

Does ownership affect bank profitability? Some international evidence.

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This paper analyzes how bank profitability varies depending on the type of bank ownership. We compare stock banks, mutual banks, state-owned banks and saving banks organized as foundations, using country-level panel data from eight OECD countries to correct for unobserved country heterogeneity. Our results indicate that mutual and state-owned banks have higher interest margins and higher profit before taxes than commercial stock banks after adjusting for risk. Whereas the higher profit before taxes of state-owned banks is based on their lower risk-taking, the use of provisions for income smoothing seems to explain the same result in mutual banks.

Keywords: bank ownership, profitability, risk, regulation, panel data.

JEL Classification: G21, G24, G28.

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1. Introduction

Since Jensen and Meckling (1976), it has been widely accepted that organizational form influences operating behavior, as it defines the nature of residual claims and, thus, the motivations of firms' owners. Without regulation, competition has the long-term effect of obliging firms to establish the most efficient corporate governance and allocation of control rights, making the ownership structure of firms endogenous. In such a scenario no relationship between a firm's profitability and its organization type is expected (Demsetz, 1983; Demsetz and Lehn, 1985). However, banking is one field in which regulation affects corporate governance because national laws define certain bank ownership types. In these cases, bank ownership is an exogenous variable because banks cannot freely adopt their optimum ownership structure, and differences in profitability and risk-taking behavior may arise between banks with different types of ownership.

Previous work on the influence of the organizational form of banks has focused on the differences in profitability and in risk-taking between stock-owned banks and mutual banks, as the mutual organization is the main alternative to stock banks in the US (Esty, 1997; Lamm-Tennant and Starks, 1993; Mester 1991, 1993; O'Hara, 1981). However, one of the hallmarks of other countries, including some European countries, is the existence of state-owned banks and savings banks organized as foundations. In the latter, depositors, employees and local and regional governments are all represented on their governance bodies. While savings banks have been converted into stock institutions in Great Britain, Denmark, Italy and Holland, in other countries such as Finland, France, Germany, Spain and Switzerland there are savings banks with different ownership structures.

The ongoing debate in all these countries has spawned proposals ranging from the extreme of advocating the conversion of savings bank into stock institutions, to others defending the current structure, whilst modifying the participation of depositors, employees and local and regional governments in saving banks ownership. However, empirical evidence about the consequences of different types of bank ownership on profitability is basically limited to the US and to a comparison of stock banks and mutual banks, whereas it is scarce for other countries and for other types of bank ownership. Some exceptions are Barth et al. (2001), La Porta et al. (2002) and Verbrugge et al. (1999), who focused on samples of government-owned banks in developed and developing countries.

The following study attempts to extend current empirical evidence on the influence of bank ownership on the operating behavior of banks by analyzing how bank profitability varies among four different types of bank ownership (stock, mutual, state and foundation-owned banks) in eight OECD-European countries (Finland, France, Germany, Italy, Norway, Spain, Sweden and Switzerland). To analyze potential differences in performance we use three earnings measures (net interest income, net income and profit before taxes), and control for risk by using risk-adjusted and non-risk adjusted earnings measures. Comparison of these measures should indicate the origin of any difference in performance between the four bank types that the study focuses on. Furthermore, we also extend the scope of previous studies by controlling for unobserved country heterogeneity and time effects using country-level panel data from 1990 to 1997.

The rest of this paper is structured as follows: section 2 describes the theory behind our empirical study in more detail. Section 3 presents the characteristics of the database and the methodology used, whilst empirical results are analyzed in Section 4. Finally, Section 5 presents the paper's conclusions.

2. Theoretical Background

Thrift institutions are organized in different countries in different ways, and their typology includes stock-owned, mutual, cooperative, foundation and state-owned banks. Since each type of organization issues different claims, each has a different incentive structure, which may provoke differences in their operational behavior¹.

Agency theory predicts that managers of stock-owned banks have more incentives to be efficient than mutual banks due to the costly monitoring of stock bank managers by outside stockholders, who may impose a significant penalty if managers do not follow the profit-maximizing rule. Moreover, as the value of the mutual bank cannot be sold on the market, increasing a bank's value is not the important objective it is in stock-owned banks. Thus, as managers of mutuals are not subject to market monitoring and consequent market discipline, the hypothesis is that they may have more flexibility in their decisions, which may be inconsistent with profit maximization (O'Hara, 1981; Rasmussen, 1988). The high number of

¹Fama and Jensen (1983) describes the different incentive structure within mutual and stock organizations. Jensen and Meckling (1979) and Gorton and Schmid (1999) analyze the incentives structure of cooperatives whereas the consequences of the state ownership of banks are studied by La Porta et al. (2002).

depositors and their lack of information about the bank also impede depositor monitoring of mutual managers. Additionally, mutual associations should have higher expenses (both compensation and overall operating costs) than stock banks as a consequence of the fact that the mutual manager does not participate in the net worth, and extracting profitability in the form of expenses or perks allows managers to maximize their utility. Because of these higher expenses and lower market monitoring, we expect mutuals to be less profitable than stock associations.

Bank ownership can also originate differences in bank risk exposure, besides differences in performance. It is well known that risk-taking incentives by stock-owned institutions arise from the moral hazard problem of risk shifting caused by the use of debt. There are other reasons that also explain the higher risk-taking incentives of stock banks compared to mutual banks (Esty, 1997; Rasmusen, 1988): 1) the opportunity to exploit changes in risk requires fixed and residual claims to be separable. However, these claims are not separable in the case of mutual banks as the depositors are also part owners of the institution. 2) mutual banks are also deterred from pursuing risky ventures by the difficulty of raising equity capital. As they cannot acquire net worth by selling stocks, their ability to absorb losses is limited and the mutual bank manager will select safer investments. 3) Managers of mutual institutions have greater freedom to behave as risk-averse agents in the decision-making process, as they are not subject to market monitoring.

The lower incentives of managers of mutual institutions to take risk compared to stock-owned institutions could be one advantage of this type of bank. Rasmusen (1988) argues that if depositors realize that mutual banks will take less risk than stock banks, more risk-averse depositors will open accounts with mutual banks. This is an advantage for mutual banks because risk-averse depositors will not incur any monitoring costs, which means a reduction in costs related to agency conflicts between owners and depositors (Valnek, 1999). However, the empirical evidence comparing stock-owned and mutual banks, basically in the US, is not so clear-cut. Although there are studies indicating that stock institutions are more efficient and profitable than mutual banks (Daniels and Sfiridis, 2001; Mester, 1991; O'Hara, 1981; Verbrugge and Goldstein, 1981; Verbrugge and Jahera, 1981), other papers fail to confirm such differences (Cebenoyan et al. 1993). In fact, there are even studies showing that mutuals are more efficient than stock-owned banks (Altunbas et al. 2001; Blair and Placone, 1988; Mester, 1993; Valnek, 1999).

Consistent with the higher risk-taking incentives of stock-owned banks, a number of empirical studies conclude that mutual associations have lower risk than stock institutions (Verbrugge and Goldstein, 1981; O'Hara, 1981; Cordell et al. 1993; Lamm-Tennant and Starks, 1993; Esty, 1997; Schrand and Unal, 1998; Karels and McClatchey, 1999) and that greater risk taking by stock-owned institutions occurs in periods of deregulation (Saunders et al. 1990; Cebenoyan et al. 1995, 1999).

Other ownership structures such as state-owned banks and saving banks organized as foundations bring other major differences into the analysis. The lack of market monitoring and the non-option of selling the value of the bank on the market are arguments that can be applied to state-owned and foundation banks to predict lower profitability than stock banks (Hansmann, 1988). Moreover, the influence of political authorities on managers' decisions may lead to further differences between state-owned banks and mutuals and foundations. In state-owned banks, managerial decisions may be guided more by political interest than by the personal preferences of the managers, as is forecasted for mutuals. As a result, agency theory also predicts different levels of efficiency in state-owned banks compared to mutuals, and lower levels of efficiency for both these types of bank ownership compared to stock-owned institutions.

Regarding risk-taking differences, the three characteristics previously mentioned for mutual banks, leading to lower risk-taking incentives compared to stock banks, can also be applied to state-owned savings banks. However, additional differences may emerge as a consequence of political influence. On the one hand, political interest in maintaining the utilization of the bank as an instrument to achieve political objectives, as shown by La Porta et al. (2002) and Sapienza (1999), may lead to limiting bank risk so as to guarantee the continuity of the bank, i.e. the politician may have incentives to limit bank risk up to a level that guarantees its solvency so as not to lose an instrument that may be difficult to substitute. In this case, the threat of losing a political instrument would play the same role of discouraging risk in state-owned banks as the loss of high charter value does in the case of stock-owned banks in regulated environments, as was first indicated by Keeley (1990).

On the other hand, the fact that public administrations can also be major clients of state-owned banks may increase the ex-ante bank risk-taking incentives, since it allows them to substitute losses originated by risky investments with "subsidies" (Barth et al. 2001). Furthermore, this possibility facilitates further politicization of decision taking, as shown by La Porta et al. (2002) and Sapienza (1999), leading to the undertaking of

projects that are politically desirable but which also increase the bank's risk.

The small number of papers that analyze the effect of public ownership on banks' efficiency have so far failed to provide conclusive evidence². La Porta et al. (2002) use data on government ownership of banks from 92 countries around the world, finding evidence to suggest that government ownership politicizes the resource allocation process because government is able to finance inefficient but politically desirable projects. Sapienza (1999) also concludes that Italian state-owned banks pursue political objectives in their lending policies. Barth et al. (2001) find in a country-level data-base that greater government ownership is associated with less efficient and less well-developed financial systems. Verbrugge et al. (1999) analyze bank privatizations in 25 countries and conclude that there is only limited improvement in bank profitability and operating efficiency after privatization. The common explanation given in the above papers to explain the negative effect of government ownership on bank efficiency is that it not only tends to politicize resource allocation but also isolates bank managers from market discipline. In contrast to the results of the previous studies, Altunbas et al. (2001) conclude that public savings banks have slight cost and profit advantages over their private commercial banking counterparts in the German market. In the Belgian case, Tulkens (1993) compares the branch efficiency of one publicly owned and another private bank, and also concludes that the public bank's branches are relatively more efficient than those of the private bank.

Since political influence on savings banks' decisions could favor both higher and lower risk levels, its effect on bank risk-taking is an empirical question that this paper incorporates into the comparison of the performance of different bank ownership types across eight OECD countries.

3. Data and Methodology

We use time series and cross-sectional country data derived from balance sheets and income statements of banks in OECD countries, as available from the Bank Profitability database published by the OECD. Additional information about inflation and growth for each country is obtained from OECD Historical Statistics. Information about the financial development

²However, there is abundant evidence in the industrial sector showing that public firms are less efficient than their private counterparts. Boardman and Vining (1989) provide a summary table with the empirical evidence on the relative efficiency of public and private firms.

and banking market concentration of each country was obtained from the *Financial Structure database* compiled by Beck et al. (2001). Data on each country's regulatory and institutional characteristics were obtained from a range of sources, including Barth et al. (2001), The Heritage Foundation (2002) and Kaufman et al. (2001). As the information from the *Financial Structure database* ends in 1997 and the information of bank market concentration is only available from 1990, our analysis covers the 1990-1997 period.

3.1. *Bank ownership types*

We classified banks into four ownership types: private commercial banks organized as stock-owned institutions, mutual banks, state-owned banks and savings banks organized as foundations. The OECD countries included in our sample are Finland, France, Germany, Italy, Norway, Spain, Sweden and Switzerland. The types of bank ownership in each country are shown in Table 1. Although there are more OECD countries with different forms of bank ownership, we only consider those OECD countries for which OECD publications provide separate information on each type of bank ownership.

{Insert Table 1}

Information on private commercial banks is directly provided by the Bank Profitability database. Banks in the cooperative sector in each country are considered mutual banks, as depositors are also the owners of these institutions. However, the group of savings banks for which the OECD compiles information presents greater diversity of ownership types³. Classifying savings banks into one of our four bank ownership types therefore requires further explanation. The German and the Spanish savings banks are classified as state-owned banks, as are the Swiss cantonal banks. The German savings banks (*Sparkassen*) are established under public law and are usually owned and guaranteed by their local government or by the state. The governance bodies (the General Assembly and Board of Directors) of the Spanish savings banks (*cajas de ahorros*) are made up of representatives of depositors, employees, founders and local and regional governments, but local and regional governments are the group with the highest ownership share. Indeed, in 50% of all Spanish

³The management report made by the Institute of European Finance (1999) offers a good description of the characteristics of the savings banks sector in Europe and their evolution since their creation. Belaisch et al. (2001) also offers a good description of the banking system in Europe.

savings banks, local and regional governments have more than 50% ownership.

Savings banks in Finland, France, Italy, Norway and Switzerland are generally organized as foundations whose governance bodies are made up of different percentages of depositors', employees', founders' and local and regional governments' representatives. However, there is no clear predominance of one collective over others and, consequently, they are in fact a hybrid of mutual (depositors), cooperative (employees) and government-owned institutions. To avoid confounding effects we prefer to classify these savings banks as a new type of bank ownership defined under the term OTHERS, instead of including them in one of the other three depending on which of the three they could most closely be identified as. As Italian and Swedish savings banks were converted into stock-institutions in 1993 and 1991 respectively, they were not included in the OTHERS dummy variable after the conversion year.

The relative importance in each country of each type of bank ownership on the whole banking sector is illustrated in Table 2. In particular, the average percentage of the number of institutions, deposits, loans and assets of each type of bank ownership in the whole national banking system over the 1990-1997 period is shown.

{Insert Table 2}

All the countries included in our sample are characterized by the existence of non-stock-owned institutions with important market shares. In Norway, savings banks had 44.62% of total deposits over the 1990-1997 period. In Spain, state-owned savings banks accounted for 42.63% of total deposits. In Germany, savings banks had 33.97% of total deposits compared to the 31.73% share of stock-owned banks. In France and Sweden, savings banks boasted 33.20% and 14.05%, respectively, of total deposits. In Finland, mutual banks held 22.60% of total deposits whereas in Switzerland the cantonal banks had 20.79% of total deposits over the 1990-1997 period. From 1990 to the year of conversion into stock-owned institutions (1993), savings banks in Italy had an average deposit share in the whole national banking system of 19.21%.

The different ratio of the number of institutions to the market share of different bank ownership types suggests that there are both differences in the average size of each type of organization and also differentiated markets for each type. Thus, despite the large number of mutuals in Finland (81.89%) and of savings banks in Norway (86.64%) and Sweden

(86.87%), a small number of commercial stock banks enjoy the majority market shares, ranging – in the case of deposits – between 55.39% in Norway and 83.96% in Sweden. However, the same cannot be said for Switzerland, where stock-owned banks represent 55.06% of the total number of institutions in the country yet their deposits represent 12.68% of total deposits. However, cantonal banks have the highest deposit share (20.79% of total deposits) whereas they only represent 6.54% of the total number of banks in the country. Such figures are explained by the fact that mutual and other savings banks usually have a local or regional market, whereas private commercial banks compete in a national or even an international market.

3.2. *Measuring bank profitability and risk*

We use net interest income (NETINTER), net income (NETINC), and profits before taxes (PROFBTAX) divided by total bank assets as measures of bank profitability. Net interest income, or bank interest margin, is interest income minus interest expenses. This variable captures the profitability of the intermediation activity of banks. Net income is the net interest income plus the non-interest earnings minus overheads, or banks' profit before provisions and taxes. Finally, profit before taxes is net income minus provisions. By comparing net income and profit before taxes, differences in provisioning among banks with different ownership types can be isolated. This control is important because provisions do not *only* reflect the risk to the bank assets portfolio. Because they are placed at the discretion of managers, they can also be used for income smoothing⁴.

To incorporate the effect of risk into each type of bank ownership, profit variables are also adjusted according to risk. In this case, we divide each measure of bank profitability (NETINTER, NETINC and PROFBTAX) by its respective time-series standard deviation over the 1990 to 1997 period to obtain risk-adjusted variables (STDNETINTER, STDNETINC and STDPROFBTAX).

3.3. *Methodology*

The availability of panel-data allows correction for country-specific and time-specific effects using a random effects model. The natural alternative

⁴ Ma (1988) and Wahlen (1994) find that the U.S. banks use provisions for income smoothing while Barth et al. (1990) also find that U.S banks use capital gains and losses of securities transactions for income smoothing.

specification of fixed effects is not feasible in our setup, given that there is no within variation in the dummy variables of bank ownership type. Additionally, to allow the inclusion of dummy variables, which are constant across countries, the use of random-effects panel estimators is also indicated when the explanatory variables are subject to measurement error (Moulton, 1987). The random effects specification is supported by the Breusch and Pagan (1980) Lagrange multiplier test (LM test), which rejects the null hypothesis that errors are independent within countries, i.e. country effects are not irrelevant. Thus, the random effects specification uses both within- and between-bank variations to estimate differences in bank risk, thereby allowing the importance of unobserved (time invariant) country effects to be estimated. We estimate a two-way random effects model because time dummy variables for each year are also included in order to capture any unobserved macroeconomic time effect not included in country-invariant effects.

The model estimated to analyze the influence of bank ownership on banks profitability is:

$$\begin{aligned}
 PROF_{it} = & \alpha + \beta STATE_{it} + \gamma MUTUAL_{it} + \delta OTHERS_{it} + \phi B_{it} + \varphi M_{it} + \lambda CONCENTRATION_{it} + \\
 & \xi RI_{it} + \theta FD_{it} + \mu_t + \eta_{it}
 \end{aligned}
 \tag{1}$$

where $PROF_{it}$ is the dependent variable measuring bank profitability on a non-risk-adjusted (NETINTER, NETINC and PROFBTAX) and risk-adjusted (STDNETINTER, STDNETINC and STDPROFBTAX) basis for country i in year t . STATE, MUTUAL and OTHERS are dummy variables that have a value of 1 if the banks are state, mutual or foundation-owned institutions respectively, and 0 otherwise. The dummy corresponding to stock-owned banks (STOCK) is omitted from the estimations and is the reference group.

B_{it} is a set of balance sheet variables made up of the book value of equity (CAPITAL), total loans (LOANS), inter-bank deposits (INTERBANKDEP), cash and balance with the Central bank (CASHCENTRAL) and bank security investments (SECURITIES). All these variables are defined in percentages of total bank assets variables. Such balance-sheet variables are included to control for the potential effect on bank performance of differences in the composition of the asset portfolio among differently owned banks.

We control for market structure by including each country's concentration ratio of the banking market ($CONCENTRATION_{it}$), estimated by Beck et al. (2001) as the ratio of the three largest banks' assets to total banking sector assets. The expected effect of banking market concentration on bank profitability is ambiguous; there are two differing explanations of the causes of bank concentration to be found in the literature on the subject (Berger and Udell, 1994; Demirgüç-Kunt et al., 2003). The structure-performance hypothesis holds that regulatory impediments to competition and monopolistic power create an environment in which a few powerful banks stymie competition, which has negative implications for efficiency. According to this hypothesis, a positive relationship between bank concentration and bank profitability is expected. Alternatively, the efficient-structure hypothesis suggests that more efficient banks have lower costs and garner greater market share. Under this hypothesis, a greater concentration of the banking market is the consequence of more efficient banks and a negative relationship between bank concentration and bank profitability is expected.

RI_i is a set of variables to control for the regulatory and institutional characteristics of each country. Two regulatory variables are included: FOREIGN and FRACTIONDENIED. FOREIGN is a 1 to 5 index of the barriers to foreign investment in each country, with a higher value indicating more restrictions on foreign investment. This index is available from The Heritage Foundation (2002). Claessens et al. (2001) provides empirical evidence showing that foreign bank entry increases competition and contributes to reduced margins and cost in the long-term. However, Lensink and Hermes (2003) have shown that in the short-term the effect of foreign bank entry is less clear, as it depends on competitive pressure in the banking market. If competitive pressure is low, domestic banks may be able to pass on increased costs due to spill-over effects to their clients and this may even lead in the short-term to higher margins for financial services. For these reasons, we do not predict a clear effect for FOREIGN in our estimations, although it is controlled for. FRACTIONDENIED equals the fraction of entry applications denied and is available from Barth et al. (2001). It is a proxy of the entry barriers in each country's banking market. Thus, we expect a positive coefficient for this variable, as the greater the entry of banks, the less competitive the banking market will be and the greater the opportunities for extraordinary profits. This variable was used to similar purposes to ours by Demirgüç-Kunt et al. (2003) and Beck et al. (2003).

As an institutional variable included in RI_i we use a global measure of institutional development in the country (INSTDEVELOP) - the index elaborated by Kaufman et al. (2001). This index averages information on (i)

voice and accountability, i.e., the extent to which citizens can choose their government and enjoy political rights, civil liberties, and independent press, (ii) political stability, i.e., a low likelihood that the government will be overthrown by unconstitutional or violent means, (iii) government effectiveness, i.e., the quality of public service delivery, competence of civil servants, and the absence of politicization of the civil service, (iv) light regulatory burden, i.e., relative absence of government controls on starting new business, or of excessive regulation of private business and international trade, (v) rule of law, i.e., protection of persons and property against violence or theft, independent and effective judges, contract enforcement, (vi) freedom from graft, i.e., absence of the use of public power for private gain, corruption. This variable is included in view of the earlier evidence of Demirgüç-Kunt et al. (2003) showing that banks in countries with a better institutional environment have lower net interest margins. This index has been used for purposes similar to ours, among others, by Demirgüç-Kunt et al. (2003) or Beck et al (2003).

As macro variables (M_{it}) potentially affecting bank profitability in each country we include the annual growth rate of real GDP per capita (GROWTH) and the inflation rate (INFLATION). Additionally, to control for the development of the financial system, we include in FD_{it} the variables proposed by Beck et al. (2001) for measuring the volume and activity of the banking sector and the stock market. To measure the size of the banking sector in the country we use the ratio of the total domestic assets of deposit money banks divided by GDP (BANKASSET). The size of the stock market is proxied by the ratio of stock market capitalization divided by GDP (MAKTCAP). To measure activity, we use credit lent to the private sector by deposit money banks divided by GDP (PRIBC) to proxy the credit activity of the banking sector, while the total value of stocks traded divided by GDP (SMTVT) is a measure of stock market activity. Demirgüç-Kunt and Huizinga (2001) have shown the greater relevance of financial development compared to the financial structure of the country in explaining bank profitability. In a sample of developed and developing countries they found that banks have both higher pre-tax profit and interest margins in underdeveloped financial systems and that once the level of financial development has been controlled for, financial structure - i.e. the relative development of banks versus markets - does not have an independent effect on their profitability or interest margin.

Finally, μ_i is a country-specific effect and η_{it} is a white-noise error term.

Table 3 summarizes the variables used in the paper and their source.

{Insert Table 3}

As the above estimations of model [1] assume exogeneity of the explanatory variables, instrumental variables were also used to control for potential bias due to endogeneity and to check the robustness of the results. We have constructed instruments for the right-hand-side balance sheet variables (CAPITAL, LOANS, INTERBANKDEP, CASHCENTRAL and SECURITIES). In particular, we use lagged values of these variables as instruments; two lags are employed to avoid cases in which there might be first-order autocorrelation of the residuals. This technique assumes that past values of the explanatory variables are not correlated with their contemporaneous values. The results obtained with these instrumental variables do not vary significantly compared to those shown in the paper and are not reported.

4. Results

4.1. Descriptive statistics

The descriptive statistics of bank variables for each type of bank ownership are shown in Table 4. To analyze whether there are statistically significant differences among any two of the four types of bank ownership, we use both a parametric test, the F-statistic of the analysis of variance (ANOVA), and a non-parametric test (the Kruskal-Wallis test).

The significant values of both tests for NETINTER point to a rejection of the hypothesis that the net interest margin is equal across banks with different type of ownership. However, these differences are observed in neither net income nor profit before taxes. However, as the F-statistic and the Kruskal-Wallis test fail to indicate where the differences lie between the two pairs of types of banks, we apply two procedures – the Tukey and the Bonferroni tests – to analyze the differences between each pair of bank ownership types. Although not shown in the paper, both tests show that stock banks have statistically significant lower interest margins than other types of banks but do not have either statistically significant lower net incomes or lower profits before taxes. Consequently, although there are differences in the net interest margin between differently owned banks, these differences disappear when non-interest earnings, overheads and provisions are taken into account. This evolution of bank profitability varying according to bank type is consistent with two different explanations; first, it could reflect that stock banks have lower market power than the other types of bank

ownership, though they are also more efficient and have lower non-interest expenses. Second, it could reflect that stock banks have lower non-interest expenses because they offer low quality services and therefore cannot attract deposits at rates that are as low as those of other bank ownership types.

Unlike non-risk adjusted profitability measures, the three measures of banks profitability vary depending on bank ownership type when they are risk adjusted. The Tukey and Bonferroni tests point to stock banks having statistically-significant lower STDNETINTER and STDPROFBTAX than mutual and state-owned banks, while there are no differences compared to the group of savings banks organized as foundations (OTHERS). As in the non-risk adjusted measures of bank performance, the differences between types of bank ownership are lower when analyzing the risk-adjusted net income (STDNETINC), and stock banks only present statistically significant lower STDNETINC than state-owned banks; there are no statistically significant differences when we compare stock banks with mutual and other savings banks. Whatever the case may be, the existence of these statistically significant differences in risk-adjusted but not in non-risk-adjusted bank performance is consistent with lower risk-taking of mutuals and state-owned banks compared to stock banks.

{Insert Table 4}

Even though analysis of the mean and median differences reveals differences in the profitability of differently owned banks, a multivariate analysis incorporating confounding effects omitted in a simple comparison of means and medians still needs to be performed. To do this, the regression analysis described in equation (1) is applied in the following section so as to also incorporate the effect of market structure, regulatory, institutional, macro and financial development variables.

4.2. *Multivariate analysis*

The results of two-way random effects on the influence of bank ownership on non-risk-adjusted bank profitability are shown in table 5.

{Insert Table 5}

The statistically significant positive coefficients of STATE, MUTUAL and OTHER in the NETINTER equations of table 5 indicate that all these forms of bank ownership have higher interest margins than commercial stock-owned banks.

As far as efficiency levels are concerned, the impact of differences in personnel expenses and depreciation expenses as well as other non-interest expenses is analyzed using NETINC as the dependent variable. The effect of provisions on banks profitability is also incorporated by comparing the results of NETINC and PROFBTAX. One can observe in models (3) and (4) of table 5 that the advantage that state-owned banks have in interest margins over commercial stock banks diminishes after considering non-interest earnings and overheads, and disappears for banks organized as foundations. In the PROFBTAX equations (models 5 and 6) the initial advantage of state-owned banks in interest margins also disappears and only mutual banks have higher profits than stock banks independently of the type of performance measure that is applied.

These results corroborate the analysis of mean differences and indicate that although state-owned banks and banks organized as foundations do have higher interest margins, they also have higher non-interest expenses and lose the initial advantage they had in lending-borrowing activities. The lower expenses of commercial stock banks compared to state and other savings banks organized as foundations is consistent with higher levels of efficiency for stock banks and with the traditional agency theory view arguing higher manager control by the market in stock-owned institutions. Alternatively, the lower expenses and lower interest margins of stock banks could also be the consequence of different strategy. Stock-owned banks would have lower non-interest expenses if they offered lower quality services than other types of banks (for instance, fewer branches). In this case, they could only attract deposits at higher interest rates and their interest margin would be lower than other types of banks offering higher quality services.

To analyze if the observed differences in bank profitability among differently owned banks are explained by differences in the risk-taking behavior of each type of institution, measures of risk-adjusted bank profitability were employed as dependent variables (STDNETINTER, STDNETINC, and STDPROFBTAX). Table 6 shows the results of two-way random effects estimations.

{Insert Table 6}

The difference observed in interest margins according to ownership type is not caused by differences in risk in the case of state or mutual banks. When banks' net interest income is adjusted by its standard deviation over the 1990-1997 period in the STDNETINTER variable, the STATE and MUTUAL bank ownership dummy variables maintain the statistically significant positive coefficients observed in table 5.

However, the results for mutual and state owned banks in STDNEIN and STDPROFBTAX change with respect to those presented in Table 5 when net income and profit before taxes are non-risk adjusted. Whereas the mutual bank ownership dummy variable had positive, statistically significant coefficients in all the non-risk adjusted equations, in the STDNETINC it does not have statistically significant coefficients. This different result indicates that the initial advantage for mutual banks in the interest margin is lost after considering the risk associated to the other higher non-interest expenses and overheads of this type of bank. Additionally, the non-significant coefficient of the mutual dummy variable regains its positive status in the STDPROFBTAX equation. As the difference between these two measures of bank performance is only caused by provisions, the positive coefficients of MUTUAL in STDPROFBTAX indicate that this type of bank uses provisions for reducing the variability of their profits before taxes more than stock banks do.

Unlike mutuals, state-owned banks have statistically significant positive coefficients in all the risk-adjusted equations. This differs from the non-significant coefficient of STATE in the PROFBTAX equation, indicating that the risk-taking of state banks is lower than stock banks and mutual banks. The lower risk-taking incentives of state-owned banks compared to stock and mutual banks is consistent with the hypothesis that politicians have incentives to limit bank risk in order to preserve bank solvency and not forego the opportunity of using state banks as a political instrument.

Savings banks organized as foundations (OTHERS) do not present higher net interest margins than stock-owned commercial banks after controlling for risk, suggesting that the higher interest margin of this type of bank shown in Table 5 may have its origin in higher risk-taking.

The influence of bank ownership dummy variables on the different measures of bank profitability is independent of whether we include activity (PRIBC and SMTVT) or size variables (BANKASSET and MAKCAP) to measure the financial development of the country. One of the features of the results obtained is that there is no hint of stock-owned banks being superior to the alternative organizational structures that this paper

analyses (mutual banks, state-owned banks and banks organized as foundations).

On the subject of bank variables, the percentage of interbank deposits over total bank assets (INTERBANK) has a positive influence on non-risk-adjusted bank profitability, while we do not observe a statistically significant influence on risk-adjusted equations. The proportion of cash and balance with the Central Bank (CASHCENTRAL) over total assets has a positive influence on bank interest margins but does not have a statistically significant influence on net income and profit before taxes after correcting for risk.

The proportion of security banks' investments as a fraction of total assets (SECURITIES) has a positive influence on non-risk-adjusted bank profitability, whereas we observe a non-significant influence of SECURITIES on risk-adjusted profitability in Table 6. These different results are consistent with the higher mean variance of security investments compared with other bank investments. Banks' capital has statistically significant positive coefficients both in non-risk-adjusted and risk-adjusted bank profitability. This positive influence of CAPITAL is consistent with the evidence of Demirgüç-Kunt and Huizinga (2001) and may indicate that well-capitalized banks face lower expected bankruptcy costs for themselves and their customers, thereby reducing their cost of capital. LOANS has a positive influence on non-risk-adjusted profitability, which only remains in the banks' interest margin after adjusting for risk, as no statistically significant coefficients occur in the STDNETINC and STDPROFBTAX equations.

The influence of market concentration depends on whether we adjust bank profitability variables for risk. In Table 5, the statistically significant positive coefficients of CONCENTRATION are consistent with the structure-performance hypothesis and with a higher market concentration being associated to a less competitive market. However, when we adjust bank profitability for risk in Table 6, CONCENTRATION has negative coefficients on rate margins equations. This result is consistent with the efficient-structure hypothesis and with higher market concentration being associated to higher efficiency of banks. Thus, no clear interpretation of the influence of banking market concentration on bank profitability in our sample of 8 OECD countries can be made.

All the coefficients of regulatory and institutional variables have the expected signs. Confirming the findings of Demirgüç-Kunt et al. (2003), higher institutional development of the country is associated with lower bank profitability. The negative coefficients of FOREIGN in Tables 5 and 6

mean that lower restrictions on foreign investments are associated to higher bank margins and profit before taxes. This result is consistent with the positive relationship found by Lensink and Hermes (2003) between foreign bank entry and bank margins in the short-term for domestic banks in developing countries. Consistent with the hypothesis that higher entry barriers in the banking market favor higher bank profitability, FRACTIONDENIED has statistically significant positive coefficients.

The macro variables (GROWTH and INFLATION) are positive and statistically significant in most of the non-risk and risk-adjusted estimations. These results indicate that banks have greater profitability in inflationary and growing environments, and are consistent with the findings of Demirgüç-Kunt and Huizinga (2001) in a sample of banks from developed and developing countries.

As for financial system variables, we observe that bank development measures, whether relating to activity or size (PRIBC and BANKASSET), have positive coefficients in most of the estimations. SMTVT and MAKTCAP have non-significant coefficients in non-risk adjusted profitability equations whereas they have a positive and statistically significant influence on risk-adjusted profitability equations. This result is also consistent with Demirgüç-Kunt and Huizinga (2001) and suggests that in countries with well-developed stock markets, banks have greater profit opportunities after controlling for risk.

5. Conclusions

This paper analyzes the influence of bank ownership on non-risk and risk-adjusted bank profitability in 8 OECD countries using country-level panel data from 1990 to 1997. We compare four types of bank ownership (stock-owned banks, state-owned banks, mutual banks and savings banks organized as foundations) and control for market structure, regulatory, institutional, macro- and financial development variables in the country.

The results show the relevance of bank ownership to explaining differences in profitability and risk among banks. For all three profitability measures applied in the study (net interest income, net income and profit before taxes) mutual banks have higher non-risk-adjusted profitability (values) than stock-owned banks. However, this result changes when we use risk-adjusted profitability variables. In this respect, the initial advantage that mutual banks have over stock banks in interest margins disappears when we consider the risk associated to the higher non-interest expenses and overheads. The different result obtained from a comparison of net income

and profit before taxes after adjusting for risk between mutual and stock banks also suggests that mutual banks use provisions for reducing the variability of their profit before taxes more than stock banks do.

State-owned banks have higher net income and profit before taxes after adjusting for risk than stock banks, although not before adjusting for risk. This result indicates the lower risk-taking of state-owned banks compared to stock banks and is consistent with the hypothesis that politicians controlling banks have incentives to preserve bank solvency and not forego the opportunity to use state banks as a political instrument. Regarding banks organized as foundations, we do not observe statistically significant profitability differences compared to stock banks after correcting for risk. In consequence, one of the points shared by all the estimations is the absence of any profitability-related superiority of stock-owned banks when compared to alternative organizational structures (mutual banks, state-owned banks and banks organized as foundations).

Our results also show the relevance of regulation and institutions of the country to explain differences in bank profitability. Higher institutional development and stricter restrictions on foreign investments are associated to lower bank profitability, while the higher the fraction of bank license applications denied in the country, the higher the bank profitability.

6. References

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Table 1. Bank ownership Types

This table shows the types of bank ownership in each country included in our sample

	Stock Commercial banks	Mutual savings banks	State banks	Other Forms (Foundations)
Finland	Stock Commercial banks	Cooperative banks		Savings banks
France	Stock Commercial banks	Cooperative banks <i>(Credit agricole, Banques populaires. Credit mutuel, Credit cooperative)</i>		Savings banks <i>(Casses D'Epargne et prevoyance)</i>
Germany	Stock Commercial banks	Cooperative banks <i>(Kreditgnossenschaften, Volksbanken, Raiffisenbanken)</i>	Savings banks <i>(Sparkassen)</i>	
Italy	Stock Commercial banks			Savings* banks <i>(Cassas di risparmio)</i>
Norway	Stock Commercial banks			Savings banks
Spain	Stock Commercial banks	Cooperative banks <i>(Cajas rurales)</i>	Savings banks <i>(Cajas de ahorros)</i>	
Sweden	Stock Commercial banks	Cooperative banks**		Savings banks
Switzerland	Stock Commercial banks	Cooperative banks <i>(Raiffeisenkassen)</i>	Cantonal banks	Savings banks

*Until 1993, after which they were converted into stock institutions

** Until 1991, after which they were converted into stock institutions

Table 2. Structure of national bank systems

This table shows the percentage of institutions, deposits, loans and assets for each type of bank ownership in the whole national banking system over the 1990-1997 period for each country included in our sample.

		STOCK	MUTUAL	STATE	OTHERS(Foundations)
Finland	# of banks	2.47	81.89		14.51
	Deposits	67.02	22.60		9.67
	Loans	68.97	21.16		9.11
	Assets	70.34	16.69		10.19
France	# of banks	25.82	9.31		3.16
	Deposits	46.64	33.20		18.10
	Loans	48.11	21.41		4.64
	Assets	55.52	21.38		5.93
Germany	# of banks	7.49	76.28	17.00	
	Deposits	31.73	22.06	33.97	
	Loans	35.89	15.38	26.76	
	Assets	33.91	14.35	24.09	
Italy	# of banks	51.51			21.32*
	Deposits	50.79			19.21*
	Loans	47.95			14.94*
	Assets	57.43			19.19*
Norway	# of banks	13.36			86.64
	Deposits	55.39			44.62
	Loans	58.47			41.62
	Assets	61.52			38.49
Spain	# of banks	51.26	31.66	17.08	
	Deposits	53.20	4.17	42.63	
	Loans	60.42	3.42	36.13	
	Assets	62.57	3.07	34.35	
Sweden	# of banks	10.73	2.40**		86.87
	Deposits	83.96	1.98**		14.05
	Loans	86.06	1.49**		12.44
	Assets	90.01	1.00**		8.99
Switzerland	# of banks	55.06	0.36	6.54	37.04
	Deposits	12.68	4.73	20.79	7.03
	Loans	10.69	5.07	26.57	9.19
	Assets	15.30	3.56	20.32	6.98

* Until 1993, after which they were converted into stock institutions

** Until 1991, after which they were converted into stock institutions

Table 3. The variables

This table describes the variables collected for the 10 OECD countries included in the sample. We present the description and the sources from which each variable is collected.

Variable	Definition
Bank Ownership types	
STOCK	Dummy variable that takes 1 if the bank is a stock owned institution and 0 otherwise
STATE	Dummy variable that takes 1 if the bank is a state owned institution and 0 otherwise
MUTUAL	Dummy variable that takes 1 if the bank is a mutual institution and 0 otherwise
OTHERS	Dummy variable that takes 1 if the bank is organized as a foundation where depositors, employees, local and regional governments and founders can participate in the ownership and 0 otherwise
Bank Characteristics	
	Source: Bank profitability (2000), OECD Publications
NETINTER	Interest income minus interest expense over total assets
NETINC	Gross income (net interest income plus non-interest earnings) minus operating expenses over total assets
PROFIBTAX	Profit before taxes over total assets
STDNETINTER	NETINTER in each year is divided by its standard deviation over the 1990-1997 period
STDNETINC	NETINC in each year is divided by its standard deviation over the 1990-1997 period
STDPROFBTAX	PROFBTAX in each year is divided by its standard deviation over the 1990-1997 period
CAPITAL	Book value of equity over total assets
LOANS	Total loans over total assets
INTERBANKDEP	Interbank deposits over total assets
CASHCENTRAL	Cash and balance with Central Bank over total assets
SECURITIES	Security banks investments over total assets
Market Structure	
CONCENTRATION	The Ratio of the three largest banks' assets to total banking-sector assets in the country. Source: Beck et al. (2001)
Regulatory and Institutional Characteristics	
INSTDEVELOP	Average value of six indicators measuring voice and accountability, political stability, regulatory quality, government effectiveness, control of corruption and rule of law. Each of these indicators is constructed from a wide array of survey indicators in the respective area. Source: Kaufman et al. (2001)
FOREIGN	Index of barriers to foreign investment that ranges from 1 to 5 with a higher value indicating more restrictions on foreign investment. Source: Heritage Foundation (2002).
FRACTIONDENIED	Share of bank license applications rejected. If there were no applications, the value is one. Source: Barth et al. (2001).
Macro Indicators	
	Source: OECD Historical Statistics (2001), OECD Publications.
GROWTH	Annual growth rate of real GDP per capita in the country
INFLATION	The annual inflation from consumer price indices in the country
Financial Development	
	Source: Beck et al. (2001): Financial structure database
BANKASSET	Total assets of deposit money banks divided by GDP.
PRIBC	Private credit by deposit money banks to GDP
MAKTCAP	Stock market capitalization to GDP
SMTVT	Stock market total value traded to GDP

Table 4. Descriptive statistics

This table shows the descriptive statistics of bank variables for each type of bank ownership. To analyze if there are statistically significant differences among bank ownership forms we use a parametric test, the F-statistic of the analysis of variance (ANOVA), and a non-parametric test (Kruskal-Wallis).

		STOCK	MUTUAL	STATE	OTHERS	F-Statistic (ANOVA)	Kruskal- Wallis Test
NETINTER	Mean	2.178	3.086	2.944	2.191	7.134***	15.430***
	Median	2.170	3.035	3.040	3.265		
	Std. Dev.	0.819	1.306	0.828	1.316		
NETINC	Mean	0.873	0.928	1.412	0.879	0.559	5.269
	Median	0.935	1.005	1.380	1.075		
	Std. Dev.	1.081	0.870	0.286	1.995		
PROFBTAX	Mean	0.408	0.648	0.795	0.662	0.189	1.050
	Median	0.545	0.525	0.880	0.410		
	Std. Dev.	1.089	0.765	0.268	1.986		
STDNETINTER	Mean	7.651	12.090	13.354	9.156	6.460***	17.993***
	Median	8.137	10.297	11.637	8.363		
	Std. Dev.	3.977	7.907	5.784	7.244		
STDNETINC	Mean	3.414	5.845	8.605	3.557	9.524***	29.181***
	Median	2.718	7.766	9.019	2.814		
	Std. Dev.	3.365	3.973	1.963	3.931		
STDPROFBTAX	Mean	1.916	5.932	6.430	2.168	31.744***	59.664***
	Median	1.338	7.413	6.476	1.958		
	Std. Dev.	2.472	3.727	1.195	2.073		
CAPITAL	Mean	5.999	6.268	5.799	6.665	1.886	6.136
	Median	5.370	4.730	4.110	5.975		
	Std. Dev.	2.396	3.168	2.314	3.331		
LOANS	Mean	51.039	57.568	58.396	58.125	7.632***	22.679***
	Median	50.605	59.345	60.840	62.870		
	Std. Dev.	13.025	14.493	11.693	22.244		
INTERBANKDEP	Mean	16.657	22.145	11.173	16.770	3.722**	25.276***
	Median	16.480	15.780	10.670	6.670		
	Std. Dev.	12.332	14.000	2.837	21.354		
CASHCENTRAL	Mean	2.172	2.900	3.610	2.473	1.210	6.859*
	Median	1.605	2.320	3.090	1.290		
	Std. Dev.	2.115	2.908	3.517	2.857		
SECURITIES	Mean	18.738	11.113	20.239	13.322	18.583***	40.608***
	Median	16.910	9.960	21.450	12.300		
	Std. Dev.	6.465	6.621	6.560	6.507		

*** Significant at 1 % level. ** Significant at 5 % level. *Significant at 10% level.

Table 5. Ownership form and non-risk-adjusted banks profitability

This table shows the results of a two-way random effects model. The dependent variables are the net interest income (NETINTER), the net income (NETINC) and the profit before taxes (PROFBTAX) of banks. As independent variables we include dummies of bank ownership types (STATE, MUTUAL, OTHERS), bank balance-sheet variables ((INTERBANKDEP, CASHCENTRAL, SECURITIES, CAPITAL, LOANS), a variable of market structure (CONCENTRATION) and regulatory (FOREIGN, FRACTIONDENIED), institutional (INSTDEVELOP), macro (GROWTH, INFLATION) and financial development (PRIBC, SMTVT, BANKASSET, MAKTCAP) variables of the country. The standard errors are corrected for autocorrelation, and the corresponding t-statistics are given in parentheses below.

	NETINTER		NETINC		PROFBTAX	
	(1)	(2)	(3)	(4)	(5)	(6)
STATE	0.582** (2.25)	0.548** (2.09)	0.511* (1.85)	0.436 (1.61)	0.388 (1.53)	0.339 (1.36)
MUTUAL	1.216*** (5.41)	1.201*** (5.28)	0.478* (1.75)	0.509* (1.87)	0.600** (2.40)	0.596** (2.38)
OTHERS	0.600*** (2.79)	0.589*** (2.71)	-0.002 (-0.01)	0.032 (0.13)	0.275 (1.25)	0.284 (1.29)
INTERBANKDEP	0.030*** (2.99)	0.028*** (2.71)	0.030* (1.83)	0.019 (1.08)	0.055*** (3.64)	0.049*** (3.02)
CASHCENTRAL	0.056** (1.97)	0.069** (2.41)	-0.139** (-2.22)	-0.109* (-1.78)	-0.168*** (-2.92)	-0.139** (-2.46)
SECURITIES	0.064*** (5.29)	0.064*** (5.20)	0.059*** (2.62)	0.049** (2.14)	0.076*** (3.67)	0.069*** (3.24)
CAPITAL	0.151*** (7.06)	0.138*** (6.26)	0.299*** (8.15)	0.265*** (7.26)	0.162*** (4.81)	0.136*** (4.06)
LOANS	0.036*** (3.73)	0.035*** (3.61)	0.022 (1.15)	0.011 (0.58)	0.040** (2.32)	0.034* (1.92)
CONCENTRATION	1.065* (1.64)	0.706 (1.10)	-0.277 (-0.17)	-1.812 (-1.17)	4.077*** (2.77)	3.160** (2.21)
FOREIGN	-0.464** (-2.43)	-0.494*** (-2.82)	-0.309 (-0.97)	-0.098 (-0.37)	-0.761*** (-2.60)	-0.656*** (-2.71)
FRACTIONDENIED	1.682 (0.93)	0.589 (0.31)	6.682*** (2.74)	5.420** (2.12)	5.284** (2.37)	4.304* (1.83)
INSTDEVELOP	-1.761** (-2.40)	-1.911*** (-2.74)	-1.544 (-0.96)	-0.320 (-0.24)	-4.000*** (-2.71)	-3.334*** (-2.70)
GROWTH	0.085*** (3.98)	0.060*** (2.87)	0.241*** (4.59)	0.167*** (3.29)	0.196*** (4.08)	0.138*** (2.94)
INFLATION	0.016 (0.48)	0.024 (0.76)	-0.024 (-0.28)	-0.021 (-0.27)	0.146* (1.89)	0.131* (1.81)
PRIBC	-0.218 (-0.59)		2.470*** (3.40)		1.682** (2.53)	
SMTVT	-0.119 (-0.48)		-0.361 (-0.62)		-0.082 (-0.15)	
BANKASSET		-0.548* (-1.82)		1.148** (2.09)		0.131* (1.81)
MAKTCAP		0.320 (1.10)		0.863 (1.63)		0.644 (1.32)
R ² overall	87.96%	86.77%	62.43%	61.51%	62.70%	61.13%
Wald χ^2	341.32***	326.86***	196.04***	194.96***	198.32***	191.84***
LM χ^2	3.31*	3.21*	7.19***	6.50***	3.05*	1.91
# observations	142	146	142	146	142	146
# countries	8	8	8	8	8	8

*** Significant at 1 % level. ** Significant at 5 % level. *Significant at 10% level.

Table 6. Ownership form and risk-adjusted banks profitability

This table shows the results of a two-way random effects model. The dependent variables are the net interest income (STDNETINTER), the net income (STDNETINC) and the profit before taxes (STDPROFBTAX) of banks, adjusted by the standard deviation of each profitability measure over the 1990-1997 period. As independent variables we include dummies of bank ownership types (STATE, MUTUAL, OTHERS), bank balance-sheet variables ((INTERBANKDEP, CASHCENTRAL, SECURITIES, CAPITAL, LOANS), a variable of market structure (CONCENTRATION) and regulatory (FOREIGN, FRACTIONDENIED), institutional (INSTDEVELOP), macro (GROWTH, INFLATION) and financial development (PRIBC, SMTVT, BANKASSET, MAKTCAP) variables of the country. The standard errors are corrected for autocorrelation, and the corresponding t-statistics are given in parentheses below.

	STDNETINTER		STDNETINC		STDPROFBTAX	
	(1)	(2)	(3)	(4)	(5)	(6)
STATE	5.150*	5.099*	3.271**	3.020*	3.078*	2.859*
	(1.86)	(1.84)	(2.08)	(1.91)	(1.77)	(1.67)
MUTUAL	4.620**	4.565**	1.666	1.734	3.199**	3.177**
	(2.11)	(2.08)	(1.32)	(1.37)	(2.31)	(2.33)
OTHERS	2.869	2.838	0.910	1.024	0.297	0.395
	(1.24)	(1.23)	(0.70)	(0.78)	(0.21)	(0.28)
INTERBANKDEP	0.022	0.022	0.022	0.013	0.027	0.030
	(0.71)	(0.73)	(0.62)	(0.38)	(0.85)	(0.95)
CASHCENTRAL	0.153**	0.156**	0.061	0.040	0.086	0.055
	(2.17)	(2.16)	(0.71)	(0.47)	(1.14)	(0.73)
SECURITIES	0.051	0.059	0.020	0.034	0.027	0.035
	(1.41)	(1.59)	(0.49)	(0.82)	(0.71)	(0.94)
CAPITAL	0.134**	0.076	0.276***	0.198***	0.022	-0.024
	(2.00)	(1.09)	(3.62)	(2.56)	(0.33)	(-0.35)
LOANS	0.066**	0.071***	0.008	0.005	0.020	0.028
	(2.45)	(2.64)	(0.25)	(0.17)	(0.70)	(1.03)
CONCENTRATION	-2.950*	-3.691**	-2.110	-3.046	1.027	1.199
	(-1.85)	(-2.30)	(-1.09)	(-1.62)	(0.61)	(0.72)
FOREIGN	-4.390***	-4.354***	-1.718*	-1.517	-0.279	-0.570
	(-2.65)	(-2.67)	(-1.73)	(-1.59)	(-0.26)	(-0.56)
FRACTIONDENIED	41.943***	39.191**	3.194	-1.012	-1.821	-3.214
	(2.56)	(2.39)	(0.33)	(-0.10)	(-0.17)	(-0.31)
INSTDEVELOP	-1.941	-2.550	-7.669***	-8.322***	-5.452*	-7.181**
	(-0.46)	(-0.61)	(-2.63)	(-2.92)	(-1.84)	(-2.49)
GROWTH	0.326***	0.241***	0.283***	0.167**	0.208***	0.193***
	(5.04)	(3.94)	(4.02)	(2.53)	(3.23)	(3.20)
INFLATION	0.137*	0.163**	-0.022	0.037	0.283***	0.259***
	(1.65)	(2.10)	(-0.22)	(0.41)	(3.20)	(3.17)
PRIBC	0.637		3.962***		1.286	
	(0.44)		(2.71)		(0.93)	
SMTVT	-0.137		-0.340		1.114*	
	(-0.22)		(-0.46)		(1.71)	
BANKASSET		-0.732		2.104*		1.548
		(-0.58)		(1.76)		(1.35)
MAKTCAP		1.488*		2.810***		2.103**
		(1.73)		(2.93)		(2.42)
R ² overall	63.02%	60.42%	72.49%	68.55%	64.43%	70.71%
Wald χ^2	148.84***	142.90***	76.62***	79.66***	69.70***	73.95***
LM χ^2	198.67***	191.65***	88.26***	86.25***	204.84***	211.93***
# observations	142	146	142	146	142	146
# countries	8	8	8	8	8	8

*** Significant at 1 % level. ** Significant at 5 % level. *Significant at 10% level.