the lending share of foreign banks (FLSA), which includes lending by hybrid banks and foreign branches to acknowledge the presence of foreign branches, confirms the above results and shows a significant and positive association between the change in the composite foreign penetration measure and the change in the growth rate of total lending by commercial banks incorporated in Thailand.

Running auxiliary regressions with the change in the lending share of foreign branches (ΔFLSB) as foreign penetration measure does not reveal a significant relationship between the change in the foreign penetration measure and the change in the growth rate of total lending although the role of all remaining control variables in explaining the dependent variable is confirmed. The results are reported in Appendix R.

To acknowledge that foreign investors not only acquired majority stakes in locally incorporated banks but also minority stakes, the ratio of the sum across all banks of the loans of each bank multiplied by the percentage of equity held by foreigners to total commercial bank lending is used as foreign penetration measure. The results as reported in Appendix T reveal, however, that the change in this foreign penetration measure is insignificant with respect to the change in total loan growth.[172]

Second set of regressions

Focusing on those commercial banks that remained domestic-owned over the period, the results with respect to the second set of regressions given in (5.2) confirm the results discussed above and reveal a statistically significant and positive relationship between the change in the lending share of hybrid banks (ΔFLSH) and the change in the growth rate of total lending.

[172] See footnote 122.

Among the control variables, the coefficient of the change in the liquid assets ratio is statistically significant and negatively associated with the change in total loan growth, as expected. The change in deposits (scaled by total assets) is statistically significant, but negatively related to the change in the growth rate of total lending, which again is counterintuitive. The dummy variables to account for transfers of non-performing assets to state-led AMC and mergers are significant and whereas the coefficient of the former enters with a negative sign, the coefficient of the latter enters with a positive sign in accordance with the results obtained from running the first set of regressions.

Using a broad measure of the lending share of foreign banks (ΔFLSA), however, leads to its coefficient being insignificant with respect to the change in total loan growth, although it enters with the expected positive sign. These results are confirmed when using the change in FLSB as foreign penetration measure as reported in Appendix R.

To verify robustness of the coefficient of the foreign penetration measures, analogous to Section 3.5.2., the three firm concentration ratio is included as control variable in the second set of regressions. As the variable CR3 is introduced, the coefficient of the foreign penetration measure and its standard error remain broadly unchanged. In addition, the coefficient on ΔFLSA is significant at the 10 percent level. The results are reported in Appendix S.

Using the ratio of the sum across all banks of the loans of each bank multiplied by the percentage of equity held by foreigners to total commercial bank lending, does not show a statistically significant association between the change in the foreign penetration measure and the change in total loan growth. The results are reproduced in Appendix T.[173]

[173] See footnote 172.

5.5.2. Lending classified by economic sector

The estimation results from running both sets of regressions are reported in Tables 21 and 22 and presented in column per dependent variable. Analogous Section 5.5.1. the composite foreign penetration measure (FLSA) is employed as an alternative to the lending share of hybrid banks in lending to economic sector j (FLSH) to acknowledge any potential benefits derived from the presence of foreign branches.

First set of regressions

The results from (5.1) reported in Table 21 show a significant and positive relationship between the change in the foreign penetration measure (ΔFLSH) and the change in lending to Agriculture and Mining and Real Estate and Construction (all scaled by total commercial bank loans) and a significant negative association between the change in the foreign penetration measure and the change in lending classified as Other Loans (scaled by total commercial bank loans). The change in the share of hybrid banks in loans classified as Manufacturing and Commerce, Utilities and Services and Housing Loans is not significantly associated with the change in the loans granted to these sectors relative to total commercial bank loans.

Turning to control variables, the coefficient of the change in the liquid assets ratio is significant and negative with respect to the change in loans classified as Real Estate and Construction and Other Loans (scaled by total commercial bank loans). The coefficient of the change in deposits in percent of total assets is significant with respect to the change in loans classified as Agriculture and Mining, Manufacturing and Commerce, Real Estate and Construction as well as Other Loans (all scaled by total commercial bank loans).

Table 21 Estimation results: Sectoral lending and foreign bank presence (1st set of regressions)

	△ AGR CC		△ MAC CC		△ REC CC		△ UTS CC		△ HL FE		△ OL CC	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
△FLSH	0.004 **	0.002	0.021	0.042	0.027 *	0.014	0.001	0.010	0.011	0.006	-0.036 **	0.016
FO	0.004	0.004	-0.032	0.080	0.018	0.030	-0.027	0.020	-0.004	0.019	-0.029	0.062
SO	0.003	0.009	-0.147	0.164	-0.030	0.080	0.007	0.041	-0.005	0.028	-0.010	0.104
△LA	0.000	0.000	-0.014	0.010	-0.007 *	0.004	-0.003	0.002	-0.002	0.001	-0.028 **	0.013
△NPL	0.001	0.018	0.425	0.412	0.316	0.212	0.132	0.101	-0.095	0.043	-0.625	0.435
△DA	-0.001 **	0.000	-0.012 *	0.006	-0.009 **	0.004	-0.002	0.002	0.000	0.001	0.015 *	0.009
ATS	-0.013	0.008	-0.504 **	0.235	-0.291 ***	0.107	-0.108 **	0.050	-0.020	0.024	0.190	0.227
MERGER	0.017	0.021	1.012 *	0.523	0.565 **	0.272	0.188 **	0.094	0.023	0.032	1.953 **	0.964
△INT	-0.001 *	0.001	-0.022 *	0.012	-0.010 **	0.004	0.001	0.004	-0.009	0.003	0.010	0.012
△CMSFI	0.000	0.000	0.000	0.002	-0.001	0.002	0.000	0.001	0.000	0.001	0.000	0.002
△GDPCAPG	0.001	0.002	-0.011	0.010	-0.001	0.003	0.005	0.003	-0.004	0.004	-0.010	0.012
R-squared	0.124		0.239		0.368		0.189		0.210		0.490	
F-statistic	1.847 **		4.111 ***		7.633 ***		3.045 ***		1.605		12.589 ***	

	△ AGR CC		△ MAC CC		△ REC CC		△ UTS CC		△ HL FE		△ OL CC	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
△FLSA	0.004 **	0.002	-0.023	0.036	0.031 *	0.017	-0.005	0.007	0.011	0.006	-0.027 **	0.012
FO	0.004	0.004	-0.044	0.080	0.019	0.030	-0.028	0.020	-0.004	0.019	-0.034	0.062
SO	0.003	0.009	-0.151	0.168	-0.031	0.080	0.008	0.040	-0.006	0.028	-0.011	0.102
△LA	0.000	0.000	-0.012	0.009	-0.008 *	0.005	-0.003	0.002	-0.002	0.001	-0.027 **	0.013
△NPL	-0.004	0.019	0.513	0.489	0.329	0.211	0.119	0.098	-0.097	0.043	-0.625	0.426
△DA	-0.001 **	0.000	-0.010 **	0.005	-0.008 **	0.004	-0.001	0.001	0.000	0.001	0.014 *	0.008
ATS	-0.016 **	0.008	-0.544 **	0.268	-0.267 **	0.105	-0.116 **	0.053	-0.023	0.024	0.131	0.219
MERGER	0.016	0.020	1.045 *	0.534	0.573 **	0.273	0.188 **	0.096	0.022	0.032	1.936 **	0.957
△INT	-0.001 **	0.001	-0.012	0.022	-0.016 **	0.007	0.003	0.005	-0.008	0.003	0.012	0.012
△CMSFI	0.000	0.000	0.000	0.002	-0.002	0.002	0.000	0.001	0.000	0.001	0.000	0.002
△GDPCAPG	0.001	0.001	-0.016 *	0.009	-0.004	0.003	0.005	0.003	-0.003	0.005	-0.007	0.011
R-squared	0.134		0.239		0.368		0.191		0.211		0.498	
F-statistic	2.029 **		4.119 ***		7.624 ***		3.096 ***		1.619		13.011 ***	

This table reports estimation results from the first set of regressions using lending classified by economic sector relative to total commercial bank lending as dependent variable. CC denotes the constant coefficient model and FE the fixed effects model. *, **, *** indicate significance levels of 10, 5 and 1 percent respectively. All regressions are estimated with heteroskedasticity-consistent standard errors. Constant terms are not reported

Whereas its coefficient enters with an unexpected negative sign with respect to the former, it enters with an expected positive sign with respect to Other Loans. The coefficient of the change in the nominal interest rate enters with an expected negative sign with respect to the change in loans classified as Agriculture and Mining, Manufacturing and Commerce and Real Estate and Construction (all scaled by total commercial bank loans). The dummy variable to account for transfers of non-performing assets to state-led AMC enters with a significant negative coefficient with respect to the change in loans classified as Manufacturing and Commerce, Real Estate and Construction and Utilities and Services (all scaled by total commercial bank loans). The coefficient of the dummy variable to account for mergers is significant and positively associated with the change in loans classified as Manufacturing and Commerce, Real Estate and Construction, Utilities and Services as well as Other Loans (all scaled by total commercial bank loans). The change in non-performing loans (scaled by total loans), the change in the growth rate of the sum of loans of SFI and new issuance of securities as well as the change in the growth of real sectoral GDP enter all regressions with an insignificant coefficient. In addition, neither foreign ownership nor state ownership is of statistical significance.

Using an alternative measure of the lending share of foreign banks to the economic sectors, which includes the activities of foreign branches, confirms the results above and reveals a significant and positive relationship between the change in the foreign penetration measure (ΔFLSA) and the change in the ratio of loans classified as Agriculture and Mining and Real Estate and Construction (scaled by total commercial bank loans) and a negative association between the composite foreign penetration measure and lending classified as Other Loans (scaled by total commercial bank loans). As shown in Appendix U, however, the change in the foreign penetration measure FLSB is only of statistical significance with respect to the change in loans classified as Other Loans, where its coefficient enters with a negative sign. The coefficient of the foreign ownership dummy variable is statistically insignificant in all regressions.

Finally, the results reported in Appendix W, reveal a statistically significant association between ΔFOBL and the change in loans classified as Housing Loans (scaled by total commercial bank loans).[174]

Second set of regressions

The results reported from (5.2) in Table 22 show a significant and positive relationship between the change in the asset share of hybrid banks (ΔFLSH) and the change in loans by domestic banks classified as Agriculture and Mining and Real Estate and Construction (all scaled by total commercial bank loans) in accordance with the results above. The significant association between the change in the foreign penetration measure and the change in loans classified as Other Loans, however, cannot be confirmed running the second set of regressions, although the coefficient enters with a negative sign.

The change in the liquid assets ratio is significant and negatively associated with the change in loans classified as Utilities and Services, Housing Loans and Other Loans (scaled by total commercial bank loans). The change in the variable non-performing loans in percent of total loans turns out to be significant and negatively related to the change in loans classified as Housing Loans relative to total commercial bank loans. The coefficient of the change in deposits relative to total assets enters with a negative sign with respect to the change in loans classified as Agriculture and Mining, Manufacturing and Commerce, Real Estate and Construction and Utilities and Services (all scaled by total commercial bank loans), but is positively related to the change in loans classified as Other Loans relative to total commercial bank loans, thus confirming the results obtained from running the first set of regressions.

[174] See footnote 172.

Table 22 Estimation results: Sectoral lending and foreign bank presence (2nd set of regressions)

	△ AGR CC		△ MAC CC		△ REC CC		△ UTS CC		△ HL FE		△ OL CC	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
△FLSH	0.005 *	0.003	0.004	0.042	0.028 *	0.015	-0.004	0.012	-0.004	0.006	-0.017	0.017
SO	0.007	0.008	-0.054	0.135	0.022	0.064	0.042	0.040	-0.012	0.023	-0.098	0.130
△LA	-0.001	0.000	-0.027	0.017	-0.012	0.008	-0.007 *	0.004	-0.002 ***	0.001	-0.051 ***	0.015
△NPL	0.000	0.000	0.010	0.007	0.005	0.003	0.003	0.002	-0.001 *	0.001	-0.008	0.006
△DA	-0.002 **	0.001	-0.033 **	0.016	-0.017 **	0.007	-0.010 *	0.006	-0.001	0.001	0.025 *	0.013
ATS	-0.016 *	0.009	-0.667 **	0.285	-0.368 ***	0.134	-0.135 **	0.058	-0.038	0.029	0.307	0.285
MERGER	0.004	0.017	0.802	0.491	0.464 *	0.245	0.103	0.083	0.003	0.033	1.863 **	0.809
△INT	-0.002 *	0.001	-0.034 *	0.018	-0.014 **	0.007	-0.001	0.006	-0.012 ***	0.003	0.015	0.017
△CMSFI	0.000	0.000	0.001	0.002	-0.002	0.001	0.000	0.001	0.000	0.001	0.004	0.003
△GDPCAPG	0.002	0.001	-0.014	0.013	-0.002	0.002	0.003	0.004	-0.007	0.004	0.019	0.020
R-squared	0.173		0.327		0.435		0.213		0.232		0.572	
F-statistic	2.620 ***		6.065 ***		9.620 ***		3.383 ***		2.096 **		16.428 ***	

	△ AGR CC		△ MAC CC		△ REC CC		△ UTS CC		△ HL FE		△ OL CC	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
△FLSA	0.004 **	0.002	-0.013	0.041	0.032 *	0.018	-0.010	0.009	-0.001	0.006	-0.019	0.013
SO	0.007	0.008	-0.053	0.133	0.020	0.063	0.044	0.039	-0.013	0.023	-0.101	0.128
△LA	-0.001	0.000	-0.026	0.016	-0.012	0.008	-0.007 *	0.004	-0.003 **	0.001	-0.049 ***	0.015
△NPL	0.000	0.000	0.011	0.008	0.005	0.004	0.003	0.002	-0.001 *	0.001	-0.008	0.006
△DA	-0.002 *	0.001	-0.032 **	0.014	-0.017 **	0.007	-0.011 *	0.006	-0.002	0.001	0.023 *	0.013
ATS	-0.016 *	0.008	-0.683 **	0.299	-0.348 ***	0.134	-0.149 **	0.059	-0.039	0.029	0.240	0.276
MERGER	0.002	0.018	0.813 *	0.491	0.461 *	0.246	0.097	0.085	0.004	0.033	1.842 **	0.806
△INT	-0.002 *	0.001	-0.029	0.030	-0.021 **	0.009	0.003	0.006	-0.012 ***	0.003	0.015	0.017
△CMSFI	0.000	0.000	0.002	0.002	-0.003 *	0.001	0.000	0.001	0.000	0.001	0.004	0.003
△GDPCAPG	0.001	0.001	-0.016	0.011	-0.004	0.002	0.003	0.004	-0.007	0.004	0.017	0.019
R-squared	0.189		0.327		0.434		0.219		0.231		0.575	
F-statistic	2.908 ***		6.075 ***		9.596 ***		3.501 ***		2.081 **		16.936 ***	

This table reports estimation results from the second set of regressions using lending classified by economic sector relative to total commercial bank lending as dependent variable. CC denotes the constant coefficient model and FE the fixed effects model. *, **, *** indicate significance levels of 10, 5 and 1 percent respectively. All regressions are estimated with heteroskedasticity-consistent standard errors. Constant terms are not reported

The coefficient of the change in the nominal interest rate enters with an expected negative sign with respect to the change in loans classified as Agriculture and Mining, Manufacturing and Commerce, Real Estate and Construction and Housing Loans (all scaled by total commercial bank loans). The dummy variable to account for transfers of non-performing assets to state-led AMC enters with a significant negative coefficient with respect to the change in loans classified as Agriculture and Mining, Manufacturing and Commerce, Real Estate and Construction as well as Utilities and Services relative to total commercial bank loans, whereas the dummy variable to account for mergers is positively associated with the change in loans classified as Real Estate and Construction and Other Loans relative to total commercial bank loans.

Consistent with the findings above, using the composite measure of the lending share of foreign banks to the economic sectors reveals a significant and positive relationship between the change in the asset share of hybrid banks and foreign branches (ΔFLSA) and the change in loans classified as Agriculture and Mining and Real Estate and Construction (scaled by total commercial bank loans). The significant association between the change in the foreign penetration measure and the change in loans classified as Other Loans, however, cannot be confirmed running the second set of regressions, although the coefficient enters with a negative sign. As shown in Appendix U, however, ΔFLSB is again of statistical significance and negatively associated with the change in loans classified as Other Loans (scaled by total commercial bank loans).

To verify robustness of the coefficient of the foreign penetration measures the three firm concentration ratio is included as control variable. As the variable CR3 is introduced, the coefficient of the foreign penetration measure and its standard error remain broadly unchanged, although the significant association between ΔFLSA and ΔREC cannot be confirmed as reported in Appendix V.

Using ΔFOBL as foreign penetration measure reveals a significant association between the change in the foreign penetration measure and the change in loans classified as Utilities and Services as well as Housing Loans (all scaled by total commercial bank loans) as reported in appendix W.[175]

5.5.3. Bank lending channel hypothesis

The results with respect to the third regression given in (5.3), which is used to test the bank lending channel hypothesis, are reported in Table 23.

In line with Arena, Reinhart and Vazquez (2004: 12, 2003: 16) but contrary to Arena, Reinhart and Vazquez (2006: 20), the results do not reveal a statistically significant difference between the change in the nominal interest rate and the change in total loan growth across domestic and hybrid banks. This may be interpreted to mean either that (i) hybrid banks are not less financially constrained than their domestic-owned counterparts or (ii) a bank lending channel does not exist.[176] It is noteworthy that the coefficient of the change in the nominal interest rate enters with a negative sign, the coefficient of the interaction term, however, with a positive sign. A similar result was obtained by Arena, Reinhart and Vazquez (2006: 40, 2004: 29).

Furthermore, the coefficients associated with the change in growth of real per capita GDP are not statistically significant. Whereas the coefficient of the change in growth of real per capita GDP enters with an expected positive sign, the coefficient of the interaction term is negative.

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[175] See footnote 172.

[176] Disyatat and Vongsinsirikul (2002: 18) find that although monetary tightening leads to a fall in bank credit, with approximately a 3 quarter lag, the importance of bank loans and the bank lending channel has declined since 1999 due to structural problems relating to non-performing loans and increased disintermediation. Given that monetary policy works with a lag, the variable INT was used with various lag specifications to check robustness. The results (not reported but available upon request) remain broadly unchanged. As a further robustness check, a specification with deposit growth as dependent variable was used analogous to Arena, Reinhart and Vázquez (2006: 9). The coefficient on the variable INT as well as on the interaction term remain insignificant. (Results are not reported but available upon request.) As an extension and to capture the low interest rate pass-through in Thailand, one could employ lending rates as alternative dependent variable analogous to Arena, Reinhart and Vázquez

Table 23 Estimation results: Bank lending channel hypothesis (3rd regression)

This table reports estimation results from the third regression, using a constant coefficient model and total loan growth as dependent variable.

	△ TLG CC	
	Coefficient	Std. Error
△GDPCG	0.3428	0.3508
△GDPCG*FO	-0.7095	0.5098
△INT	-0.9009	0.6684
△INT*FO	0.6056	0.9697
△LA	-1.8450 ***	0.6754
△LA*FO	-0.0217	0.8340
△NPL	-0.1239	0.1966
△NPL*FO	0.0622	0.3062
△DA	-2.8760 *	1.4675
△DA*FO	1.8903	1.5235
△CMSFI	-0.1339 *	0.0762
△CMSFI*FO	0.1373	0.1150
SOI	-6.8449	5.8658
ATS	-10.8787 **	4.4965
MERGER	76.3644 ***	28.2644
R-squared	0.37492	
F-statistic	12.3158 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. All regressions are estimated with heteroskedasticity-consistent standard errors. Constant terms are not reported

In accordance with the results obtained is Section 5.5.1., the change in the liquid assets ratio is significant and negatively associated with the change in total loan growth, with no statistically significant differences across hybrid and domestic banks. The change in deposits (scaled by total assets) is significant and its coefficient enters with a negative sign. Although the interaction term ΔDA*FO is statistically insignificant, it is interesting that its coefficient enters with the expected positive sign. The significant and negative coefficient of the change in the growth rate of the sum of outstanding loans of SFI and new issuance of securities again reflects the increasing importance of SFI in financing government projects as well as the increasing importance of capital markets. Statistically significant differences across hybrid and domestic

(2006: 9), who proxy lending rates with the ratio of interest revenue to average loan volume.

banks again do not seem to exist. The coefficients of the dummy variables to account for transfers of non-performing loans to asset management corporations and mergers are significant and enter in the case of the former with an expected negative and in case of the latter an expected positive sign.

5.6. Interpretation of results and summary

This chapter aims at addressing three major concerns surrounding foreign banks, namely that their presence may (i) decrease total lending, (ii) affect the distribution of credit with respect to specific lending areas and (iii) decrease the stability of domestic bank credit.

Regarding the first area of concern, the examination of the foreign bank effect on lending behaviour of commercial banks incorporated in Thailand shows that ceteris paribus increases in the change of the lending share of hybrid banks have tended to increase the change in total loan growth, which is consistent with the literature on financial liberalisation and gives supportive evidence of a beneficial impact of foreign bank entry. The estimation results, however, do not show a statistically significant impact of foreign ownership on lending behaviour, which is interpreted to mean that the changes in ownership have not changed lending strategies.

Regarding the second area of concern, the analysis of the foreign bank effect on lending to six economic sectors, namely Agriculture and Mining, Manufacturing and Commerce, Real Estate and Construction, Utilities and Services, Housing Loans and Other Loans relative to total commercial bank loans, suggests that ceteris paribus increases in the change of the lending share of foreign banks in loans classified as Agriculture and Mining and Real Estate and Construction have tended to increase the change in lending to these sectors (scaled by total commercial bank loans). Furthermore, there is some evidence that increases in the change of the lending share of foreign

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The exercise of employing price-related dependent variables is left for future research.

banks in loans classified as Other Loans have tended to initially decrease the change in lending to this sector (scaled by total commercial bank loans). Since hybrid banks have on average devoted less of their loan portfolios to loans classified as Agriculture and Mining and Real Estate and Construction, but on average held more loans classified as Other Loans as shown in Table 19, these findings are in line with the expectation that domestic banks have increased their lending exposure to those market segments foreign banks do not focus on and vice versa.

Given that hybrid banks are relatively small in size, their entry seems to increase contestability, with varying impact across different lines of business.

The results thus suggest that the change in foreign bank presence has affected the distribution of credit. Regarding the desirability of this redistribution, the results do not allow a judgement. On the one hand, lending to Real Estate and Construction played a major role in the distress of financial institutions leading to the financial crisis in 1997 (Koeberle, Renaud and Zhang, 1998: 1) suggesting that careful monitoring is warranted. On the other hand, it is also important to keep in mind that foreign bank entry may result in a welfare-improving segmentation of the market should domestic banks increase their exposure to this market in a sustainable way. In addition, the economic magnitude of the effects is rather small.

To conclude, although foreign bank presence appears to have been beneficial in terms of total loan growth, the distribution of lending should be considered as well.

Regarding the third area of concern, the estimation results further indicate that ceteris paribus no statistically significant differences in the responsiveness of changes in total loan growth to monetary policy changes across domestic and hybrid banks exist, which is interpreted to mean that foreign bank presence has not led to decreased stability of domestic bank credit.

Finally, the results discussed above must again be interpreted cautiously since isolation of the effects of foreign bank presence from the

manifold changes in the Thai financial sector as discussed in Chapter 2 is not a straightforward task. Moreover, the quality of the data is especially impeded by the transfer of non-performing assets to state-led asset management corporations and the surrounding uncertainties as well as the treatment of accrued interest receivables and loan loss provisionings. In this respect, to enhance the quality of the data, core performing loans (i.e. performing loans excluding restructured loans) could be used, however, quarterly data are not available for the entire period.

CHAPTER VI
CONCLUDING REMARKS

6.1. Conclusion

The 1997 financial crisis can be regarded as a unique opportunity to analyse the impact of foreign bank entry against profound changes in the economic system. More and more countries are being exposed to similar developments, given the trend toward financial liberalisation. Research on the effects of foreign bank entry can potentially help policymakers in these countries to achieve the benefits while avoiding adverse outcomes.

This study investigates how foreign banks operate differently from domestic banks and analyses the impact of foreign bank presence on the behaviour of domestic banks.

Regarding efficiency comparisons between domestic and foreign banks as well as bank efficiency spillovers, this study does not only use traditional performance measures but attempts to take existing literature one step further by also employing value-based performance measures as proxies for bank efficiency.

Hybrid banks appear to have performed better in terms of non-interest income and standardised cash value added, but worse in terms of personnel expenses (scaled by total assets). These results are interpreted to support the notion that banking sector efficiency may be enhanced through sales of domestic banks to foreign investors.

The results discussed in Chapter 3 support the findings in the literature on foreign bank entry and indicate that ceteris paribus increases in the asset share of hybrid banks have tended to decrease net interest margins, personnel expenses (scaled by total assets) and return on assets in domestic banks, suggesting that the presence of hybrid banks has contested their position and improved the functioning of the domestic banking market.

Once value-based performance measures are used, the results indicate that ceteris paribus increases in the asset share of hybrid banks have tended to decrease standardised economic profit, which accounts for bank-specific risk preferences by levying a charge for the use of equity, as well as standardised cash value added, which is not bound by standard accounting principles, in domestic banks suggesting a positive foreign bank effect in terms of value creation. The statistically insignificant association between the asset share of hybrid banks and standardised economic value added, however, casts some doubt over the presumed benefits of opening up as does the fact that once the change in the three firm concentration ratio is introduced as explanatory variable, the negative relationship between the asset share of hybrid banks and standardised cash value added turns out to be insignificant. Furthermore, the economic magnitude of the effect is considerably less in the case of cash value added (scaled by total assets) than return on assets and standardised economic profit, both of which are bound by standard accounting principles. All else being equal, increases in the change in the three firm concentration ratio appear to have led to significant decreases in the change in standardised cash value added.

These results suggest that findings in previous studies may need to be qualified since foreign bank presence may not be unequivocally beneficial upon consideration of the cost of equity and departure from standard accounting principles.

Furthermore, the results underline the importance of distinguishing between different modes of entry and organisational forms since foreign entry through the acquisition of domestic banks appears to have a stronger and more beneficial impact on the efficiency of locally incorporated banks than through the establishment of branches, with majority-ownership by a foreign block-holder being crucial.

Regarding the diffusion of financial innovations, the literature asserts that the transfer of technology and intangible assets is directly or indirectly associated with foreign bank presence. Since a framework for systematically analysing and quantifying these effects of foreign bank entry does not exist in

the literature as yet, foreign bank presence and foreign ownership are linked to the diffusion of financial innovations in Chapter 4 in an attempt to overcome this shortcoming.

The estimation results suggest that ceteris paribus hybrid banks tended to be more likely to adopt both innovations, transactional internet banking and organisational restructuring, than their domestic-owned counterparts.

In addition, increases in the asset share of hybrid banks are found to have increased the probability of adoption of either innovation, indicating a positive foreign bank effect on the diffusion of financial innovations.

The mode of entry, the organisational form as well as the ownership structure are again found to be important.

Estimating the model in first differences which allows a focus on changes in foreign bank presence (i.e. new foreign bank entry) instead of foreign bank presence, however, yields adverse outcomes.

Last not least, turning to the foreign bank effect on lending by locally incorporated banks three areas of concern are addressed.

With respect to the first area of concern, the examination of the foreign bank effect on lending behaviour of commercial banks incorporated in Thailand shows that ceteris paribus the lending behaviour of hybrid and domestic banks is similar in terms of total loan growth. Increases in the change in the lending share of hybrid banks, however, have tended to increase the change in total loan growth, all else being equal, indicating a positive foreign bank effect.

Regarding the second area of concern, the estimation results provide some evidence that foreign bank presence has an impact on the distribution of lending and that domestic banks tended to increase their lending exposure to those market segments foreign banks do not focus on, with the economic magnitude of the effects, however, being rather small.

Finally, testing the bank lending channel hypothesis, the results indicate that foreign bank presence does not seem to have decreased the stability of domestic bank credit.

The mode of entry, the organisational form as well as the ownership structure are again found to be important.

Whereas country-case studies generally only consider single aspects of foreign bank entry, this study is one of few comprehensive analyses. While this study gives some supportive evidence of a positive impact of foreign bank entry, it concomitantly suggests that foreign bank entry may not be unequivocally beneficial, giving rise to important policy implications. In addition, the analyses clearly show that the mode of entry, the organisational form as well as the size of foreign equity holdings matter.

6.2. Policy evaluation and recommendation

While the 1997 Guidelines for Equity Holding in Financial Institutions allow foreign investors to hold more than 49 percent of the shares of a financial institution, these regulations only apply on a case-by-case basis and are limited to a period of 10 years. Foreign branches on the other hand face serious operating restrictions. Although the first FSMP has introduced the subsidiary license for foreign banks, obstacles remain. Furthermore, the first FSMP does not address the status of hybrid banks.

The results in this study indicate that further opening up to foreign participation, especially in the form of foreign majority equity holdings in locally incorporated banks, may be beneficial. At the same time, however, the findings cast some doubt on the presumed benefits of opening up.

In addition, given that hybrid banks have remained small relative to domestic banks, it is not clear if the findings obtained in this study would continue to hold at high levels of foreign bank presence.

Especially regarding the impact of foreign bank entry on the stability of lending it is crucial to keep in mind that the importance of bank loans and the bank lending channel has declined in recent years due to structural problems relating to non-performing loans and increased disintermediation and that the

interest rate pass-through has been low in Thailand as mentioned in footnote 176. However, the BoT's reform of its monetary operation framework[177] as well as the closure of the BoT-operated repurchase market are expected to be completed within 2007. Both measures are likely to increase the efficiency of monetary policy. Hence, the result that foreign bank entry has not led to decreased stability of domestic bank credit needs to be reassessed in the future.

To avoid any adverse results that may be brought about by foreign bank entry, further liberalising foreign equity participation in locally incorporated banks should be done gradually and in conjunction with enhanced supervision and regulation (without creating incentives that result in adverse outcomes), which seems to be the approach taken by the BoT as evidenced by the first FSMP. The first FSMP in effect ended the decade-old moratorium on new banking licenses by allowing new domestic entry, thus reducing concentration in the sector. This gives incumbent banks the opportunity to prepare themselves for an increased foreign presence -with decreased discrimination- in the future, without forcing them to undertake higher-risk activities and threatening their survival. In addition, the eased regulations regarding approval of new types of financial products introduced by the first FSMP together with liberalisation measures announced by the SEC at the end of 2006 should allow incumbent banks to position themselves as universal banks and / or to seek out market niches in which they might have advantages over new foreign-owned entrants.

The main drawback of the current policy seems to be the absence of a credible commitment towards further lowering entry barriers post-FSMP1. Although the BoT has in principle committed itself to further liberalising the financial sector (see for example BoT, 2004a: 60), the fate of the hybrid banks has not been addressed by the first FSMP and uncertainties surround future

[177] Major measures include a shift from the 14-days repurchase rate to the 1-day repurchase rate as key monetary policy rate, synchronisation of reserve maintenance periods with meetings of the Monetary Policy Committee as well as the establishment of an end-of-day liquidity adjustment window with an interest rate corridor of +/- 50 basis points relative to the policy rates. (BoT, 2006a: 4-5)

regulations on entry and operations of foreign banks. Furthermore, the first FSMP does not seem to acknowledge that foreign entry via foreign majority equity holdings in locally incorporated banks may be an important complement to branch-based entry. As stipulated by the literature on market contestability, the near certainty that financial markets *will* be further liberalised is of importance. As noted in Graham (2001: 320) "*when a man is to be hanged in a fortnight, it concentrates his mind wonderfully*" (Samuel Johnson).

The second FSMP, scheduled to be finalised at the end of 2007 and expected to broaden the scope of activities as well as to prepare for new domestic and foreign entry, and passage of the bill on Financial Institution Business are opportunities to remove existing uncertainty.

In addition, the US government is likely to put pressure on Thailand in the near future to further liberalize market access - not only for banking and related services, but also for insurance and related services. The former would most likely provide US banks the opportunity to obtain new licenses, access the local ATM network as well as establish new branches. In addition, a Thailand-US FTA may also include cross-border trade in financial services, which could pose threats to financial stability under inadequate supervision, and increase the risk of financial contagion if Thailand as a host country fails to diversify. Analogous to the above, a carefully designed sequencing and timing of FTA instead of lengthy horse trading is needed. Of particular importance is also that any FTA commitments can be perceived as complementing existing and forthcoming FSMP.

The Thai commercial banking sector has arrived at yet another turning point. With the BAY shedding the image of a family-run bank at the beginning of 2007, the end of political influence by former pressure groups seems to have eventually arrived. Reluctance to further open up to foreign competition rooted in nationalism is vanishing at the same time. The future is likely to witness further mergers and acquisitions in the sector and new domestic and foreign entries will be needed to decrease subsequent "too big to fail" risks. Large banks will have to position themselves as universal banks, whereas

smaller banks need to establish themselves as niche providers of financial services as implied by the concept of the retail bank license, resulting in a deeper segmentation of the market. This segmentation of the market will concomitantly be brought about by changing demographics in the form of for example declining birth rates and increasing life expectancy as well as socio-economic factors such as the rising influence of children on family spending. Incumbent banks can be expected to strengthen their e-banking services and more aggressively engage in brand-building efforts. The commercial banking sector is likely to see an increase in co-operative endeavours between domestic and foreign financial institutions in areas such as bancassurance to support the universal bank concept. In addition, the SEC's liberalisation policy may eventually include investment overseas, which would not only attract foreign banks since these are likely to have more expertise in overseas investment but also encourage further strategic partnerships.

6.3. Limitations and extensions

The major limitation, but at the same time a major attraction, is that foreign bank entry in the form of acquisitions of majority stakes in locally incorporated banks occurred concurrently with a multitude of regulatory changes as discussed in Chapter 2, which complicates isolating the foreign bank effect on domestic banks. In addition, the relaxation of restrictions on foreign equity participation in commercial banks incorporated in Thailand has only recently occurred and it may be too early to draw conclusions. Besides, the activities of hybrid banks have remained small relative to domestic banks due to the existing exit provisions. However, only two out of four hybrid commercial banks still exist which justifies this analysis, given that one foreign hybrid retail bank has recently started operations.

As an extension of this study, since foreign entry has not only occurred in the commercial banking sector but also in non-bank financial institutions, most notably credit card companies, this should also be analysed and their potential impact on the degree of competition in the commercial banking

sector taken into consideration. It would also be interesting to see if the findings obtained in this study are consistent for financial sectors in other countries. Finally, a comparison between different approaches to measuring competition as well as the role of foreign banks in affecting the competitive conditions of banking systems should be conducted along the lines of Claessens and Laeven (2003), who examine the extent to which a change in factor input prices is reflected in revenues and relate this competitiveness measure to indicators of countries' banking system structures and regulatory regimes (including foreign bank entry).

These questions are left for future research.

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APPENDICES

Appendix A

Guidelines for Equity Holdings in Financial Institutions

The Ministry of Finance and the Bank of Thailand have recently announced the measure to restore confidence in the financial sector by requiring commercial banks and finance companies currently in operation to increase their capital as a cushion against any potential loss from asset deterioration. All financial institutions are encouraged to take early action so as to prevent problem in the future. To facilitate and expedite financial institutions' capital increase, the Bank of Thailand, with the approval of the Minister of Finance, has set the following guidelines for the financial institution's capital increase:

1. Guidelines for foreign equity participation in Thai financial institutions

1.1 Foreign investors that have sound financial status and high potential to help increase the efficiency in the management of the financial institution shall be allowed to hold more than 49% of the share in the 15 commercial banks, 33 finance companies, and 12 credit foncier companies for a period of 10 years. After 10 years, foreign investors will not be forced to sell their shares but may not purchase any additional shares, unless the amount of foreign shareholdings is less than 49% of total shares. Additional shares may be acquired to bring foreign shareholdings to 49% of total shares. For the holding of shares of the 58 suspended finance companies, the Financial Sector Restructuring Agency (FRA) shall follow the guideline of the Committee to Supervise the Merger and Acquisition of Financial Institutions announced on 13 October 1997. The guideline allows unlimited amount of shareholding by foreign shareholders up to period of 10 years. After 10 years, foreign investors may not purchase any more shares

unless the amount held is less than 49% of total shares in which case additional shares maybe acquired until the 49% mark is reached.

1.2 The guideline shall be the same for foreign investors that are banks. The foreign bank that already has a full branch or a Bangkok International Banking Facility will be allowed to continue their existing operation. However, the authorities reserve the right not to allow a foreign bank that has more than 49% stake in a Thai bank to have an additional full branch in Thailand.

2. Thai financial institutions' holdings of shares in other financial institutions

The authorities have the intention to apply the same guideline for Thai commercial banks and finance companies with sound financial status that wish to hold shares in other banks and finance companies. Nonetheless, there are legal limitations which prohibit a domestically incorporated commercial bank from holding other bank's shares unless approved by the Finance Minister on a case-by-case basis, and with a specified timeframe. Finance companies are also subject to the same legal constraints.

Therefore, the guideline regarding the shareholding in other financial institutions by domestically incorporated banks and finance companies will be as follows: The authorities will allow domestically incorporated banks and finance companies with sound financial status to have more than 49% stake in other financial institutions for a period of 10 years. After 10 years if the banks or finance companies request to maintain their ownership, the extension will be approved on the ten-year basis. During the extension period, banks and finance companies will not be forced to sell their shares. Additional shares maybe acquired to bring their shareholdings to 49% of total shares.

3. Common directors

Thai commercial banks and finance companies that are allowed to hold shares in other financial institutions according to 2 above may have the same directors as the financial institutions in which they hold shares for no more than 3 years. Further extension may be allowed if necessary.

The Bank of Thailand believes that the above guidelines will assist in the capital increase of financial institutions and will provide equal treatment between Thai and foreign investors.

Bank of Thailand
11 November 1997

Appendix B

Calculation of economic value added (in THB)

CALCULATION OF ECONOMIC VALUE ADDED - KBANK 2005:4		
		after-tax basis
net income	2,660,081,000	2,660,081,000
+ loan loss provisioning	238,128,000	166,689,600
- reversal of loan loss provisioning	0	0
- chargeoffs /1	1,248,030,000	873,621,000
+ recoveries /1	0	0
- gain on disposal of securities for investment	85,164,000	59,614,800
+ loss on disposal of securities for investment	0	0
- gain on disposal of equity investments	13,416,000	9,391,200
+ loss on disposal of equity investments	0	0
+ loss on diminution in value of securities	0	0
- revaluation gain on change in value of investments	0	0
- extraordinary gain	0	0
+ extraordinary loss	0	0
adjusted net income 2005:4		**1,884,143,600**
equity	76,065,513,000	76,065,513,000
+ loan loss reserves	38,449,020,000	26,914,314,000
+ unrealized loss on changes in value of investments	206,594,000	206,594,000
- gain on disposal of securities for investment	33,848,000	23,693,600
+ loss on disposal of securities for investment	0	0
- gain on disposal of equity investments	28,091,000	19,663,700
+ loss on disposal of equity investments	0	0
+ loss on diminution in value of securities	0	0
- revaluation gain on change in value of investments	0	0
- extraordinary gain	0	0
+ extraordinary loss	0	0
adjusted equity 2005:3		**103,143,063,700**
beta 2005:4		0.86
cost of equity (in %) 2005:4		1.90
equity capital charge 2005:4		**1,962,084,518**
economic value added 2005:4		**-77,940,918**

/1 Following Damien et al. (1997: 11-12) chargeoffs (recoveries) are calculated as follows:
$LLR_{t-1} + LLP_t - LLR_t$, where LLR denotes loan loss reserves and LLP loan loss provisioning.

Appendix C

Calculation of cash value added (in THB)

CALCULATION OF CASH VALUE ADDED - KBANK 2005:4	
net cash-flow from operating activities before changes in operating assets and liabilities	6,305,575,000
sinking fund depreciation	223,983,920
sustainable cashflow 2005:4	**6,081,591,080**
equity 2005:3	76,065,513,000
cost of equity (in %) 2005:4	1.90
equity capital charge	**1,446,989,842**
cash value added 2005:4	**4,634,601,238**

CALCULATION OF SINKING FUND DEPRECIATION - KBANK 2005:4	
depreciating assets	21,440,593,000
depreciation	389,589,000
cost of equity (in %) 2005:4	1.90
N (assuming an asset life of N quarters)	55
sinking fund depreciation 2005:4	**223,983,920**

Net cash-flow from operating activities before changes in operating assets and liabilities reconciles net income (loss) to net cash used in operating activities. Major adjustments to net income are: depreciation and amortisation, loan loss provisioning, loss on diminution in value of investments in securities, amortisation of excess of fair value of assets acquired over cost of investment in subsidiary, gain on disposal of investment in securities for investment, amortisation of premium and discount on debt instruments, loss on diminution in value of properties foreclosed, loss on diminution in value of other assets, loss on disposal of premises and equipment, loss on diminution in value of premises and equipment, profit/loss in subsidiaries and associated companies, dividend income from subsidiaries and associated companies,

deferred income tax expense, amortisation of discount on debentures, changes in accrued interest receivables.

Following Martin and Petty (2000: 120, 235 (endnote 10)), sinking fund depreciation (SFD) is computed as follows:

$$SFD = \text{current cost of depreciating assets} \times \frac{\text{reinvestment rate}}{(1 + \text{reinvestment rate})^{N} - 1}$$

Asset life in quarters is computed by dividing depreciating assets by depreciation expenses. (Martin and Petty, 2000: 124).

Appendix D

Descriptive statistics

FIRST SET OF REGRESSIONS (Sample: 1997:2 - 2004:1)													
	NIM	NII	OEA	PEA	ROA	EP	EVA	CVA	LA	NPL	DA	SO	FO
Mean	0.36	0.26	0.66	0.20	-0.51	-0.65	-0.71	-0.12	14.47	24.04	78.94	0.22	0.26
Median	0.45	0.24	0.57	0.17	0.01	-0.10	-0.27	0.03	11.17	18.88	81.22	0.00	0.00
Maximum	8.41	1.30	5.10	0.72	18.56	18.38	19.33	2.45	88.49	102.38	94.58	1.00	1.00
Minimum	-10.37	-0.83	-1.12	0.05	-36.29	-36.68	-21.23	-6.36	1.48	0.01	47.86	0.00	0.00
Std. Dev.	0.84	0.19	0.47	0.09	3.04	3.06	2.95	0.76	13.44	20.50	7.71	0.42	0.44
Observations	336	336	336	336	336	336	336	336	336	336	336	336	336

SECOND SET OF REGRESSIONS (Sample: 1997:2 - 2005:4)												
	NIM	NII	OEA	PEA	ROA	EP	EVA	CVA	LA	NPL	DA	SO
Mean	0.40	0.27	0.58	0.17	-0.23	-0.37	-0.53	-0.01	13.69	22.30	80.42	0.28
Median	0.47	0.25	0.52	0.16	0.09	-0.02	-0.14	0.08	12.20	17.12	82.62	0.00
Maximum	8.41	1.30	4.41	0.68	12.78	12.80	19.33	2.45	57.64	102.38	94.58	1.00
Minimum	-10.37	-0.83	0.04	0.05	-21.84	-21.89	-16.02	-3.67	2.99	0.01	47.86	0.00
Std. Dev.	0.86	0.19	0.36	0.06	1.91	1.92	2.73	0.61	8.55	18.47	6.87	0.45
Observations	280	280	280	280	280	280	280	280	280	280	280	280

Sample: 1997:2 - 2004:1							
	CMSFI	INT	GDPCAPG	FMSH	FMSA	FMSB	FOBA
Mean	4.31	5.05	0.49	4.87	17.88	13.01	37.43
Median	4.86	1.86	0.34	5.82	17.96	12.53	37.72
Maximum	34.73	21.95	9.22	6.30	20.23	19.37	40.66
Minimum	-22.67	1.25	-8.13	0.00	15.37	10.25	31.80
Std. Dev.	13.67	6.41	4.60	1.96	1.22	2.26	2.37
Observations	28	28	28	28	28	28	28

Sample: 1997:2 - 2005:4							
	CMSFI	INT	GDPCAPG	FMSH	FMSA	FMSB	FOBA
Mean	4.28	4.48	0.67	4.65	17.52	12.87	38.59
Median	4.10	1.89	0.38	5.64	17.63	12.38	38.02
Maximum	34.73	21.95	9.22	6.30	20.23	19.37	46.67
Minimum	-22.67	1.25	-8.13	0.00	15.18	10.25	31.80
Std. Dev.	12.25	5.84	4.65	1.81	1.36	2.08	3.37
Observations	35	35	35	35	35	35	35

Appendix E

Estimation results: 1st set of regressions

The asset share of foreign branches (FMSB) is used as foreign penetration measure.

	NIM CC		NII FE		OEA FE		PEA FE	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
FMSB	0.0732 **	0.0351	-0.0174	0.0114	0.0254	0.0205	0.0069 **	0.0032
FO	0.0125	0.0630	0.1430 ***	0.0489	0.1000	0.2351	0.0837 ***	0.0276
SO	-0.1422	0.1663	0.2789 ***	0.0837	-0.1320	0.2237	-0.0196	0.0182
OEA	0.1342	0.2081	0.0104	0.0240				
LA	-0.0073 ***	0.0019	-0.0023 ***	0.0009	0.0002	0.0025	-0.0010 ***	0.0002
NPL	-0.0130 ***	0.0029	-0.0021 ***	0.0007	0.0028	0.0020	0.0002	0.0003
DA	0.0055	0.0067	-0.0013	0.0020	0.0204 **	0.0091	0.0016 *	0.0009
INT	-0.0260	0.0161	0.0023	0.0037	0.0095	0.0101	-0.0011	0.0013
CMSFI	0.0056	0.0053	-0.0005	0.0007	0.0043	0.0027	0.0009 **	0.0004
GDPCAPG	0.0151	0.0109	-0.0032	0.0023	0.0029	0.0063	0.0016	0.0010
R-squared	0.1351		0.3078		0.1925		0.5961	
F-statistic	5.0750 ***		6.6483 ***		3.7550 ***		23.2429 ***	
	ROA FE		**EP** FE		**EVA** CC		**CVA** FE	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
FMSB	-0.1613	0.1428	-0.1709	0.1431	-0.4170 **	0.2106	-0.0146	0.0380
FO	1.2927	1.1051	1.3050	1.1106	-0.4662	0.3692	0.2868	0.2034
SO	2.2678	1.4148	2.2881	1.4227	-0.9540 *	0.5140	-0.3326	0.3334
LA	0.0555 *	0.0284	0.0555 *	0.0285	-0.0134	0.0145	-0.0007	0.0045
NPL	-0.0343 ***	0.0110	-0.0337 ***	0.0111	0.0091	0.0137	-0.0094 ***	0.0030
DA	-0.1308 **	0.0641	-0.1272 **	0.0643	-0.0846	0.0568	-0.0100	0.0090
INT	-0.0242	0.0609	-0.0261	0.0612	0.0983	0.0701	-0.0187	0.0149
CMSFI	-0.0351 ***	0.0095	-0.0361 ***	0.0096	-0.0167 **	0.0082	-0.0120 ***	0.0034
GDPCAPG	0.0753 *	0.0403	0.0741 *	0.0405	0.0423	0.0397	-0.0098	0.0097
R-squared	0.2597		0.2574		0.0696		0.3087	
F-statistic	5.5249 ***		5.4599 ***		2.7080 ***		7.0318 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. CC denotes the constant coefficient model and FE the fixed effects model. Regarding the latter, the regressions also include bank dummy variables which are not reported. Constant terms are also not reported. All regressions are estimated with heteroskedasticity-consistent standard errors.

Appendix F

Estimation results: 1st set of regressions

The ratio of the sum across all banks of the assets of each bank multiplied by the percentage of equity held by foreigners to total commercial bank assets (FOBA) is used as foreign penetration measure.

	△ NIM CC		△ NII CC		△ OEA CC		△ PEA CC	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
△FOBA	0.0084	0.0337	0.0091	0.0075	-0.0323	0.0207	-0.0036	0.0030
FO	0.1081 *	0.0630	0.0191	0.0288	-0.1274 *	0.0768	0.0047	0.0104
SO	0.1166	0.3042	0.0295	0.0336	-0.1208	0.0784	0.0005	0.0105
△OEA	0.4619	0.3652	0.0023	0.0214				
△LA	0.0001	0.0075	-0.0023	0.0027	-0.0028	0.0053	-0.0006	0.0007
△NPL	0.0036	0.0095	-0.0003	0.0012	-0.0194 ***	0.0062	-0.0001	0.0008
△DA	-0.0244 **	0.0117	0.0024	0.0025	0.0241 **	0.0096	0.0055 ***	0.0021
△INT	0.0040	0.0413	0.0019	0.0050	-0.0092	0.0141	-0.0004	0.0016
△CMSFI	0.0077	0.0047	-0.0007	0.0006	0.0029	0.0019	0.0009 ***	0.0003
△GDPCAPG	0.0161	0.0119	-0.0033	0.0021	0.0008	0.0054	0.0013 *	0.0007
R-squared	0.0749		0.0287		0.1682		0.2552	
F-statistic	2.5351 ***		0.9238		7.0552 ***		11.9533 ***	
	△ ROA CC		△ EP CC		△ EVA CC		△ CVA CC	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
△FOBA	-0.0292	0.1673	-0.0283	0.1701	0.2207 *	0.1145	0.0085	0.0299
FO	0.5248	0.4815	0.5291	0.4888	0.2794	0.4643	0.1350	0.0898
SO	0.9528	0.6144	0.9466	0.6274	0.2944	0.6298	0.0802	0.1712
△LA	0.1775 **	0.0779	0.1810 **	0.0799	0.0228	0.0395	0.0436 **	0.0180
△NPL	0.0194	0.0526	0.0215	0.0540	0.0778 ***	0.0275	0.0237 **	0.0104
△DA	-0.1900 *	0.1150	-0.1912 *	0.1157	-0.2498 ***	0.0879	-0.0166	0.0131
△INT	-0.0688	0.1031	-0.0717	0.1048	-0.0860	0.0724	0.0242	0.0277
△CMSFI	-0.0311 ***	0.0071	-0.0320 ***	0.0072	-0.0085	0.0075	-0.0076 ***	0.0027
△GDPCAPG	0.0650 **	0.0318	0.0645 **	0.0323	0.0249	0.0338	-0.0075	0.0083
R-squared	0.2163		0.2164		0.1438		0.1827	
F-statistic	9.6278 ***		9.6372 ***		5.8584 ***		7.8010 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. CC denotes the constant coefficient model. Constant terms are not reported. All regressions are estimated with heteroskedasticity-consistent standard errors. Dependent and independent variables in first differences (denoted Δ) (except the dummy variables).

Appendix G

Estimation results: 2nd set of regressions

The asset share of foreign branches (FMSB) is used as foreign penetration measure.

	NIM CC		NII FE		OEA FE		PEA FE	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
FMSB	0.0888 **	0.0395	-0.0019	0.0130	0.0051	0.0150	0.0082 ***	0.0026
SO	-0.1406	0.1493	0.2263 ***	0.0665	0.0605	0.1401	-0.0251 **	0.0125
OEA	0.3052	0.4481	0.0242	0.0342				
LA	0.0017	0.0045	-0.0033 **	0.0015	0.0036	0.0025	0.0005 *	0.0003
NPL	-0.0134 ***	0.0042	-0.0029 ***	0.0008	0.0051 ***	0.0016	0.0004	0.0004
DA	0.0072	0.0092	-0.0034	0.0025	0.0259 **	0.0116	0.0021	0.0014
INT	-0.0283	0.0221	-0.0039	0.0044	0.0257 **	0.0107	0.0000	0.0009
CMSFI	0.0097	0.0077	-0.0006	0.0010	0.0024	0.0026	0.0008 *	0.0004
GDPCAPG	0.0169	0.0106	-0.0030	0.0023	0.0065	0.0042	0.0026 ***	0.0010
R-squared	0.1199		0.3216		0.2710		0.3319	
F-statistic	4.0862 ***		7.7927 ***		6.5431 ***		8.7445 ***	
	ROA FE		**EP** FE		**EVA** CC		**CVA** FE	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
FMSB	0.0053	0.0751	-0.0062	0.0749	-0.1904	0.1641	0.0521 *	0.0312
SO	0.6628	0.6704	0.6451	0.6753	-0.8541 **	0.4246	-0.1904	0.1986
LA	0.0503	0.0331	0.0521	0.0333	-0.0661 *	0.0376	0.0080	0.0095
NPL	-0.0407 ***	0.0097	-0.0395 ***	0.0098	0.0119	0.0143	-0.0117 ***	0.0031
DA	-0.0832	0.0696	-0.0799	0.0697	-0.0682	0.0752	-0.0094	0.0092
INT	-0.0779	0.0584	-0.0785	0.0585	0.0431	0.0550	-0.0361 ***	0.0121
CMSFI	-0.0241 ***	0.0090	-0.0247 ***	0.0091	-0.0109	0.0109	-0.0063 **	0.0029
GDPCAPG	-0.0025	0.0235	-0.0037	0.0235	0.0143	0.0412	-0.0081	0.0083
R-squared	0.2872		0.2816		0.1079		0.2803	
F-statistic	7.0907 ***		6.9001 ***		4.0991 ***		6.8557 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. CC denotes the constant coefficient model and FE the fixed effects model. Regarding the latter, the regressions also include bank dummy variables which are not reported. Constant terms are also not reported. All regressions are estimated with heteroskedasticity-consistent standard errors.

Appendix H

Estimation results: 2nd set of regressions

The asset share of hybrid banks (FMSH) is used as foreign penetration measure. To verify the robustness of the coefficient of the foreign penetration measure, the three firm concentration ratio (CR3) is included as control variable.

	△ NIM CC		△ NII CC		△ OEA CC		△ PEA CC	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
△FMSH	-0.2465 *	0.1326	0.0382	0.0285	0.1184 **	0.0546	-0.0177 ***	0.0060
SO	0.0640	0.1763	0.0111	0.0305	-0.0705	0.0662	0.0018	0.0093
△OEA	1.1948 ***	0.2066	0.0009	0.0298				
△LA	0.0036	0.0143	-0.0060 **	0.0028	0.0019	0.0040	0.0009	0.0008
△NPL	-0.0006	0.0108	-0.0022	0.0013	-0.0116	0.0077	0.0011	0.0012
△DA	-0.0309	0.0192	-0.0017	0.0038	0.0132	0.0101	0.0061 **	0.0029
△CR3	0.2596 **	0.1018	0.0392 **	0.0172	-0.0136	0.0454	-0.0017	0.0059
△INT	0.0591	0.0433	0.0108	0.0074	-0.0060	0.0147	-0.0012	0.0016
△CMSFI	0.0076 *	0.0041	-0.0018 **	0.0009	0.0021	0.0016	0.0008 ***	0.0002
△GDPCAPG	0.0098	0.0133	-0.0036	0.0023	0.0053	0.0036	0.0025 ***	0.0006
R-squared	0.1804		0.0660		0.1198		0.3030	
F-statistic	5.7443 ***		1.8432 **		3.9623 ***		12.6522 ***	

	△ ROA CC		△ EP CC		△ EVA CC		△ CVA CC	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
△FMSH	-0.4576 *	0.2432	-0.4560 *	0.2452	0.0233	0.3246	-0.0659	0.0902
SO	0.2774	0.3278	0.2625	0.3306	0.0974	0.5925	0.0214	0.1291
△LA	0.1071 ***	0.0266	0.1074 ***	0.0268	-0.0167	0.0523	0.0469 *	0.0261
△NPL	-0.0132	0.0196	-0.0137	0.0197	0.0816 ***	0.0265	0.0115	0.0130
△DA	-0.0710 **	0.0354	-0.0719 **	0.0357	-0.3245 ***	0.1106	-0.0146	0.0196
△CR3	-0.0205	0.1899	-0.0242	0.1915	-0.3042 *	0.1793	-0.1750 ***	0.0529
△INT	-0.0682	0.0808	-0.0723	0.0815	-0.1259	0.0915	-0.0255	0.0227
△CMSFI	-0.0228 ***	0.0076	-0.0235 ***	0.0077	-0.0062	0.0096	0.0004	0.0025
△GDPCAPG	-0.0017	0.0247	-0.0029	0.0249	0.0105	0.0329	-0.0037	0.0067
R-squared	0.1633		0.1644		0.1782		0.1684	
F-statistic	5.6826 ***		5.7276 ***		6.3125 ***		5.8959 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. CC denotes the constant coefficient model. Constant terms are not reported. All regressions are estimated with heteroskedasticity-consistent standard errors. Dependent and independent variables in first differences (denoted Δ) (except the dummy variables) to correct for the high correlation between FMSH and CR3.

Appendix I

Estimation results: 2nd set of regressions

The asset share of hybrid banks and foreign branches (FMSA) is used as foreign penetration measure. To verify the robustness of the coefficient of the foreign penetration measure, the three firm concentration ratio (CR3) is included as control variable.

	NIM CC		NII FE		OEA FE		PEA FE	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
FMSA	-0.0834 ***	0.0181	0.0014	0.0083	-0.0036	0.0172	-0.0089 **	0.0040
SO	-0.1632	0.1519	0.2211 ***	0.0643	0.0773	0.1487	-0.0197	0.0130
OEA	0.3023	0.4566	0.0272	0.0343				
LA	0.0067	0.0050	-0.0035 **	0.0015	0.0041	0.0030	0.0002	0.0003
NPL	-0.0094 **	0.0042	-0.0032 ***	0.0008	0.0058 ***	0.0021	0.0010 **	0.0005
DA	0.0053	0.0098	-0.0037	0.0024	0.0264 **	0.0118	0.0021	0.0014
CR3	-0.0036	0.0433	0.0089	0.0084	-0.0289	0.0190	-0.0104 ***	0.0021
INT	0.0046	0.0083	-0.0018	0.0034	0.0181 **	0.0083	-0.0001	0.0012
CMSFI	0.0090	0.0070	-0.0007	0.0010	0.0028	0.0024	0.0008 **	0.0004
GDPCAPG	0.0159	0.0113	-0.0028	0.0024	0.0059	0.0043	0.0024 ***	0.0009
R-squared	0.1219		0.3240		0.2780		0.3807	
F-statistic	3.7335 ***		7.3862 ***		6.3299 ***		10.1054 ***	
	ROA FE		**EP FE**		**EVA CC**		**CVA FE**	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
FMSA	-0.2170 **	0.0919	-0.2069 **	0.0927	-0.3314 **	0.1569	-0.0169	0.0314
SO	0.8303	0.6972	0.8123	0.7024	-0.8119 *	0.4255	-0.1744	0.1962
LA	0.0616 *	0.0342	0.0627 *	0.0345	-0.0562	0.0390	0.0105	0.0101
NPL	-0.0326 ***	0.0088	-0.0321 ***	0.0089	0.0194	0.0163	-0.0090 **	0.0037
DA	-0.0759	0.0678	-0.0724	0.0679	-0.0571	0.0712	-0.0099	0.0091
CR3	-0.0990 **	0.0468	-0.0938 **	0.0475	-0.0288	0.0754	-0.0678 ***	0.0207
INT	-0.0867 *	0.0482	-0.0900 *	0.0483	0.0061	0.0440	-0.0414 ***	0.0101
CMSFI	-0.0238 ***	0.0089	-0.0244 ***	0.0089	-0.0117	0.0114	-0.0055 *	0.0028
GDPCAPG	-0.0081	0.0227	-0.0091	0.0228	0.0050	0.0395	-0.0092	0.0083
R-squared	0.3038		0.2967		0.1207		0.2893	
F-statistic	7.1742 ***		6.9355 ***		4.1191 ***		6.6915 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. CC denotes the constant coefficient model and FE the fixed effects model. Regarding the latter, the regressions also include bank dummy variables which are not reported. Constant terms are also not reported. All regressions are estimated with heteroskedasticity-consistent standard errors.

Appendix J

Estimation results: 2nd set of regressions

The ratio of the sum across all banks of the assets of each bank multiplied by the percentage of equity held by foreigners to total commercial bank assets (FOBA) is used as foreign penetration measure.

	△ NIM CC		△ NII CC		△ OEA CC		△ PEA CC	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
△FOBA	0.0244	0.0366	0.0104	0.0083	-0.0119	0.0134	-0.0033	0.0030
SO	0.0882	0.2862	0.0203	0.0306	-0.0699	0.0684	0.0004	0.0094
△OEA	1.1247	0.7953	0.0130	0.0308				
△LA	0.0025	0.0098	-0.0058	0.0027	0.0029	0.0040	0.0008	0.0007
△NPL	-0.0008	0.0142	-0.0014	0.0014	-0.0107	0.0081	0.0010	0.0012
△DA	-0.0346 *	0.0209	-0.0009	0.0034	0.0163	0.0110	0.0057 *	0.0030
△INT	-0.0018	0.0648	-0.0001	0.0061	-0.0025	0.0165	-0.0001	0.0018
△CMSFI	0.0119 *	0.0070	-0.0011	0.0008	0.0017	0.0020	0.0007 ***	0.0003
△GDPCAPG	0.0165	0.0124	-0.0028	0.0022	0.0043	0.0043	0.0025 ***	0.0007
R-squared	0.1527		0.0398		0.0907		0.2827	
F-statistic	5.2468 ***		1.2069		3.2798 ***		12.9569 ***	
	△ ROA CC		**△ EP** CC		**△ EVA** CC		**△ CVA** CC	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
△FOBA	0.0623	0.0700	0.0642	0.0712	0.3227 **	0.1274	0.0211	0.0299
SO	0.2681	0.4045	0.2530	0.4095	0.1121	0.5678	-0.0005	0.1318
△LA	0.1031 *	0.0542	0.1033 *	0.0552	-0.0212	0.0510	0.0457 *	0.0265
△NPL	-0.0177	0.0361	-0.0182	0.0366	0.0763 ***	0.0259	0.0089	0.0130
△DA	-0.0837	0.1084	-0.0847	0.1091	-0.3330 ***	0.1078	-0.0179	0.0181
△INT	-0.0671	0.1056	-0.0707	0.1073	-0.1014	0.0815	0.0127	0.0229
△CMSFI	-0.0222 ***	0.0064	-0.0229 ***	0.0064	-0.0058	0.0094	-0.0018	0.0024
△GDPCAPG	0.0014	0.0224	0.0003	0.0226	0.0148	0.0337	-0.0059	0.0067
R-squared	0.1530		0.1544		0.1922		0.1367	
F-statistic	5.9383 ***		6.0016 ***		7.8218 ***		5.2036 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. CC denotes the constant coefficient model. Constant terms are not reported. All regressions are estimated with heteroskedasticity-consistent standard errors. Dependent and independent variables in first differences (denoted Δ) (except the dummy variables).

Appendix K

Descriptive statistics

FIRST SET OF REGRESSIONS (Sample: 1997:2 - 2004:1)														
	IB	OR	SO	LA	DA	NPL	PEX	BRA	GDPCAPG	FMSH	FMSA	FMSB	FOBA	FO
Mean	0.42	0.61	0.22	14.47	78.94	24.04	33.83	6.29	0.49	4.87	17.88	13.01	37.43	0.26
Median	0.00	1.00	0.00	11.17	81.22	18.88	32.59	5.83	0.34	5.82	17.96	12.53	37.72	0.00
Maximum	1.00	1.00	1.00	88.49	94.58	102.38	432.11	15.56	9.22	6.30	20.23	19.37	40.66	1.00
Minimum	0.00	0.00	0.00	1.48	47.86	0.01	-39.70	2.43	-8.13	0.00	15.37	10.25	31.80	0.00
Std. Dev.	0.49	0.49	0.42	13.44	7.71	20.50	28.65	2.04	4.60	1.96	1.22	2.26	2.37	0.44
Observations	336	336	336	336	336	336	336	336	28	28	28	28	28	336

SECOND SET OF REGRESSIONS (Sample: 1997:2 - 2005:4)													
	IB	OR	SO	LA	DA	NPL	PEX	BRA	GDPCAPG	FMSH	FMSA	FMSB	FOBA
Mean	0.48	0.66	0.28	13.69	80.42	22.30	34.22	5.79	0.67	4.65	17.52	12.87	38.59
Median	0.00	1.00	0.00	12.20	82.62	17.12	32.44	5.54	0.38	5.64	17.63	12.38	38.02
Maximum	1.00	1.00	1.00	57.64	94.58	102.38	432.11	15.56	9.22	6.30	20.23	19.37	46.67
Minimum	0.00	0.00	0.00	2.99	47.86	0.01	3.83	2.43	-8.13	0.00	15.18	10.25	31.80
Std. Dev.	0.50	0.48	0.45	8.55	6.87	18.47	30.64	2.03	4.65	1.81	1.36	2.08	3.37
Observations	280	280	280	280	280	280	280	280	35	35	35	35	35

Appendix L

Estimation results: 1st set of regressions

The asset share of foreign branches (FMSB) is used as foreign penetration measure.

	IB LOGIT		OR LOGIT	
	Coefficient	Std. Error	Coefficient	Std. Error
FMSB	-1.311 ***	0.277	-1.682 ***	0.250
FO	2.347 ***	0.689	2.319 ***	0.595
SO	-6.509 ***	1.021	0.322	0.619
LA	0.011	0.014	0.001	0.018
DA	0.376 ***	0.071	-0.015	0.041
NPL	-0.145 ***	0.027	-0.044 ***	0.012
PEX	-0.005	0.008	0.003	0.006
BRA	0.124	0.129	-0.126	0.115
GDPCAPG	-0.003	0.052	-0.020	0.050
Log likelihood	-69.480		-80.536	
LR statistic	317.458 ***		288.292 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. Constant terms are not reported. IB and OR denote the binary choice variables, where IB refers to transactional internet banking and OR to organisational restructuring.

Appendix M

Estimation results: 1st set of regressions

The ratio of the sum across all banks of the assets of each bank multiplied by the percentage of equity held by foreigners to total commercial bank assets (FOBA) is used as foreign penetration measure.

	IB LOGIT		OR LOGIT	
	Coefficient	Std. Error	Coefficient	Std. Error
△FOBA	-0.176 **	0.082	0.003	0.079
FO	1.038 ***	0.292	1.943 ***	0.398
SO	-1.934 ***	0.425	-0.073	0.308
△LA	-0.070 ***	0.024	-0.041	0.034
△DA	0.003	0.033	-0.022	0.035
△NPL	-0.028 *	0.016	-0.112 ***	0.027
△PEX	0.001	0.003	-0.001	0.003
△BRA	-0.277	0.221	0.194	0.241
△GDPCAPG	-0.010	0.021	-0.015	0.022
Log likelihood	-184.810		-176.468	
LR statistic	73.5457 ***		73.121 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. Constant terms are not reported. IB and OR denote the binary choice variables, where IB refers to transactional internet banking and OR to organisational restructuring. Dependent and independent variables in first differences (denoted Δ) except the dummy variables.

Appendix N

Estimation results: 2nd set of regressions

The asset share of foreign branches (FMSB) is used as foreign penetration measure.

	IB LOGIT		OR LOGIT	
	Coefficient	Std. Error	Coefficient	Std. Error
FMSB	-0.660 ***	0.156	-1.392 ***	0.222
SO	-3.478 ***	0.603	0.456	0.575
LA	-0.051	0.033	-0.031	0.022
DA	0.194 ***	0.045	0.001	0.043
NPL	-0.080 ***	0.023	-0.055 ***	0.012
PEX	-0.011	0.008	-0.001	0.007
BRA	-0.247 **	0.124	-0.232 *	0.125
GDPCAPG	0.033	0.043	0.001	0.051
Log likelihood	-93.645		-79.911	
LR statistic	200.359 ***		200.208 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. Constant terms are not reported. IB and OR denote the binary choice variables, where IB refers to transactional internet banking and OR to organisational restructuring.

Appendix O

Estimation results: 2nd set of regressions

The asset share of hybrid banks (FMSH) and alternatively the asset share of hybrid banks and foreign branches (FMSA) are used as foreign penetration measure. To verify the robustness of the coefficient on the foreign penetration measure, the three firm concentration ratio (CR3) is included as control variable.

	IB LOGIT		OR LOGIT	
	Coefficient	Std. Error	Coefficient	Std. Error
△FMSH	-2.383 ***	0.512	-2.338 ***	0.468
SO	-1.933 ***	0.366	-0.115	0.352
△LA	-0.050 *	0.027	-0.045	0.043
△DA	-0.050	0.061	-0.060	0.057
△NPL	-0.025	0.021	-0.060 **	0.028
△PEX	0.001	0.003	-0.003	0.004
△BRA	0.317	0.368	0.844	0.550
△CR3	-0.578 ***	0.180	-0.582 ***	0.172
△GDPCAPG	0.019	0.025	0.020	0.026
Log likelihood	-136.837		-125.504	
LR statistic	103.339 ***		91.441 ***	

	IB LOGIT		OR LOGIT	
	Coefficient	Std. Error	Coefficient	Std. Error
FMSA	-0.725 ***	0.187	-0.296 *	0.172
SO	-3.591 ***	0.646	0.687	0.530
LA	-0.037	0.034	-0.043 *	0.022
DA	0.274 ***	0.050	0.087 **	0.037
NPL	-0.065 ***	0.023	-0.072 ***	0.014
PEX	-0.010	0.009	-0.005	0.005
BRA	-0.235 **	0.115	-0.321 ***	0.115
CR3	0.100	0.106	0.598 ***	0.111
GDPCAPG	0.054	0.043	0.026	0.044
Log likelihood	-96.303		-99.697	
LR statistic	195.042 ***		160.636 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. Constant terms are not reported. IB and OR denote the binary choice variables, where IB refers to transactional internet banking and OR to organisational restructuring. Dependent and independent variables in first differences (denoted Δ) except the dummy variables to correct for the high correlation between FMSH and CR3.

Appendix P

Estimation results: 2nd set of regressions

The ratio of the sum across all banks of the assets of each bank multiplied by the percentage of equity held by foreigners to total commercial bank assets (FOBA) is used as foreign penetration measure.

	IB LOGIT		OR LOGIT	
	Coefficient	Std. Error	Coefficient	Std. Error
△FOBA	0.072	0.085	0.101	0.089
SO	-1.777 ***	0.332	-0.252	0.304
△LA	-0.050 **	0.025	-0.047	0.036
△DA	-0.093 *	0.053	-0.110 **	0.052
△NPL	-0.034 *	0.019	-0.081 ***	0.027
△PEX	0.002	0.003	-0.001	0.003
△BRA	0.298	0.285	0.661 **	0.288
△GDPCAPG	0.003	0.022	0.003	0.023
Log likelihood	-166.148		-158.207	
LR statistic	44.7169 ***		26.0341 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. Constant terms are not reported. IB and OR denote the binary choice variables, where IB refers to transactional internet banking and OR to organisational restructuring. Dependent and independent variables in first differences (denoted Δ) except the dummy variables.

Appendix Q

Descriptive statistics

FIRST SET OF REGRESSIONS (Sample: 1997:2 - 2004:1)
Quarterly Data

	TLG	SO	LA	NPL	DA	ATS	MERGER	INT	SFICM	GDPCAPG	FLSH	FLSA	FLSB	FOBL	FO
Mean	2.76	0.22	14.47	24.04	78.94	0.06	0.01	5.05	4.31	0.49	5.18	17.27	12.09	36.33	0.26
Median	0.29	0.00	11.17	18.88	81.22	0.00	0.00	1.86	4.86	0.34	6.10	17.19	12.06	36.18	0.00
Maximum	341.28	1.00	88.49	102.38	94.58	1.00	1.00	21.95	34.73	9.22	7.00	20.47	17.48	42.25	1.00
Minimum	-92.22	0.00	1.48	0.01	47.86	0.00	0.00	1.25	-22.67	-8.13	0.00	13.81	8.72	30.49	0.00
Std. Dev.	25.55	0.42	13.44	20.50	7.71	0.23	0.12	6.41	13.67	4.60	2.16	1.55	2.19	3.08	0.44
Observations	336	336	336	336	336	336	336	28	28	28	28	28	28	28	336

SECOND SET OF REGRESSIONS II (Sample: 1997:2 - 2005:4)
Quarterly Data

	TLG	SO	LA	NPL	DA	ATS	MERGER	INT	SFICM	GDPCAPG	FLSH	FLSA	FLSB	FOBL
Mean	2.60	0.28	13.69	22.30	80.42	0.05	0.02	4.48	4.28	0.67	4.95	16.51	11.56	37.33
Median	0.36	0.00	12.20	17.12	82.62	0.00	0.00	1.89	4.10	0.38	5.64	16.73	11.25	36.32
Maximum	341.28	1.00	57.64	102.38	94.58	1.00	1.00	21.95	34.73	9.22	7.00	20.47	17.48	44.67
Minimum	-65.74	0.00	2.99	0.01	47.86	0.00	0.00	1.25	-22.67	-8.13	0.00	13.20	8.72	30.49
Std. Dev.	25.50	0.45	8.55	18.47	6.87	0.22	0.13	5.84	12.25	4.65	1.98	2.08	2.24	3.62
Observations	280	280	280	280	280	280	280	35	35	35	35	35	35	35

FIRST SET OF REGRESSIONS (Sample: 1997S1 - 2003S2)
Semi-annual data

	AGR	MANU	REC	UTS	HL	OL	SO	LA	NPL	DA	ATS	MERGER	INT
Mean	0.25	3.50	0.94	0.90	0.69	0.77	0.21	14.28	23.54	79.19	0.11	0.03	5.40
Median	0.18	2.57	0.87	0.76	0.50	0.33	0.00	10.67	19.09	81.39	0.00	0.00	1.98
Maximum	1.06	12.34	3.51	3.01	2.49	8.37	1.00	88.34	102.38	94.58	1.00	1.00	19.84
Minimum	0.00	0.02	0.01	0.01	0.00	0.01	0.00	1.48	0.01	51.44	0.00	0.00	1.25
Std. Dev.	0.25	3.15	0.79	0.71	0.66	1.44	0.41	13.65	20.11	7.69	0.32	0.17	6.50
Observations	168	168	168	168	168	168	168	168	168	168	168	168	14

	SFICM	GDP-AGR	GDP-MANU	GDP-REC	GDP-UTS	GDPCAPG	FLSH-AGR	FLSB-AGR	FLSA-AGR	FLSH-MANU	FLSB-MANU	FLSA-MANU	FLSH-REC
Mean	9.68	0.29	1.25	-2.00	0.89	0.43	4.98	6.25	11.23	4.52	16.00	20.52	3.94
Median	6.03	0.71	1.51	-0.59	1.04	1.48	6.04	5.24	11.29	5.24	15.97	20.87	4.32
Maximum	38.05	1.67	8.52	9.63	7.14	4.19	7.42	9.64	15.85	6.10	22.59	25.54	5.47
Minimum	-16.92	-1.64	-8.40	-23.55	-7.29	-10.09	0.00	2.15	6.38	0.00	11.36	16.21	0.00
Std. Dev.	14.88	1.17	4.54	9.55	3.72	3.60	2.35	2.37	2.81	1.97	3.01	2.63	1.76
Observations	14	14	14	14	14	14	14	14	14	14	14	14	14

	FLSB-REC	FLSA-REC	FLSH-UTS	FLSB-UTS	FLSA-UTS	FLSH-HL	FLSB-HL	FLSA-HL	FLSH-OL	FLSB-OL	FLSA-OL	FO
Mean	4.94	8.88	4.61	19.72	24.34	5.42	1.58	6.99	5.21	7.66	12.87	0.25
Median	4.60	9.03	5.15	20.27	24.53	5.74	1.53	7.34	5.21	9.20	12.44	0.00
Maximum	7.80	12.07	6.13	25.48	28.63	9.91	2.30	10.52	11.80	11.08	22.89	1.00
Minimum	3.58	5.24	0.00	15.32	20.37	0.00	0.60	1.40	0.00	3.25	6.68	0.00
Std. Dev.	1.27	1.52	2.01	2.97	2.88	2.97	0.48	2.65	3.20	3.12	5.14	0.43
Observations	14	14	14	14	14	14	14	14	14	14	14	168

SECOND SET OF REGRESSIONS (Sample: 1997S1 - 2005S2)
Semi-annual data

	AGR	MANU	REC	UTS	HL	OL	SO	LA	NPL	DA	ATS	MERGER	INT
Mean	0.33	4.89	1.25	1.36	1.03	1.12	0.27	13.40	21.51	80.43	0.10	0.03	4.66
Median	0.29	4.48	1.11	1.31	0.94	0.48	0.00	12.16	17.07	82.40	0.00	0.00	1.98
Maximum	1.06	12.34	3.51	3.86	3.36	8.37	1.00	57.42	102.38	94.58	1.00	1.00	19.84
Minimum	0.04	0.50	0.14	0.14	0.02	0.02	0.00	2.99	0.01	59.83	0.00	0.00	1.25
Std. Dev.	0.25	2.99	0.68	0.70	0.71	1.59	0.45	8.01	18.39	6.81	0.30	0.18	5.88
Observations	144	144	144	144	144	144	144	144	144	144	144	144	18

	SFICM	GDP-AGR	GDP-MANU	GDP-REC	GDP-UTS	GDPCAPG	FLSH-AGR	FLSB-AGR	FLSA-AGR	FLSH-MANU	FLSB-MANU	FLSA-MANU	FLSH-REC
Mean	8.71	0.24	1.65	-0.89	1.35	0.87	4.31	5.86	10.17	4.26	15.03	19.29	3.62
Median	6.03	0.71	1.51	-0.07	1.37	1.48	4.90	5.19	9.68	4.94	14.98	20.14	4.07
Maximum	38.05	2.82	8.52	9.63	7.14	4.83	7.42	9.64	15.85	6.10	22.59	25.54	5.47
Minimum	-16.92	-2.15	-8.40	-23.55	-7.29	-10.09	0.00	2.15	4.67	0.00	11.19	14.25	0.00
Std. Dev.	13.80	1.46	4.19	8.79	3.53	3.36	2.44	2.36	3.31	1.80	3.23	3.31	1.67
Observations	18	18	18	18	18	18	18	18	18	18	18	18	18

	FLSB-REC	FLSA-REC	FLSH-UTS	FLSB-UTS	FLSA-UTS	FLSH-HL	FLSB-HL	FLSA-HL	FLSH-OL	FLSB-OL	FLSA-OL
Mean	5.12	8.74	4.12	19.48	23.61	5.89	1.30	7.19	5.48	7.41	12.89
Median	4.71	8.78	5.04	19.90	22.99	6.80	1.43	7.42	5.36	8.58	12.44
Maximum	7.80	12.07	6.13	25.48	28.63	9.91	2.30	10.52	11.80	11.08	22.89
Minimum	3.58	5.24	0.00	15.32	18.60	0.00	0.20	1.40	0.00	3.25	6.68
Std. Dev.	1.17	1.39	2.00	2.74	2.99	2.79	0.68	2.39	2.95	2.83	4.70
Observations	18	18	18	18	18	18	18	18	18	18	18

Appendix R

Estimation results

The lending share of foreign branches (FLSB) is used as foreign penetration measure.

	FIRST SET OF REGRESSIONS		SECOND SET OF REGRESSIONS	
	△ TLG CC		△ TLG CC	
	Coefficient	Std. Error	Coefficient	Std. Error
△FLSB	1.194	1.545	0.264	1.744
FO	-2.874	3.238		
SO	-7.693	5.988	-3.315	5.336
△LA	-1.959 ***	0.435	-2.138 ***	0.690
△NPL	-0.139	0.164	-0.149	0.216
△DA	-2.241 **	1.066	-4.123 ***	1.478
ATS	-10.920 **	5.360	-12.938 **	5.236
MERGER	83.744 **	32.867	50.187 **	24.968
△INT	-0.912 *	0.504	-0.832	0.661
△CMSFI	-0.122 *	0.070	-0.109 *	0.065
△GDPCAPG	0.154	0.285	0.370	0.270
R-squared	0.3582		0.440	
F-statistic	15.833 ***		20.471 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. CC denotes the constant coefficient model. Constant terms are not reported. All regressions are estimated with heteroskedasticity-consistent standard errors. Dependent and independent variables in first differences (denoted Δ) (except the dummy variables).

Appendix S

Estimation results: 2nd set of regressions

The lending share of hybrid banks (FLSH) and alternatively the lending share of hybrid banks and foreign branches (FLSA) are used as foreign penetration measure. To verify the robustness of the coefficient of the foreign penetration measure, the three firm concentration ratio (CR3) is included as control variable.

	△ TLG CC		△ TLG CC	
	Coefficient	Std. Error	Coefficient	Std. Error
△FLSH	5.277 **	2.474		
△FLSA			2.728 *	1.647
SO	-3.595	5.389	-3.448	5.370
△LA	-2.160 ***	0.690	-2.235 ***	0.695
△NPL	-0.164	0.215	-0.186	0.214
△DA	-4.237 ***	1.460	-4.131 ***	1.465
ATS	-13.294 **	5.200	-12.359 **	5.307
MERGER	51.974 **	24.192	51.042 **	25.114
△CR3	-0.099	1.575	1.331	1.740
△INT	-0.718	0.744	-0.782	0.757
△CMSFI	-0.097	0.074	-0.120	0.077
△GDPCAPG	0.442	0.278	0.331	0.267
R-squared	0.448		0.445	
F-statistic	19.167 ***		18.922 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. CC denotes the constant coefficient model. Constant terms are not reported. All regressions are estimated with heteroskedasticity-consistent standard errors. Dependent and independent variables in first differences (denoted Δ) (except the dummy variables).

Appendix T

Estimation results

The ratio of the sum across all banks of the loans of each bank multiplied by the percentage of equity held by foreigners to total commercial bank loans (FOBL) is used as foreign penetration measure.

	FIRST SET OF REGRESSIONS		SECOND SET OF REGRESSIONS	
	△ TLG CC		△ TLG CC	
	Coefficient	Std. Error	Coefficient	Std. Error
△FOBL	1.691	1.133	0.375	1.156
FO	-2.910	3.166		
SO	-7.737	5.934	-3.301	5.290
△LA	-2.010 ***	0.442	-2.154 ***	0.693
△NPL	-0.100	0.179	-0.145	0.217
△DA	-2.277 **	1.035	-4.131 ***	1.462
ATS	-8.230	6.142	-12.366 **	6.097
MERGER	85.476 ***	33.178	50.510 **	24.824
△INT	-0.944 *	0.529	-0.847	0.640
△CMSFI	-0.090	0.065	-0.104 *	0.061
△GDPCAPG	0.189	0.289	0.382	0.284
R-squared	0.363		0.440	
F-statistic	16.196 ***		20.491 ***	

*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. CC denotes the constant coefficient model. Constant terms are not reported. All regressions are estimated with heteroskedasticity-consistent standard errors. Dependent and independent variables in first differences (denoted Δ) (except the dummy variables).

Appendix U

Estimation results

1st set of regressions

	△ AGR CC		△ MAC CC		△ REC CC		△ UTS CC		△ HL FE		△ OL CC	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
△FLSB	0.006	0.004	-0.036	0.050	-0.033	0.037	-0.004	0.006	0.071	0.045	-0.070 **	0.030
FO	0.003	0.004	-0.048	0.076	0.014	0.030	-0.028	0.020	-0.008	0.020	-0.038	0.062
SO	0.003	0.010	-0.152	0.167	-0.033	0.081	0.008	0.040	-0.011	0.029	-0.012	0.100
△LA	0.000	0.000	-0.012	0.009	-0.007	0.005	-0.003	0.002	-0.001 **	0.001	-0.026 **	0.012
△NPL	0.001	0.021	0.489	0.451	0.347	0.219	0.114	0.099	-0.102 **	0.042	-0.631	0.416
△DA	0.000	0.000	-0.012 **	0.006	-0.008 **	0.003	-0.002	0.002	0.000	0.001	0.012	0.008
ATS	-0.022	0.008	-0.554 **	0.275	-0.314 ***	0.106	-0.115 **	0.053	-0.037	0.023	0.081	0.212
MERGER	0.019	0.021	1.038 *	0.534	0.571 **	0.279	0.186 *	0.094	0.018	0.032	1.918 **	0.950
△INT	-0.001	0.001	-0.007	0.027	0.000	0.008	0.002	0.004	-0.003	0.005	0.018	0.013
△CMSFI	0.000	0.000	0.000	0.003	0.000	0.003	0.000	0.001	0.000	0.000	0.000	0.002
△GDPCAPG	0.002	0.002	-0.014 *	0.008	0.000	0.005	0.005	0.003	0.002	0.005	0.005	0.011
R-squared	0.108		0.242		0.361		0.1912		0.207		0.506	
F-statistic	1.588		4.186 ***		7.404 ***		3.0937 ***		1.579 **		13.422 ***	

2nd set of regressions

	△ AGR CC		△ MAC CC		△ REC CC		△ UTS CC		△ HL FE		△ OL CC	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
△FLSB	0.003	0.002	-0.018	0.056	-0.022	0.029	-0.008	0.008	0.083	0.053	-0.064 *	0.036
SO	0.007	0.008	-0.054	0.134	0.023	0.064	0.043	0.039	-0.011	0.022	-0.108	0.125
△LA	0.000	0.000	-0.026	0.016	-0.011	0.008	-0.007 *	0.004	-0.002 **	0.001	-0.047 ***	0.015
△NPL	0.000	0.000	0.010	0.007	0.006	0.004	0.002	0.002	-0.001 *	0.001	-0.008	0.006
△DA	-0.002	0.001	-0.034 **	0.016	-0.015 **	0.007	-0.011 *	0.006	-0.002 *	0.001	0.020	0.013
ATS	-0.019 **	0.008	-0.684 **	0.307	-0.383 ***	0.136	-0.147 **	0.060	-0.055 *	0.029	0.162	0.265
MERGER	0.006	0.019	0.808	0.492	0.469 *	0.257	0.097	0.082	0.005	0.033	1.829 **	0.800
△INT	-0.002 *	0.001	-0.027	0.035	-0.007	0.008	0.002	0.006	-0.007	0.005	0.017	0.017
△CMSFI	0.000	0.000	0.001	0.003	0.000	0.001	0.000	0.001	0.000	0.001	0.004	0.003
△GDPCAPG	0.001	0.001	-0.015	0.011	-0.001	0.003	0.004	0.004	-0.002	0.005	0.019	0.019
R-squared	0.159		0.327		0.427		0.2167		0.249		0.582	
F-statistic	2.362 ***		6.082 ***		9.333 ***		3.4584 ***		2.303 ***		17.392 ***	

This table reports the results using the lending share of foreign branches (FLSB) as foreign penetration measure.
*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. CC denotes the constant coefficient model and FE the fixed effects model. Constant terms and individual effects are not reported. All regressions are estimated with heteroskedasticity-consistent standard errors. Dependent and independent variables in first differences (denoted Δ) (except the dummy variables).

Appendix V

Estimation results: 2nd set of regressions

	△ AGR CC		△ MAC CC		△ REC CC		△ UTS CC		△ HL FE		△ OL CC	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
△FLSH	0.007 **	0.003	0.000	0.044	0.025 *	0.015	-0.009	0.013	-0.003	0.006	-0.014	0.017
SO	0.007	0.008	-0.057	0.135	0.020	0.064	0.040	0.040	-0.003	0.022	-0.102	0.128
△LA	-0.001	0.000	-0.027	0.017	-0.012	0.008	-0.007 *	0.004	-0.002 ***	0.001	-0.052 ***	0.015
△NPL	0.000	0.000	0.009	0.007	0.005	0.004	0.002	0.002	-0.001	0.001	-0.010	0.007
△DA	-0.002 *	0.001	-0.035 **	0.016	-0.018 **	0.007	-0.012 *	0.006	-0.001	0.002	0.021	0.013
ATS	-0.010	0.010	-0.688 **	0.290	-0.381 ***	0.136	-0.161 ***	0.060	-0.025	0.031	0.256	0.289
MERGER	0.006	0.018	0.778	0.480	0.452 *	0.240	0.085	0.079	0.013	0.035	1.825 **	0.813
△CR3	-0.005	0.004	0.029	0.047	0.017	0.018	0.030	0.019	-0.015	0.009	0.068 *	0.041
△INT	-0.003 **	0.002	-0.023	0.019	-0.009	0.007	0.009	0.010	-0.018 ***	0.005	0.041 **	0.019
△CMSFI	0.000	0.000	0.001	0.003	-0.002	0.001	0.000	0.001	0.000	0.001	0.003	0.003
△GDPCAPG	0.001	0.001	-0.013	0.013	-0.002	0.002	0.003	0.004	-0.008 *	0.004	0.026	0.020
R-squared	0.185		0.328		0.437		0.230		0.245		0.578	
F-statistic	2.559 ***		5.504 ***		8.751 ***		3.3662 ***		2.111 ***		15.189 ***	

	△ AGR CC		△ MAC CC		△ REC CC		△ UTS CC		△ HL FE		△ OL CC	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
△FLSA	0.005 **	0.002	-0.021	0.041	0.028	0.017	-0.008	0.009	-0.001	0.005	-0.017	0.013
SO	0.007	0.008	-0.056	0.133	0.019	0.064	0.041	0.040	-0.004	0.022	-0.106	0.127
△LA	-0.001	0.000	-0.026	0.017	-0.012	0.008	-0.007 *	0.004	-0.002 ***	0.001	-0.050 ***	0.015
△NPL	0.000	0.000	0.010	0.008	0.005	0.004	0.002	0.002	-0.001	0.001	-0.010	0.007
△DA	-0.002 *	0.001	-0.035	0.015	-0.018 **	0.007	-0.013 **	0.006	-0.001	0.002	0.019	0.013
ATS	-0.013	0.009	-0.717 **	0.309	-0.362 ***	0.137	-0.171 ***	0.061	-0.025	0.031	0.198	0.281
MERGER	0.003	0.019	0.787 **	0.483	0.450 *	0.242	0.081	0.079	0.014	0.035	1.809 **	0.810
△CR3	-0.003	0.003	0.036	0.045	0.016	0.019	0.027	0.018	-0.015	0.009	0.063	0.040
△INT	-0.003 *	0.002	-0.012	0.032	-0.015	0.009	0.011	0.010	-0.018 ***	0.005	0.039 **	0.019
△CMSFI	0.000	0.000	0.001	0.002	-0.003 *	0.001	0.000	0.001	0.000	0.001	0.003	0.003
△GDPCAPG	0.001	0.001	-0.015	0.011	-0.004	0.002	0.004	0.004	-0.008 *	0.004	0.023	0.020
R-squared	0.193		0.329		0.436		0.2324		0.244		0.581	
F-statistic	2.701 ***		5.528 ***		8.717 ***		3.4122 ***		2.102 ***		15.615 ***	

This table reports the results using the lending share of hybrid banks (FLSH) and alternatively the lending share of hybrid banks and foreign branches (FLSA) as foreign penetration measure. To verify the robustness of the coefficient of the foreign penetration measure, the three firm concentration ratio (CR3) is included as control variable.
*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. CC denotes the constant coefficient model and FE the fixed effects model. Constant terms and individual effects are not reported. All regressions are estimated with heteroskedasticity-consistent standard errors. Dependent and independent variables in first differences (denoted Δ) (except the dummy variables).

Appendix W

Estimation results

1st set of regressions

	△ AGR CC		△ MAC CC		△ REC CC		△ UTS CC		△ HL FE		△ OL CC	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
△FOBL	0.002	0.001	0.014	0.026	0.001	0.011	0.007	0.005	0.007 **	0.003	-0.017	0.015
FO	0.003	0.004	-0.032	0.077	0.015	0.030	-0.026	0.020	-0.001	0.019	-0.021	0.060
SO	0.002	0.010	-0.149	0.164	-0.034	0.080	0.007	0.041	-0.002	0.031	-0.006	0.107
△LA	0.000	0.000	-0.014	0.010	-0.007	0.004	-0.003	0.002	-0.002 ***	0.001	-0.030 **	0.014
△NPL	0.016	0.019	0.515	0.398	0.375 *	0.196	0.163	0.101	-0.060	0.046	-0.705	0.479
△DA	0.000	0.000	-0.012 **	0.005	-0.007 **	0.003	-0.002	0.001	0.000	0.001	0.015	0.009
ATS	-0.012	0.008	-0.462	0.294	-0.285 **	0.128	-0.089	0.058	0.003	0.023	0.256	0.246
MERGER	0.022	0.022	1.033 *	0.529	0.583 **	0.281	0.195 **	0.095	0.029	0.033	1.965 **	0.978
△INT	-0.001	0.001	-0.024 *	0.013	-0.007	0.005	-0.001	0.004	-0.010 ***	0.003	0.020	0.013
△CMSFI	0.000	0.000	0.001	0.002	-0.001	0.002	0.000	0.001	0.000	0.001	0.000	0.002
△GDPCAPG	0.001	0.001	-0.011	0.008	-0.003	0.003	0.005	0.003	-0.004	0.004	0.006	0.013
R-squared	0.107		0.240		0.359		0.198		0.222		0.479	
F-statistic	1.571		4.134 ***		7.348 ***		3.224 ***		1.720 **		12.050 ***	

2nd set of regressions

	△ AGR CC		△ MAC CC		△ REC CC		△ UTS CC		△ HL FE		△ OL CC	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
△FOBL	0.002	0.001	0.029	0.025	0.002	0.012	0.011 *	0.006	0.013 ***	0.003	-0.001	0.017
SO	0.007	0.009	-0.052	0.135	0.022	0.065	0.043	0.040	0.002	0.025	-0.096	0.130
△LA	-0.001	0.000	-0.029 *	0.016	-0.012	0.007	-0.007 *	0.004	-0.003 ***	0.001	-0.053 ***	0.016
△NPL	0.000	0.000	0.011	0.007	0.006 *	0.003	0.003 *	0.002	-0.001	0.001	-0.008	0.007
△DA	-0.002	0.001	-0.034 **	0.015	-0.015 **	0.007	-0.011 *	0.006	-0.002	0.001	0.024 *	0.013
ATS	-0.015 *	0.009	-0.573 *	0.330	-0.362 **	0.153	-0.104	0.066	-0.003	0.030	0.366	0.301
MERGER	0.010	0.018	0.826 *	0.494	0.469 *	0.261	0.118	0.079	0.022	0.034	1.882 **	0.821
△INT	-0.002 *	0.001	-0.041 *	0.022	-0.013	0.008	-0.004	0.006	-0.014 ***	0.003	0.015	0.017
△CMSFI	0.000	0.000	0.002	0.002	-0.001	0.001	0.000	0.001	0.000	0.001	0.004	0.003
△GDPCAPG	0.002 *	0.001	-0.013	0.011	-0.002	0.003	0.004	0.004	-0.003	0.004	0.021	0.021
R-squared	0.156		0.334		0.426		0.2256		0.284		0.568	
F-statistic	2.314 ***		6.281 ***		9.286 ***		3.6413 ***		2.759 ***		16.464 ***	

This table reports the results using the ratio of the sum across all banks of the loans of each bank multiplied by the percentage of equity held by foreigners to total commercial bank loans (FOBL) as foreign penetration measure.
*, **, *** indicate significance levels of 10, 5 and 1 percent respectively. CC denotes the constant coefficient model and FE the fixed effects model. Constant terms and individual effects are not reported. All regressions are estimated with heteroskedasticity-consistent standard errors. Dependent and independent variables in first differences (denoted Δ) (except the dummy variables).

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