



Domestic and international determinants of bank profits: Foreign banks in Australia

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Abstract

This paper develops and tests a model that integrates the existing multinational bank literature with the domestic bank profits literature. Using data for Australia, this paper demonstrates that an integrated model results in a small increase in explanatory power when compared to models drawn solely from the multinational banking literature. The paper finds that profits are a negative function of competitor market share and bank licence status, and a positive function of Australian size and home GDP growth. It is argued that there is incomplete integration between the market segments of domestic and multinational banks due to the first mover advantages of incumbent banks.

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1. Introduction

This paper extends previous studies of foreign bank profits. It considers a wider range of factors than previously hypothesised to affect foreign bank profits. A model is proposed that integrates the limited existing literature on multinational bank profits with the literature on domestic bank profits. By developing and testing the integrated model, the paper demonstrates the consequences of modeling foreign bank

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profits as a function of both multinational and domestic factors. This paper illustrates the impact an integrated model has upon the understanding of multinational bank profits.

Foreign banks operating in a host market are subject to two processes. The first of these processes is due to their ownership by a foreign multinational bank. The second process is due to their participation in the host banking system. The focus of this study is to unify both these processes into a single model to explain foreign bank profits in Australia. Failure to identify and control for both domestic and multinational processes will not encompass all aspects of a foreign bank's profit experience. The empirical tests in this paper indicate the relevance of accounting for both domestic and international affects when considering foreign banks' profits.

This paper finds that the concentration of the Australian banking system reduced the profits of foreign banks and merchant banks, acting as a barrier to entry. It is also found that size has a positive role in determining the profits of foreign banks and merchant banks. In the case of non-Japanese banks, parent profitability is positively related to profitability in Australia. It is found that the integrated model proposed results in a small increase in explanatory power when compared to a model based solely upon the multinational banking literature. However, variables drawn from the domestic profits literature provide insights into the policy decisions made by managers of foreign banks and foreign merchant banks in Australia. This paper argues, consistent with Buch and Golder (2001), that there is incomplete integration between market segments pursued by domestic and multinational banks due to the first mover advantage of incumbent banks.

This paper is structured as follows: Section 2 develops a model of multinational bank profitability, drawing upon both the multinational banking and domestic bank profits literatures. The method and data are discussed in Section 3. The empirical results are presented in Section 4. Section 5 discusses the policy implication of the results and provides directions for further research.

2. Model development

This paper will extend the model of multinational banking developed by Williams (1998a,b) by integrating the multinational banking literature with the domestic bank profit literature. In general terms this model can be considered to be

$$\pi_{fb} = \phi_0 + \phi_m \mathbf{X}_m + \phi_d \mathbf{X}_d + \phi_z \mathbf{Z} \quad (1)$$

where π_{fb} is foreign bank and foreign merchant bank profits and \mathbf{X}_d is a vector of variables drawn from the domestic bank profits literature. Relatively few studies using an \mathbf{X}_d vector have employed cross-border data (Short, 1979; Bourke, 1989; Molyneux and Thornton, 1992). Each of the cross-border studies of this type have focussed upon testing a model of bank profits using multicountry data, rather than considering determinants of multinational bank profits. The \mathbf{X}_m vector is drawn from the multinational banking literature. To date, there has been relatively limited overlap between the \mathbf{X}_d vector and the \mathbf{X}_m vector. \mathbf{Z} is a vector of variables con-

trolling for various exogenous factors. Those studies that fail to recognise the impact that domestic market factors have upon foreign bank profits in the host market are liable to potential biases in their estimated vector of coefficients.

2.1. Domestic market factors

The structure–conduct–performance (SCP) paradigm draws upon work such as that of Caves (1967) to argue that industry structure affects firm behavior (conduct) and conduct results in the firm's observed performance. It is argued that bank profits are a function of industry structure, and banks in markets with higher concentration will tend to earn higher profits, due to their increased ability to earn monopoly rents via collusion (Gilbert, 1984, p. 618; Berger and Hannan, 1998, p. 455). The market power approach has a second element, that of relative market power (RMP) (Berger, 1995a). The RMP hypothesis argues that firms with market power producing well-differentiated products are able to earn supernormal profits via pricing due to barriers to entry.

The efficient structure hypothesis (ESH) is based upon the assumption that market dominance is due to efficiency of the dominating firms. Berger (1995a) argues that there are two sources of this efficiency, X-efficiency (ESX) and scale efficiency (ESS). Efficient firms dominate the market due to their lower prices in each case. The observed outcome is a positive relationship between profits and market dominance for both ESH and SCP.

It is also possible that firms may exploit market power in a manner that does not maximise profits. This approach is termed the quiet life effect (Berger and Hannan, 1998). Bank management seeking a quiet life may choose to adopt lower risk projects (Bourke, 1989), or operate at lower levels of cost efficiency.¹

These alternative hypotheses have important implications for merger policy as well as bank regulation and bank management performance. A considerable literature has developed seeking to empirically determine which of these views accurately reflects banking practice (Gilbert, 1984; Berger and Humphrey, 1997). Considerable attention has been given to the development of estimates of bank efficiency (Berger and Humphrey, 1997; Berger and Mester, 1997). The more recent literature employing recent developments in efficiency modeling have tended to find that banks are inclined to exploit market power (due to barriers to entry/product differentiation) by a combination of RMP and quiet life behaviors (Berger and Hannan, 1997; Mendes and Rebelo, 1999).

Foreign banks in Australia do not dominate the Australian banking market in terms of size. The SCP/ESH concept of market dominance is relevant for a study of foreign banks in Australia, as the Australian banking market is currently dominated by the four largest banks. This dominance is expected to impact upon the profitability of foreign banks in Australia, and act as an effective barrier to entry (with

¹ Examples of reduced cost efficiency resulting from the quiet life include expansion of staff, increasing other inputs which increase management utility but not profits, and using resources to increase or defend market power (Berger and Hannan, 1998).

incumbent banks exploiting a local monopoly, as suggested by SCP/RMP). In order to compete with this dominance, which is particularly apparent in delivery systems, such as branch and automatic teller networks, the foreign banks would be compelled to be price competitive. Price competition is particularly apparent in the wholesale markets since the entry of the foreign banks (Milbourne and Cumberworth, 1991). Wright and Liesch (1994) indicate that foreign bank profits in Australia are negatively related to competitor market share in Australia. Given these issues it is expected that foreign banks and foreign merchant banks face barriers to entry when operating in Australia due to the market share of their main competitor banks.²

Domestic hypothesis 1 (DH1). The profits of foreign banks and foreign merchant banks in Australia are negatively related to the market share of its competitor banks in Australia.

To discriminate between the SCP and ESH propositions, Smirlock (1985) tested a model including a concentration measure (CR), a bank's own market share measure (MS) and an interaction term (MS * CR). Smirlock (1985) finds MS dominates CR in determining bank profits. Smirlock's (1985) model provoked some debate (Berger and Hannan, 1989; Hannan, 1991). However, it is agreed that there will be a positive relationship between bank profits and the market power of that bank, which has been supported empirically (Hannan, 1991). The debate is about the causes of this relationship. It is not the intention of this paper to directly address this issue. Thus, a positive relationship between a foreign bank's profits and its market power would be expected.

Domestic hypothesis 2 (DH2). The profits of foreign banks and foreign merchant banks in Australia are positively related to that bank or merchant bank's own market share in Australia.

Banks seek to maximise their return on capital (Short, 1979). Maximising borrowed funds rather than using equity will result in maximising the bank's returns to shareholders. Replacing debt with equity reduces insolvency risk, but replaces debt with more expensive equity (Angbazo, 1997). A positive relationship between profits and equity is confirmed by a number of studies (Bourke, 1989; Molyneux and Thornton, 1992; Wright and Liesch, 1994;³ Lloyd-Williams et al., 1994; Berger, 1995b; Allen and Rai, 1996; Angbazo, 1997). Berger (1995b) proposed two explanations as to why increased equity would increase bank profits; (i) increased equity provides a signal that the bank's management consider the bank to have positive future

² As definition of the appropriate market can be controversial several alternative measures of competitor market share will be considered in this study. The principal measure of competitor market share used will be the market share of the four largest banks in Australia plus the market share of all other foreign banks and foreign merchant banks of the same nationality.

³ The capital ratio used by Wright and Liesch (1994) had some possible inconsistencies between banks and merchant banks in the sample. Further, Wright and Liesch (1994) applied ordinary least squares regression (OLS) to pooled data, casting doubt upon their results.

prospects, or, (ii) the increased equity reduces the likelihood of insolvency and results in a lower cost of funds. Berger (1995b) found no evidence to support the signaling argument, and concludes that the insolvency effect explains a positive relationship between bank profits and bank capital ratios.⁴

Domestic hypothesis 3 (DH3). The profits of a foreign bank or foreign merchant bank in Australia are positively related to that foreign bank or foreign merchant bank's own capital ratio in Australia.

Foreign banks entering Australia are likely to have long-term rather than short-term objectives. This may involve choosing to grow in the short-term in the interests of achieving a longer-term target market share (Short, 1979). Such a strategy tends to depress short-term profits. Bank management may pursue growth in order to maximise manager rather than shareholder utility, consistent with managerial expense preference theory. Williams (1998a,b) found that foreign banks in Australia were willing to sacrifice net interest margin (NIMs) in order to achieve increased size (assets), consistent with De Young and Nolle (1996) for the USA. Both these effects would act to reduce reported profits. Short (1979) found individual bank's asset growth is negatively correlated with profits.

Domestic hypothesis 4 (DH4). The profits of a foreign bank or foreign merchant bank in Australia are negatively related to that foreign bank's or foreign merchant bank's growth in total assets in Australia.

On first inspection Domestic hypothesis 2 (DH2) has some incompatibility with Domestic hypothesis 4 (DH4), as higher local growth will lead to higher market share. This apparent contradiction can be resolved by reference to the findings of De Young and Nolle (1996). De Young and Nolle (1996) found that foreign banks in the United States were willing to sacrifice short-term profits in order to grow to a profit-maximising long-term optimal size. In order to achieve this long-run target size, the foreign banks offer competitive loan terms and so accept a short-run reduction in profit. Further, as discussed by Hogan et al. (1999, p. 270), in the early 1980s rapid loan growth in Australia was accompanied by a reduction in credit quality, leading to lower profits.⁵

Banks operating in Australia can choose between a full bank licence, merchant bank status or branch status.⁶ Bank status places no restrictions upon the range of products the bank can distribute and allows the bank to raise funds without issuing a prospectus. Banks are also perceived as safer due to their regulation by the Reserve Bank of Australia (RBA) and later the Australian Prudential Regulatory

⁴ It is possible that the foreign bank or foreign merchant bank could pass its profits to the parent via fees or interest payments and so reduce reported Australian profits (see, for example, Demirgüç-Kunt and Huizinga, 2001).

⁵ I am indebted to an anonymous referee for comments in this area.

⁶ As data is not available for foreign bank branches, these will not be considered in this study.

Authority (APRA). However, a fully licenced bank must abide by the regulatory and reporting standards required by prudential regulators. In contrast, merchant banks must use a prospectus to raise funds and are restricted in their product range to wholesale activity. Given that the foreign banks actively pursued full licence status during the deregulation period (Pauly, 1987), it would be expected that a full bank licence has some value. On the contrary side, the foreign licenced banks were considered to have disproportionately experienced the losses that resulted from the economic downturn of the early 1990s (Ferguson, 1991). Thus a full licence may imply higher profits or lower profits for foreign banks in Australia.

Domestic hypothesis 5 (DH5). The profits of fully licenced foreign banks in Australia are significantly different to those of foreign-owned merchant banks in Australia.

2.2. Multinational banking factors

The literature regarding the determinants of multinational bank profitability is relatively sparse. Some authors (Fieleke, 1977; Giddy, 1983; Cho, 1985; Williams, 1996, 1998a,b) have developed models based upon the multinational bank size literature and applied that model to both size and profits. Other approaches have been to consider the impact of foreign banks upon the host market (Claessens et al., 2001) or the issue of transfer pricing by multinational banks (Demirgüç-Kunt and Huizinga, 2001).⁷ However, the relationship between characteristics of the parent bank or parent nation and subsidiary profits in the host nation are, as yet, relatively poorly explored.

To earn profits in the host market, parent banks must devote resources, including capital, to their foreign subsidiary. Those banks that are more profitable have increased resources to devote to offshore investment. As a result, increased profits for the parent firm, *ceteris paribus*, increase the ability to devote profit-increasing resources to the foreign bank subsidiary. Such resources would only be devoted to the host nation if the parent expects these to earn a higher return than if they would in the home nation. Focarelli and Pozzolo (2001, p. 2326) argued that parent profitability measures parent efficiency and found that more efficient banks are more likely to expand abroad to seek new profit opportunities. Increased parent profits also provide a signal to depositors about the stability of the foreign bank, resulting in a lower cost of deposited funds.

However, to date the relationship between parent profits and profits in the host nation has received relatively little attention in the literature.⁸ Following Focarelli and Pozzolo (2001) this paper will argue that efficient, profit maximising, banks ex-

⁷ Cross-border studies of bank profitability include Short (1979), Schuster (1984), Bourke (1989), Molyneux and Thornton (1992) and Saunders and Schumacher (2000). These studies can be broadly considered as multinational studies rather than studies of multinational banking.

⁸ Williams (1998a,b) found limited evidence of a relationship between parent profits and host profits in the Australian context.

pand abroad to seek higher profits.⁹ Thus, higher parent profits will be reflected in higher profits in Australia *ceteris paribus*. Parent profits are measured by parent NIMs,¹⁰ consistent with Zimmer and McCauley (1991), as used by Williams (1998a,b).

Multinational hypothesis 1 (MH1). The profits of a foreign bank or foreign merchant bank in Australia are positively related to that foreign bank or foreign merchant bank's parent NIM.

Banks prefer to invest in locations where the profit opportunities are greatest and one measure of profit opportunities is the host nation GDP growth. Increased home nation growth reduces the relative attractiveness of foreign investment, and results in increased domestic investment in banking (Moshirian, 2001). Thus, investment offshore produces an opportunity cost of reduced domestic investment. Home nation GDP growth relative to host nation growth is one measure of the opportunity cost of foreign investment.¹¹ Moshirian (2001) found that home GDP growth had a negative impact upon FDI in banking. Khoury (1979) provided an alternative model, and argued that some activities conducted by the foreign bank in the host nation are the result of economic activity in the home nation. Khoury (1979) did not test this relationship.¹² Molyneux and Seth (1998) considered that foreign bank size (but not profits) would be a negative function of home nation GDP, as increased home demand would reduce offshore lending *ceteris paribus*. This study will expand this approach to foreign bank profits in the host nation.

While these arguments are posed in the context of foreign bank size in the host nation, it would be expected that foreign banks would increase size of presence in the host nation in the expectation of increased profits. Demirgüç-Kunt and Huizinga (2001) found that foreign bank profits are positively related to the host nation GDP. Continuing with the profit-maximisation approach of the previous hypothesis, banks will choose to allocate profit-increasing resources to those locations that offer the greatest returns. In this study home nation GDP growth will represent the opportunity cost of accessing the host nation GDP growth. Thus, this study will argue that the opportunity costs argument posed for foreign bank size in the host nation are equally applicable to foreign bank profits in the host nation.

⁹ This approach assumes a bilateral investment decision by each parent bank. The actual foreign investment decision may involve potential host nations other than Australia. However, the currently available data does not allow consideration of these alternatives.

¹⁰ As discussed in Section 4 of this paper, parent return on assets is an alternative measure of parent profits.

¹¹ As this study considers a single host nation, the host GDP approach of Cho (1985) is not appropriate (as this is a constant for a single nation). Likewise the relative growth approach of Goldberg and Saunders (1981a) and Walker (1983) is not appropriate, as it involves transformation by a constant. Thus this study will use home nation GDP growth to measure the opportunity cost of offshore expansion.

¹² It is possible that nations with low GDP growth will retain high domestic demand for bank credit. Banks from nations of this type will find it comparatively less attractive to expand offshore and so devote resources to a nation that is not experiencing excess demand for bank funds.

Multinational hypothesis 2 (MH2). The profits of a foreign bank or foreign merchant bank in Australia are negatively related to the growth of the foreign bank or foreign merchant bank's home country GDP.

The defensive expansion hypothesis considers that banks follow their clients to new markets to retain (defend) their existing relationship (Brimmer and Dahl, 1975; Grubel, 1977). These existing clients can act as a beachhead for expansion into the new market (Fieleke, 1977). Considerable evidence has been advanced in support of this hypothesis (Nigh et al., 1986; Sabi, 1988; Hultman and McGee, 1989; Goldberg and Saunders, 1981a,b; Grosse and Goldberg, 1991). To date this evidence has had a US focus. Defensive expansion effects have been measured using exports (Goldberg and Saunders, 1981a,b) and investment measures (Nigh et al., 1986; Sabi, 1988; Moshirian, 2001). Williams (1996) found no evidence of following clients, (measured using FDI), affecting Japanese bank profits in Australia. Williams (1998b) found that following clients, (measured using FDI and exports), increases foreign bank profits in Australia, although the economic significance was small. Given this body of evidence it is reasonable to expect a defensive expansion effect in Australia.

Multinational hypothesis 3 (MH3). The profits of a foreign bank or foreign merchant bank in Australia are positively related to Australian trade and investment relationships with that foreign bank or foreign merchant bank's home country.

2.3. Control variables

Bank profits will be affected by their expenditure upon infrastructure and staff. If such expenses have a positive net present value they will increase profits (Bourke, 1989). Such expenditure also captures technological aggressiveness (JaJa, 1996). One argument for allowing foreign bank entry into Australia was the technological advantages foreign banks possess over domestic banks (Davis and Lewis, 1982). Restrictions upon data availability do not allow this study to employ separate measures of expenditure on staff and technology. All that is available for both foreign banks and foreign merchant banks is a total expenditure measure, which includes expenses on premises and other general expenses.¹³

Several studies have found evidence of significant time effects in bank profits (Kwast and Rose, 1982; Berger and Hannan, 1989, 1992). In order to control for possible time series effects, the model includes dummy variables representing years.

Clark (1986) and Liang (1989) found that models of bank profits must include a risk measure. Lloyd-Williams et al. (1994) and Angbazo (1997) considered that bank leverage acts to measure the risk of insolvency. In this study leverage is measured by capital ratio (DH3), and this will also act as a partial control for any changes in the risk of foreign banks and foreign merchant banks over the study period.¹⁴ Brooks

¹³ This limitation also resulted in an inability to include efficiency measures of the type used by De Young and Nolle (1996).

¹⁴ Well-capitalized banks have been found to be more efficient (Berger and Mester, 1997).

and Faff (1995) and Harper and Scheit (1992) found no evidence of bank risk changing over the post-deregulation period for listed Australian banks.

The bank profits model estimated by Williams (1998a,b) included a measure of bank interest margin and a measure of bank fee based income. Badger (1995) argued that NIMs account for between 75% and 90% of the operating revenue of a bank. Thus, NIM will undoubtedly produce a positive and significant coefficient in a profit model. Foreign banks in Australia are disproportionately active in off-balance sheet activity (Linklater, 1989), so it is also important to control for this source of income. Measures of host nation NIM and host nation non-interest income will be included for comparison with the results of Williams (1998a,b). Dummy variables representing nationality will also be included in this model, (i) to act as a control for any exogenous nationality effects such as home national regulation not controlled for by other variables; and, (ii) for comparison with the results of Williams (1998b).

The size of a parent bank is a key factor in determining the competitiveness of a multinational bank (Cho, 1985). Williams (1998a,b) found parent bank size did not impact upon Australian foreign bank and merchant bank profits. It is possible that the omission of domestic market factors has produced an omitted variable bias in the previous results. Two measures of parent size, log of parent assets and log of parent capital will be included in this model.¹⁵ Those banks that have operated in Australia for longer periods may have been able to use their local expertise to increase Australian profits. Williams (1998a,b) did not find experience in Australia had any impact upon profits. Again this model will include local experience to determine if previous insignificance was due to model mis-specification.

2.4. *Bank efficiency*

De Young and Nolle (1996), Peek et al. (1999), Mahajan et al. (1996) and Hasan and Hunter (1996) have found foreign-owned banks to be significantly less efficient than their domestic competitors. With the exception of Peek et al. (1999)¹⁶ these employed estimates of either cost or profit efficiency (or both) to determine efficiency differences. Such models require specification of the bank's inputs and outputs and the estimation of efficiency via stochastic frontier estimation or the distribution-free approach.¹⁷ The sample in this study has some limitations. One limitation is that financial disclosure by foreign-owned merchant banks in Australia are less detailed than is ideal.¹⁸ As a result, it is not currently possible to estimate an efficiency measure for foreign-owned merchant banks. Sathye (2001) estimated bank and foreign

¹⁵ Two alternatives are used, as some foreign merchant banks owned by securities houses measured parent equity differently to foreign banks and foreign merchant banks owned by banks. These two alternatives are highly correlated.

¹⁶ Peek et al. (1999) focussed upon foreign acquisition of US banks. Within the Australian context, acquisition by a foreign bank was employed in a single case.

¹⁷ Key survey articles on efficiency estimation are Berger and Humphrey (1997), Berger and Mester (1997) and Berger et al. (2000).

¹⁸ The foreign merchant banks are wholly owned foreign subsidiaries, which are not regulated by the RBA or the APRA. Thus, the prices of foreign merchant bank inputs could not be obtained.

bank efficiency in Australia for a single year (1996), using the DEA approach, and concluded foreign banks to be less efficient than domestic banks. An important study by Berger et al. (2000) found that foreign banks on average are less efficient than domestic banks, however, when nationality is controlled for, banks from at least one nation (the United States) were found to be more efficient than domestic banks.

3. Methodology and data

3.1. Data

The primary data source for this study was the *KPMG Financial Institutions Performance Survey*. Parent bank details were sourced from Moody's *Credit Opinions*. Tables 1 and 2 detail the sample selection criteria and sample characteristics.

3.2. Empirical model

Extending Eq. (1) to reflect the control variables employed, the model tested in this study is

$$\begin{aligned} \pi = & \phi_0 - \phi_1 \text{ Competitor Market Share} + \phi_2 \text{ Own Market Share} \\ & + \phi_3 \text{ Capital Ratio (Australia)} - \phi_4 \text{ Asset Growth} \pm \phi_5 \text{ License} \\ & + \phi_6 \text{ Parent NIM} \pm \phi_7 \text{ Home GDP} \\ & + \phi_8 \text{ Home Trade and Investment} \pm \phi_9 \text{ Expenses} \\ & + \phi_{10} \text{ Australian NIM} + \phi_{11} \text{ Australian Non-Interest Income} \\ & \pm \phi_{12} \text{ Experience} \pm \phi_{13} \text{ Year Dummies} \\ & \pm \phi_{14} \text{ Nationality Dummy Variables} + \varepsilon. \end{aligned} \quad (2)$$

Table 1
Sample selection criteria

	1989	1990	1991	1992	1993
<i>Listed in KPMG Survey, of which</i>	78	77	68	61	59
Licensed banks ^a	15	14	14	14	13
Merchant banks	63	63	54	47	46
<i>Reason for deletion</i>					
No/insufficient data in KPMG survey and annual report not available	10	13	10	2	3
Parent data not in Moody's credit opinions	10	8	8	7	6
<i>Total, of which</i>					
Licensed banks	15	14	14	14	13
Merchant banks	43	42	36	38	37

^a All branches were excluded from this study.

Table 2
Nationality of banks in sample

	1989	1990	1991	1992	1993
United States	11 (4)	11 (4)	10 (4)	10 (4)	8 (4)
Japan	23 (3)	23 (3)	20 (3)	19 (3)	20 (3)
United Kingdom ^a	5 (4)	5 (4)	4 (4)	4 (4)	3 (3)
Singapore	3 (1)	3 (1)	3 (1)	3 (1)	3 (1)
Germany	1 (1)	1 (1)	1 (1)	2 (1)	2 (1)
Hong Kong	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)
Netherlands	2 (0)	0	1 (0)	1 (0)	1 (0)
Belgium	1 (0)	1 (0)	1 (0)	1 (0)	1 (0)
Canada	3 (1)	2 (0)	2 (0)	2 (0)	2 (0)
France ^b	5 (0)	5 (0)	4 (0)	4 (0)	3 (0)
Korea	1 (0)	1 (0)	1 (0)	1 (0)	1 (0)
Switzerland	2 (0)	2 (0)	1 (0)	2 (0)	2 (0)
Sweden	0	0	0	1 (0)	1 (0)
Taiwan	0	0	0	0	1 (0)
Italy	0	1 (0)	1 (0)	1 (0)	1 (0)
New Zealand	0	0	0	0	0
Ireland	1 (0)	1 (0)	0	0	0
Total	58 (15)	56 (14)	50 (14)	52 (14)	50 (13)

Banks shown in parentheses.

^a For the purposes of this study, Lloyds NZA was classified as from the United Kingdom. The Bank of New Zealand was taken over by National Australia Bank in 1992, so there were no longer New Zealand owned banks operating in Australia after that takeover. The Bank of New Zealand had operated in Australia as a branch rather than as a fully licensed bank, and so was excluded.

^b As a branch, Banque Nationale de Paris was excluded from this study, however, its merchant bank subsidiary was included.

3.3. Variable measurement

Table 3 details the variables used in this study. Profits were measured as return on assets after tax.¹⁹ This allows a consistent measurement of the profit experience of the foreign banks and foreign merchant banks. While return on equity is an alternative measure of profits, considerable heterogeneity was observed for return on net assets.²⁰ This was due to several factors. Ferguson (1991) indicates that many foreign-owned banks were effectively fully guaranteed by their parents. Thus, their capital was partially held in Australia and partially held in the home nation. The regulators of the era relied upon the size of the parents to provide implied capital (which occurred in several cases) (Ferguson, 1991). The net effect is that return on equity has considerable measurement problems for Australian foreign banks and foreign

¹⁹ As noted by Molyneux et al. (1996) measures such as ROA and ROE have some problems in that they combine a stock variable with a flow variable. However, such measures do have the advantage of simplicity, and providing a single figure to measure the performance of a multiproduct firm. In the case of this study, ROA provides the best available measure of foreign bank and foreign merchant bank profits.

²⁰ Net assets is used in this study to measure equity as it is available in a consistent series for the sample employed.

Table 3
Variable definitions

Variable	Definition	Hypothesis (direction)
<i>Dependent variable</i>		
ROA	Profits after tax/total assets (%)	NA
<i>Independent variables</i>		
Competitor market share	(Assets of four largest banks + assets of all other banks or merchant banks from same nation)/ assets of all banks and merchant banks	DH1 (–ve)
Log of Australian equity	Log of net assets	DH2 (+ve)
Capital ratio (Australia)	Net assets/total assets	DH3 (+ve)
Asset growth	Growth in total assets year $t - 1$ to year t (%)	DH4 (–ve)
License	Dummy variable for full bank license	DH5 (\pm)
Parent NIM	(Interest income [parent] – interest expense [parent])/ average interest earning assets [parent] (%)	MH1 (+ve)
Home GDP growth	Growth in home nation GDP (%)	MH2 (\pm)
Capital flow	Flow of foreign investment into Australia from the i th bank's home nation in the t th year in Australian dollars	MH3 (+ve)
Exports	Australian exports to the i th bank's home nation for the t th year, in Australian dollars	MH3 (+ve)
Log parent equity	Log of parent equity: log of tier-one capital of parent in Australian dollars	Control
Log parent assets	Log of parent assets in Australian dollars	Control
Expenses	(Total expenses less interest expenses and doubtful debt expense)/total assets (%)	Control
Australian NIM	(Interest income [Aust] – interest expense [Aust])/ average interest earning assets [Aust] (%)	Control
Australian non-interest income	(Income less interest income and doubtful debt expense)/average total assets (%)	Control
Experience	Years of operation in Australia = (t th year) – (year of first incorporation)	Control
USA	Dummy variable for US banks	Control
Japan	Dummy variable for Japanese banks	Control
UK	Dummy variable for UK banks	Control
1990	Dummy variable for 1990	Control
1991	Dummy variable for 1991	Control
1992	Dummy variable for 1992	Control
1993	Dummy variable for 1993	Control

merchant banks in this era.²¹ Many of the foreign merchant banks in Australia do not report capital in terms consistent with the BIS capital adequacy accord, due to their status as non-banks. Thus the parent bank may be acting as a de facto provider

²¹ This issue may also account for the insignificance of Australian capital ratio as used in this study.

of capital that is not reflected in the Australian balance sheet. However, this study did not find any evidence to support that size of parent significantly impacts upon profits in Australia. Differences in capital holding by foreign banks and foreign merchant banks in Australia may also reflect different levels of risk aversion amongst the parent banks, and a measure of parent risk aversion was not available to this study.

Competitor market share (DH1) is measured as the market share of the four largest banks in Australia, plus the market share of all other foreign banks and foreign merchant banks of the same nationality (Wright and Liesch, 1994). This variable is based upon the argument that as the dominant banks, the four largest banks are significant competitors for any new entrant. In addition, as argued by the defensive expansion hypothesis, a significant reason for banks to expand across borders is to follow clients of the same nationality. Thus, the next most important level of competition for a foreign bank or foreign merchant bank are those banks of the same nationality competing for the same client base. The market was defined as the total assets of all licensed banks and merchant banks in Australia for that particular year. The market definition in banking can be controversial. Two additional measures of competitor market share were also considered, a wider measure that assumed that foreign banks and foreign merchant banks compete with all other banks and merchant banks, and a measure that excluded housing loans as part of the total market. These alternatives were found to be highly collinear with all alternative measures of Australian size (DH2), and so the results including these measures are not reported. An advantage of the definition used in this study is that it reduces the linear dependency between host nation size and competitor market share.

Competitor market share is defined in terms of assets, thus it is important to use a measure of own market share that does not have a potentially linear relationship with competitor market share. Three measures of Australian size of presence are possible, log of Australian assets, own market share and log of Australian equity (defined as net assets). Of these three possible measures, the third does not have a direct linear relationship with competitor market share and so is the least likely to induce collinearity problems. Log of Australian equity has a correlation with log of Australian assets of 0.7496, and has a correlation with own market share of 0.7613. Thus Log of Australian Equity acts as an appropriate instrumental variable for own market share or Australian size.

In some cases parent NIM was not available and parent return on average assets was used, Williams (1998a) found that this difference did not produce any noticeable biases.²² Home GDP growth (MH2) was obtained from the IMF's *International Financial Statistics*.²³ Two alternative measures of the defensive expansion effect (MH3) were tested, both obtained from the Australian Bureau of Statistics, the flow of foreign investment capital from the bank's home nation and Australian exports to

²² The model proposed in this paper was also re-estimated using parent return on assets as an alternative to parent NIMs. No noticeable biases were found in this study.

²³ In four cases (Japan, Germany, Hong Kong and Sweden), GDP growth was measured in nominal prices, in all other cases it was measured in 1990 prices. Hong Kong's GDP growth was obtained from Moody's *Credit Opinions*.

the bank's home nation.²⁴ A lagged measure of capital flow was also included to test for any time series properties of the defensive expansion effect, as proposed by Fieleke (1977). Parent size was measured as tier-one capital or parent assets, both in Australian dollars. Experience is measured as time in Australia; the number of years from the first transaction based activity to the *t*th year. The year of first transaction were obtained from the *Directory of Australian Financial Institutions*, the KPMG Financial Institutions Performance Survey or the RBA *Bulletin*. All other variables are defined in Table 3. Correlations between the independent variables are shown in Table 4.

Table 4
Correlation matrix of independent variables

	Licence	Com- petitor market share	Asset growth	Log of Aus- tra- lian equity	Australian NIM	Austra- lian non- interest income	Parent NIM	Log parent assets
Licence	1.00000							
Competitor market share	-0.04381	1.00000						
Asset growth	-0.07486	0.03436	1.00000					
Log of Aus- tra- lian equity	0.61231	0.11474	-0.10180	1.00000				
Australian NIM	-0.05685	-0.10344	-0.03622	-0.10698	1.00000			
Australian non-interest income	0.02946	-0.00041	-0.01972	0.06355	0.12032	1.00000		
Parent NIM	0.08235	-0.17224	0.02090	-0.05602	0.42227	0.28795	1.00000	
Log parent assets	0.15367	0.29471	0.03081	0.46535	-0.33038	-0.21436	-0.31159	1.00000
Capital ratio (Australia)	-0.10277	0.08612	-0.04932	-0.06424	0.64912	0.48687	0.40431	-0.36816
Expenses	-0.00687	-0.03009	-0.08245	-0.06084	0.22371	0.68262	0.26142	-0.20687
Experience	0.14452	0.01058	-0.05025	0.10357	-0.02851	0.02156	0.11750	0.08778
Capital flow	0.07302	0.06016	0.02526	0.14800	0.12276	0.08287	0.19682	0.08090
Exports	-0.16047	0.55731	0.06501	0.00500	0.09397	-0.11926	-0.27663	0.28973
Home GDP growth	-0.02886	-0.38312	-0.01037	-0.17156	0.23803	-0.11634	-0.06247	-0.34188
1990	-0.01543	-0.28489	-0.00070	-0.05307	0.06225	0.03868	0.06675	-0.07323
1991	0.01840	0.31983	-0.04273	0.01900	-0.00980	-0.02734	-0.04369	0.03390
1992	0.00680	0.31459	-0.05412	0.02266	-0.06918	-0.00574	-0.05818	0.08391
1993	-0.00345	0.35802	0.08607	0.09978	-0.11986	-0.02463	-0.08491	0.12781
USA	0.14951	0.12996	-0.04516	0.16376	0.01403	0.23511	0.27146	-0.15108
UK	0.23160	-0.10016	-0.01957	0.17975	0.03087	0.03722	-0.06203	-0.03283
Japan	-0.21216	0.40054	0.06843	-0.04407	0.10573	-0.16243	-0.29082	0.32423

²⁴ Imports and exports were found to be, unsurprisingly, highly correlated. Exports were found to have a lower correlation with capital flow, thus exports were used to reduce potential multicollinearity problems.

Table 4 (continued)

	Capital ratio (Australia)	Expenses	Experience	Capital flow	Exports	Home GDP growth	1990	1991
Capital ratio (Australia)	1.00000							
Expenses	0.47774	1.00000						
Experience	-0.05983	0.01425	1.00000					
Capital flow	0.12723	0.00583	0.02892	1.00000				
Exports	0.16604	-0.09528	-0.21455	0.37476	1.00000			
Home GDP growth	0.07426	-0.10965	-0.19763	0.11205	0.07655	1.00000		
1990	0.04262	0.10047	-0.00845	0.09283	-0.02465	0.13457	1.00000	
1991	-0.03349	-0.03448	0.02068	-0.06330	0.05437	-0.04014	-0.24845	1.00000
1992	-0.03737	-0.02737	0.03932	-0.31528	0.01154	-0.18014	-0.25455	-0.23717
1993	0.02030	-0.04215	-0.00344	0.02297	0.06422	-0.22532	-0.24845	-0.23148
USA	0.04923	0.11117	0.22907	0.39773	-0.14497	-0.17612	0.01118	0.01481
UK	-0.04117	0.02162	-0.06183	-0.07107	-0.12070	0.11912	-0.00357	0.00426
Japan	0.14716	-0.11550	-0.25937	0.32604	0.95511	0.13059	0.00598	0.01262
	1992	1993	USA	UK	Japan			
1992	1.00000							
1993	-0.23717	1.00000						
USA	0.00547	-0.03444	1.00000					
UK	0.00157	0.00426	-0.06659	1.00000				
Japan	-0.02209	0.01262	-0.38246	-0.11002	1.00000			

3.4. Model estimation

The analysis of pooled data raises several issues. The assumptions of OLS estimation are not met when using pooled data. Particularly, the assumption that $E[e_i e_j] = 0$ is unlikely to hold. The question of whether this assumption of OLS is violated can be resolved by the use of a Lagrange multiplier (LM) test. The LM test is based upon the residuals of an OLS regression (Greene, 1997, p. 628). The model proposed includes time-invariant independent variables, representing a bank licence as well as nationality of origin. The fixed effects or least squares dummy variable (LSDV) approach is thus inappropriate in this case, as this method requires that there is within cross-section variation in all variables for at least some of the cross-sections (Greene, 1998). Thus random effects estimation is appropriate.²⁵ Unbalanced estimators of the variance components were used for this study. In this case, group means were used as estimators of the variance components (Baltagi, 1995). ANOVA based methods are used to estimate the variance components, as more complex estimators of error variance components have not been found to yield

²⁵ Time series effects will be controlled for with the use of dummy variables, as the time series effects have some relevance to this study.

superior results (Baltagi and Chang, 1994). The Akaike information criteria (AIC) is used to indicate the optimal model.

4. Results

The results for the regressions are shown in Table 5. In order to demonstrate the impact the integrated model of foreign bank profits has had upon explanatory power, the first two columns of Table 5 estimate the multinational only model used

Table 5
Dependent variable: Return on assets after tax

Model	Multinational A	Multinational B	A	B	C
Licence	-1.1534 (0.0230)*	-1.1970 (0.0002)**	-1.5614 (0.0001)**	-1.6142 (0.0001)**	-1.6147 (0.0001)**
Competitor market share			-33.5822 (0.0527)	-38.6397 (0.0250)*	-38.3034 (0.0257)*
Log of Australian equity			0.3549 (0.0659)	0.3882 (0.0387)*	0.3827 (0.0403)*
Capital ratio (Australia)			-0.0081 (0.5881)		
Asset growth			0.00003 (0.9588)	0.0002 (0.7537)	
Parent NIM	0.2198 (0.0135)*	0.1095 (0.1874)	0.1323 (0.1147)	0.1251 (0.1309)	0.1270 (0.1235)
Home GDP growth	0.2014 (0.0021)**	0.2443 (0.0001)**	0.1889 (0.0025)**	0.2031 (0.0011)**	0.2037 (0.0011)**
Capital flow	0.0001 (0.0908)	0.00007 (0.2697)	0.00005 (0.3801)	0.00005 (0.3924)	0.00005 (0.3944)
Log parent assets	0.3383 (0.1810)	0.5471 (0.0021)**	0.2845 (0.1717)	0.2677 (0.1715)	0.2716 (0.1638)
Expenses			-0.0524 (0.1503)		
Australian NIM	0.2624 (0.0012)**	0.2506 (0.0009)**	0.2675 (0.0034)**	0.2097 (0.0053)**	0.2084 (0.0054)**
Australian non-interest income		0.2408 (0.0001)**	0.2901 (0.0001)**	0.2401 (0.0001)**	0.2400 (0.0001)**
Experience	-0.0159 (0.2424)	-0.0154 (0.0784)	-0.0127 (0.1438)		
USA	1.0232 (0.1160)	0.7162 (0.1339)	1.3902 (0.0295)*	1.5081 (0.0181)*	1.5015 (0.0183)*
UK	-1.8871 (0.2446)	-2.3967 (0.0154)*	-2.7201 (0.0058)**	-2.6016 (0.0082)**	-2.5934 (0.0083)**
Japan	-0.2443 (0.6621)	-0.1821 (0.6644)	1.1239 (0.1260)	1.3583 (0.0583)	1.3537 (0.0586)
1990	-0.5418 (0.1305)	-0.6606 (0.0917)	0.0448 (0.9301)	0.0787 (0.8780)	0.07061 (0.8901)
1991	0.3962 (0.3159)	0.3392 (0.4236)	2.1624 (0.0379)*	2.4226 (0.0198)*	2.3995 (0.0204)*
1992	0.9689 (0.0260)*	0.8768 (0.0584)	2.6735 (0.0112)*	2.9324 (0.0053)**	2.9079 (0.0055)**

Table 5 (continued)

Model	Multinational A	Multinational B	A	B	C
1993	1.1680 (0.0049)**	1.0789 (0.0125)*	2.9616 (0.0062)**	3.2147 (0.0029)**	3.2019 (0.0030)**
Constant	-5.5651 (0.0620)	-8.2900 (0.0002)**	14.2562 (0.2496)	17.3806 (0.1589)	17.1657 (0.1627)
Adjusted R^2	0.1924	0.3359	0.3540	0.3493	0.3517
F -statistic (df; p -value)	5.51 (14, 251; 0.0001)**	9.94 (15, 250; 0.0001)**	8.26 (20, 245; 0.0001)**	9.37 (17, 248; 0.0001)**	9.98 (16, 249; 0.0001)**
AIC ^a	4.519	4.327	4.317	4.314	4.307
LM test ^b (p -value)	22.96 (0.00002)**	3.01 (0.0827)	0.62 (0.4304)	1.57 (0.2109)	1.56 (0.2121)

66 Firms, 1989–1993, $N = 266$; p -values in parentheses.

* Significant at the 5% level.

** Significant at the 1% level.

^a Akaike information criteria: The optimal model has the lowest AIC.

^b The LM test is a test of the null hypothesis that OLS is the correct specification. Rejection of the null hypothesis requires the application of a pooled regression technique. In all cases where the null hypothesis has been rejected pooled estimations have been performed, in all other cases OLS was applied.

by Williams (1998b). The first column (Multinational A), excludes non-interest income, which was not available for the sample used by Williams (1998b). The second column (Multinational B), includes non-interest income, which is available for the sample used in this study. Some of the increase in explanatory power between Williams (1998b) and this study is due to the inclusion of non-interest income as a control variable. However, much of the increase in explanatory power is due to the change in sample time period. This study uses the period 1989–1993, while Williams (1998b) used 1987–1993, 1987 and 1988 were deleted from this study due to non-availability of data for the expanded model. Williams (1998b) had an adjusted R^2 of 0.05, while Multinational A has an adjusted R^2 of 0.1924, a fourfold increase. Model A provides the results for estimating the full model proposed in Eq. (2). Models B and C are more parsimonious models, excluding insignificant variables.²⁶ Overall, the model proposed in this paper explains about 35% of the profit experience of foreign banks operating in Australia. This is comparable to other profits models, with Claessens et al. (2001) explaining about 15% of the profit experience of domestic banks, and the survey paper by Gilbert (1984) reporting adjusted R^2 of similar or lower magnitudes to those found in this study.

Inclusion of domestic factors, developed as part of the integrated model proposed in this study, have increased explanatory power only at the margins, with an increase in the adjusted R^2 of only 1%, from about 34% to about 35%. However, variables drawn from the domestic profits literature provide valuable insights into the policy decisions made by managers of foreign banks and foreign merchant

²⁶ The insignificance of expenses, Australian capital ratio, asset growth and experience were robust to model specification.

banks in Australia. A possible explanation for the low marginal increase in explanatory power due to the increase of domestic market factors is similar to that proposed by Claessens et al. (2001, pp. 906–907). In the case of this study, the foreign banks were able to observe the structure of the Australian banking system before commencing operations in the deregulated Australian market, and so chose to emphasize their operations in those areas in which the concentration of the Australian market had the lowest impact. Instead the foreign banks emphasized those elements of their operations in which their existing advantages, as measured by the multinational factors employed in this study, were able to maximise their profits. This result is consistent with that found by Buch and Golder (2001) for lending by foreign banks in Germany and the US. Buch and Golder (2001) formulated a model that illustrated that a foreign bank faces several problems when accessing a new market. Of particular importance for this study is the argument that incumbent banks have a first mover advantage. This study has measured incumbency by competitor market share and argues that foreign banks made a strategic choice upon entry to concentrate upon those markets in which their traditional (multinational) advantages were strongest. Buch and Golder (2001) argued that there is not full integration between market segments pursued by domestic and foreign banks.²⁷ While their model was tested for bank size, this argument would explain the greater importance of multinational factors in explaining foreign bank profits as compared to domestic factors.

DH1 proposed that foreign bank and foreign merchant bank profits in Australia would be a negative function of the market share of competitor banks. Dominance of Australian banking by the four major banks (as measured in competitor market share) resulted in a reduction in profits for foreign-owned banks and merchant banks. This is an important result, as the variable is opposite in direction to that accepted in the domestic bank profits literature. The level of concentration of the Australian banking industry provided a barrier to entry to the foreign banks in the initial phases of their operation. The resulting reduction in profits would not necessarily have resulted in a direct transfer of wealth to the consumers of banking products. This effect includes the impact of the losses made between 1989 and 1991 due to large loan losses, and so also represents substantial reductions in asset values over this period. As a result, managers of banks considering offshore expansion will have to consider incumbent market share as a potential barrier to entry. However, the positive and significant coefficient for Australian size indicates that foreign banks and foreign merchant banks cannot afford to ignore the role size has to play in profit determination.

DH2 argued that there would be a positive relationship between the market share of a bank, and the profits of that bank. This hypothesis was based upon the arguments of both the ESH and SCP paradigms. Log of Australian equity was used as

²⁷ As discussed by Claessens et al. (2001), foreign bank entry is typically focussed upon the wholesale market. However, foreign bank entry can result in increased efficiency and lower profits in the retail market.

an appropriate instrumental variable for presence in Australia, and was significant at the 5% level. Alternative measures of size in Australia, log of Australian assets and own market share were also tested. However, as discussed above, collinearity with competitor market share resulted in these alternative measures of Australian size being insignificant. Thus, increased size does result in increased profits. This confirms the result of Williams (1998a,b) and De Young and Nolle (1996) that increasing size in the host nation has a long-run benefit of increasing profits in the host nation. As a non-linear relationship between size and profits is possible, a quadratic term (log of Australian equity)² was also tested. This variable was not significant. Overall, the size effect found in this paper may indicate the presence of economies of scale for foreign banks in Australia. Investigation of economies of scale for foreign banks in Australia would be a valuable extension of this study if data availability permits such an extension.

DH3 argued that banks seek to maximise their return on capital. This argument is based upon the need to maximise returns from borrowed funds. Thus, those banks that have higher equity levels must earn higher return on assets to ensure that return on shareholders funds are maximised. This argument was not supported in this study, with Australian capital ratio being consistently insignificant. As a result, only Model A in Table 5 includes Australian capital ratio. Given the international evidence relating to the role of capital ratios in bank profits, and the importance assigned to capital in the current international regulatory framework, this is an area that would benefit from further Australian research. As implied by Ferguson (1991) it is possible that the parent banks acted as de facto suppliers of capital that was not reflected in the Australian subsidiaries' balance sheet, and it is this factor that may account for the insignificance of Australian capital ratio.

No evidence was found to support DH4, that total asset growth will be inversely related to profits. This hypothesis may be best tested for foreign banks in Australia using a growth measure that spans several years, due to lags between the loan decision and any impact on bad debts. Such a measure may provide superior descriptive power, as it may take several years for the effects of high growth rates to become noticeable in profits. It is also possible that the effects of the losses the foreign banks experienced in the early 1990s due to economic cycle effects may have overcome any effects due to asset growth. It should be noted that losses in this period were not confined to the foreign banks and foreign merchant banks, but also affected the domestic banks. The relatively short time the foreign banks and foreign merchant banks have operated in Australia may also have contributed to the difficulties in detecting any relationship between growth in total assets, which commenced from a low base, and profits, which were affected by initial start up costs.

DH5 argued that the profit experience of fully licenced foreign banks differs from that of foreign merchant banks. In this study the licence dummy variable is uniformly negative and significant. This indicates that the foreign licensed banks earned an average of 1.5% lower return on assets than the foreign merchant banks. This confirms the discussion of KPMG Financial Institutions Survey (1991), and Ferguson (1991), that the foreign banks suffered disproportionately from the losses of the

late 1980s and early 1990s.²⁸ It should be noted that these losses were not isolated to the foreign banks, and were also experienced by many of the domestic banks. However, these losses were proportionately larger for the foreign banks (Ferguson, 1991).

MH1 argued that parent NIM is positively related to Australian profits, this was not supported. This result was not affected by using parent return on assets as an alternative measure of parent profits. Thus for the Australian case, for the time period studied, parent profits had no impact upon Australian profits. However, sub-sample analysis discussed below indicates some limited support for MH1. Home GDP (MH2) was significant, with home GDP having a consistently positive relationship with host nation profits. This indicates that those foreign banks from countries that grow more rapidly will, on average, be more profitable. The relative growth hypothesis has not been subject to much attention in the literature. One problem with this hypothesis is that smaller countries' relative growth rates will be biased upward relative to larger countries. Thus, this result may represent a residual nationality effect for a smaller nation with a high growth rate, that also has banks or merchant banks in Australia that are relatively more profitable. As it is possible that the home GDP effect is specific to a particular country, nation specific dummies for the United States, Japan, and the United Kingdom were used. These three nations were the home nations for a large proportion of the sample, particularly Japan, however the Japan dummy was uniformly insignificant.

Khoury (1979) argued that some activities conducted by the foreign bank in the host nation are the result of economic activity in the home nation. Thus, as the home nation grows, its demand for imports increases, and exports and offshore investments may also increase. Some of these activities could be serviced by international banking rather than multinational banking. In this context, international banking services are those offshore banking services that can be provided without leaving the home nation. Multinational banking services are those banking services that are provided from a location other than the bank's original country of incorporation.²⁹ The results for home GDP growth could reflect a substitution between international banking and multinational banking that occurs as a result of home GDP growth producing increased demand for offshore banking services that are serviced by the Australian subsidiary rather than by the parent. Khoury (1979) did not test this relationship, but such an approach would provide an avenue for further investigation of this result.³⁰

The defensive expansion hypothesis (MH3) was tested using capital flow as a measure of banks following their clients. This measure was found to be insignificant. Alternative measures of defensive expansion, exports and lagged capital flow, were also tested, with both insignificant. Examination of the correlation between exports

²⁸ The insignificant constant indicates that foreign merchant banks that were not from the USA, the UK or Japan earned profits that were insignificantly different from zero in 1989.

²⁹ Williams (1997) provides a further discussion of this distinction.

³⁰ A recent study by Peek and Rosengren (2000) found that in the Japanese case, home nation GDP impacted upon host nation lending in the United States. However, the relationship between home nation GDP growth and host nation profits was not explored.

and competitor market share indicated that collinearity is the likely source of the insignificance ($\rho = 0.5573$) (see Table 4). Collinearity between competitor market share and capital flow ($\rho = 0.06016$) was not apparent. This indicates that following clients will increase foreign bank size (from Williams, 1998a,b), but has no impact upon foreign bank profits.

The dummy variables representing nationality of origin found banks from the United States to be more profitable than other nationalities. Similarly, it was found that banks from the United Kingdom were less profitable. The dummy variables representing years indicated a time series effect for the foreign banks in Australia. The period 1991–1993 was found to be more profitable than the preceding years. This result indicates that when set up costs had been absorbed and some experience gained about the Australian marketplace, profits increased. Further, the estimated coefficient on the year dummy variable tended to increase in size over time. This indicates the impact of two possible effects: (i) A recovery from the losses that all banks incurred in the early 1990s, and which affected the new foreign banks in particular (Ferguson, 1991), and (ii) the impact of learning the Australian marketplace post-deregulation. As this model included a control for experience in Australia, which was not significant, it seems that the first of these effects is more likely and reflects economic cycle effects. Unsurprisingly, both Australian NIMs and Australian non-interest income were found to have a positive relationship with foreign bank profits.

As shown in Table 2, Japanese banks make up approximately 40% of the sample used in this study. In order to determine if the results are the outcome of a Japanese bank effect, the sample was segmented into two sub-samples, (a) Japanese banks ($n = 103$) and (b) non-Japanese banks ($n = 163$). It was found that for the non-Japanese component of the sample, home NIM became positive and significant, indicating some support for MH1. In the case of the Japanese bank sample, the single nation focus resulted in home nation variables such as GDP growth and capital flow being excluded. For a single nation study such measures are a constant for each year, thus, the sub-sample analysis does not allow comparison of results of these variables for the Japan only sub-sample. Otherwise, the results found for the entire sample were largely supported by the sub-sample analysis.

5. Conclusions and directions for further research

This paper has demonstrated the impact of integrating domestic and multinational factors when modeling foreign bank profits. For the sample employed in this study, domestic factors had a relatively small impact of the overall descriptive power of the model employed. However, the additional variables drawn from the domestic profits literature generate valuable insights into strategic and policy decisions adopted by foreign bank and foreign merchant bank management. An important outcome of the integrated approach adopted in this paper was the inclusion of competitor market share. Contrary to the domestic bank profits literature, this paper found that concentration in the host market reduces profits of the foreign entrants. Consequently, this concentration acts as an effective barrier to entry. This barrier to entry

is likely to have resulted in a strategic choice by foreign-owned banks and merchant banks to service those market segments in which the foreign bank's traditional comparative advantage was strongest. This result indicates that there is incomplete integration between the market segments of domestic and multinational banks. This argument is consistent with Claessens et al. (2001) and Buch and Golder (2001). It was also found that increasing foreign bank size in Australia is profit increasing over the longer run, but that possession of a bank licence was negatively correlated with profits. This provides important guidance for management of banks seeking to enter a new foreign market. Further, for non-Japanese banks, parent profitability is positively related to profitability in Australia.

The stated reason for allowing foreign banks wider access to the Australian market was to increase competition, particularly in the retail banking market (Keating, 1984). It was unreasonable to expect the foreign banks to provide effective competition in the retail sphere (Bourke, 1990).³¹ The significant and negative coefficient of the competitor market share variable indicates that the foreign banks and merchant banks actively compete with the four major Australian banks and foreign banks of the same nationality. This competition results in significantly lower profits for both the foreign banks and merchant banks. This result verifies the contention of Milbourne and Cumberworth (1991) that foreign bank and merchant entry has resulted in increased competition in the wholesale banking market. This argument is also supported by the negative relationship between foreign bank and foreign merchant bank size in Australia and Australian NIMs of those banks, as found by Williams (1998a,b). Thus, opening the Australian banking market to foreign entrants has partially fulfilled its objective of increasing competition, but this effect has been generally confined to the wholesale banking markets, where the traditional advantages of foreign banks and merchant banks are strongest.³² This again indicates the lack of integration between these market segments.

The bank licence dummy variable is negatively related to bank profitability, indicating that the licensed foreign banks earned significantly lower profits than the foreign merchant banks. This confirms that the foreign banks suffered disproportionately from the losses of the early 1990s. The dummy variables representing years indicates that the foreign banks and merchant banks had recovered from their earlier losses by the later years of the sample period, and were able to capitalise from the economic recovery of the later period in the sample and so increase profits.

The effect of home GDP growth on foreign bank performance is one that has not received much attention to date. The previous studies (Goldberg and Saunders, 1981a; Walker, 1983) have not produced a conclusive outcome. Further, the relationship between home nation GDP and host nation profits has not been subject to much

³¹ As discussed by Guillen and Tschoegl (2000), multinational retail banking is relatively rare, with the recent exception of Latin America.

³² It should be noted that these arguments do not necessarily extend to foreign banks operating in developing markets, as discussed in Buch and Golder (2001). As previously noted, foreign bank entry can result in increased efficiency and lower profits in the retail market (Claessens et al., 2001).

research to date. This is an area that will benefit from further research in different environments before a conclusive statement can be made regarding the relevance of this hypothesis to multinational banking. The approach proposed by Khoury (1979) provides a potentially valuable avenue for this further research. This would provide a useful avenue to distinguish between the factors determining multinational banking as opposed to those factors determining international banking.

This study has not included a measure that reflects individual bank efficiency, as used by De Young and Nolle (1996). Such a measure is conventionally included in recent studies of bank profits, such as Berger and Hannan (1997). However, restrictions on data availability did not allow such a measure to be calculated for the sample employed. Including a measure of foreign bank efficiency in a study of foreign bank profits in Australia would be a valuable extension. Such a study should ensure that differences in nationality of origin are controlled for (Berger et al., 2000). A test for the existence of economies of scale in foreign banks and foreign merchant banks in Australia using the methods of Walker (1994, 1998) would also be worthwhile, particularly given that the size measure employed in this study is significant. The Reserve Bank of Australia (1994) assumed that the foreign banks innately possess economies of scale as a direct extension of their international operations. This issue also offers a potentially fruitful line of future research with important policy implications.

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