

The Determinants of Bank Profitability and the Effects of Foreign Ownership

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Abstract

This study aims to study the profitability of banks operating in Lebanon between 1996 and 2007 and examine the effect of micro and macroeconomic variables on it. Results show that foreign control deteriorates the bank's return on assets (ROA), and foreign banks (FB) have better profitability than banks with majority domestic ownership (MDO). The findings also show that the return on equity (ROE) and ROA are determined differently among banks. For instance, larger MDO generate higher ROE and ROA, unlike banks with majority foreign ownership (MFO) and FB. The MDO benefit from off-balance sheet (OBS) activities, whereas the FB and the MFO lose from this business. A negative correlation between the MDO's and the MFO's capital and profitability is found, but the opposite for FB. This suggests that profitable MDO hold lesser capital, whereas better capitalization allows the FB to engage in more profitable (risky) businesses. Concentration and economic condition of the host market do not influence the FB, whereas the MDO and the MFO seem to be negatively affected by concentration, but benefit from the economic growth of the host market.

محددات ربحية البنوك وآثار الملكية الأجنبية

علي عودة

ملخص

تهدف هذه الورقة إلى دراسة ربحية المصارف العاملة في لبنان بين عامي 1996 و 2007، ودراسة تأثير متغيرات الاقتصاد الكلي والجزئي على ذلك. أظهرت النتائج تدهور عائدات البنك على الأصول في حال السيطرة الأجنبية، كما أظهرت ربحية أفضل من البنوك المحلية ذات الملكية الأغلبية الوطنية. كما أوضحت النتائج أيضاً أن العائد على حقوق المساهمين والعائد على الأصول يتحدد بشكل مختلف بين البنوك وعلى سبيل المثال، البنوك ذات الأغلبية الوطنية في الملكية تحقق عائداً أكبر على الأصول وعلى حقوق المساهمين من تلك البنوك الأجنبية أو ذات الملكية الأغلبية الأجنبية من أنشطة خارج الميزانية، في حين تخسر البنوك الأجنبية وتلك ذات الغالبية الأجنبية من مثل هذه الأعمال. تم العثور على علاقة سلبية بين رأس مال و ربحية البنوك ذات الغالبية المحلية وتلك ذات الغالبية الأجنبية، ولكن وجد العكس بالنسبة للبنوك الأجنبية. وهو ما يشير إلى أن البنوك المربحة ذات الغالبية الوطنية هي أقل رأسمال، في حين أن الرسمة الأفضل هي التي ستسمح للبنوك الأجنبية بتشغيل أعمال أكبر ربحية. فالتركيز والحالة الاقتصادية للسوق المضيف لا تؤثر على البنك الأجنبي، بينما يبدو أن غالبية الملكية المحلية وغالبية الملكية الأجنبية تتأثر سلباً من جراء التركيز، ولكنها تستفيد من النمو الاقتصادي للسوق المضيف.

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1. Introduction

The increased international trade flows and foreign direct investment activities and the globalization of capital markets, combined with the liberalization of domestic financial markets have caused international banking activity to grow rapidly. The internationalization of banking activities involves cross-border activities or expansion of banks outside their home country (i.e. establishing foreign banks). Thus, increases in foreign banking are due to the implementation of financial liberalization policies by many countries since early 1990s, allowing foreign banks to set up subsidiaries and branches and domestically-owned banks to become foreign-owned. Foreign banks differ according to the mode of entry: newly established foreign banks (Greenfield banks), and domestic banks sold to foreign investors (take-over banks). Greenfield banks are integrated with parent institutions and depend on them for capital and apply their risk and investment management techniques. On the other hand, when taking over a bank, foreign investors inherit personnel, infrastructure and loan portfolio.

This entry of foreign banks has triggered the interest of policy makers (regulators) and academics. The debate mainly focuses on: (a) the reasons behind foreign entry; (b) the competitive effects of foreign bank entry on domestic bank efficiency; (c) the effect of foreign bank entry on the availability and stability of credits to small and medium-sized firms; and (d) the efficiency differences between foreign and domestic banks.

This paper focuses on the Lebanese banking system as a case study and tries to explore the issue of foreign banking in emerging markets by proposing two questions:

- What is the effect of foreign ownership on the performance of banks?
- What is the effect of microeconomic factors and the host market's macroeconomic conditions on the performance of foreign banks?

Choosing this specific market was based on the significant foreign banking presence, and its long history of openness to the entry of foreign banks. This case study allows performing several empirical tests: (a) testing the effect of foreign participation (control) on domestic bank performance; (b) detecting the profitability differences between domestic and foreign banks; and (c) understanding why domestic and foreign banks achieve different returns.

The study analyzes and compares profitability of foreign and domestic banks operating in Lebanon between 1996 and 2007, and detects any profitability differences between these banks. The effect of bank characteristics and the economic development on this profitability is analyzed.

There seems to be a dearth of literature on previous empirical studies that have been conducted on the effect of foreign ownership on bank profitability in an emerging market, specifically in the Middle East and North Africa region. Thus, this study hopes to extend the literature on emerging markets' banking in several dimensions.

Firstly, it attempts to detect the effect of foreign acquisition on the performance of local banks, and if acquired banks realize better performance (profitability). It also compares the profitability of domestic banks with the subsidiaries of foreign banks. Secondly, the study tries to detect the profitability determinants of banks, taking into consideration the effect of ownership structure (foreign vs. domestic). The results of this study may suggest an entrance strategy for foreign banking in an emerging market, i.e. trying to show if the best method for expansion is acquiring an existing player or establishing a bank (subsidiary).

2. An Overview of the Lebanese Banking System

The Lebanese economy is a typical model of an open and service-oriented economy where the service sector accounts for about 60% of GDP, with extensive links abroad, an unrestricted exchange and trade system, free access to foreign investment and perfect capital and labor mobility. The banking sector is the centerpiece of the Lebanese economy, and banks represent a very active segment because of the limited role of other financial intermediaries.

Prior to the civil war (1975–1990), the Lebanese banking sector was the most advanced banking sector in the Middle East. But it has been seriously affected by the war. By the end of 1990, banks were lagging behind in terms of infrastructures and services; their capitalization levels dropped dramatically and their assets and liabilities became (and still) highly dollarized after a severe depreciation of the Lebanese currency in the late 1980s and early 1990s.

Since the early 1990s, Lebanese banks have been implementing restructuring and modernization programs and procedures, along with increasing capital, service diversification, debt issuing, and mergers and acquisitions. As a result, the sector has overcome its problems, grown at fast rates and has become capable of regaining its leading position in the region. Moreover, the sector has witnessed the return of foreign banks, and the establishment of large number of investment banks to pursue the development of the emerging domestic and regional capital markets.

The Lebanese banking sector employs about 1.2% of the total domestic workforce and contributes about 5% of the GDP. More than 80% of the sector's total assets are invested domestically (Association of Banks of Lebanon, 2010).

The Lebanese banking system has several features that represent advantages among the other banking systems in the Middle East and the other emerging markets. These features are:

- A free exchange system and a free movement of capital and earnings;
- The banking secrecy law, which was implemented in 1956;
- The Money Laundering Law and the Due Diligence Convention set up by the Association of Banks in Lebanon to prevent any money-laundering operations;
- A free banking zone, which was established in 1975;
- Openness to foreign banking.

The Lebanese banking system has a long record of foreign banking. After the First World War and until the independence in 1943, the banking system was dominated by foreign banks. Starting with the independence era and the establishment of the Central Bank (Banque du Liban) in 1964, the banking system has witnessed prosperity and development, which has encouraged the establishment of more domestic banks. Consequently, foreign banks lost their domination and domestic banks became important players in the market. The Lebanese banking sector remains very open to foreign banking and the acquisition of domestic banks by foreign investors is permitted.

Foreign banks can receive deposits from the public and perform credit and fiduciary operations and portfolio management on the behalf of other parties. Moreover, foreign banks can carry out brokerage activities on the Beirut Stock Exchange. On the other hand, foreign banks are prohibited from: (a) carrying out any activity other than banking; (b) participating in industrial, commercial or agricultural institutions or any other institutions except within the limits of the private funds; (c) carrying out any derivatives operations; and (d) reducing its capital or buying back any part of it.⁽¹⁾

Currently, there are 54 commercial banks operating in the Lebanese market with total assets of about \$121 billion.⁽²⁾ These banks may be classified into three categories: (a) 33 banks with majority domestic control (with total assets of about \$102 billion); (b) 11 banks with majority foreign control (with total assets of about \$11.5 billion); and (c) 10 foreign banks (with total assets of about \$7.5 billion). In addition, there are representative offices of another 14 foreign banks.

All the above cited characteristics of the Lebanese banking system make it an interesting case study for analyzing the effect of foreign ownership on bank performance and analyzing the effect of micro- and macroeconomic variables on this performance taking into consideration the issue of ownership.

3. Foreign Banking: An Overview of the Literature

Reasons for Foreign Bank Entry

On the determinants of foreign bank entry in the United States, Goldberg and Saunders (1981) and Hultman and McGee (1989) found that interest differential is the most important factor determining foreign bank presence and growth in the United States. Grosse and Goldberg (1991) claim that foreign investment in the US, foreign trade with the US, and the size of the banking sector in a foreign country are positively correlated with the country's bank presence in the US.

Fisher and Molyneux (1996) found that countries with large banking markets have the largest banking presence in London. In addition, they found that banks whose home countries are more risky than the UK, will have more tendency to conduct business through London. Brealey and Kaplanis (1996) found a positive correlation between the size of a foreign bank and the GDP of its home country. They argue that large economies are large exporters of banks. Dopico and Wilcox (2001) claim that countries that are more economically liberal as measured: (a) by their openness to foreign banking; (b) by permitting banks to undertake more activities; and (c) by their involvement in international trade, tend to have more foreign banks. Moreover, they found that countries with smaller domestic banking sectors (relative to their own GDP) tend to have more foreign banks. Finally, Magri, Mori and Rossi (2005) cite four factors that affect foreign banking: (a) trade has a positive effect on foreign bank entry; (b) the difference of interest spreads; (c) the level of openness of the host country; and (d) banks come mainly from larger countries with more developed financial systems.

The Effect of Foreign Bank Entry on the Efficiency of Domestic Banks

Studies have found that the entry of foreign banks motivates domestic banks to reduce costs, increase efficiency and increase the diversity of financial services. The entrance of foreign banks forces domestic banks to improve the quality of their services to retain their market shares, which may improve the quality of financial services of

domestic banks, but at the same time lower their interest margins and profits. Foreign banks may introduce new financial services which stimulate domestic banks to develop such new services. Foreign banks may also introduce modern and more sophisticated banking techniques that are new to domestic banks that may copy those techniques.

Empirically, Claessens, Demircuc–Kunt, and Huizinga (2001) and Clarke et al. (2003) find that foreign bank entry increases the efficiency of domestic banks. Yildirim and Philippatos (2007) state that a higher degree of foreign bank participation is associated with a higher level of competitiveness and efficiency in domestic markets and reduced bank margins and profitability. They also posit that domestic bank returns are negatively linked to foreign bank participation. Unite and Sullivan (2003) argue that entry of foreign banks leads to a decline in operating expenses and an increase in domestic banks' risk, where, due to the foreign bank entry, domestic banks may become forced to take on less creditworthy customers due to the increased competition.

Levy Yeyati and Micco (2007) observe that foreign penetration may lead to a less competitive environment and thus, allows banks to increase profits. Finally, Lensink and Hermes (2004) claim that foreign bank entry is associated with falling costs, profits and interest margins of domestic banks especially at higher economic development.

The Effect of Foreign Bank Entry on Credit Availability

Detragiache and Gupta (2006) claim that a larger foreign bank presence is associated with less credit to the private sector and slower credit growth in low income countries, but not in other countries. They state that foreign banks are better than domestic banks at screening large, transparent borrowers, but are worse at evaluating more opaque borrowers. De Haas and Van Lelyveld (2006) examined the reaction of foreign and domestic banks in Central and Eastern Europe to business cycles and banking crises. Their empirical analysis shows that during crisis periods, domestic banks contract credit, whereas greenfield foreign banks play a stabilizing role by keeping their credit base stable. They also report a significant and negative relationship between home country economic growth and host country credit by foreign bank subsidiaries.

The Efficiency Differences between Foreign and Domestic Banks

Why would the efficiency of a foreign bank differ from that of a domestic bank? The literature on foreign banking suggests that there are two important reasons for this. Firstly, foreign banks may be less subject to domestic credit allocation rules than

domestic banks. Secondly, domestic banks may have informational advantages relative to foreign banks. Berger et al. (2000) differentiate between home field advantages and global advantages.

The global advantage hypothesis states that foreign banks might benefit from competitive advantages relative to their domestic peers. Foreign banks use more advanced technologies, are more competitive, and have access to an educated labor force that is able to adapt new technologies. Foreign banks could better deal with a systemic crisis because they may find it easier to raise capital or liquid funds on international financial markets during periods of distress. Finally, foreign banks employ more sophisticated risk management techniques and have a better system of internal controls. According to the home field advantage hypothesis, domestic banks' efficiency advantage is sourced in costs borne by the foreign institution. These costs are often called the liability of foreignness.

Another debate has emerged concerning the determinants of foreign bank profitability and the impact of ownership structure on bank performance. It has been argued that foreign banks may be differently affected than domestic banks by the same factors (micro or macro). For instance, they are less sensitive to domestic economic conditions. However, on the other hand, they are influenced by additional factors compared to domestic banks, like their home country economic conditions and the strategies of their parent institutions. These factors, among many others, cause the difference in performance between foreign and domestic banks.

Foreign Banks in Developed Countries

In general, foreign banks operating in the developed countries have been found to exhibit poorer performance than domestic ones. For instance, DeYoung and Nolle (1996) observe that foreign banks operating in the US are less efficient than domestic banks. Despite a little difference between the two categories in terms of output efficiency, foreign banks have disadvantages in input efficiency, mainly caused by the excess expenditures on acquired funds. Elyasiani and Mehdiian (1997) report that in the US, foreign banks are as efficient as domestic banks.

Berger et al. (2000) performed an analysis of cross-border banking efficiency in France, Germany, Spain, the UK, and the US. Their results reveal that foreign banks are less efficient than domestic ones, and the latter have higher cost efficiency and profit efficiency than foreign banks operating in those countries. They also report that the relative

efficiency of foreign versus domestic institutions appears to depend on host and home country conditions. Elyasiani and Rezvanian (2002) examined the efficiency difference between foreign and domestic banks in the US. Their results show that although the cost structure of the two categories of banks is different, scale and scope economy measures for the two groups are similar. Finally, Kosmidou et al. (2006) studied the performance of foreign banks in the UK. They found that foreign banks operate with lower return on equity than domestic banks.

Foreign Banks in Less Developed Countries

In less developed countries, the results are somehow conflicting. Demircuc–Kunt and Huizinga (1999) reveal that foreign banks have higher margins and lower profitability than their domestic counterparts. Sturm and Williams (2004) compared the efficiency of foreign and domestic banks operating in Australia. They show that foreign banks are more input–efficient than domestic ones, mainly due to the superior scale efficiency. However, this fact does not result in superior profitability for foreign banks. Havrylchuk (2006) states that foreign banks are more efficient than their domestic peers. However, their higher (technical and allocative) efficiency are due to the better performance of greenfield banks, whereas acquired banks do not appear to have enhanced efficiency. Sensarma (2006) posits that both efficiency and productivity of foreign banks have been lower than those of domestic banks. This is explained by the fact that foreign banks incur huge expenditures in paying high salaries and the use of technology.

In Central and Eastern Europe, Yildirim and Philippatos (2007) report that foreign banks are less efficient than domestically owned private and state–owned banks. Van Horne (2007) claims that developing countries' banks have a competitive advantage dealing with countries with weak institutional climate, and foreign banks coming from developing countries realize higher interest margin (less profitable though) than foreign banks from high–income countries. Sturm and Williams (2008) find that foreign banks are, on the average, less efficient than domestic banks due to increasing expenditures on inputs.

4. Methodology

Variables Specification

The profitability of a bank is determined by two sets of variables: internal and external variables. An objective of this study is to detect the degree of importance of the two sets of factors on foreign and domestic bank performance.

Among the internal variables are the size of the bank (its assets), its investments, its off-balance sheet activities, its efficiency, its ownership structure, etc. On the other hand, the main external variables that affect bank profitability are the macroeconomic development, demand and supply conditions, cost of inputs, concentration and competition, regulation (or deregulation), etc.

The dependent and the explanatory variables employed in this study are the following:⁽³⁾ Firstly, the return on equity (ROE) and the return on assets (ROA) as proxy for bank profitability. The asset size (SIZE) of a bank is utilized to control the effect of scale and scope economies. Off-balance sheet activities (OBS) and private sector loans as proportion of total assets (LOAN) are proxies for banks' investment opportunities/decisions. Customer deposit growth (DEP) represents the growth opportunities/strategies. Capitalization level (CAP) is employed to detect the effect of capital requirements/decision on banks' profitability. Also, the liquidity (LIQ) will control the effect of reserve requirements on banks' profitability. BADEBT will control the effect of credit risk on banks' profitability. The net interest margin (IRS) will control the effect of competition on bank revenues. Cost-to-income ratio (CI) and staff expenses ratio (STAFF) will control the efficiency of bank management. To proxy the effect of the monopolistic behavior of banks, the proportion of the top 5 banks' assets of the entire banking sector's assets (CONC5) is utilized.

For foreign ownership, bank is defined as "foreign" if it has more than 50% of its equity under foreign control. This implies having two types of foreign banks: (a) domestic banks with majority foreign control (MFO), i.e. more than 50% of the bank equity is owned by foreigners; and (b) subsidiaries of foreign banks (FB). Proxying for the effect of the two variables are two dummy variables: MFO for domestic banks with majority foreign control, and FB for the subsidiaries of foreign banks. To control the effect of income generated by nontraditional banking activities, the ratio of non-interest income to total income (NII) is utilized. Finally, to control the effect of the host market economic environment on banks' profitability, the growth rate of gross domestic product (GDPG) is exploited.

The above cited variables are the most important determinants of bank profitability used in the literature on bank performance such as those of Boyd et al. (2001), Peters et al. (2004), Iannotta et al. (2007), Hirtle and Stiroh (2007), and Hauner (2008).

Model Specification

The most popular model for evaluating firm performance is the ROE. It is a measure of the rate or return to the bank's shareholders. ROE measures the profitability from the shareholders perspective, and it measures bank accounting profits per dollar of book equity capital. Additionally, ROA is employed, which is an indicator of the managerial efficiency and shows how the bank's management converted the institution's assets under its control into earnings.

The variables affecting bank profitability and the proposed equation relating ROE and ROA to some of their determinants are as follows:

$$ROE_{it} \langle ROA_{it} \rangle = f \langle SIZE_{it}, OBS_{it}, DEP_{it}, CAP_{it}, LIQ_{it}, BADEBT_{it}, IRS_{it}, CI_{it}, STAFF_{it}, LOAN_{it}, NII_{it}, CONC5_{it}, GDPG_{it}, MFO_{it} \rangle$$

The data set under study is a cross-section and time-series panel data. The first possible applicable estimation in such cases is the Ordinary Least Squares method (OLS). However, because the cross-sectional units (i.e. the banks) included in the sample are widely dispersed in terms of efficiency and are drawn from a larger population, the OLS method is not suitable, because it does not tackle these issues. The Fixed Effects (FE) method solves the first problem and allows taking into consideration the firm-specific effects in regression estimates, where they include an individual constant for each firm. The FE method controls for all time-invariant differences between the units, so the estimated coefficients of the FE models cannot be biased because of omitted time-invariant characteristics.

Another applicable method is the Random Effects (RE), which allows for two types of unobserved effects affecting the dependent variable: (a) an idiosyncratic (firm-specific) time-constant effect, which is random; and (b) an idiosyncratic time-varying random error. Unlike the FE model, the RE assumes that the variation across entities is random and uncorrelated with the independent variables included in the model. An advantage of the RE is the possibility of including time invariant variables (e.g. ownership), whereas in the FE model, these variables are absorbed by the intercept. Additionally, the RE model assumes that the cross-sections included are drawn from a larger universe and they have a common mean value for the intercept and the individual differences in the intercept values of each company are reflected in the error term.⁽⁴⁾

Data

Source of Data. To estimate the determinants of bank profitability, a sample of unbalanced panel data is used from 57 commercial banks operated in Lebanon between 1996 and 2007 – 33 banks with majority domestic ownership, 11 banks with majority foreign ownership and 13 foreign banks. A few banks operating in Lebanon had to be excluded from the sample due to missing data for some variables. Information about banks is extracted from BilanBanques.⁽⁵⁾ Annual accounting data (balance sheet and income statement) for banks for the period 1996–2007 is used. Finally, the macroeconomic data are taken from the International Financial Statistics.

Descriptive Statistics

In order to understand the data set under study, some descriptive statistics for the three categories of banks are presented in Table 1.⁽⁶⁾ It is to be noted that the number of MDO includes ranges from 32 banks in 1996 to 29 banks in 2007 (with a maximum of 33 banks in 1997, 1998, and 1999). The number of MFO ranges from 9 in 1996 to 8 in 2007 (with a maximum of 11 banks in 2002, 2003 and 2004); and the number of FB ranges from 11 banks in 1996 to 8 banks in 2007 (with a maximum of 13 banks in 1999 and 2000). The number of included banks depends on the availability of data.

Table 1 shows that the FB recorded the highest average ROE and ROA among the three categories of banks, with the highest variation represented by its standard deviation. By considering the annual variation of the ratios, it may be noted that the average ROE and ROA for the three groups of banks witnessed a decrease during the period under study. This shows that banks operating in the Lebanese market were under pressure especially after 1998, which resulted in lower returns.

MFO recorded the highest ratios for deposit growth, capitalization, liquidity, credit risk and reliance on non-interest income. The growth rate of deposits at the MDO and MFO witnessed an overall steady decline. In general, the MDO attracted more deposits than the other banks.

As to the NII, the MDO have increased their reliance on fee-based services between 1996 and 2007 as a plan to diversify their revenues.

The FB which have the highest IRS among the three groups of banks, appear to have higher pricing power, which may be a result of the distinguished products and

services they offer. However, for the three categories of banks, there was a decline in this ratio during the period under study. This may imply that the Lebanese market had witnessed an increase in competition which forced banks (foreign and domestic) to adopt lower spreads. The FB also recorded the highest average cost-to-income, staff expenses, and lending ratios.

An interesting finding regarding the dispersion of indicators is the observation that the FB have more dispersed ratios shown by their standard deviations. This suggests that the MDO and the MFO operating in the Lebanese market are more homogenous than FB. This may be explained by the fact that foreign banks operating in Lebanon come from different countries with different banking cultures and practices.

Table 2 presents a correlation matrix for the entire sample to detect the correlations among all variables (dependent and independent). This table shows the preliminary correlation of the independent variables with the dependent variables. These correlations were used in determining the regression models.

5. Empirical Results

The Effect of Foreign Ownership on Bank Profitability

The study attempts to identify the profitability differences between banks with majority domestic ownership and the other two categories of banks. The purpose of this is to detect the effect of foreign control on domestic bank performance and whether this control has any constructive effect on profitability. It also aims to find out whether the FB exhibit any performance superiority over domestic banks.⁽⁷⁾ The foreign control of domestic banks is represented by a dummy variable (MFO) that takes the value of 1 for banks with foreign ownership that exceeds 50%, zero otherwise. Foreign banks are represented by another dummy variable (FB) that takes the value of 1 for foreign banks, zero otherwise. The regression estimations are presented in Table 3.

Different regression models are presented in each section and table, where each of these models does not include all the control variables, however. This is to avoid any multicollinearity that exists among some regressors. Therefore, the regressions models that are based on the correlations presented in Table 2, do not combine the variables with high coefficient of correlation in one model.

Before analyzing the effect of the independent variables separately, it is of importance to look at the significance of the overall models in Table 3. These models appear

to be satisfactory for estimating the determinants of the banks' profitability, proven by their adjusted R-squared and the F-statistics show the significance of the overall models. As to the appropriate model for this study, the Hausman tests presented at the end of each table, suggest that the Random Effects Method is the applicable method.

It will be noted that foreign control (MFO) seems to have negative effect on bank profitability, albeit insignificant. This suggests that the MFO have a slightly lower ROE, but significantly lower ROA than the MDO. Consequently, the shareholders of the MDO realize some higher returns than those of the MFO. As a conclusion, in contrast to the theory of "eliminating inefficient management", the foreign acquisition of domestic banks does not improve their performance (profitability), and may even deteriorate performance due to the implementation of "inapplicable" management and investment models in the bank.

On the other hand, it appears that the variable representing foreign banks (FB) has a significant positive effect on both ROE and ROA. These results may suggest that foreign banks operating in Lebanon do have superior profitability over their domestic counterparties. This matches the majority of studies done on emerging markets with findings that foreign banks have better profitability than domestic ones. This better performance results in higher returns received by foreign bank shareholders.

The empirical results of this study do not match those of Havrylchuk (2006), who found that both Greenfields and acquired banks have better performance than domestic ones, albeit in a different level. The findings also contradict the report of Demircug-Kunt and Huizinga (1999) which posits that foreign banks have lower profitability than domestic banks in developing countries; and Sturm and Williams (2004) who did not find any superior profitability for foreign banks over domestic ones.

The Determinants of Bank Profitability

After having performed a comparison of the profitability of the MDO, MFO and FB, and having found evidence about the existence of differences among them, the next logical step was to find out the causes of these differences. This was done by detecting the effects of several microeconomic and macroeconomic factors that shape the profitability of banks. Following are regression estimates that show the relationship between profitability (represented by ROE and ROA) and the variables that control this profitability for each category of banks.

The Profitability Determinants of Banks with Majority Domestic Ownership (MDO). The empirical results are presented in Table 4. Firstly, the models' adjusted R-squared range from a minimum of 63% for ROE and 60% for ROA, to a maximum of 71% for ROE and 79% for ROA. These models show high ability to explain the variability of MDO profitability. The F-statistics is used to show the significance of the models.

One more variable was added which is the one period lag ROE and lag ROA (LAGROE and LAGROA). The objective is to detect the "persistence" of profitability at banks. Results show that lags ROE captures a highly significant effect (at the 1% level) in all ROE and ROA models. This shows that the MDO's profitability is persistent and banks that realize higher returns in one year will continue to have high returns in the following years.

The size of the MDO has a positive effect on both their ROE and ROA in many of the models presented in Table 4, although the effect of size on ROA is less significant than on ROE. The significant effect on ROE and ROA shows that the larger MDO are more profitable than their smaller counterparties. This may be due to the effect of scale and scope economies, a better use of technological innovations, and the ability to expand business abroad, where almost all large Lebanese banks have branch networks and banking operations overseas.

The MDO benefit significantly from OBS activities. This variable exhibits positive and significant effect in one of ROE's models and all ROA's models. Domestic Lebanese banks are relying more on this type of business to improve their profitability.

Deposit growth does not seem to have a beneficial effect on the MDO. This could be explained by the limited investment opportunities in the small Lebanese market. Besides, domestic banks are subject to firm regulations regarding overseas lending and also forbidden from investing in risky derivatives instruments.

The empirical results show a negative correlation between CAP and both ROE and ROA. This shows that profitable MDO tend to have lower capitalization, whereas less profitable ones tend to keep higher capital. This is due to the ability of profitable banks to provide new capital when needed by relying on their profits.

Liquidity seems to add value to MDO profits, where they tend to invest large amounts of their funds in Lebanese government T-bills with relatively high rate of return.

BADEBT shows the expected effect on ROE and ROA. MDO with higher bad debts and poor credit profiles suffer from lower profitability (this variable captures a significant effect at the 1% in the presented models). IRS increases MDO profits, where those with distinguished products have the ability to increase their profits (the effect of this variable is at the 1% significance level in all the presented models). CI lowers MDO profitability. MDO that are unable to control their expenses will also suffer lower profits.

On the other hand, STAFF is positively correlated with both ROE and ROA. This may be interpreted that spending on skilled personnel does not represent a burden for the MDO, but income-generating.

It seems that MDO that expand their activities in business related to fees and commissions, are able to increase their ROE and ROA. This is shown by the positive sign (significant at the 1% level) captured by NII. On the other hand, lending does not enhance bank earnings same as fee-based activities, which is shown by the effect of LOAN, which is significant at the 10% level in one of ROE models and one of ROA models.

Banking concentration has a strong negative effect on the MDO. This demonstrates that the increasing concentration and competition puts pressure on the MDO and forces them to lower their yields and consequently, lowers their ROE and ROA.

Finally, GDPG has the same positive and significant effect on ROE and ROA. The MDO are strongly influenced by the economic conditions of their home markets since the majority of their investments and businesses are concentrated locally, due to the foreign expansion restrictions imposed by the Central Bank. It appears that MDO profitability perfectly matches the domestic economic cycle – improves during booms and depresses during recessions.

The Profitability Determinants of Banks with Majority Foreign Ownership (MFO). The empirical results of the determinants of MFO profitability are presented in Table 5. The presented models show higher explanatory power (higher adjusted R-squared) than those of the MDO and seem to be satisfactory in explaining the variability of the MFO's ROE and ROA. ROE adjusted R-squared ranges from 57% to 86%, and ROA adjusted R-squared ranges from 70% to 90%. The F-statistics shows the significance of the overall models.

Like the MDO, the profitability of the MFO is persistent and banks that realize high ROE and ROA will continue to realize high returns in the future.

SIZE is positively and significantly correlated to ROE in two out of three models. This suggests that the shareholders of large and small MFO achieve higher returns. Turning to ROA, size has a destructive effect on MFO bank's ROA. It seems that smaller banks realize higher ROA than larger ones, which may suggest a problem of excess capacity at those banks.

OBS activities tend to show a negative effect (insignificant, however) on both ROE and ROA. Deposit growth has contradicting impact on the MFO's ROE and ROA. It improves the returns on equity but deteriorates the returns on assets. This may suggest that deposit growth is matched by an increase in assets, but without a matched increase in profits. Thus, increasing deposits does not add much value to the MFO. It may therefore be concluded that the MFO profitability improves from fees and commissions more than activities related to lending. This is also consistent with the positive and significant effect of the NII on both ROE and ROA. MFO engaging in traditional banking activities tend to have lower returns, whereas those involved in more fee-based activities achieve higher returns. The negative and significant effect of LOAN on ROA shown in one model adds evidence on the negative effect of traditional lending activities on MFO profitability.

Again, similar to the MDO, capitalization is negatively correlated with the MFO's ROE and ROA. This shows that profitable MFO tend to hold lower capitalization since they have the ability to provide new capital when needed by relying on their profits. Liquid assets are significantly correlated to the profitability of MFO banks and higher liquidity results in higher profitability.

BADEBT shows the expected impact. This variable has a negative and significant effect in all presented models — at the 1% level in most models. IRS has a positive and significant effect in all models, also at the 1% level in most models. Like the MDO, the MFO with distinguished products are able to set higher rates and extract higher returns. CI shows that banks that are unable to control their expenses suffer lower returns, since this variable demonstrates a negative effect and significant at the 1% level.

Empirical results also show that the MFO are not affected by banking concentration to the same extent as the MDO. CONC5 captures a significant negative effect in only one of ROE models (at the 5% level) and one of ROA models (at the 10% level).

Finally, regarding the effect of GDP growth, it is noted that this variable demonstrates less effect than in the case of the MDO. For ROE, the coefficients show a positive and significant impact in three models, whereas for ROA, it is significant

in one model only. This may suggest that the MFO are also affected by the economic development of the Lebanese market, albeit to a lower extent than the MDO. This could imply that because a part of the MFO is located abroad, it minimizes the effect of the domestic economic conditions on their profitability.

The Profitability Determinants of Foreign Banks (FB). The empirical results of the determinants of the FB profitability are presented in Table 6. The presented models show lower explanatory power (lower adjusted R-squared) than those of the MDO and the MFO. However, they seem to be satisfactory in explaining the variability of the FB's ROE and ROA. ROE adjusted R-squared ranges from 29% to 53%, and ROA adjusted R-squared ranges from 45% to 66%. The F-statistics show the significance of the overall models.

Firstly, just like the MDO and the MFO banks, the profitability of the FB is persistent and banks that realize high ROE and ROA will continue to realize high returns in the future. This is shown by the significant correlation between LAGROE and ROE, and between LAGROA and ROA.

The size of the FB has contradictory effects on ROE and ROA. The larger FB realize higher ROE (possibly because they hold relatively lower capital), but lower ROA which may be due to excess capacity.

OBS activities do not have an effect on foreign bank profitability, and those that engage more in OBS activities will not realize higher returns. Deposit growth does not have any effect on ROE, but some positive effect on ROA. It appears that increasing deposits does not add much value to the FB's ROE, but adds value to their ROA.

Conversely, when compared to the MDO and the MFO, FB's capital has a positive and significant effect on both ROE and ROA. This may imply that higher capitalized foreign banks are likely to have better performance, since they are able to engage in more risky investment that generate higher returns.

Liquidity has a positive effect on profitability since this variable has a significant effect on both ROE and ROA. Checking on the balance sheet of the FB, it is noted that under "liquid assets", there are considerable items such as deposit with the head office and other financial institutions. This is an indication that foreign banks operating in Lebanon tend to channel funds to their parent companies that invest these funds abroad (with high returns), and possibly, part of these revenues are channeled back to the subsidiary.

BADEBT exhibits the expected impact on ROE and ROA. IRS has a positive and significant effect in all the ROA models, but none in the ROE models. CI and STAFF show a negative and significant effect on both ROE and ROA. This implies that personnel expenses represent a burden for the FB.

The insignificant effect of LOAN implies that lending does not add value to FB profitability. This is consistent with the effect of LIQ where channeling funds abroad to their parent company is more profitable for foreign banks. NII has a positive and significant effect on ROA, but without any significant impact on ROE.

Empirical results also show that the FB are not affected (positively or negatively) by the concentration in the host market. The variable CONC5 does not exhibit a significant effect in any of the models presented.

Finally, and with great interest, it is noted that GDPG does not gain any effect on ROE and ROA. This may suggest that the FB are not affected at all by the economic development in the host market since the majority of their funds are channeled and invested abroad. This is consistent with the literature arguing that the FB are not influenced by the conditions of the host market.⁽⁸⁾ This may be due to the fact that they collect deposits from the host market and channel them to their home market where the investments could be more profitable.

6. Conclusion and Discussion

This study delves into the issue of profitability of banks operating in Lebanon between the period 1996 and 2007. It focuses on detecting the profitability differences among the three categories of banks: (a) Banks with majority domestic ownership (MDO); (b) Banks with majority foreign ownership (MFO); and (c) Subsidiaries of foreign banks (FB). Additionally, the effect of several micro and macroeconomic variables on bank profitability is investigated to uncover how this profitability is determined. Several internal variables that represent bank's characteristics and two external variables (banking concentration and GDP growth) have been chosen, and their impact on bank ROE and ROA is identified.

Results show that foreign control does not add value to the MDO's ROE and this is shown by the negative correlation between foreign control and the domestic banks' ROE and ROA. Regarding the FB, the empirical results show that they realize significantly higher ROE and ROA than the MDO.

As to the determinants of ROE and ROA, it has been observed that the impact of the employed independent variables differs according to the category of the banks. Bank profitability in Lebanon is shaped differently among banks. For instance, the size of the MDO has a positive impact on their profitability (both ROE and ROA), whereas this variable does not discriminate the MFO and the FBs in the same way. The larger MFO and FB realize higher ROE may be due to their lower capitalization, but lower ROA may result from excess capacity. The MDO benefit from OBS activities, whereas both the MFO and FB may lose from this type of business. Results show a negative correlation between the MDO's and the MFO's capital and profitability, whereas the opposite is found with the FB. This may suggest that profitable MDO and MFO hold lower capital, whereas better capitalization allows the FB to engage in more profitable businesses, but perhaps more risky, as well.

Staff expenses do not represent a burden for the MFO and the MDO, which suggests that spending on skilled employees results in generating higher returns. The opposite is found for the FB.

Banking concentration does not have a significant effect on the FB, whereas increase concentration seems to put pressures on the returns of the MDO and the MFO. Finally, foreign banks are not affected by the host market's economic circumstances.

Overall, this paper has two main contributions: (a) It has detected the effect of foreign ownership on domestic banks; and (b) It has compared the effect of different variables on bank profitability. Accordingly, it shows that the acquisition of domestic banks by foreign banks/investors does not necessarily improve their performance. In fact, according to this case study, the performance of acquired banks has lower performance (profitability) than domestically controlled banks. This may be an indication that it is not feasible to implement the investment and business techniques and models by the new (foreign) owners in the acquired bank. It also may be because the business structure and culture of the acquired bank cannot absorb these models and techniques.

Another implication of this study is that it might be more reasonable and feasible for a bank willing to expand in an emerging market, to establish a subsidiary (Greenfield) rather than acquiring an existing player. This is based on the findings of the study that show that the subsidiaries of foreign banks are more profitable than domestic banks with domestic control, whereas the opposite conclusion is noted when comparing domestic banks with domestic control with domestic banks with foreign control.

The last implication is that a foreign bank is unable to implement the business models of the local banks of the host market. The empirical results of the study imply that what is profitable for a domestic bank is not necessarily profitable for a foreign bank. A foreign bank may adopt different procedures and practices than domestic banks, and yet, achieve higher returns.

Footnotes

(1) Regarding capital adequacy, all banks in Lebanon are required to adopt Basel II rules. Banque du Liban classifies banks operating in Lebanon into 4 categories: (a) Lebanese banks with majority domestic ownership; (b) Lebanese banks with majority foreign ownership; (c) the subsidiaries of foreign banks from countries that do not apply Basel II rules; and (d) the subsidiaries of foreign banks from countries that apply Basel II rules. The first three categories of banks are required to implement Basel II rules similarly to the last category of banks that are required by their home regulators to adopt Basel II rules. Concerning reserve requirements, only Lebanese banks (with majority domestic or foreign control) are subject to this type of regulation, whereas the subsidiary of foreign banks are required to submit a letter (upon the establishment) from the parent company of its willingness to channel liquidity to its subsidiary whenever needed.

(2) Source: Central Bank of Lebanon, July (2010). It is worth mentioning here that the Lebanese banking sector is one of the largest in the world compared to its domestic economy, where the consolidated assets of banks are equal to about four times the GDP.

(3) For the calculation of variables and their expected signs, see the Appendix.

(4) The test for the appropriate model is based on Hausman (1978).

(5) An annual report published by the BankData Financial Services, Lebanon. The report contains the (audited) annual financial statements of all banks operating in Lebanon.

(6) All tables are placed in the Appendix for better physical format organization. The data set is decomposed into three sub-samples: (a) MDO; (2) MFO; and (c) FB.

(7) The scope of this study does not cover comparison of the profitability of the MFO and the FB.

(8) See for instance Breal and Kaplanis (1996), Williams (1998) and Molyneux and Seth (1998).

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Appendix

Calculation of Control Variables

Variable	Description	Expected sign
Dependent variables		
ROE	After tax net income –to– average equity	
ROA	After tax net income –to– average assets	
Independent variables		
SIZE	Natural log of assets	+
OBS	Log off –balance sheet (assets side)	+
DEP	Customer Deposit growth (percentage)	+
CAP	Equity –to– asset ratio	+ / –
LIQ	Cash and Central Bank + T–bills + marketable securities + deposits with head office and branches and with the other banks divided by total assets	+ / –
BADEBT	Bad debts –to– gross loans	–
IRS	Net interest margin –to– average assets	+
CI	Cost –to– income ratio	–
STAFF	Staff expenses –to– average assets	–
LOAN	Loan –to– asset ratio	+ / –
NII	Non –interest income –to– by total revenues	+
MFO / FB	Dummy variable	+
CONC5	Assets of top 5 banks –to– sector total assets	+
GDPG	GDP growth rate (%)	+

Table 1: Descriptive Statistics for Banks Operating in Lebanon (1996–2007)

		MDO	MFO	FB
ROE	Mean	11.41	7.66	12.55
	SD	10.22	11.67	27.66
	Max	59.31	33.55	83.33
	Min	-20.22	-34.37	-71.98
ROA	Mean	0.83	0.83	0.86
	SD	0.75	1.27	1.35
	Max	5.62	4.82	3.26
	Min	-2.57	-3.63	-5.88
DEP	Mean	16.81	25.04	9.21
	SD	21.14	54.14	39.09
	Max	237.32	346.36	380.15
	Min	-98.65	-68.11	-40.40
CAP	Mean	9.38	10.78	10.19
	SD	6.84	5.57	9.63
	Max	67.46	27.01	57.15
	Min	0.68	2.82	0.72
LIQ	Mean	65.78	72.19	61.17
	SD	10.85	15.09	14.19
	Max	89.97	93.37	96.56
	Min	36.01	26.27	25.38
BADEBT	Mean	0.84	2.25	1.27
	SD	1.51	5.63	4.99
	Max	8.37	47.76	42.63
	Min	-8.24	-3.86	-17.39
IRS	Mean	2.48	2.94	3.39
	SD	0.99	1.33	1.37
	Max	6.97	6.71	8.26
	Min	0.09	0.19	-0.06
CI	Mean	71.86	81.93	87.62
	SD	26.14	42.46	93.57
	Max	273.38	269.66	388.77
	Min	24.81	20.89	29.54

Continue table (1)

		MDO	MFO	FB
STAFF	Mean	1.20	1.47	1.53
	SD	0.59	0.69	0.82
	Max	3.61	4.05	5.30
	Min	0.15	0.38	0.63
LOAN	Mean	27.75	23.10	31.79
	SD	9.20	13.31	14.86
	Max	51.87	66.97	66.62
	Min	7.46	5.48	0.43
NII	Mean	26.84	27.69	24.89
	SD	11.56	14.06	13.02
	Max	89.01	82.19	102.65
	Min	-5.46	5.53	3.52
Cross sections (Max)		33	11	13

Table 2: Correlation Matrix for the Dependent and Independent Variables

	ROE	ROA	SIZE	OBS	DEP	CAP	LIQ	BADEBT	IRS	CI	STAFF	LOAN	NII	CONC5	GDPG
ROE	1														
ROA	0.66	1													
SIZE	0.20	0.05	1												
OBS	0.16	0.03	0.53	1											
DEP	0.04	0.04	-0.03	-0.02	1										
CAP	-0.21	-0.05	-0.48	-0.33	-0.03	1									
LIQ	0.10	0.19	0.14	0.01	0.02	-0.01	1								
BADEBT	-0.15	-0.07	-0.07	-0.05	0.05	0.03	0.04	1							
IRS	0.25	0.38	-0.42	-0.11	0.15	0.41	-0.13	0.13	1						
CI	-0.60	-0.65	-0.21	-0.10	0.00	0.03	-0.21	0.12	-0.15	1					
STAFF	-0.15	-0.25	-0.54	-0.16	0.14	0.42	-0.26	0.03	0.65	0.27	1				
LOAN	0.00	-0.10	-0.01	0.07	-0.02	-0.25	-0.90	-0.06	0.06	0.14	0.13	1			
NII	-0.20	-0.17	-0.15	-0.13	-0.04	-0.10	-0.10	0.07	-0.40	0.20	0.03	0.07	1		
CONC5	-0.15	-0.08	0.26	0.10	-0.21	0.04	0.26	-0.10	-0.35	-0.02	-0.27	-0.27	0.07	1	
GDPG	0.22	0.20	-0.08	0.04	0.01	0.02	0.00	-0.01	0.20	-0.10	0.16	0.00	0.06	0.14	1

Table 3: Profitability Differences between the MDO, the MFO and the FB (1996–2007)

Method: Random Effects

	ROE					ROA				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Constant	-7.70 (7.24)	10.04 (6.52)	-13.15** (6.03)	17.12*** (2.07)	-14.02** (6.00)	-2.28*** (0.34)	2.18*** (0.39)	-2.65*** (0.33)	0.99*** (0.12)	-1.49*** (0.32)
LAGROE/ROA	0.31*** (0.03)	0.31*** (0.03)	0.44*** (0.03)	0.32*** (0.03)	0.33*** (0.03)	0.25*** (0.02)	0.40*** (0.03)	0.35*** (0.03)	0.38*** (0.03)	0.26*** (0.02)
SIZE	1.76*** (0.35)	0.06*** (0.38)			1.66*** (0.35)	0.08*** (0.02)	0.04** (0.02)			0.09*** (0.02)
OBS			0.08 (0.12)	0.04 (0.10)				0.002 (0.01)	-0.001 (0.01)	
DEP	0.01 (0.01)	0.02 (0.01)		0.02* (0.01)		0.001* (0.001)	0.001* (0.001)		0.001** (0.001)	
CAP			-0.031*** (0.07)	-0.23*** (0.06)				-0.01 (0.004)		
LIQ	0.01 (0.03)		0.11** (0.04)			0.01*** (0.001)		0.02*** (0.002)		
BADEBT	-0.56*** (0.12)	-0.46*** (0.12)	-0.79*** (0.14)		-0.57*** (0.12)	-0.04*** (0.01)	-0.02*** (0.01)	-0.06*** (0.01)		-0.04*** (0.01)
IRS	1.81*** (0.50)		3.34*** (0.57)		2.39*** (0.46)	0.44*** (0.03)		0.49*** (0.03)		0.41*** (0.02)
CI	-0.13*** (0.01)	-0.14*** (0.01)		-0.16*** (0.01)	-0.13*** (0.01)	-0.01*** (0.0004)	-0.01*** (0.001)		-0.01*** (0.001)	-0.01*** (0.0004)
STAFF		-0.52 (0.82)		-0.58 (0.75)			-0.05 (0.05)		-0.04 (0.04)	
LOAN		0.04 (0.04)		0.06 (0.04)			-0.003 (0.002)		-0.001 (0.002)	
NII	-0.05 (0.04)	-0.02 (0.03)	-0.01 (0.05)		-0.08** (0.04)	0.01*** (0.001)	0.002 (0.001)	0.01*** (0.002)		0.01*** (0.001)
CONC5	-0.16* (0.09)	-0.19** (0.09)	-0.11 (0.10)			0.002 (0.003)	-0.01 (0.01)	-0.01*** (0.01)		
GDPG	23.09*** (6.43)	29.46*** (6.54)	17.11** (7.65)	24.25*** (6.49)		0.37 (0.29)	1.83*** (0.37)	0.32 (0.39)	1.67*** (0.38)	
MFO	-0.07 (1.16)	-0.86 (1.17)	-1.77 (1.35)	-0.08 (1.19)	-0.06 (1.14)	-0.04 (0.05)	-0.11* (0.07)	-0.15* (0.09)	-0.08 (0.07)	-0.05 (0.06)
FB	3.07*** (1.13)	3.77*** (1.14)	2.37* (1.29)	2.65** (1.13)	2.26** (1.11)	0.06 (0.05)	0.13** (0.07)	0.30*** (0.09)	0.17*** (0.07)	0.02 (0.06)
Adj. - R ²	0.5915	0.5836	0.4200	0.5820	0.5855	0.7365	0.6318	0.5409	0.6152	0.7062
Obs.	604	604	586	586	605	604	604	586	586	605
F-statistic	70.87	68.62	37.93	79.13	103.43	135.86	83.79	61.09	90.69	175.28
Prob(F-stat.)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hausman test										
² statistic	13.13	8.17	11.75	13.28	11.24	26.06	23.70	17.08	19.32	21.83
Prob(²)	0.4352	0.8917	0.4835	0.4781	0.1843	0.1849	0.3392	0.1592	0.1691	0.3076

N.B.

Standard error in parentheses

*** Significantly different at the 1% level

** Significantly different at the 5% level
 * Significantly different at the 10% level

Table 4: Profitability Determinants of the MDO (1996–2007)

Method: Random Effects

	ROE					ROA				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Constant	-5.67 (5.61)	18.49*** (5.42)	-9.37** (3.87)	17.99*** (1.73)	-10.27** (4.69)	-0.29 (0.34)	2.33*** (0.38)	-2.02*** (0.30)	1.94*** (0.12)	-0.04 (0.30)
LAGROE/ ROA	0.36*** (0.03)	0.39*** (0.03)	0.47*** (0.03)	0.37*** (0.03)	0.41*** (0.03)	0.10*** (0.03)	0.18*** (0.03)	0.38*** (0.03)	0.11*** (0.03)	0.18*** (0.03)
SIZE	1.05*** (0.26)	0.53* (0.28)			0.99*** (0.26)	0.03** (0.02)	0.01 (0.02)			0.04** (0.02)
OBS			0.27*** (0.08)	0.04 (0.08)				0.03*** (0.01)	0.01* (0.01)	
DEP	0.01 (0.01)	-0.01 (0.02)		0.02 (0.01)		-0.001 (0.001)	-0.0003 (0.001)		0.001 (0.001)	
CAP			-0.26*** (0.05)	-0.17*** (0.04)				-0.01* (0.003)	-0.01* (0.002)	
LIQ	0.07** (0.03)		0.08*** (0.03)			0.01*** (0.001)		0.01*** (0.002)		
BADEBT	-0.96*** (0.20)	-0.58*** (0.21)	-1.24*** (0.19)		-0.91*** (0.20)	-0.07*** (0.01)	-0.02 (0.01)	-0.11*** (0.02)		-0.06*** (0.01)
IRS	2.79*** (0.45)		3.49*** (0.39)		3.28*** (0.41)	0.39*** (0.03)		0.44*** (0.03)		0.37*** (0.03)
CI	-0.10*** (0.01)	-0.13*** (0.01)		-0.20*** (0.01)	-0.10*** (0.01)	-0.01*** (0.001)	-0.02*** (0.001)		-0.02*** (0.001)	-0.01*** (0.001)
STAFF		0.62 (0.71)		1.59*** (0.54)			0.23*** (0.05)		0.34*** (0.04)	
LOAN		0.01 (0.04)		0.06* (0.03)			0.002 (0.002)		0.003* (0.002)	
NII	0.09*** (0.03)	0.003 (0.03)	0.07** (0.030)		0.10*** (0.03)	0.01*** (0.001)	0.002 (0.002)	0.01*** (0.002)		0.01*** (0.001)
CONC5	-0.20*** (0.07)	-0.26*** (0.07)	-0.03 (0.07)			-0.002 (0.004)	-0.01** (0.004)	0.01 (0.01)		
GDPG	19.22*** (4.80)	26.42*** (5.04)	11.69** (4.65)	16.72*** (4.25)		0.92*** (0.28)	1.87*** (0.33)	0.42 (0.35)	0.98*** (0.28)	
Adj. -R ²	0.7052	0.6760	0.6282	0.7075	0.6926	0.7925	0.7074	0.6000	0.7799	0.7796
Obs.	363	363	361	361	364	363	363	361	361	364
F-statistic	87.62	76.53	68.61	109.86	137.34	139.29	88.54	61.02	160.50	215.04
Prob(F-stat.)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hausman test										
² statistic	14.22	8.85	12.73	14.39	12.18	28.24	25.68	18.50	20.93	23.65
Prob(²)	0.4903	0.8690	0.5238	0.5169	0.1697	0.2903	0.4108	0.1725	0.1232	0.3325

N.B.

Standard error in parentheses.

*** Significantly different at the 1% level

** Significantly different at the 5% level

* Significantly different at the 10% level

Table 5: Profitability Determinants of the MFO (1996–2007)

Method: Random Effects

	ROE					ROA				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Constant	4.72 (9.39)	11.97 (7.81)	-20.65** (0.57)	24.32*** (2.52)	15.96 (9.99)	-1.52** (0.62)	3.97*** (0.71)	-3.75*** (0.63)	1.72*** (0.22)	0.44 (0.56)
LAGROE/ ROA	0.27*** (0.04)	0.28*** (0.05)	0.57*** (0.06)	0.28*** (0.05)	0.26*** (0.04)	0.24*** (0.03)	0.37*** (0.04)	0.49*** (0.05)	0.26*** (0.05)	0.28*** (0.03)
SIZE	1.67*** (0.50)	1.01** (0.51)			0.26 (0.56)	-0.04 (0.03)	-0.15*** (0.04)			-0.01 (0.03)
OBS			-0.02 (0.15)	0.01 (0.10)				-0.01 (0.01)	-0.02 (0.01)	
DEP	0.01* (0.01)	0.02** (0.01)		0.01 (0.01)		-0.001** (0.001)	9.88E-05 (0.001)		-0.001 (0.001)	
CAP			-0.55*** (0.17)	-0.50*** (0.10)				-0.02 (0.01)	-0.03*** (0.01)	
LIQ	0.06* (0.04)		0.14** (0.06)			0.02*** (0.002)		0.02*** (0.004)		
BADEBT	-0.24*** (0.09)	-0.18* (0.09)	-0.46*** (0.14)		-0.29*** (0.09)	-0.04*** (0.01)	-0.02*** (0.01)	-0.05*** (0.01)		-0.03*** (0.01)
IRS	1.35** (0.52)		3.90*** (0.89)		3.23*** (0.59)	0.44*** (0.04)		0.51*** (0.07)		0.34*** (0.03)
CI	-0.18*** (0.01)	-0.19*** (0.02)		-0.23*** (0.12)	-0.21*** (0.01)	-0.02*** (0.001)	-0.02*** (0.001)		-0.02*** (0.001)	-0.02*** (0.001)
STAFF		0.24 (0.96)		1.68* (0.89)			0.12 (0.09)		0.11 (0.08)	
LOAN		0.12** (0.05)		0.05 (0.04)			-0.01** (0.004)		-0.003 (0.003)	
NII	0.02 (0.04)	0.08** (0.04)	0.16 (1.59)		0.13*** (0.05)	0.03*** (0.002)	0.01** (0.003)	0.02*** (0.01)		0.02*** (0.002)
CONC5	-0.21** (0.08)	-0.13 (0.09)	-0.11 (0.14)			-0.002 (0.01)	-0.002 (0.01)	-0.02* (0.01)		
GDPG	22.53*** (6.34)	23.68*** (6.92)	17.07 (10.68)	15.94** (6.99)		0.25 (0.42)	0.98 (0.61)	0.78 (0.77)	1.34** (0.66)	
Adj.-R ²	0.8118	0.8071	0.5725	0.8279	0.8589	0.9025	0.8269	0.6964	0.8117	0.8836
Obs.	119	119	115	115	115	119	119	115	115	119
F-statistic	51.89	50.38	17.96	69.57	70.39	110.66	57.36	30.06	62.45	150.32
Prob(F-stat.)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hausman test										
² statistic	10.05	6.26	9.00	9.82	9.13	29.15	18.15	13.07	14.78	16.69
Prob(> ²)	0.3323	0.6830	0.4501	0.2776	0.5194	0.1416	29.04	0.2618	0.1296	0.8649

N.B.

Standard error in parentheses

*** Significantly different at the 1% level

** Significantly different at the 5% level

* Significantly different at the 10% level

Table 6: Profitability Determinants of the FB (1996–2007)
Method: Random Effects

	ROE					ROA				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Constant	-63.11* (32.40)	-31.38 (25.99)	-22.96 (26.85)	20.19** (8.02)	-57.49** (24.96)	-4.14*** (1.23)	2.41* (1.23)	-2.28** (1.00)	0.88*** (0.31)	-2.73** (1.33)
LAGROE/ROA	0.26*** (0.07)	0.25*** (0.07)	0.39*** (0.080)	0.26*** (0.07)	0.27*** (0.07)	0.28*** (0.06)	0.40*** (0.06)	0.37*** (0.07)	0.32*** (0.06)	0.19*** (0.06)
SIZE	5.33*** (1.61)	3.50** (1.58)			5.18*** (1.52)	-0.17*** (0.06)	-0.12* (0.07)			-0.17* (0.09)
OBS			-0.26 (0.54)	-0.11 (0.44)				-0.03 (0.02)	-0.01 (0.02)	
DEP	0.03 (0.05)	0.05 (0.05)		-0.06 (0.06)		0.001 (0.002)	0.01** (0.002)		0.002 (0.002)	
CAP			0.68* (0.35)	0.19 (0.28)				0.004 (0.01)	0.05*** (0.01)	
LIQ	0.02* (0.02)		0.16 (0.17)			0.02*** (0.004)		0.02** (0.01)		
BADEBT	-0.81** (0.37)	-0.70* (0.37)	-1.17*** (0.44)		-0.84** (0.36)	-0.04*** (0.01)	-0.03* (0.02)	-0.05*** (0.02)		-0.04*** (0.01)
IRS	1.98 (1.76)		3.26 (2.34)		2.30 (1.62)	0.44*** (0.08)		0.43*** (0.11)		0.48*** (0.08)
CI	-0.13*** (0.02)	-0.13*** (0.02)		-0.13*** (0.02)	-0.13*** (0.02)	-0.01*** (0.001)	-0.01*** (0.001)		-0.004*** (0.001)	-0.01*** (0.001)
STAFF		-3.19 (2.75)		-5.61* (2.95)			-0.42*** (0.12)		-0.63*** (0.12)	
LOAN		0.09 (0.13)		0.16 (0.15)			-0.0002 (0.01)		0.01 (0.01)	
NII	0.23 (0.16)	0.12 (0.13)	-0.28 (0.20)		0.24 (0.15)	0.01** (0.01)	0.01 (0.01)	0.004 (0.01)		0.01* (0.01)
CONC5	0.05 (0.35)	0.09 (0.36)	0.45 (0.47)			0.01 (0.01)	0.02 (0.02)	0.02 (0.02)		
GDPG	21.98 (27.44)	35.23 (27.79)	35.78 (36.34)	50.37 (31.06)		-0.83 (1.00)	1.47 (1.12)	0.36 (1.28)	2.34 (2.16)	
Adj.-R ²	0.5196	0.5202	0.2867	0.4890	0.5311	0.6639	0.6235	0.4504	0.6652	0.6236
Obs.	122	122	110	110	122	122	122	110	110	122
F-statistic	14.08	14.12	5.86	14.03	23.85	24.90	21.04	10.92	28.08	34.42
Prob(F-stat.)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hausman test										
² statistic	10.94	6.81	9.79	11.07	9.37	21.72	19.75	14.23	16.10	18.19
Prob(²)	0.3618	0.7431	0.4029	0.3976	0.1536	0.1541	0.3160	0.1327	0.1409	0.2558

N.B.

Standard error in parentheses

*** Significantly different at the 1% level

** Significantly different at the 5% level

* Significantly different at the 10% level