Determinants of multinational banks' subsidiary performance: the host and home country effects

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Abstract

Purpose – The purpose of this paper is to provide new empirical evidence on the performance of multinational banks as a subset of the eclectic theory.

Design/methodology/approach – The paper employs the least square method of random effects model (REM). The opportunity to use a random effects rather than a fixed effects model has been tested with the Hausman test. To control for cross-section heteroscedasticity of the variables, the study employs White's transformation.

Findings – The empirical findings indicate that credit risk, overhead costs, income from non-traditional sources, and loans intensity contribute positively to the profitability of the foreign subsidiaries. The results seem to suggest that the parent bank's branch networks exert positive influence on their foreign subsidiaries in India, while the size of the parent banks negatively influences their Indian subsidiaries' performance.

Research limitations/implications – Due to its limitations, the present study could be extended in a variety of ways. First, future research could include more variables such as taxation and regulation indicators, and exchange rates as well as indicators of the quality of the offered services. Second, future studies could also examine the differences in the determinants of profitability between small and large or high and low profitability banks. Third, in terms of methodology, frontier optimization techniques such as the data envelopment analysis, the stochastic frontier analysis, and/or the Malmquist productivity index methods are recommended to examine the performance of the foreign subsidiaries of multinational banks operating in the Indian banking sector.

Practical implications – Studies on the potential benefit of foreign bank entry have been studied extensively. Still, little is known about in which type of country, and under which circumstances, foreign banks have an advantage over their domestic bank peers. Furthermore, Claessens and van Horen point out that the recent financial crisis has highlighted risks associated with cross-border banking and foreign banks presence. These developments have led to greater interest among policy makers and academicians for more analyses to help guide regulatory reform.

Originality/value – The empirical works concerning multinational banking have mainly focused on the determinants and methods of multinational banks entry into foreign markets. On the other hand, empirical evidence on the performance of multinational banks as a subset of the eclectic theory is scarce. By using the whole gamut of foreign subsidiaries of multinational banks operating in the Indian banking sector during the period 2000 to 2008, the paper contributes to this line of the literature.

Keywords India, Multinational companies, Banks, Subsidiaries, Profitability,
Panel regression analysis, Multinational banks

Paper type Research paper

1. Introduction

The empirical studies concerning multinational banking have mainly concentrated on the why, when, and how questions. The focus of these studies has been the determinants and methods of multinational banks entry into foreign markets (see among others Seth *et al.*, 1998; Buch, 2000; Esperanca and Gulamhussen, 2001; Williams, 2002; Cerutti *et al.*, 2005). On the other hand, studies concerning the performance of multinational banks as a subset of the literature on the eclectic theory are relatively scanty (see among others Grosse and Goldberg, 1991; Grosse and Trevino, 1996; Williams, 1996). Furthermore, the existing studies are confined to the banking sectors of the developed and western world, while empirical evidence on the developing countries banking sectors is completely missing from the literature.

The literature examining the efficiency of foreign-owned banks has expanded rapidly in recent times. Banks expand internationally to gain from economies of scale, reduce risks, and increase profitability. However, in order to survive in foreign markets, multinational banks should possess some firm-specific advantages, which they can exploit in foreign markets (Casson, 1990; Gray and Gray, 1981; Rugman and Kamath, 1987). When these advantages can be transferred at little cost, or utilized at lower marginal cost, multinational banks may enjoy some competitive advantages compared to their local and multinational bank counterparts (Lewis and Davis, 1987).

Although empirical studies which examine the performance of the Indian banking sector is vast in the literature (e.g. Bhattacharyya *et al.*, 1997a, b; Sarkar *et al.*, 1998; Sathye, 2003; Shanmugam and Das, 2004; Ataullah and Le, 2006; Bodla and Verma, 2007; Das and Ghosh, 2009), these studies have not critically examined the host and home country impacts on the performance of multinational banks foreign subsidiaries. By using the whole gamut of multinational banks foreign subsidiaries operating in the Indian banking sector during the period 2000-2008, the present study investigates to what extent the performance of multinational banks foreign subsidiaries operating in the Indian banking sector is influenced by host country factors (i.e. subsidiary-specific characteristics, macroeconomic, and financial market conditions) and to what extent by home country factors (i.e. parent-specific characteristics, macroeconomic conditions, and financial market conditions).

In essence, studies on the potential benefit of foreign bank entry have been studied extensively. Still, little is known about which types of countries and under which circumstances do foreign banks are at advantage to their domestic bank peers. Furthermore, Claessens and van Horen (2012) point out that the recent financial crisis has highlighted risks associated with cross-border banking and foreign banks presence. In developing countries, with low levels of economic development and growth, the financial system is underdeveloped and is more inclined toward financial crises, which could have adverse effects on the performance of the multinational banks subsidiaries. On the other hand, foreign subsidiaries of the multinational banks from the relatively developed countries may benefit from the underdevelopment of the host country financial system. These developments have led to greater interests among policy makers and academicians for more analyses to help guide regulatory reform.

Among others, research and policy questions being asked include for which types of country of origins and under which circumstances do foreign banks are at advantage or disadvantage compared to their domestic bank peers. Therefore, policy makers and regulators would be interested to find out whether location-specific factor is important in determining the performance of multinational banks foreign subsidiaries in a developing country like India. In this vein, the earlier study by Berger *et al.* (2005)

suggests that foreign-owned banks from developed nations in developing countries may have access to superior technologies for collecting and assessing "hard" quantitative information. Besides, policy makers and regulators would be keen to know what balance sheets and performance indicators are most important to monitor for assessing foreign banks' role in domestic financial intermediation.

This paper is structured as follows. In the next section, we review the related studies in the literature, followed by a section that outlines the econometric framework. Section 4 reports the empirical findings. Finally, Section 5 concludes and offers avenues for future research.

2. Internationalization of banking operations: theories and empirical evidence

The empirical literature as to why banks expand their operations abroad expound on two major theories, namely the internationalization and eclectic theories. The internationalization theory of multinational banking takes its root from Coase (1937) theory of the firm[1]. Also known as the defensive approach (Grubel, 1977) and follow the customer approach (Walter, 1988), the theory postulates that banks follow their customers and serve them in foreign markets. This implies that banks expand in countries where their corporate clients choose to invest, in order to offer their clients the services they need (Brimmer and Dahl, 1975; Gray and Gray, 1981; Ball and Tschoegl, 1982). Moreover, banks may have clear interest in keeping other financial institutions away from developing relationship with its corporate clients. In other words, a bank's expansion abroad can sometimes be a defensive reaction to avoid losing important corporate clients at home (Williams, 2002).

The eclectic theory was first introduced by Dunning (1973, 1981, 1993). Based on the OLI paradigm, the theory postulates that firms rely on three important factors namely ownership (O), location (L), and internationalization (I) before making decision to invest abroad. Similar to the other types of investments, banks face uncertainties about the expected costs and returns. Therefore, the empirical studies on all the three paradigms have mainly concentrated on the benefits and costs of multinational firms operating in foreign countries. Hymer (1976) suggests that foreign banks could face significant cost disadvantage compared to their domestic bank peers arising from differences in language, culture, legal barriers, managing from a distance, etc. To mitigate these costs, foreign banks must therefore be able to capitalize on its strengths and realize gains stemming from its competitive advantage, efficiency, and risk diversification.

Among the competitive advantages most frequently cited by both the eclectic and the internalization theories are innovative products, better technologies, and superior management quality[2]. However, these factors may not be germane to the banking sector, since banks have intangible assets, which cannot be emulated (Dufey and Giddy, 1981). Furthermore, banks may also find it difficult to retain skilled staffs when operating in a foreign country (Merret, 1990). Other comparative advantages, such as soft and hard information, may be crucial as well for banks to operate abroad. Banks could be argued to have the competitive advantage, since firms normally prefer to do business with a bank it has established relationship with (Nigh et al., 1986; Casson, 1990).

In regard to efficiency, size, degree of internationalization, and product and distribution channels are the main factors mentioned in the literature. A large size may enable banks to translate their scale efficiency to foreign markets at a relatively low cost (Terrell, 1979; Tschoegl, 1983; Sabi, 1988). The importance of size depends heavily on the kind of activity developed by the foreign banks in the host market. If the

business model implies a duplication of costs, scale efficiency will be difficult to attain. That is the reason why some authors argue that subsidiaries focussing on the retail business is unlikely to benefit from large gains in efficiency compared to a branch model with wholesale or investment banking markets focus (see among others Casson, 1990). The degree of internationalization is also essential since banks with a large and geographically diversified customer base will be able to reduce transaction costs (Ursacki and Vertinsky, 1992). The use of their own distribution channels may imply large efficiency gains, particularly in developing countries where the supply of certain banking services is generally poor and sometimes non-existent. In this case, subsidiaries oriented toward retail banking can certainly profit from product efficiency. Furthermore, if the bank shares the same culture and language with the host country, the same financial products and services can be offered without requiring substantial changes.

Finally, risk diversification has also been widely quoted as an important motive for banks to have international operations. Banks may benefit from diversification of its risk-return profile by expanding their operations in foreign countries (Aggarwal and Durnford, 1989; Berger and DeYoung, 2001). Other macroeconomic factors, such as the business cycle, interest rate structure, and exchange rate could also have considerable influence in determining the intensity of banks diversification in a foreign country. In this vein, Repullo (2000) suggest that banks prefer to open branches in relatively riskier countries, but with generous deposit guarantee schemes.

2.1 The performance of multinational banks: empirical evidence to date
The earlier studies on the efficiency of foreign-owned banks in the USA have generally found that they were relatively inefficient compared to their domestically owned bank peers (Mahajan *et al.*, 1996; Miller and Parkhe, 2002). According to these studies, the foreign-owned banks have to trade efficiency, both cost and profit, for rapid expansion of market share as they financed their rapid growth by relying on purchased funds, which are relatively more expensive compared to core deposits.

Berger *et al.* (2000) home field advantage hypothesis suggest that domestic financial institutions are relatively more efficient than financial institutions from foreign nations attributed to the fact that it is less efficient for these institutions to operate from a distance. The lack of exposure and training in lesser-known markets and the lack of close monitoring by the management of the banks in their home countries are some of the adverse factors that may offset foreign banks potential to exploit any comparative cost advantage. In other words, there may be some costs associated with transferring comparative advantages to a new market where more time and investment is required to deal with the idiosyncratic features of the local customers and service delivery systems.

Despite the poor performance of the foreign-owned banks in developed countries, a growing body of empirical evidence has shown the superiority in performance of the foreign-owned banks in developing and transition economies. Foreign-owned banks in India were found to be relatively efficient compared to the domestically owned banks (e.g. Ataullah *et al.*, 2004). Similarly, Sathye (2003) and Shanmugam and Das (2004) also suggest that the public- and foreign-owned banks in India have exhibited a higher level of technical efficiency compared to their private-owned bank peers. Leightner and Lovell (1998) find that the average Thai banks have experienced falling total factor productivity growth (TFP), while the average foreign banks have exhibited increasing TFP.

Hasan and Marton (2003) find that foreign-owned banks in Hungary have been relatively more profit efficient compared to their domestic bank counterparts. Likewise, in a study on the Czech and Poland banking sectors, Weill (2003) find that the foreign-owned banks are relatively more efficient compared to their domestic bank counterparts. By employing data from a wide range of transition countries, Grigorian and Manole (2006) find that foreign ownership with controlling power and enterprise restructuring enhance bank efficiency. Isik and Hassan (2003) suggest that foreign banks in Turkey, especially the foreign bank branches are significantly more efficient compared to their domestic bank peers.

Berger *et al.* (2005) suggests that foreign-owned banks from developed nations in developing countries may have access to superior technologies, particularly information technologies for collecting and assessing "hard" quantitative information. However, in less developed countries or regions the weight of proximity is greater, thus the liability of unfamiliarness is more difficult to overcome. Local communities differ in terms of the economic, institutional, social, and cultural characteristics from regions where out-of-region bank holding companies are headquartered. The risk of being isolated from strategic banking functions requiring staffs that are more qualified is therefore higher. On the other hand, foreign banks with a common origin, either historical, linguistic, or both, can significantly reduce the costs of operating abroad while facilitating the exploitation of efficiencies or competitive advantages. A common origin may lead to advantages in product differentiation (Swoboda, 1990), knowledge transfer (Guillén and Tschoegl, 1999), and reduction in the cost of capital. This could be the case if local funds are easily obtained because of the cultural proximity.

To date, studies performed on the Indian banking sector have mainly examine the differences in efficiency and profitability across private- and state-owned banks as opposed to differences across foreign and domestic banks (e.g. Bhattacharyya *et al.*, 1997a; Sarkar *et al.*, 1998; Sathye, 2003; Shanmugam and Das, 2004; Ataullah and Le, 2006; Bodla and Verma, 2007; Das and Ghosh, 2009). Overall, the empirical findings indicate that the private-owned banks in India are relatively more profitable compared to their public sector bank peers (e.g. De, 2003). However, Koeva (2003) finds that even though nationalized banks appear to be less profitable than the private- and foreign-owned banks, ownership is not the key determinant of efficiency and profitability. Koeva (2003) also suggest that profitability declines with concentration in India.

Apart from the few studies discussed above, empirical evidence on host and home country effects on the performance of multinational banks foreign subsidiaries operating in the Indian banking sector is completely missing from the literature. In light of the knowledge gap, the present study seeks to provide for the first time empirical evidence host and home countries effects on the performance of multinational banks subsidiaries operating in the Indian banking sector.

3. Data and methodology
We use annual bank level data over the period 2000-2008. During the period under study, there were 29 foreign bank subsidiaries operating in the Indian banking sector. All foreign bank subsidiaries of which data are available are included in the sample. However, due to missing observations for certain banks for certain years, the sample is an unbalanced panel. The bank-specific variables are obtained from various issues of Report on Trend and Progress of Banking in India and Statistical Tables Relating to Banks in India and the BankScope database maintained by Bureau van Dijk. The macroeconomic variables are retrieved from IMF Financial Statistics and the World

Bank World Development Indicator databases. The complete list of all banks and years covered included by the sample is given in Appendix.

3.1 Performance measure
Following Ben Naceur and Omran (2011), Sufian and Habibullah (2009), and Kosmidou (2008) among others, the dependent variable used in this study is return on assets (ROA). ROA shows the profit earned per dollar of assets and most importantly, reflects the ability of managers to utilize the bank's financial and real investment resources to generate profits (Hassan and Bashir, 2003). Given that ROA is not distorted by high equity multipliers, Rivard and Thomas (1997) suggest that bank profitability is best measured by ROA. Moreover, ROA represents a better measure of the ability of the firm to generate returns on its portfolio of assets. Essentially the ROA – return on equity (ROE) relationship clearly illustrates the fundamental tradeoff that banks face between risk and return, whereas the equity multiplier reflects the leverage or financing policies, i.e. the sources (debt or equity) chosen to fund the bank. Banks with lower leverage and thus higher equity, generally report higher ROA, but lower ROE.

3.2 Internal determinants
The bank-specific variables included in the regression models are loans loss provisions divided by total loans (LLP/TL), log of total deposits (LNDEPO), book value of stockholders' equity as a fraction of total assets (EQASS), total overhead expenses divided by total assets (NIE/TA), non-interest income divided by total assets (NII/TA), total loans divided by total assets (LOANS/TA), and log of total assets (LNTA).

The ratio of LLP/TL is incorporated as an independent variable in the regression analysis as a proxy of credit risk. The coefficient of LLP/TL is expected to be negative. In this direction, Miller and Noulas (1997) suggest that the greater the exposure of banks to high-risk loans, the higher would be the accumulation of unpaid loans and profitability would be lower. Miller and Noulas (1997) suggest that decline in loan loss provisions are in many instances the primary catalyst for increases in profit margins. Furthermore, Thakor (1987) also suggests that the level of loan loss provisions is an indication of the bank's asset quality and signals changes in the future performance.

The variable LNDEPO is included in the regression models as a proxy variable for network embeddedness. It would be reasonable to assume that banks with wide branch networks will be able to attract more deposits, which is a cheaper source of funds. Earlier studies by among others Chu and Lim (1998) points out that large banks with wide depositor base may attract more deposits and loan transactions and in the process command larger interest rate spreads, while the smaller banks might have to resort to purchasing funds in the inter-bank market, which is costlier (Randhawa and Lim, 2005).

The EQASS variable is included in the regression models to examine the relationship between profitability and bank capitalization. Strong capital structure is essential for banks in developing economies, since it provides additional strength to withstand financial crises and increased safety for depositors during unstable macroeconomic conditions (Sufian, 2009). Furthermore, lower capital ratios in banking imply higher leverage and risk, and therefore greater borrowing costs. Thus, the profitability level should be higher for the better-capitalized bank.

The ratio of overhead expenses to total assets, NIE/TA, is used to provide information on the variations of bank operating costs. The variable represents total amount of wages and salaries, as well as the costs of running branch office facilities.

The relationship between the NIE/TA variable and profitability levels is expected to be negative because the relatively more productive and efficient banks should be keeping their operating costs low. Furthermore, the usage of new electronic technology, like ATMs and other automated means of delivering services, may have caused expenses on wages to fall (as capital is substituted for labor).

To recognize that financial institutions in recent years have increasingly been generating income from "off-balance sheet" business and fee income generally, the ratio of non-interest income over total assets (NII/TA) is entered in the regression analysis as a proxy of non-traditional activities. Non-interest income consists of commissions, service charges, fees, net profit from sale of investment securities, foreign exchange profit, etc. The variable is expected to exhibit positive relationship with bank profitability.

An important decision that the managers of commercial banks must take refers to the liquidity management and specifically to the measurement of their needs related to the process of deposits and loans. For that reason the LOANS/TA is used as a measure of liquidity. Higher figures denote lower liquidity. Without the required liquidity and funding to meet obligations, a bank may fail. Thus, in order to avoid insolvency problems, banks often hold liquid assets, which can be easily converted to cash. However, liquid assets are usually associated with lower rates of return. It would therefore reasonable to expect higher liquidity to be associated with lower bank profitability.

The LNTA variable is included in the regression models as a proxy of size to capture the possible cost advantages associated with size (economies of scale). In the literature, mixed relationships have been documented between size and profitability, while in some cases a U-shaped relationship is observed. In essence, LNTA may lead to positive effects on bank profitability if there are significant economies of scale. On the other hand, if increased diversification leads to higher risks, the variable may exhibit negative effects.

3.3 External determinants

If analysis is done in a static setting, they may fail to capture developments in the regulatory environment and in the marketplace, which may have changed the underlying production technology and the associated production functions. Furthermore, different forms of financial institutions may react differently to changes in the marketplace. In essence, the impact of changes in the financial landscape and structure may vary across banking groups (Saunders *et al.*, 1990; Button and Weyman-Jones, 1992; Berger *et al.*, 1995). To measure the relationship between economic and market conditions and bank profitability, natural log of gross domestic product (GDP), the annual inflation rate (INFL), the three-bank concentration ratio (CR3), and the ratio of stock market capitalization divided by GDP (MKTCAP/GDP) are used.

GDP is among the most commonly used macroeconomic indicator to measure total economic activity within an economy. GDP is expected to influence numerous factors related to the supply and demand for loans and deposits. Favorable economic conditions will affect positively on the demand and supply of banking services. Another important macroeconomic condition that may affect both the costs and revenues of banks is the INFL. Staikouras and Wood (2004) points out that inflation may have direct effects, i.e. increase in the price of labor and indirect effects, i.e. changes in interest rates and asset prices on the profitability of banks. Perry (1992)

suggests that the effects of inflation on bank performance depend on whether the inflation is anticipated on unanticipated. In the anticipated case, the interest rates are adjusted accordingly resulting in revenues to increase faster than costs subsequently positive impact on bank profitability. On the other hand, in the unanticipated case, banks may be slow in adjusting their interest rates resulting in a faster increase of bank costs than bank revenues, consequently negative effects on bank profitability.

To examine the impact of concentration and competition on bank performance, the CR3 and MKTCAP/GDP variables are introduced in the regression models. The CR3 ratio is calculated as the total assets held by the three largest banks in the country. The variable is used to examine the impact of concentration in the Indian banking sector on the profitability of foreign subsidiaries of the multinational banks. The Structure-Conduct-Performance (SCP) theory posits that banks in highly concentrated market tend to collude and therefore earn monopoly profits (Molyneux *et al.*, 1996). The MKTCAP/GDP ratio is computed as the ratio of stock market capitalization as a fraction of the national GDP. The variable is entered in the regression model to examine the impact of competition from the stock market on the performance of foreign subsidiaries of the multinational banks operating in the Indian banking sector.

Table I lists the variables used to proxy profitability and its determinants.

Panels A and B of Table II presents the summary statistics of the dependent and the explanatory variables used in the regression analysis.

3.4 Econometric specification
To examine the impact of host and home country factors on the performance of foreign subsidiaries multinational banks operating in the Indian banking sector, we estimate a linear regression model in the following form:

$$
\begin{aligned}
ROA_{j,t} = &\alpha + \beta_1 \sum SubsidiaryCharacteristicS_{j,t} + \beta_2 \sum HostMacroConditions_t \\
&+ \beta_3 \sum ParentCharacteristics_{j,t} + \beta_4 \sum HomeMacroConditions_t \quad (1) \\
&+ v_{i,t} + \mu_{i,t}
\end{aligned}
$$

where j denotes the bank, t the examined time period, and ε is the disturbance term, with v_{it} capturing the unobserved bank-specific effect and u_{it} is the idiosyncratic error and is independently identically distributed, $e_{it} \sim N(0, \sigma^2)$.

We employ a panel data regression analysis framework. Gujarati (2002) points out three main advantages stemming from a panel data. First, panel data allows for greater variability, reduces collinearity among observed variables, and gives more freedom to the data. Second, panel data constructs better detection and measurement of effects that could not be observed by a simple cross-sectional or time series data. And third, panel data may be able to minimize the bias resulting from broad aggregates of individual or firm level observations.

However, Gujarati (2002) suggest that there are several estimation and inference problem with panel data. Since panel data involves cross-section and time dimensions, heteroscedasticity and autocorrelation problems need to be addressed. There are several estimation techniques, which can be used to address these problems. The two most prominent are the fixed effects model (FEM) and the random effects model (REM). In the FEM, the intercept in the regression model is allowed to differ among individuals in recognition of the fact that each individual firm or cross-sectional (banks in our case)

Variable	Description
Dependent	
ROA	The return on average total assets of bank j in year t
Independent	
	Internal factors – host country
LLP/TL	Loan loss provisions/total loans. An indicator of credit risk, which shows how much a bank is provisioning in year t relative to its total loans
LNDEPO	A proxy measure of network embeddedness, calculated as the log of total deposits of bank j in year t
EQASS	A measure of bank's capital strength in year t, calculated as equity/total assets. High capital asset ratio is assumed to be indicator of low leverage and therefore lower risk
NIE/TA	Calculated as non-interest expense/total assets and provides information on the efficiency of the management regarding expenses relative to the assets in year t. Higher ratios imply a less efficient management
NII/TA	A measure of diversification and business mix, calculated as non-interest income/total assets
LOANS/TA	A measure of liquidity, calculated as total loans/total assets. The ratio indicates what percentage of the assets of the bank is tied up in loans in year t
LNTA	The natural logarithm of the accounting value of the total assets of the bank in year t
	Internal factors – home country
NIM_{Home}	The net interest margin of bank j's parent at time t
ROA_{Home}	The return on assets of bank j's parent at time t
LLP/TL_{Home}	The ratio loan loss provisions/total loans of bank j's parent at time t
$LNDEPO_{Home}$	The log of total deposits of bank j's parent at time t
$EQASS_{Home}$	The ratio of equity/total assets of bank j's parent at time t
NIE/TA_{Home}	The ratio non-interest expense/total assets of bank j's parent at time t
NII/TA_{Home}	The ratio non-interest income/total assets of bank j's parent at time t
$LOANS/TA_{Home}$	The ratio total loans/total assets of bank j's parent at time t
$LNTA_{Home}$	The natural logarithm of the accounting value of the total assets of bank j's parent at time t
	External factors – host country
LNGDP	The natural logarithm of gross domestic products
INFL	The rate of inflation
CR3	The three largest banks asset concentration ratio
MKTCAP/GDP	The ratio of stock market capitalization. The variable serves as a proxy of financial development
	External factors – home country
$LNGDP_{Home}$	The natural logarithm of gross domestic products of the origin country
$INFL_{Home}$	The rate of inflation of the origin country
$CR3_{Home}$	The three largest banks asset concentration ratio of the origin country-banking sector
$Z\text{-score}_{Home}$	The Z-score ratio of the origin country-banking sector
$MKTCAP/GDP_{Home}$	The ratio of stock market capitalization in the origin country
	Origins-specific effects
DUMHIGH	A dummy variable that takes a value of 1 if a foreign bank is originated from a high-income country, 0 otherwise
DUMMID	A dummy variable that takes a value of 1 if a foreign bank is originated from a middle-income country, 0 otherwise
DUMLOW	A dummy variable that takes a value of 1 if a foreign bank is originated from a low-income country, 0 otherwise
DUMLANG	A dummy variable that takes a value of 1 if a foreign bank is originated from a country with the same language as the host, 0 otherwise

Table I.
Descriptive of the variables used in the regression models

Panel A: host country

	ROA	LLP/TL	LNDEPO	EQASS	NIE/TA	NII/TA	LOANS/TA	LNTA	LNGDP	INFL	CR3	MKTCAP/GDP
Mean	1.507	24.267	10.720	19.368	3.724	4.433	38.556	11.547	10.105	5.207	0.340	1.320
Minimum	−11.454	−711.468	5.298	0.000	0.000	−1.011	0.000	5.976	9.833	3.774	0.329	0.550
Maximum	82.385	2,817.000	15.344	154.516	147.949	97.970	449.328	15.942	10.416	10.746	0.357	3.443
SD	5.923	214.783	2.193	22.304	10.129	9.865	33.493	1.974	0.195	2.123	0.009	0.908

Panel B: home country

	NIM	ROA	LLP/TL	LNDEPO	EQASS	NIE/TA	NII/TA	LOANS/TA	LNTA	LNGDP	INFL	CR3	Z-score	MKTCAP/GDP
Mean	2.404	0.848	3.924	10.692	7.227	16.255	31.804	49.631	11.034	26.990	3.197	0.543	7.799	0.887
Minimum	−1.220	−12.130	0.330	4.896	−8.060	−5.920	−0.920	10.330	5.461	20.801	−1.700	0.212	1.439	0.022
Maximum	6.150	7.720	47.380	14.148	16.950	629.000	1,723.000	81.990	14.743	30.296	22.564	1.000	44.809	2.498
SD	1.366	1.702	4.822	2.567	4.137	84.732	192.876	14.429	2.676	2.261	3.131	0.186	4.427	0.535

Note: The table presents the summary statistics of the variables used in the regression analysis

Table II.
Summary statistic of
dependent and
explanatory variables

may have some special characteristics of their own. On the other hand, the REM assumes that the intercept of an individual firm or cross-section is a random drawing from a much larger population with a constant mean value.

It is also worth pointing out that if the error component $\varepsilon_{j,t}$ and the X's regressors are uncorrelated, the REM may be more suitable. On the other hand, if the $\varepsilon_{j,t}$ and X's are correlated, then, the FEM is a more efficient estimator. To select between the FEM and REM estimation methods, the Hausman test can be used. The null hypothesis underlying the Hausman test is that the FEM and REM estimators do not differ significantly. The test statistics developed by Hausman has an asymptotic χ^2 distribution. If the null hypothesis is rejected at the 1 or 5 percent levels, the FEM is more appropriate to be used compared to the REM. On the other hand, if the null hypothesis failed to be rejected at any conventional levels (1 or 5 percent levels) the REM is a more efficient estimator.

For the purpose of this study, we apply the least-square method of REM. The opportunity to use a random effects rather than a FEM has been tested with the Hausman test (see Baltagi, 2002). Furthermore, Equation (1) is estimated by using White's (1980) transformation to control for cross section heteroscedasticity of the variables.

Panels A and B of Table III provides information on the degree of correlation between the explanatory variables used in the multivariate regression analysis. The matrix shows that in general the correlation between the bank-specific variables is not strong suggesting that multicollinearity problems are not severe. In this vein, Kennedy (2008) points out that multicollinearity is a problem when the correlation is above 0.80, which is not the case here.

4. Empirical findings
It is of interest to know what banks can do to improve their performance so that scarce resources are allocated to their best uses and not wasted during the production of services and goods (Isik and Hassan, 2003). For this purpose, we investigate whether any aspects of the foreign subsidiaries are related to their degree of profitability. In the following analysis, we will first discuss the difference in the means between the parent banks and its subsidiary based on the results derived from a series of parametric and non-parametric tests, before we embark to discuss the results derived from a multivariate panel regression analysis setting.

4.1 The difference between subsidiaries and parent banks: a univariate analysis
To examine the different in the means between the parent banks in the home country and their foreign subsidiaries operating in the Indian banking sector, we perform a series of parametric (t-test) and non-parametric (Mann-Whitney (Wilcoxon rank-sum) and Kruskall-Wallis) tests and the results are presented in Table IV. As observed, the results seem to suggest that the foreign subsidiaries of the multinational banks are relatively more profitable ($0.848 < 1.507$) compared to their parents. The favorable development could largely be attributed to lower overhead costs of the foreign subsidiaries operating in the Indian banking sector compared to their parent banks in the home country ($4.432 < 31.804$). On the other hand, we find that the foreign subsidiaries of the multinational banks have higher loan loss provisions compared to their parent banks ($24.267 > 3.924$) and lower level of non-interest income ($3.724 < 16.255$).

The foreign subsidiaries also differ significantly from their parent banks in terms of their asset and liability structures. In particular, we find that the parent banks have been relatively better capitalized compared to their foreign subsidiaries in India

Panel A: host country

Explanatory variables	EQASS	LNTA	LNDEPO	LOANS/TA	LLP/TL	NIE/TA	NII/TA	LNGDP	INFL	CR3	MKTCAP/GDP
EQASS	1.000										
LNTA	-0.575**	1.000									
LNDEPO	-0.647**	0.591**	1.000								
LOANS/TA	0.014	0.116	0.201**	1.000							
LLP/TL	0.051	-0.013	-0.042	-0.110	1.000						
NIE/TA	0.260**	-0.162*	-0.037	0.741**	-0.005	1.000					
NII/TA	0.354***	-0.268**	-0.161*	0.246***	0.089	0.534**	1.000				
LNGDP	-0.012	0.199**	0.146*	-0.079	-0.078	-0.120	-0.192**	1.000			
INFL	-0.001	0.175**	0.141*	-0.023	-0.102	-0.064	-0.080	0.791**	1.000		
CR3	-0.004	0.086	-0.042	0.135*	-0.047	0.165**	0.172**	-0.523**	-0.077	1.000	
MKTCAP/GDP	0.033	-0.158*	-0.107	0.086	-0.002	0.136	0.297**	-0.188**	-0.454**	0.605**	1.000

Panel B: home country

Explanatory variables	NIM	EQASS	LNTA	LNDEPO	LOANS/TA	LLP/TL	NIE/TA	NII/TA	LNGDP	INFL	CR3	Z-score	MKTCAP/GDP
NIM	1.000												
EQASS	0.630**	1.000											
LNTA	-0.459**	-0.324**	1.000										
LNDEPO	-0.439**	-0.308**	0.799**	1.000									
LOANS/TA	0.532**	0.329**	-0.469**	-0.427**	1.000								
LLP/TL	-0.064	-0.034	-0.323**	-0.319**	-0.010	1.000							
NIE/TA	-0.069	0.204**	0.038	0.042	-0.150*	-0.013	1.000						
NII/TA	-0.064	0.210**	0.035	0.039	-0.150*	0.000	0.798**	1.000					
LNGDP	0.208**	-0.422**	0.565**	0.566**	-0.365**	-0.317**	-0.069	-0.069	1.000				
INFL	0.093	-0.009	-0.248**	-0.246**	0.128	0.209**	-0.052	-0.055	-0.365**	1.000			
CR3	-0.068	0.330**	-0.237**	-0.262**	-0.058	0.236**	0.346**	0.345**	-0.547**	0.035	1.000		
Z-score	-0.066	0.283**	-0.199**	-0.198**	0.068	0.234**	0.283**	0.293**	-0.301**	-0.025	0.237**	1.000	
MKTCAP/GDP		0.028	0.364**	0.364**	-0.285**	-0.366**	0.360**	0.365**	0.549**	-0.366**	-0.121	-0.075	1.000

Notes: The table presents the results from Pearson correlation coefficients. LLP/TL, a measure of bank credit risk calculated as the ratio of total loan loss provisions divided by total loans; LNDEPO, proxy measure for network embededdness calculated as natural logarithm of total deposits; EQASS, a measure of capitalization, calculated as book value of shareholders equity as a fraction of total assets; NIE/TA, a proxy measure for management quality, calculated as personnel expenses divided by total assets; NII/TA, a measure of bank diversification toward non-interest income, calculated as total non-interest income divided by total assets; LOANS/TA, used as a proxy measure of loans intensity, calculated as total loans divided by total assets; LNTA, proxy measure of size, calculated as a natural logarithm of total bank assets; LNGDP, natural log of gross domestic products; INFL, the rate of inflation; MSG, the growth of money supply as measured by currency in circulation; CR3, the three bank concentration ratio; MKTCAP/GDP, the ratio of stock market capitalization over GDP; Z-score, the Z-score ratio; ** and *significance at 1 and 5 percent levels, respectively

Table III.
Correlation matrix for the explanatory variables

Table IV.
Summary of parametric and non-parametric tests

Individual tests Test statistics	Parametric test t-test		Non-parametric test Mann-Whitney (Wilcoxon rank-sum) test		Kruskall-Wallis equality of populations test
	Mean	t (probability $> t$) t	Mean rank	z (probability $> z$) z	χ^2 (probability $> \chi^2$) χ^2
ROA					
Home country	0.848	1.536	220.06	−0.664	0.441
Host country	1.507		228.21		
EQASS					
Home country	7.227	7.664***	189.08	−5.295***	28.032***
Host country	19.368		254.11		
LNTA					
Home country	11.547	2.316**	226.16	−0.757	0.573
Host country	11.034		216.90		
LNDEPO					
Home country	10.692	0.123	227.72	−1.003	1.007
Host country	10.720		215.48		
LOANS/TA					
Home country	49.631	−4.347***	264.73	−6.344***	40.244***
Host country	38.556		187.15		
LLP/TL					
Home country	3.924	1.322	210.92	−1.059	1.122
Host country	24.267		223.75		
NII/TA					
Home country	16.255	−2.291**	227.47	−0.813	0.661
Host country	3.724		217.53		
NIE/TA					
Home country	31.804	−2.214**	187.84	−5.071***	25.719***
Host country	4.432		249.86		

Test groups

Notes: Parametric (*t*-test) and non-parametric (Mann-Whitney and Kruskall-Wallis) tests test the null hypothesis of equal mean between the two models; *** and **significant at the 1 and 5 percent levels, respectively

(19.368 > 7.227) and is statistically significant at the 1 percent level in both the parametric (*t*-test) and non-parametric (Mann-Whitney (Wilcoxon rank-sum) and Kruskall-Wallis) tests. A plausible explanation is the difference in the mode of operations in the host market. This may also help explain why the foreign subsidiaries produced a lower amount of loans as a percentage of total assets than their parent banks (38.556 < 49.631).

Interestingly, the foreign subsidiaries have a relatively higher amount of deposits compared to their parent banks (10.720 > 10.692). In this vein, Demirguc-Kunt and Huizinga (1999) reported that foreign subsidiaries, which have higher level of deposits, tend to have higher levels of overhead costs, which they attributed to high branching expenses. However, the findings should be interpreted with caution since the difference is not statistically significant at any conventional levels in both the parametric (*t*-test) and non-parametric (Mann-Whitney (Wilcoxon rank-sum) and Kruskall-Wallis) tests.

Overall, the results from the univariate analysis confirm that the parent banks differ to a large extent from their foreign subsidiaries in terms of capitalization, size, costs, loans composition, and income structure. As a result, the question of what determines the performance of foreign subsidiaries relative to their parent banks seems to be justified.

4.2 Factors influencing multinational banks' profitability: the host country effects
The regression results focussing on factors influencing the performance of multinational banks foreign subsidiary and the explanatory variables are presented in Table V. To conserve space, the full regression results, which include bank-specific effects, are not reported in the paper. Several general comments regarding the test results are warranted. First, the regression models perform reasonably well with most variables remain stable across the various regressions tested. Second, the explanatory power of the regression models is reasonably high, while the F-statistics for all models is significant at the 1 percent level. Third, the adjusted R^2 is considerably higher compared to those reported by Williams (2003), Staikouras and Wood (2004), and Kosmidou *et al.* (2007). It is also worth highlighting that the regression results presented in Table V are based on the financial data retrieved from the foreign bank subsidiaries account.

Referring to the impact of credit risk, the coefficient of LLP/TL exhibits a positive sign and is statistically significant at the 5 percent level or better in all regression models estimated. The result is in consonance with Berger and DeYoung's (1997) skimping hypothesis. To recap, Berger and DeYoung (1997) suggests that under the skimping hypothesis, a bank maximizing long-run profits may rationally choose to have lower costs in the short-run by skimping on the resources devoted to loans underwriting and monitoring, but bear the consequences of greater loan performance problems.

NIE/TA has consistently exhibit positive relationship and is statistically significant at the 1 percent level supporting the expense preference behavior among foreign subsidiaries of multinational banks operating in the Indian banking sector. There are a few plausible explanations. First, Sathye (2001) suggests that the more highly qualified and professional management may require higher remuneration packages and thus a highly significant positive relationship with profitability measure is natural. Second, Claessens *et al.* (2001) point out that although overstaffing could lead to deterioration of bank profitability levels in low-income countries, the same could not be hold true for banks operating in the middle- and high-income countries.

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	−2.326***	−17.069	−17.382	−16.944	−16.640	−15.507
	(−2.796)	(−0.361)	(−0.364)	(−0.356)	(−0.350)	(−0.330)
Bank characteristics						
LLP/TL	0.001**	0.002***	0.001***	0.002***	0.002***	0.002***
	(2.413)	(3.018)	(2.878)	(3.007)	(2.909)	(2.935)
LNDEPO	−0.232	−0.208	−0.190	−0.210	−0.203	−0.189
	(−0.688)	(−0.690)	(−0.698)	(−0.715)	(−0.699)	(−0.645)
EQASS	0.004	0.000	0.002	0.001	0.000	0.000
	(0.458)	(−0.055)	(0.202)	(0.061)	(−0.024)	(−0.041)
NIE/TA	0.423***	0.410***	0.410***	0.411***	0.409***	0.406***
	(8.666)	(8.245)	(8.053)	(8.284)	(8.058)	(8.100)
NII/TA	0.061*	0.090***	0.091***	0.090***	0.092***	0.088***
	(1.816)	(4.247)	(4.221)	(4.090)	(4.141)	(3.957)
LOANS/TA	0.034**	0.036**	0.035**	0.035**	0.035**	0.037**
	(2.164)	(2.154)	(2.015)	(2.099)	(2.066)	(2.221)
LNTA	0.256	0.093	−0.017	0.081	0.024	0.051
	(0.700)	(0.311)	(−0.064)	(0.280)	(0.087)	(0.151)
Economic conditions						
LNGDP		−0.208	−0.152	−0.206	−0.172	−0.256
		(−0.052)	(−0.038)	(−0.051)	(−0.043)	(−0.063)
INFL		0.066	0.071	0.068	0.069	0.075
		(0.264)	(0.281)	(0.269)	(0.273)	(0.302)
Industry specific						
CR3		57.150*	57.711*	57.267*	57.337*	54.263*
		(1.932)	(1.931)	(1.925)	(1.927)	(1.820)
MKTCAP/GDP		−1.066***	−1.079***	−1.068***	−1.078***	−1.059***
		(−3.241)	(−3.223)	(−3.219)	(−3.226)	(−3.219)
Origins-specific effects						
DUMHIGH			0.804**			
			(2.305)			
DUMMID				−0.558		
				(−0.968)		
DUMLOW					−0.621	
					(−1.442)	
DUMLANG						0.335
						(0.498)
R^2	0.852	0.870	0.871	0.870	0.871	0.870
Adjusted R^2	0.848	0.864	0.864	0.863	0.864	0.863
F-statistic	191.376***	138.464***	127.645***	126.808***	127.246***	125.616***
No. of observations	240	240	240	240	240	240

$$\text{ROA}_{jt} = \beta_0 + \beta_1 \text{LLP/TL}_{Host} + \beta_2 \text{LNDEPO}_{Host} + \beta_3 \text{EQASS}_{Host}$$
$$+ \beta_4 \text{NIE/TA}_{Host} + \beta_5 \text{NII/TA}_{Host} + \beta_6 \text{LOANS/TA}_{Host} + \beta_7 \text{LNTA}_{Host}$$
$$+ \beta_8 \text{LNGDP}_{Host} + \beta_9 \text{INFL}_{Host} + \beta_1 \text{CR3}_{Host} + \beta_{11} \text{MKTCAP/GDP}_{Host}$$
$$+ \beta_{13} \text{DUMHIGH} + \beta_{14} \text{DUMMID} + \beta_{15} \text{DUMLOW} + \beta_{16} \text{DUMLANG} + \varepsilon_{jt}$$

Notes: The table presents regression results focusing on the impact of internal (subsidiary bank specific), external (economic and industry conditions of the host country), and origins factors on the performance of foreign bank subsidiary in the host country. The period covered is 2000-2008. During the period, there were 29 foreign bank subsidiaries operating in the Indian banking sector. All foreign bank subsidiaries of which data are available are included in the sample. However, due to

Table V.
Panel regression
results – the host
country effects

continued

missing observations for certain banks for certain years, the sample is an unbalanced panel. The complete list of banks and years covered in the sample is given in Appendix. The dependent variable is ROA calculated as net profit divided by total assets; LLP/TL$_{Host}$, a measure of bank credit risk calculated as the ratio of total loan loss provisions divided by total loans; LNDEPO$_{Host}$, a proxy measure for network embededdness calculated as natural logarithm of total deposits; EQASS$_{Host}$, a measure of capitalization, calculated as book value of shareholders equity as a fraction of total assets; NIE/TA, a proxy measure for management quality, calculated as personnel expenses divided by total assets; NII/TA$_{Host}$, a measure of bank diversification toward non-interest income, calculated as total non-interest income divided by total assets; LOANS/TA$_{Host}$, used as a proxy measure of loans intensity, calculated as total loans divided by total assets; LNTA$_{Host}$, a proxy measure of size, calculated as a natural logarithm of total bank assets; LNGDP$_{Host}$, natural log of gross domestic products; INFL$_{Host}$, the rate of inflation; CR3, the three bank concentration ratio; MKTCAP/GDP$_{Host}$, the ratio of stock market capitalization over GDP; DUMHIGH, DUMMID, and DUMLOW, dummy variables that takes a value of 1 for foreign banks from the high, middle, and low income countries respectively, 0 otherwise. DUMLANG, a dummy variable that takes a value of 1 if the foreign bank has the same language, 0 otherwise. Values in parentheses are t-statistics; ***, **, and *significance at 1, 5, and 10 percent levels, respectively

Likewise, NII/TA entered all the regression models with a positive sign. The results imply that banks which derived a higher proportion of its income from non-interest sources such as fee and commission-based services tend to report higher profitability levels. The empirical findings provide support to earlier study by among others Canals (1993). To recap, Canals (1993) suggests that revenues generated from new business units have significantly contributed to improve bank performance.

Concerning the liquidity results, the coefficient of the LOANS/TA is always positive sign (statistically significant at the 5 percent level in all regression models estimated), indicating a negative relationship between bank profitability and the level of liquid assets held by the bank. As higher figures denote lower liquidity, the results imply that the more (less) liquid banks tend to exhibit lower (higher) profitability levels. Sufian and Habibullah (2009) points out that the positive relationship found between bank profitability and LOANS/TA may be supporting the efficient market hypothesis, since market power in the loan markets could be the result of efficient operations. Due to their ability to manage operations more productively, relatively efficient banks might have lower production costs, which enable them to offer more reasonable loan terms and ultimately gaining larger market shares over their inefficient counterparts.

Turning to the impact of banking sector's concentration, it can be observed from Table V that the coefficient of the CR3 is positive. If anything could be delved, the empirical findings seem to support the SCP hypothesis. To recap, the SCP hypothesis states that banks in highly concentrated markets tend to collude and therefore earn monopoly profits (Short, 1979; Gilbert, 1984; Molyneux *et al.*, 1996). It can be observed from Table V that the impact of stock market capitalization (MKTCAP/GDP) is negative. The results clearly advocate that during the period under study, the Indian stock markets serves as a substitute rather than complementing the products and services that the foreign subsidiaries of the multinational banks offers to borrowers in India.

During the period under study, the empirical findings seem to suggest that foreign banks from the high-income countries tend to be relatively more profitable compared to foreign banks from the middle- and low-income countries. The results from this study seem to verify the earlier studies showing that location-specific factors are important in determining the performance of multinational banks foreign subsidiaries in

developing countries. In developing countries, with low levels of economic development and growth, the financial system is underdeveloped and is more inclined toward financial crises, which could have adverse effects on the performance of the multinational banks subsidiaries. On the other hand, foreign subsidiaries of the multinational banks from the relatively developed countries may benefit from the underdevelopment of the host country financial system. In this vein, the earlier studies by among other Berger *et al.* (2005) suggests that foreign-owned banks from developed nations in developing countries may have access to superior technologies, particularly information technologies for collecting and assessing "hard" quantitative information.

4.3 Factors influencing multinational banks' profitability: the home country effects

In the preceding sub-section, we have analyzed the host country and subsidiary-specific factors, which influence the performance of the foreign subsidiaries of multinational banks operating in the Indian banking sector. In the following analysis, we will examine whether indeed the home country and parent-specific factors influence the variability of their foreign subsidiary performance. In Table VI, we present the regression results of the performance of foreign bank subsidiaries, while taking into account as additional control variables in the regression analysis their parent bank attributes.

The empirical findings presented in Table VI seem to suggest that the parent banks' branch network (LNDEPO) exerts positive influence on the performance of their foreign subsidiaries operating in the Indian banking sector. A plausible reason could be due to the fact that banks with extensive branch networks has a large depositors base and in the process attracts cheaper source of funds (Randhawa and Lim, 2005). Furthermore, banks with extensive branch networks may attract more loan transactions and in the process command larger interest rate spreads and subsequently higher profitability levels. On the other hand, banks with limited number of branches may have to resort to the inter-bank market, which is a relatively costlier source of funds. In essence, the empirical findings from this study highlight the importance of the source of funding of the parents banks in the home countries on the performance of their foreign subsidiaries operating in the Indian banking sector.

From Table VI it can be observed that the coefficient of LNTA is always negative, a fact that support the results of Spathis *et al.* (2002), Dogan and Fausten (2003), and Kosmidou (2008). In this vein, the earlier studies by among others Berger *et al.* (1987), Boyd and Runkle (1993), Miller and Noulas (1997), and Athanasoglou *et al.* (2008) suggests that marginal cost savings can be achieved by increasing the size of the banking firm, especially as markets develop. Eichengreen and Gibson (2001) suggest that the effect of a growing bank's size on performance may be positive up to a certain limit. Beyond this point, the effect of size could be negative due to bureaucratic and other reasons.

As expected, the coefficient of the *Z*-score variable entered the regression models with a negative sign, which is in consonance with the finding of among others Boyd and De Nicolo (2006). If anything could be delved, the empirical findings from this study lend support to the stringent capital requirements of Basel II. From the policy-making point of view, the findings seem to call for a more effective policy maker's role in reducing excessive bank risk exposures and at the same time induce a more efficient risk management by banks.

4.4 Robustness checks

In order to check for the robustness of the results, we perform a number of sensitivity analyses. First, we restrict our sample to foreign bank subsidiaries with a wide presence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	2.070	−10.278	1.383	−3.724	8.743	−3.958	5.536	5.509
	(1.428)	(−0.582)	(1.044)	(−0.278)	(1.215)	(−0.126)	(1.110)	(0.263)
Bank characteristics								
NIM$_{Home}$	−0.985	−1.547			−2.319	−3.274		
	(−1.089)	(−1.183)			(−1.159)	(−1.080)		
ROA$_{Home}$			−0.745	−0.628			−1.012**	−1.555
			(−0.993)	(−0.794)			(−1.962)	(−1.383)
LLP/TL$_{Home}$	0.038	0.217	−0.040	0.030	−0.302	−1.002	−0.209	−1.099
	(0.638)	(1.187)	(−0.466)	(0.200)	(−1.583)	(−1.355)	(−1.571)	(−1.308)
LNDEPO$_{Home}$	5.505*	4.038*	4.951*	5.409**	10.630	10.605**	7.387*	11.018*
	(1.772)	(1.741)	(1.854)	(1.987)	(1.556)	(2.054)	(1.692)	(1.800)
EQASS$_{Home}$	0.009	0.396	0.043	0.117	0.279	0.976	−0.002	0.347
	(0.076)	(0.814)	(0.261)	(0.366)	(0.946)	(0.868)	(−0.018)	(0.859)
NIE/TA$_{Home}$	0.071	0.083	−0.079	−0.054	−0.006	0.003	−0.080	−0.023
	(0.814)	(1.044)	(−0.836)	(−0.629)	(−0.326)	(0.079)	(−0.819)	(−0.440)
NII/TA$_{Home}$	−0.038	−0.044	0.038	0.027	−0.003	−0.007	0.038	0.010
	(−0.837)	(−1.084)	(0.809)	(0.615)	(−0.483)	(−0.476)	(0.782)	(0.364)
LOANS/TA$_{Home}$	0.000	0.034	−0.023	−0.032	−0.035	−0.021	−0.035	−0.072
	(0.022)	(0.542)	(−1.491)	(−0.960)	(−1.133)	(−0.298)	(−1.354)	(−1.044)
LNTA$_{Home}$	−5.186*	−3.922*	−4.611*	−5.162**	−10.355	−10.184**	−7.157*	−10.426*
	(−1.740)	(−1.713)	(−1.817)	(−1.945)	(−1.523)	(−1.993)	(−1.641)	(−1.794)
Economic conditions								
LNGDP$_{Home}$		0.469		0.285		0.499		0.144
		(0.726)		(0.566)		(0.436)		(0.198)
INFL$_{Home}$		−0.139		−0.253		−0.625		−0.923
		(−0.562)		(−0.805)		(−1.008)		(−0.983)
Industry specific								
Z-score$_{Home}$		−0.271*		−0.154*		−0.090		−0.027
		(−1.873)		(−1.851)		(−0.559)		(−0.152)
CR3$_{Home}$		3.763		3.666		0.627		3.395
		(1.436)		(1.321)		(0.103)		(0.662)
MKTCAP/GDP$_{Home}$		−1.269		−1.769		−2.470		−4.264
		(−0.506)		(−0.636)		(−0.586)		(−0.784)
R^2	0.061	0.084	0.057	0.073	0.092	0.141	0.059	0.120
Adjusted R^2	0.017	0.001	0.013	0.012	0.020	0.018	0.015	0.044
F-statistic	1.388	0.988	1.289	0.856	1.281	0.885	0.795	0.731
No. of observations	181	155	181	155	110	84	110	84

$$\begin{aligned}
\text{ROA}_{jt} =& \beta_0 + \beta_1 \text{NIM}_{Home} + \beta_2 \text{LLP/TL}_{Home} + \beta_3 \text{LNDEPO}_{Home} + \beta_4 \text{EQASS}_{Home} \\
& + \beta_5 \text{NIE/TA}_{Home} + \beta_6 \text{NII/TA}_{Home} + \beta_7 \text{LOANS/TA}_{Home} + \beta_8 \text{LNTA}_{Home} \\
& + \beta_9 \text{LNGDP}_{Home} + \beta_{10} \text{INFL}_{Home} + \beta_{11} \text{Z-score}_{Home} \\
& + \beta_{12} \text{CR3}_{Home} + \beta_{13} \text{MKTCAP/GDP}_{Home} + \varepsilon_{jt}
\end{aligned}$$

Notes: The table presents regression results focusing on the impact of internal (parent bank specific)
and external (economic and industry conditions of the home country) factors on the performance of foreign
bank subsidiaries in the host country. The period covered is 2000-2008. During the period, there were
29 foreign bank subsidiaries operating in the Indian banking sector. However, due to missing observations
for certain banks for certain years, the sample is an unbalanced panel covering 27 foreign bank subsidiaries.

continued

The complete list of banks and years covered in the sample is given in Appendix. The dependent variable is ROA calculated as net profit divided by total assets; NIM_{Home}, the net interest margin of bank j's parent at time t; LLP/TL_{Home}, the ratio loan loss provisions/total loans of bank j's parent at time t; $LNDEPO_{Home}$, the log of total deposits of bank j's parent at time t; $EQASS_{Home}$, the ratio of equity/total assets of bank j's parent at time t; NIE/TA_{Home}, the ratio non-interest expense/total assets of bank j's parent at time t; NII/TA_{Home}, the ratio non-interest income/total assets of bank j's parent at time t; $LOANS/TA_{Home}$, the ratio total loans/total assets of bank j's parent at time t; $LNTA_{Home}$, the natural logarithm of the accounting value of the total assets of bank j's parent at time t; $LNGDP_{Home}$, the natural logarithm of gross domestic products of the origin country; $INFL_{Home}$, the rate of inflation of the origin country; Z-$score_{Home}$, the Z-score ratio of the home country banking sector; $CR3_{Home}$, the three largest banks asset concentration ratio of the origin country banking sector; $MKTCAP/GDP_{Home}$, the ratio of stock market capitalization in the origin country. Values in parentheses are t-statistics. ***, **, and *significance at 1, 5, and 10 percent levels, respectively

in the Indian banking sector. In particular, we remove foreign bank subsidiaries operating with less than three branches in the country. The move resulted in the loss of eight foreign bank subsidiaries consisting of 71 bank-year observations. The results are presented in columns 5-8 of Table VI. As observed, the empirical findings seem to suggest that the profitability of the foreign banks in the home country negatively influence the performance of their foreign subsidiaries in operating in the Indian banking sector. However, it is worth noting that the coefficient loses its explanatory power when we control for macroeconomic and financial sector variables in the regression model.

Second, we restrict our sample to banks with more than three years of observations. All in all, the results remain qualitatively similar in terms of directions and significance levels. Third, we address the effects of outliers in the sample by removing the top and bottom 1 percent of the sample. The results remain robust in terms of directions and significance levels. Finally, we replace ROA with ROE and repeat Equation (1). In general, the results confirm the baseline regression results. To conserve space, we do not report the full regression results in the papers, but are available upon request.

5. Concluding remarks and directions for future research

The empirical works concerning multinational banking have mainly focus on the determinants and methods of multinational banks entry into foreign markets. On the other hand, examinations on the performance of multinational banks as a subset of the literature on the eclectic theory are relatively scanty. The present study attempts to contribute to the literature by providing empirical evidence on the impacts of host and home countries on the performance of foreign banks subsidiaries operating in the Indian banking sector during 2000-2008.

The empirical findings of this study suggest that foreign subsidiaries of multinational banks operating in the Indian banking sector with high credit risks tend to be relatively more profitable, which is in consonance with Berger and DeYoung's (1997) skimping hypothesis. Similarly, we find that overhead costs to be positively related to the multinational banks subsidiary performance thus lending support to the expense preference behavior among foreign banks subsidiaries operating in the Indian banking sector. The empirical findings seem to suggest that foreign banks subsidiary operating in the Indian banking sector, which earned a higher proportion of their income from non-interest sources, tend to be relatively more profitable. Similarly, foreign subsidiaries, which disbursed a higher amount of loans relative to their total assets, have been relatively more profitable.

During the period under study, we find that concentration ratio in the host country banking sector exerts positive influence on multinational banks foreign subsidiaries performance. On the other hand, the level of capital market development seem to exert negative influence, which could be due to fact that the Indian stock markets serves as a substitute rather than complementing the products and services offered by the multinational banks foreign subsidiaries to borrowers in India. The empirical findings from this study seem to suggest that foreign subsidiaries from relatively developed countries tend to be more profitable compared to subsidiaries of multinational banks from middle- and low-income countries.

The empirical findings of this study also document that the parent banks' networks exerts positive influence on the performance of their foreign subsidiaries operating in the Indian banking sector. The results therefore clearly bring forth the importance of the source of funding of the parents banks on the performance of their foreign subsidiaries. The empirical findings seem to suggest that the size of the parent banks negatively influence the performance of their foreign subsidiaries operating in the Indian banking sector. We also find that the risk of default of the banking sectors in the home countries negatively affect the performance of their subsidiaries operating in the Indian banking sector.

Studies on the potential benefit of foreign bank entry have been studied extensively. Still, little is known about which types of countries and under which circumstances do foreign banks are at advantage to their domestic bank peers. Furthermore, Claessens and van Horen (2012) point out that the recent financial crisis has highlighted risks associated with cross-border banking and foreign banks presence. These developments have led to greater interests among policy makers and academicians for more analyses to help guide regulatory reform.

During the period under study, the empirical findings seem to suggest that foreign banks from the high-income countries tend to be relatively more profitable compared to foreign banks from the middle- and low-income countries. The results from this study seem to verify the earlier studies showing that location-specific factors are important in determining the performance of multinational banks foreign subsidiaries in developing countries. In developing countries, with low levels of economic development and growth, the financial system is underdeveloped and is more inclined toward financial crises, which could have adverse effects on the performance of the multinational banks subsidiaries.

On the other hand, foreign subsidiaries of the multinational banks from the relatively developed countries may benefit from the underdevelopment of the host country financial system. In this vein, the earlier studies by among other Berger *et al.* (2005) suggests that foreign-owned banks from developed nations in developing countries may have access to superior technologies, particularly information technologies for collecting and assessing "hard" quantitative information.

In essence, the empirical findings from this study seem to suggest that there is a significant relationship between the performance of multinational banks foreign subsidiaries and their countries of origins, thus confirming one of the main theoretical predictions of international business. Besides, it is also worth noting that some of the foreign subsidiaries of multinational banks characteristics have significant influence in determining their performance in the host country. The implications for bank managers and their boards are clear. A multinational bank may consider having operations abroad if the foreign subsidiaries are able to take on greater risk (disbursed more loans, have a higher proportion of non-interest income) and engage in expense preference behavior.

The implication for regulators and policy makers is that not only is the origins of the multinational banks and important determinants of their performance but so is their foreign subsidiaries characteristics. Regulators and policy makers must therefore consider the potential impacts of banks' decisions to set up their operations abroad. This will assist regulators and policymakers in ensuring safe and efficient banking sector.

Future research could include more variables such as taxation and regulation indicators, exchange rates as well as indicators of the quality of the offered services. Another possible extension could be the examination of differences in the determinants of profitability between small and large or high- and low-profitability banks. In terms of methodology, a statistical cost accounting and/or frontier optimization techniques such as the data envelopment analysis, the stochastic frontier analysis, and/or the Malmquist productivity index methods are recommended to examine the performance of the foreign subsidiary of multinational banks operating in the Indian banking sector.

Notes

1. As a departure from the eclectic theory, the internalization theory arguments stresses on the advantages of multinational firms stemming from the possibility of limiting the cost of market failures by carrying out a share of their transactions within the boundaries of the firm. Williams (1997) presents a recent review of this paradigm and argues that most of the theoretical approaches to multinational banking can be encompassed as subsets of internalization theory.

2. See Dunning (1977), Gray and Gray (1981), and Buckley and Casson (1991) for an early application to multinational banking.

References

Aggarwal, R. and Durnford, J. (1989), "Market assessment of international banking activity: a study of US bank holding companies", *Quarterly Review of Economics and Business*, Vol. 29 No. 1, pp. 58-67.

Ataullah, A. and Le, H. (2006), "Economic reforms and bank efficiency in developing countries: the case of the Indian banking industry", *Applied Financial Economics*, Vol. 16 No. 9, pp. 653-63.

Ataullah, A., Cockerill, T. and Le, H. (2004), "Financial liberalization and bank efficiency: a comparative analysis of India and Pakistan", *Applied Economics*, Vol. 36 No. 17, pp. 1915-24.

Athanasoglou, P.P., Brissimis, S.N. and Delis, M.D. (2008), "Bank specific, industry specific and macroeconomic determinants of bank profitability", *Journal of International Financial Markets, Institutions and Money*, Vol. 18 No. 2, pp. 121-36.

Ball, C. and Tschoegl, A. (1982), "The decision to establish a foreign bank branch or subsidiary: an application of binary classification procedures", *Journal of Financial and Quantitative Analysis*, Vol. 17 No. 3, pp. 411-24.

Baltagi, B. (2002), *Econometric Analysis of Panel Data*, 2nd ed., John Wiley and Sons, Chichester.

Ben Naceur, S. and Omran, M. (2011), "The effects of bank regulations, competition and financial reforms on banks' performance", *Emerging Markets Review*, Vol. 12 No. 1, pp. 1-20.

Berger, A.N. and DeYoung, R. (1997), "Problem loans and cost efficiency in commercial banks", *Journal of Banking and Finance*, Vol. 21 No. 6, pp. 849-70.

Berger, A.N. and DeYoung, R. (2001), "The effects of geographic expansion on bank efficiency", *Journal of Financial Services Research*, Vol. 19 Nos 2-3, pp. 163-84.

Berger, A.N., Hanweck, G.A. and Humphrey, D.B. (1987), "Competitive viability in banking: scale scope and product mix economies", *Journal of Monetary Economics*, Vol. 20 No. 3, pp. 501-20.

Berger, A.N., Kashyap, A.K. and Scalise, J.M. (1995), "The transformation of the US banking industry: what a long, strange trip it's been", *Brookings Papers on Economic Activity*, Vol. 2 No. 1, pp. 55-218.

Berger, A.N., DeYoung, R., Genay, H. and Udell, G.F. (2000), "Globalization, of financial institutions: evidence from cross border banking performance", *Brookings-Wharton Papers on Financial Services*, Vol. 3 No. 1, pp. 23-158.

Berger, A.N., Clarke, G.R.G., Cull, R., Klapper, L. and Udell, G.F. (2005), "Corporate governance and bank performance: a joint analysis of the static, selection, and dynamic effects of domestic, foreign, and state ownership", *Journal of Banking and Finance*, Vol. 29 Nos 8-9, pp. 2179-221.

Bhattacharyya, A., Bhattacharyya, A. and Kumbhakar, S.C. (1997a), "Changes in economic regime and productivity growth: a study of Indian public sector banks", *Journal of Comparative Economics*, Vol. 25 No. 2, pp. 196-219.

Bhattacharyya, A., Lovell, C.A.K. and Sahay, P. (1997b), "The impact of liberalization on the productive efficiency of Indian commercial banks", *European Journal of Operational Research*, Vol. 98 No. 2, pp. 332-45.

Bodla, B.S. and Verma, R. (2007), "Determinants of profitability of banks in India: a multivariate analysis", *Journal of Services Research*, Vol. 7 No. 1, pp. 75-88.

Boyd, J.H. and De Nicolo, G. (2006), "The theory of bank risk taking and competition revisited", *The Journal of Finance*, Vol. 60 No. 3, pp. 1329-43.

Boyd, J.H. and Runkle, D. (1993), "Size and performance of banking firms: testing the predictions theory", *Journal of Monetary Economics*, Vol. 31 No. 1, pp. 47-67.

Brimmer, A.F. and Dahl, F.R. (1975), "Growth of American international banking: implications for public policy", *Journal of Finance*, Vol. 30 No. 2, pp. 341-63.

Buch, C.M. (2000), "Why do banks go abroad – evidence from German data", *Financial Markets, Institutions and Instruments*, Vol. 9 No. 1, pp. 33-67.

Buckley, P.J. and Casson, M. (1991), *The Future of the Multinational Enterprise*, Macmillan Press, London.

Button, K.J. and Weyman-Jones, T.G. (1992), "Ownership structure, institutional organization and measured x-efficiency", *The American Economic Review*, Vol. 82 No. 2, pp. 439-45.

Canals, J. (1993), *Competitive Strategies in European Banking*, Oxford University Press, Cambridge.

Casson, M. (1990), "Evolution of multinational banks: a theoretical perspective", in Jones, G. (Ed.), *Banks as Multinationals*, Routledge, London, pp. 14-29.

Cerutti, E., Ariccia, G.D. and Peria, M.S.M. (2005), "How banks go abroad: branches or subsidiaries?", working paper, World Bank, Washington, DC.

Chu, S.F. and Lim, G.H. (1998), "Share performance and profit efficiency of banks in an oligopolistic market: evidence from Singapore", *Journal of Multinational Financial Management*, Vol. 8 Nos 2-3, pp. 155-68.

Claessens, S. and van Horen, N. (2012), "Foreign banks: trends, impact and financial stability", working paper, International Monetary Fund, Washington, DC.

Claessens, S., Demirguc-Kunt, A. and Huizinga, H. (2001), "How does foreign banking entry affect domestic banking markets?", *Journal of Banking and Finance*, Vol. 25 No. 5, pp. 891-911.

Coase, A.H. (1937), "The nature of the firm", *Economica*, Vol. 4 No. 16, pp. 386-405.

Das, A. and Ghosh, S. (2009), "Financial deregulation and profit efficiency: a non-parametric analysis of Indian banks", *Journal of Economics and Business*, Vol. 61 No. 6, pp. 509-28.

De, B. (2003), "Ownership effects on bank performance: a panel study of Indian banks", working paper, IGIDR, Mumbai.

Demirguc-Kunt, A. and Huizinga, H. (1999), "Determinants of commercial bank interest margins and profitability: some international evidence", *World Bank Economic Review*, Vol. 13 No. 2, pp. 379-408.

Dogan, E. and Fausten, D. (2003), "Productivity and technical change in Malaysian banking: 1989-1998", *Asia-Pacific Financial Markets*, Vol. 10 No. 2, pp. 205-37.

Dufey, G. and Giddy, I. (1981), "Innovation in the international financial markets", *Journal of International Business Studies*, Vol. 12 No. 2, pp. 33-51.

Dunning, J.H. (1973), "The determinants of international production", *Oxford Economic Papers*, Vol. 25 No. 3, pp. 289-336.

Dunning, J.H. (1977), "Trade, location of economic activity and the MNE: a search for an eclectic approach", in Ohlin, B., Hesselborn, P. and Wijkman, P. (Eds), *The International Allocation of Economic Activity*, Macmillan Press, London, pp. 395-418.

Dunning, J.H. (1981), *International Production and the Multinational Enterprise*, Allen and Unwin, London.

Dunning, J.H. (1993), *Multinational Enterprises and the Global Economy*, Addison-Wesley, Berkshire.

Eichengreen, B. and Gibson, H.D. (2001), "Greek banking at the dawn of the new millennium", discussion paper, CEPR, London.

Esperanca, J.P. and Gulamhussen, M.A. (2001), "(Re) testing the 'Follow the Customer' hypothesis in multinational bank expansion", *Journal of Multinational Financial Management*, Vol. 11 No. 3, pp. 281-93.

Gilbert, R. (1984), "Bank market structure and competition – a survey", *Journal of Money, Credit and Banking*, Vol. 16 No. 4, pp. 617-45.

Gray, M. and Gray, H. (1981), "The multinational bank: a financial MNC?", *Journal of Banking and Finance*, Vol. 5 No. 1, pp. 33-63.

Grigorian, D.A. and Manole, V. (2006), "Determinants of commercial bank performance in transition: an application of data envelopment analysis", *Comparative Economic Studies*, Vol. 48 No. 3, pp. 497-522.

Grosse, R. and Goldberg, L.G. (1991), "Foreign bank activity in the United States: an analysis by country of origin", *Journal of Banking and Finance*, Vol. 15 No. 6, pp. 1092-112.

Grosse, R. and Trevino, L.J. (1996), "Foreign direct investment in the United States: an analysis by country of origin", *Journal of International Business Studies*, Vol. 27 No. 1, pp. 139-55.

Grubel, H. (1977), "A theory of multinational banking", *Banca Nazionale del Lavoro Quarterly Review*, December, Vol. 30 No. 126, pp. 349-63.

Guillén, M. and Tschoegl, A. (1999), "At last the internationalisation of retail banking? The case of the Spanish banks in Latin America", working paper, Wharton Financial Institutions Center, Philadelphia.

Gujarati, D. (2002), *Basic Econometrics*, 4th ed., McGraw-Hill-Irwin, New York, NY.

Hasan, I. and Marton, K. (2003), "Development and efficiency of the banking sector in a transitional economy: Hungarian experience", *Journal of Banking and Finance*, Vol. 27 No. 12, pp. 2249-71.

Hassan, M.K. and Bashir, A.H.M. (2003), "Determinants of Islamic banking profitability", paper presented at the 10th ERF Annual Conference, Morocco, December 16-18.

Hymer, S.H. (1976), *The International Operations of National Firms: A Study of Direct Foreign Investment*, MIT Press, Cambridge, MA.

Isik, I. and Hassan, M.K. (2003), "Efficiency, ownership and market structure, corporate control and governance in the Turkish banking industry", *Journal of Business Finance and Accounting*, Vol. 30 Nos 9-10, pp. 1363-421.

Kennedy, P. (2008), *A Guide to Econometrics*, Blackwell Publishing, Malden, MA.

Koeva, P. (2003), "The performance of Indian banks during financial liberalization", working paper, International Monetary Fund, Washington, DC.

Kosmidou, K. (2008), "The determinants of banks' profits in Greece during the period of EU financial integration", *Managerial Finance*, Vol. 34 No. 3, pp. 146-59.

Kosmidou, K., Pasiouras, F. and Tsaklanganos, A. (2007), "Domestic and multinational determinants of foreign bank profits: the case of Greek banks operating abroad", *Journal of Multinational Financial Management*, Vol. 17 No. 1, pp. 1-15.

Leightner, J.E. and Lovell, C.A.K. (1998), "The impact of financial liberalization on the performance of Thai banks", *Journal of Economics and Business*, Vol. 50 No. 2, pp. 115-31.

Lewis, M. and Davis, K. (1987), *Domestic and International Banking*, MIT Press, Cambridge, MA.

Mahajan, A., Rangan, N. and Zardkoohi, A. (1996), "Cost structures in multinational and domestic banking", *Journal of Banking and Finance*, Vol. 20 No. 2, pp. 283-306.

Merret, D. (1990), "Paradise lost? British banks in Australia", in Jones, G. (Ed.), *Banks as Multinationals*, Routledge, London, pp. 62-84.

Miller, S. and Parkhe, A. (2002), "Is there a liability of foreignness in global banking? An empirical test of banks' x-efficiency", *Strategic Management Journal*, Vol. 23 No. 1, pp. 55-75.

Miller, S.M. and Noulas, A. (1997), "Portfolio mix and large bank profitability in the USA", *Applied Economics*, Vol. 29 No. 4, pp. 505-12.

Molyneux, P., Altunbas, Y. and Gardener, E.P.M. (1996), *Efficiency in European Banking*, John Wiley and Sons, Chichester.

Nigh, D., Cho, K. and Krishnan, S. (1986), "The role of location related factors in U.S. banking involvement abroad: an empirical examination", *Journal of International Business Studies*, Vol. 17 No. 3, pp. 59-72.

Perry, P. (1992), "Do banks gain or lose from inflation", *Journal of Retail Banking*, Vol. 14 No. 2, pp. 25-40.

Randhawa, D.S. and Lim, G.H. (2005), "Competition, liberalization and efficiency: evidence from a two stage banking models on banks in Hong Kong and Singapore", *Managerial Finance*, Vol. 31 No. 1, pp. 52-77.

Repullo, R. (2000), "A model of takeover by foreign banks", working paper, CEMFI, Madrid.

Rivard, R.J. and Thomas, C.R. (1997), "The effect of interstate banking on large bank holding company profitability and risk", *Journal of Economics and Business*, Vol. 49 No. 1, pp. 61-76.

Rugman, A.M. and Kamath, S.J. (1987), "International diversification and multinational banking in recent developments", in Khory, S.J. and Ghosh, A. (Eds), *International Banking and Finance*, D.C. Heath and Co, Washington, DC, pp. 35-69.

Sabi, M. (1988), "An application of the theory of foreign direct investment to multinational banking in LDCs", *Journal of International Business Studies*, Vol. 19 No. 3, pp. 433-47.

Sarkar, J., Sarkar, S. and Bhaumik, S. (1998), "Does ownership always matter? Evidence from the Indian banking industry", *Journal of Comparative Economics*, Vol. 26 No. 2, pp. 262-81.

Sathye, M. (2001), "X-efficiency in Australian banking: an empirical investigation", *Journal of Banking and Finance*, Vol. 25 No. 3, pp. 613-30.

Sathye, M. (2003), "Efficiency of banks in a developing economy: the case of India", *European Journal of Operational Research*, Vol. 148 No. 3, pp. 662-71.

Saunders, A., Strock, E. and Travlos, N.G. (1990), "Ownership structure, deregulation, and bank risk taking", *Journal of Finance*, Vol. 45 No. 2, pp. 643-54.

Seth, R., Nolle, D.E. and Mohanty, S.K. (1998), "Do banks follow their customers abroad?", *Financial Markets, Institutions and Instruments*, Vol. 7 No. 4, pp. 1-25.

Shanmugam, K.R. and Das, A. (2004), "Efficiency of Indian commercial banks during the reform period", *Applied Financial Economics*, Vol. 14 No. 9, pp. 681-6.

Short, B.K. (1979), "The relation between commercial bank profit rate and banking concentration in Canada, Western Europe and Japan", *Journal of Banking and Finance*, Vol. 3 No. 3, pp. 209-19.

Spathis, C., Kosmidou, K. and Doumpos, M. (2002), "Assessing profitability factors in the Greek banking system: a multicriteria methodology", *International Transactions in Operational Research*, Vol. 9 No. 5, pp. 517-30.

Staikouras, C. and Wood, G. (2004), "The determinants of European bank profitability", *International Business and Economics Research Journal*, Vol. 3 No. 6, pp. 57-68.

Sufian, F. (2009), "Determinants of bank efficiency during unstable macroeconomic environment: empirical evidence from Malaysia", *Research in International Business and Finance*, Vol. 23 No. 1, pp. 54-77.

Sufian, F. and Habibullah, M.S. (2009), "Bank specific and macroeconomic determinants of bank profitability: empirical evidence from the China banking sector", *Frontiers of Economics in China*, Vol. 4 No. 2, pp. 274-91.

Swoboda, A. (1990), "Swiss banking after 1992", in Dermine, J. (Ed.), *European Banking in the 1990s*, Blackwell, Basil, pp. 335-53.

Terrell, H. (1979), "US banks in Japan and Japanese Banks in the US: an empirical comparison", *Economic Review, Federal Reserve Bank of San Francisco* (Summer), pp. 18-30.

Thakor, A. (1987), "Discussion", *Journal of Finance*, Vol. 42 No. 3, pp. 661-3.

Tschoegl, A.E. (1983), "Size, growth, and transnationality among the world's largest banks", *Journal of Business*, Vol. 56 No. 2, pp. 187-201.

Ursacki, T. and Vertinsky, I. (1992), "Choice of entry timing and scale by foreign banks in Japan and Korea", *Journal of Banking and Finance*, Vol. 16 No. 2, pp. 405-21.

Walter, I. (1988), *Global Competition in Financial Services: Market Structure, Protection, and Trade Liberalization*, American Enterprise Institute, Cambridge, MA.

Weill, L. (2003), "Banking efficiency in transition economies", *The Economics of Transition*, Vol. 11 No. 3, pp. 569-92.

White, H.J. (1980), "A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity", *Econometrica*, Vol. 48 No. 4, pp. 817-38.

Williams, B. (1996), "Determinants of performance of Japanese financial institutions in Australia 1987-1992", *Applied Economics*, Vol. 28 No. 9, pp. 1153-65.

Williams, B. (1997), "Positive theories of multinational banking: eclectic theory versus internalization theory", *Journal of Economic Surveys*, Vol. 11 No. 1, pp. 71-100.

Williams, B. (2002), "The defensive approach to multinational banking: evidence to date", *Financial Markets, Institutions and Instruments*, Vol. 11 No. 2, pp. 127-203.

Williams, B. (2003), "Domestic and international determinants of bank profits: foreign banks in Australia", *Journal of Banking and Finance*, Vol. 27 No. 6, pp. 1185-210.

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Appendix

	Bank	Country of origin	Years covered (host)	Years covered (home)
1	ABN Amro Bank	The Netherlands	2000-2008	2004-2008
2	Abu Dhabi Commercial Bank	United Arab Emirates	2000-2008	2000-2008
3	American Express Bank	USA	2000-2007	2001-2006
4	Antwerp Diamond Bank	Belgium	2003-2008	
5	Arab Bangladesh Bank	Bangladesh	2000-2006	2000-2006
6	Bank International Indonesia	Indonesia	2000-2007	2000-2007
7	Bank of America	USA	2000-2008	2000-2008
8	Bank of Bahrain & Kuwait	Bahrain	2000-2008	2000-2008
9	Bank of Ceylon	Sri Lanka	2000-2008	2000-2008
10	Bank of Nova Scotia	Canada	2000-2008	2000-2008
11	Bank of Tokyo Mitsubishi UFJ	Japan	2000-2008	2000-2008
12	Barclays Bank	UK	2000-2008	2000-2004
13	BNP Paribas	France	2002-2008	2002-2003
14	Calyon Bank (changed name to Credit Agricole S.A.)	France	2003-2008	2003-2004
15	Chinatrust Commercial Bank	Taiwan	2000-2008	2000-2008
16	Cho Hung Bank	South Korea	2000-2006	2003-2006
17	Citibank	USA	2000-2008	2000-2008
18	DBS Bank	Singapore	2000-2008	2000-2008
19	Deutsche Bank	Germany	2000-2008	2000-2002
20	Hongkong & Shanghai Banking Corporation	UK	2000-2008	2000-2004
21	JP Morgan Chase Bank	USA	2004-2008	2004-2008
22	Krung Thai Bank	Thailand	2000-2008	2000-2008
23	Mashreq Bank	United Arab Emirates	2000-2008	
24	Mizuho Corporate Bank	Japan	2002-2008	2002-2005
25	Oman International Bank	Oman	2000-2008	2000-2008
26	Societe Generale	France	2000-2008	2000-2003
27	Sonali Bank	Sri Lanka	2000-2008	2000-2008
28	Standard Chartered Bank	UK	2001-2008	2000-2004
29	State Bank of Mauritius	Mauritius	2000-2008	2000-2008

Table AI.
List of banks: home and host country

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