The relationship between charter value and bank market concentration. The influence of regulations and institutions

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Abstract.

This paper analyzes the influence of regulations and institutions on the relationship between market concentration and bank charter value by applying a simultaneous equations model to a sample of 276 banks in 27 countries. Results highlight that the role of the structure-conduct-performance (SCP) and the efficient-structure (EFS) hypotheses in explaining a positive relationship between bank charter value and market concentration depends on a country's regulatory and institutional set up. The validity of EFS forecasts compared to SCP forecasts increases in line with the quality of the legal environment and enforceability of contracts, with the increased weight of the markets compared to banks, and with the share of banking assets held by banks that are majority-owned by foreign owners and by the government. In contrast, tighter legal restrictions on the activities banks are allowed to pursue limit the validity of both the EFS and SCP hypotheses.

JEL classification: G18, G21, G28.
Keywords: banks, charter value, institutions, market concentration, regulations.

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1. Introduction.

The wealth of literature analyzing the concentration-performance relationship in both the banking and non-financial sectors has often indicated a positive relationship between the two factors. Two hypotheses have being put forth to explain such a finding. One, the structure-conduct-performance hypothesis (SCP), asserts that banks are able to extract monopolistic rents in concentrated markets by their ability to offer lower deposit rates and charge higher loan rates. This hypothesis is derived from the model of oligopolistic behavior of firms, which suggests that collusive arrangements are less costly to maintain in concentrated markets. A second hypothesis, the efficient-structure hypothesis (EFS), claims that efficient banks increase in size and market share because they can generate higher profits, which usually leads to higher market concentration. According to this hypothesis, concentration is due to more efficient banks growing more rapidly than their less efficient counterparts, or more efficient banks taking over less efficient ones. If this is the case, banks would price their services - at least to some extent - more rather than less competitively.

Though different to each other, the two hypotheses are not mutually exclusive, and recognizing which of the two predominates is of crucial importance when selecting an adequate antitrust policy. If the SCP hypothesis were dominant, antitrust enforcement would be socially beneficial, whereas policies that penalize or impair mergers would be socially costly if the EFS hypothesis were to predominate.

This paper analyzes the structure-performance relationship in the banking industry by incorporating three key innovations. First, we study the impact of bank regulations and the influence of national institutions, financial structure and financial development on the relationship between market structure and bank performance using data for banks from 27 countries. The role of these political economy aspects is coming increasingly into the spotlight in work analyzing the development and stability of the financial system[1] and they may originate different validities of the SCP and EFS hypotheses across countries as explanations of the concentration-performance relationship in banking.

The second contribution of this paper is that it considers endogeneity of bank market concentration by simultaneously estimating a system of two equations in which both bank

[1] See, among others, Barth et al., (2001, 2004), La Porta et al., (2002) and Beck et al., (2003).

performance and market concentration are endogenous variables. To our knowledge, empirical studies have not controlled for the potential endogeneity of banking market concentration. Yet at least two reasons hint at it being endogenous. Endogeneity is first suggested by the EFS hypothesis when it proposes that different ratios of market concentration across countries are to be explained by efficiency differences among banks in each national market. Secondly, differences among countries in restrictions on entering the banking sector would also mean that the ratio of bank market concentration in each country would be influenced by the nature of bank regulation in that country. So, by the simultaneous estimation of a system of a two equations we are able to obtain unbiased coefficients and, moreover, provide new evidence about the determinants of market concentration across countries.

Finally, a third contribution lies in the use of Tobin's Q to gauge bank performance. This tends to be the proxy used to measure bank charter value, as it obviates many of the limitations that accounting-based measures of performance suffer from when we incorporate rents not only from bank-specific factors but also from monopoly rents earned by banks due to pricing power (Fisher and McGowan, 1983; Smirlock et al. 1984). Moreover, bank charter value is particularly useful in the banking sector, as it is an indicator of a bank's incentives to take risk (keeley, 1990; Demsetz et al., 1996).

Despite its advantages, and even though Smirlock et al. (1984) have used Tobin's Q instead of accounting-based measures of profitability on manufacturing firms, we are unaware of any study of the banking sector that has applied Tobin's Q to analyze the concentration-performance relationship.[2]

After incorporating the above three innovations the results of the paper confirm the influence of regulations, institutions, financial structure and financial development on the relative importance of SCP and EFS hypotheses in the banking sector. Results show that the validity of EFS compared to SCP forecasts increases in line with the quality of the legal environment and enforceability of contracts, with the increased weight of the markets compared to banks, and with the share of banking assets held by banks that are majority-owned by foreign owners and by the government. However, tighter legal restrictions on the activities banks are allowed to pursue limit the validity of both the EFS and SCP

[2] To test the sensitivity of Tobin's Q and accounting rates of return to measurement errors, McFarland (1988) used Monte Carlo experiments to determine which accounting measure provides the best approximation to its "true" measure. They found that Q estimates have smaller average errors than accounting rate of return measures. In addition, the Q ratio was found to have a much higher average correlation with its true measure.

hypotheses. The level of a country's financial development plays no clear-cut role in the relative importance of the two hypotheses. Results hold when alternative measurements of the quality of the legal environment, financial structure and financial development are applied.

The remainder of the paper is organized as follows. Section 2 describes the theoretical background and hypothesis. Section 3 defines the dataset. Section 4 describes the simultaneous equations model. Finally, section 5 presents the conclusions.

2. Theoretical Background and Hypotheses.

Empirical tests on the structure-performance relationship have applied a range of methodologies to focus on American banks, and have yielded mixed results. One early methodology explained bank performance by using market concentration and proxies of bank efficiency as explanatory variables. In this type of regression, a positive coefficient of the bank efficiency proxy supports the EFS hypothesis, whereas a positive coefficient of market concentration is consistent with the SCP hypothesis. Results for the American market have been consistent with only the SCP hypothesis (Shepherd, 1986), consistent with only the EFS hypothesis (Smirlock et al., 1984; Smirlock, 1985) and consistent with both hypotheses (Berger, 1995). Beyond America, Goldberg and Rai (1996) find no evidence consistent with the SCP hypothesis but do find evidence to support the EFS hypothesis for a sample of banks across 11 European countries.

The price-concentration relationship has also been analyzed as an alternative to the profit-concentration approach to discriminate between the SCP and EFS hypotheses. As the SCP hypothesis suggests that market concentration results in less favorable prices for consumers (higher loan rates and lower deposit rates), this hypothesis implies a negative deposit interest rates-concentration relationship and a positive loan rates-concentration relationship. However, if concentrated markets are dominated by more efficient firms, as suggested by the EFS hypothesis, and these firms perform competitively, then they can offer better prices to consumers and the opposite relationship would be found. Berger and Hannan (1989), Calen and Carlino (1990), Hannan (1991) and Hannan and Herger (1991) all used this methodology to obtain strong evidence in favor of the SCP hypothesis for the American market. In a sample of banks from 10 European countries, Corvoisier and Gropp (2002) also analyze the price-concentration relationship, suggesting that concentration may have substantially different effects depending on the country and on the type of product under

consideration. They observed that increasing concentration may lead to collusion and higher bank interest margins for loans and demand deposits whereas they do not find evidence in favor of the SCP hypothesis for savings and time deposits. However, Corvoisier and Gropp (2002) do not consider differences in aspects of a country's political economy to explain different results across countries.

A third methodological approach has consisted of employing the "H-statistic" as a measure of market competition. The "H-statistic" corresponds to the sum of the elasticities of the reduced form revenues with respect to factor prices. Depending on the value of this statistic, conclusions can be drawn as to whether the banking market is operating under monopolistic competition, perfect competition or monopoly. Bikker and Haaf (2002) and Claessens and Laeven (2003) relate bank market concentration to the value of the H-statistic. Both studies use an international dataset of banks, yet they obtain different results. Bikker and Haaf (2002) analyze banks from 23 countries, concluding that bank market concentration reduces bank competition, which is evidence indirectly favorable to the SCP hypothesis. However, Claessens and Laeven (2003) do not concur when they include the influence of regulatory and institutional characteristics in a sample of 50 countries, providing some evidence that more concentrated banking systems are more competitive. They also find that systems with greater foreign bank entry and fewer entry and activity restrictions are more competitive. Though such an approach can be applied to obtain evidence either for or against the SCP hypothesis, it is worthless as regards compliance with the EFS hypothesis when the two hypotheses are not mutually exclusive.

This paper is most closely related to Demirgüc-Kunt et al. (2004), who examine the impact of concentration, bank regulations, and national institutions on bank net interest margins through regression analysis, using data on over 1,400 banks across 72 countries. While concentration is positively associated with net interest margins, this relationship breaks down when controlling for regulatory impediments to competition. Furthermore, bank regulations become insignificant when controlling for institutional indicators. However, unlike our paper, Demirgüc-Kunt et al., (2004) do not control for endogeneity of bank market concentration; nor do they employ charter value as a measure of bank performance, or compare the relative importance of the SCP and EFS hypotheses as explanations of the concentration-performance relationship.

The impact of bank regulations, market orientation, state ownership and quality of the legal system and institutions on the performance and risk of the banking system, described respectively by Barth et al. (2001, 2004), Demirgüc-Kunt and Huizinga (2001), La Porta et

al. (2002) and Beck et al. (2003), may cause the roles of the SCP and EFS hypotheses as explanations of structure-performance relationship in banking to vary across countries. Thus, in line with the literature, we specifically analyze the influence on the bank concentration-performance relationship of the quality of institutions and enforceability of contracts, the legal restrictions on bank activities, the financial structure (the relative importance of banks versus markets, the extent of foreign and government ownership of banks) and the country's financial development.

Consideration of the well documented correlations between the quality of the legal system, financial structure, and financial development is essential to any analysis of the influence of these factors. Well-functioning markets, for example, rely on contracts and their legal enforceability. In contrast, weak legal systems and poor institutional infrastructure impedes market functioning. Rajan and Zingales (1998) argue that bank-based architecture survives and is more effective in the latter scenario because banks can use their power, in the absence of effective legal provision, to protect their interests. La Porta et al. (1997, 1998) find that markets develop better in countries where the rights of the minority shareholders are well protected. Because well-defined shareholder rights are found in common law countries, they conclude that it comes as no surprise that markets are larger in common-law countries than civil-law countries. Likewise, Levine (1998, 1999) finds that banks develop better in countries where the rights of the secured creditors are well protected. Hence, market-based systems work better where more stringent contractual environments are in place, and bank-based systems fare well where they are lacking. Thus, a positive correlation is observed between the quality of the legal environment, enforceability of contracts and the market orientation of the financial system.

Moreover, weak legal systems, poor property rights and fragile regulatory institutions characterize less developed countries (La Porta et al., 1998), and lead to financial underdevelopment (La Porta et al., 1997). The diversity of contractual and informational environments across countries leads one to expect a systematic pattern in the effectiveness of different financial architectures. Given the weak legal and institutional structure in financially underdeveloped countries, it appears more likely for bank-based financial architecture to prevail and be more effective in these economies. Gerschenkron (1962) thus argues that banks finance industrial expansion more effectively than markets in underdeveloped economies: powerful banks can induce firms to reveal information and pay debts better than atomistic markets. Similarly, banks that are unencumbered by regulatory restrictions on their activities can exploit economies of scale and scope in financing

industry growth. This suggests that weak institutional environments are associated with underdeveloped financial systems and basically bank-based systems. Just as it is complicated for well-oiled markets to prosper in weak institutional environments, it is also difficult for the forecasts of the EFS hypothesis to bear fruit, and a positive relationship between concentration and performance is more likely to be the outcome of the SCP hypothesis in this type of environment.

A further reason for forecasting the greater validity of the SCP hypothesis in countries with weak institutional environment, bank-based systems and underdeveloped financial systems is that there are more ties between firms and their creditors in these countries. Firm-creditor relationships are seen as an alternative market mechanism when the problems of adverse selection and moral hazard have a sizeable effect (Rajan, 1992; Petersen and Rajan, 1994). If a weak institutional environment stymies acceptable resolution of these difficulties, then bank-based systems will aim for long-term relationships with companies. However, if the information generated by the bank in the relationship cannot be verified by new lenders, the current lender acquires an informational monopoly over the firm. Greenbaum et al. (1989), Sharpe (1990) and Rajan (1992) argue that this allows the current lender to extract the rents attributable to knowing that the borrower is less risky than the average. The likelihood of banks extracting rents from the company will increase in line with enhanced market concentration (Boot and Thakor, 2000) and will favor the forecasts of the SCP hypothesis in countries where banks have more relationships with firms. If these countries have weak institutional environments, are more bank-based and are financially less developed, this will be where the SCP hypothesis can be most thoroughly verified.

The above arguments lead to our first hypothesis:

Hypothesis 1. The importance of the EFS compared to the SCP hypothesis is positively related to the quality of the contracting environment, the market orientation of the financial system and the level of financial development of the country.

In addition to the degree of market or bank-orientation of the national financial system , we also analyze a further two facets of a country's financial structure - the extent of both foreign and government bank ownership in the national banking system. Barth et al. (2004) indicate that barriers to foreign bank participation enhance bank fragility. Claessens et al. (2001) and Claessens and Laeven (2003) provide empirical evidence that for most countries greater foreign bank entry increases the level of competition of national banking markets, which in the long run may improve their functioning, with positive welfare implications for

banking customers. One spin-off of these results would be a greater role for the EFS compared to the SCP hypothesis, the larger the share of foreign ownership of banks in the market, as concentration would more likely be the outcome of the survival of the fittest.

A second hypothesis stems from the above arguments:

Hypothesis 2. The importance of the EFS compared to SCP hypothesis is positively related to foreign bank entry in the national market.

Scope of government ownership is a further aspect of a country's financial structure. The literature has focused increasingly upon the role played by government ownership on financial development (Barth et al. 2001), on growth (La Porta et al., 2002) and on bank lending (Sapienza, 2004), with results supporting a political view of government ownership that sees state-owned banks as a mechanism for pursuing the individual goals of politicians, such as maximizing employment or financing preferred enterprises. From the political view, state-owned banks are inefficient because of politicians' deliberate policy of transferring resources to their supporters (Shleifer, 1998).

However, no empirical evidence is available on the issue of whether government ownership effects the competition and efficiency levels of private banks in the national market. On the one hand, the lower efficiency of state-owned banks intrinsic to the political view would reduce the pressure of competition on private banks and would foster lower efficiency levels there too. One would therefore predict the EFS hypothesis to exert relatively less effect as government ownership of the national banking market went up. On the other hand, decreased pressure on private banks to compete, a spin-off of the less efficient state-owned banks, could come to nothing if state-owned banks compensated their inefficiency with State subsidies. More government ownership of banks might even encourage higher efficiency levels among the other banks to offset subsidies and financial aid given to their state-owned market competitors. In such circumstances, a greater relative importance of the EFS hypothesis would be forecast as government ownership increased. The existence of both arguments means that the influence of government ownership on the role of the SCP and EFS hypotheses becomes an empirical question.

Finally, the influence of regulation of bank activities on the role of the SCP and EFS hypotheses is also analyzed. The relevance of restricting bank activities on the behavior of banks has been highlighted by research demonstrating its negative influence on bank performance and stability (Barth et al., 2001, 2004; Beck et al., 2003). Claessens and

Laeven (2003) have also shown that more stringently regulated bank markets are less competitive. Different levels of regulatory stringency might thus also impinge upon the predominance of either the SCP or EFS hypotheses. For instance, if more stringent regulations restrict competition in the banking market, two different scenarios might ensue: in countries with stringent regulation, bank concentration would more likely be the result of banks enjoying monopolistic rents rather than being explained by the survival of the fittest, and a positive concentration-performance relationship would be consistent with the SCP hypothesis. On the other hand, wherever banks were given a free hand, bank concentration would more likely be brought about by the more efficient taking over the less efficient, and a positive concentration-performance relationship would be consistent with the EFS hypothesis.

Based on the above arguments, our third hypothesis is:

Hypothesis 3. The importance of the EFS compared to the SCP hypothesis is negatively related to a country's legal restrictions on bank activities.

3. Data.

Measures of bank regulations, contracting environment, financial structure and financial development for a broad cross-section of countries are required in order to evaluate the impact of political economy variables on the predominance of the SCP or EFS hypothesis. After using a wide array of measures for each political economy factor, presentation of results is organized around a single measure for each factor to avoid correlation problems, using the other measures as robustness checks. We also control for macroeconomic and bank specific variables. This section describes the proxies used for all the variables, justifies the use of each variable and explains how each proxy is calculated. A summarized description of the variables is included in the appendix.

3.1. Endogenous variables.

The Tobin's Q database and other bank-specific variables come from Worldscope, which provides financial data on stock exchange-listed banks. We use consolidated balance sheets and income statements. Since this database includes the market prices of banks stocks, we can calculate a Tobin's Q for each bank, and thus obtain a measure of bank charter value.

To calculate Tobin's Q, the market value of assets is proxied by the book value of assets minus the book value of equity minus deferred taxes plus the market value of common stocks. The replacement value of assets is proxied by the book value of assets. These values are averaged over the 1995-1999 period.

Following Demirgüc-Kunt et al. (2004), we measure bank market concentration in two ways. First, the fraction of bank assets held by the three largest commercial banks in the country (CONCA), averaged over the 1995-1999 period, is used as a measure of bank market concentration. Figures are obtained from the World Bank Database, whose base source is the Fitch IBCA's Bankscope Database. Then, the World Bank Bank Regulation Supervision Database developed in 1999 by Barth et al. (2004) is also used, with the fraction of deposits held by the five largest commercial banks in each country (CONCD) providing a second measure of bank market concentration.

All banks in the WorldScope Database for which Tobin's Q could be calculated and for which the two World Bank databases provided a measure of bank market concentration in each country were included in the analysis. After mapping information from the two databases, the final sample tally was of 276 banks in 27 countries.

3.2. Bank regulation.

Two variables from the Barth et al. (2004) database of bank regulation characteristics in different countries are used. A measure of entry restrictions is used as a predetermined variable potentially affecting bank market concentration. The entry into banking requirements variable (ENTRY) considers eight types of submissions that could potentially be considered by the banking authorities when deciding upon whether or not to grant a license[3]. Each of these types of submissions was assigned a value of 1 if it was required and a value of 0 otherwise. The entry into banking requirements variable is created by adding these eight variables together and may range in value from 0 to 8, with higher values indicating more restrictiveness.

The second regulation indicator measures regulatory restrictions on bank activities (RESTRICT) to analyze their influence on the SCP and EFS hypotheses. Average restrict

[3] These types of submissions are: 1) draft by-laws, 2) intended organizational chart, 3) first 3-year financial projections, 4)financial information on main potential shareholders, 5) background/experience of future directors, 6) background/experience of future mangers, 7) sources of funds to be used to capitalize the new bank, and 8) intended differentiation of new bank from other banks.

measures indicate whether bank activities in the securities, insurance and real estate markets, and bank ownership and control of nonfinancial firms are (1) unrestricted, (2) permitted, (3) restricted, or (4) prohibited. This indicator ranges from 1 to 4, with higher values indicating more restrictions on bank activities and nonfinancial ownership and control. Lower values of RESTRICT indicate a financial system in which banks face fewer restrictions and are therefore potentially more powerful.

3.3.Indicators of the legal system.

We follow La Porta et al. (1998) and many others when measuring the quality of the legal environment, and use the index of property rights from the Economic Freedom Index (RIGHTS). The more protection private property receives, the lower the score on a scale from 1 to 5. The score is based on the degree of legal protection of private property, the extent to which the government protects and enforces laws that protect private property, the probability that the government will expropriate private property, and the country's legal protection of private property. The index is the average for the 1995-1999 period and is obtained from the Heritage Foundation.

I also checked the robustness of results by including alternative measures of the quality of the legal and institutional environment that are used in other papers: 1) the index of law and order of the International Country Risk Guide (LAW), and 2) the indicator of the quality of institutional development in the country for 1998, calculated by Kaufman et al. (2001) as the average of six indicators: voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption (KKZ INDEX). All these variables were applied separately to the estimations so as to avoid correlation problems. Results were not significantly different to those reported in the paper using the index of property rights.

3.4. Indicators of financial structure.

Three different measures used in previous studies are defined in order to examine the influence of the financial structure on the relationship between concentration and bank charter value: measures of (i) the comparative importance of stock markets and banks, (ii) the extent of foreign ownership of banks and, (iii) the extent of state ownership of banks.

To measure the comparative importance of stock markets and banks, we use Demirgüc-Kunt and Levine's (2001) structure index, STRUCT, which is based upon data collected in the 1990s and is the average of three ratios: market capitalization over bank credit, total value traded over bank credit and total value traded over overhead costs. Higher values signify a more prominent role of markets compared to banks in the economy. As an alternative, we also use the structure-aggregate variable described by Beck and Levine (2002) and defined as the first principal component of two variables that measure the comparative activity and size of markets and banks (STRUCT-AGGR). Each of the underlying components is constructed so that higher values indicate more market-based financial systems. The first component (STRUCT–ACTIV) is the natural logarithm of the ratio of value traded to bank credit. Value traded equals the value of stock transactions as a share of national output. Bank credit equals the claims of the banking sector on the private sector as a share of GDP. The second component (STRUCT-SIZE) equals the natural logarithm of the ratio of market capitalization to bank credit. Market capitalization is defined as the value-listed shares divided by GDP, and is a measure of the size of stock markets relative to the economy. All these indexes are averaged over the 1995-1997 period and come from the Beck et al. (2001) database.

The following section reports the results obtained using the structure index (STRUCT) as a measure of the relative market orientation of a country's financial system. Results were similar when the other variables (STRUCT-AGGR, STRUCT-ACTIV and STRUCT-SIZE) were used as alternatives.

The second measure of financial structure is established by Barth et al. (2004) and defined as the fraction of the banking system's assets held by banks that are 50 percent or more foreign-owned, FOREIGN, and serves as an indicator of the scope of foreign bank ownership. The third and final financial structure indicator measures the extent of government ownership in the banking system, STATE. It is also established by Barth et al. (2004) and defined as the share of banking assets in banks that are majority owned by the government.

3.5. Indicators of financial development

We follow Levine and Zervos (1998), Levine et al. (2000) and Beck and Levine (2002), using the Finance-Aggregate index (DEVELOP) to gauge the importance of a country's

financial development in the relationship between concentration and bank charter value. This index equals the first principal component of two underlying measures of financial development. The first underlying measure (FINAN-ACTIV) is a measure of the overall activity of financial intermediaries and markets. It equals the natural logarithm of the product of private credit (the value of credits by financial intermediaries to the private sector divided by GDP) and value traded (the value of total shares traded on the stock market exchange divided by GDP). Private credit includes credits by both bank and non-bank intermediaries. The second underlying measure of financial development (FINAN-SIZE) is a measure of the overall size of the financial sector and equals the natural logarithm of the sum of private credit and market capitalization. The data to calculate these measures of financial development come from Beck et al's database (2001), averaging out the values for the 1995-1997 period. As an alternative to the finance-aggregate index, the variables FINAN-ACTIV and FINAN-SIZE were also incorporated separately into the equations. No variation of results was observed, and they are therefore not reported in the paper.

3.6. Macroeconomic Indicators

We follow Demirgüc-Kunt and Huizinga (2001), Demirgüc-Kunt et al. (2004) and Smirlock (1985), among others, when selecting the macro-economic variables that might impact upon bank charter value and bank market concentration. These are the inflaton rate (INFLATION), the growth of deposits (GROWTH), and the natural logarithm of per capita GDP (LnGDP), which are all averaged for each country over the 1995-1999 period. Demirgüc-Kunt and Huizinga (2001) and Demirgüc-Kunt et al. (2004) have shown that banks have greater margins and greater profitability in inflationary environments. The percentage growth in market deposits is employed because rapid growth should expand profit opportunities for existing banks (Smirlock, 1985; Shepherd, 1986). The natural logarithm of per capita GDP is a proxy of a country's economic development.

3.7. Bank-specific variables

Finally, bank-specific variables with a potential explanatory role in bank charter value are also controled for. These variables are the natural logarithm of the book value of total bank

assets (SIZE), the percentage of tangible assets (TANG), and the percentage of bank deposits to total bank assets (DEP).

The potential effect of these variables on bank charter value can be explained in different ways. For instance, the presence of scale economies or the greater market power inherent to larger size might lead to a positive relation between size and Tobin's Q. The percentage of tangible assets to total bank assets is included as an additional control variable to account for possible differences that might vary depending on the tangible assets of the bank, including differences in efficiency, branching policy, or size of country. Finally, the percentage of bank deposits caters for the possible influence on bank charter value of different costs of equity and debt across different banks. Demirgüc-Kunt and Huizinga (2001) have shown that well-capitalized banks have higher profitability.

Table 1 shows each variable's mean for each country in the sample, while Table 2 reports the correlation matrix for the entire sample by variables.

(Insert Table 1)

The correlations in Table 2 highlight that higher bank concentration is associated with higher entry barriers, less restrictions on bank activities, more state-owned banks, more foreign-owned banks, less financial development and stronger institutional environment in the country. On the other hand, higher bank charter value is associated with market-based countries, more foreign-owned banks, fewer state-owned banks, developed financial systems and strong institutional environments. However, there is no correlation between bank market concentration and charter value. Finally, correlations between political economy aspects coincide with those documented in the literature: market-based systems are linked to greater financial development and stronger legal systems.

(Insert Table 2)

4. A simultaneous equations model for bank charter value and bank market concentration.

As has been described in the previous section, the SCP and the EFS hypotheses imply an observationally equivalent relationship between concentration and performance, but differ as to the structural model underlying this relationship. Essentially, the SCP hypothesis

takes concentration as exogenous and maintains that high concentration allows for non-competitive behavior that results in less favorable prices for consumers and higher profits for firms. The usual form of the EFS hypothesis, on the other hand, takes bank-specific efficiencies as exogenous and maintains that these efficiencies result in both more concentrated markets and higher profits (Berger and Hannan, 1989).

As the two contrasting hypothesis suggested by the literature differ in the direction of causality, we define a simultaneous equations model to consider both causalities explicitly. Whilst the SCP hypothesis suggests that market concentration triggers better results (i.e. greater bank charter value), the EFS hypothesis holds that market concentration is the outcome of greater bank efficiency or of banks having charter value. The SCP hypothesis would thus forecast a positive bank concentration coefficient to explain bank charter value, whereas the EFS hypothesis would predict a positive bank charter value coefficient to explain bank market concentration. The simultaneous equation model estimated controlling for political economy, macroeconomic and bank-specific variables is:

$$CONC_{i,j} = \alpha_0 + \alpha_1 Q_{TOBIN\ i,j} + \alpha_2 X_{i,j} + \alpha_3 Z_{i,j} + \varepsilon_{i,j} \quad [1]$$

$$Q_{TOBIN\ i,j} = \beta_0 + \beta_1 CONC_{i,j} + \beta_2 Y_{i,j} + \beta_3 Z_{i,j} + \nu_{i,j} \quad [2]$$

The i and j subscripts indicate bank and country respectively. $CONC_{i,j}$ is the measure of banking concentration in country j that bank i belongs to. $Q_{TOBINi,j}$ is Tobin's Q for bank i in country j. $X_{i,j}$ is an exogenous regulatory variable measuring entry restriction on banks in each country, which we assume to influence bank market concentration but which has no direct influence on bank charter values. $Y_{i,j}$ is a set of three predetermined bank variables (i.e., the natural logarithm of bank assets, the percentage of tangible assets to total bank assets and the percentage of deposits to total bank assets), which are potential determinants of bank charter values, but which we assume do not influence bank market concentration. Z_j is a set of regulatory, institutional, financial structure, financial development and macroeconomic variables which potentially have an effect on both market concentration and charter values. We observe that the above system of equations satisfies the rank and order conditions for model identification (Greene, 1993) because each equation has its own predetermined variable, $X_{i,j}$ for equation [1] and $Y_{i,j}$ for equation [2]. Finally, $\varepsilon_{i,j}$ and $\nu_{i,j}$ are disturbance terms.

In the above specification, if only the SCP hypothesis holds true, the expected signs of the coefficients are: α_1 is non-significant and $\beta_1>0$. If only the EFS hypothesis holds true: $\alpha_1>0$ and β_1 is non-significant. In contrast, if $\alpha_1>0$ and $\beta_1>0$, neither of the two hypotheses may be rejected.

Since the number of observations varies widely across countries, the three-stage weighted least squares (3SWLS) procedure is employed to estimate the simultaneous equation models, using the inverse of the number of country observations for each country as the weight for each bank in that particular country. We also estimate each equation separately, by applying weighted least squares (WLS). Comparison of the results underline the bias caused by assuming exogeneity of bank concentration and charter value in the equations in which they are included as explanatory variables.

5. Results.

5.1. Political economy variables as determinants of market concentration and charter value.

Table 3 describes the results of estimating the system of equations [1] and [2] applying 3SWLS (Panel A), of estimating each equation separately by applying WLS (Panel B), and of using both measures of bank market concentration, based on deposits (COND) and bank assets (CONCA).

(Insert Table 3)

Results in Panel A are consistent with both the SCP and EFS hypotheses, since bank charter value has a statistically significant positive coefficient to explain bank market concentration, and bank market concentration has a statistically significant positive coefficient in the equation explaining bank charter value. These results do not vary regardless of the measure of market concentration that is used, and are obtained after controlling for bank regulation, quality of the legal system, financial structure, financial development and macroeconomic variables for each country.

The economic effect is also significant. For instance, using regression 1 in Table 3, if Spain was to change its bank deposit concentration (0.49) to the level of its neighboring country,

France (0.701), this would represent a one-standard deviation change in deposit bank concentration. Spain's increase in bank concentration would translate into an increase in its charter value from 2.021 to 2.51, slightly over one-half of a standard deviation increase.[4] Similarly, if the charter value of Belgium banks were to increase, for instance, to the Netherlands's level (1.432 to 2.238), which represents slightly less than one standard deviation increase, this would lead to an increase of bank deposit concentration from 0.75 to 0.82, almost one-third of a standard deviation increase.

However, the CONC and Q_{TOBIN} coefficients in the WLS estimations described in Panel B yield different results. Only partial support is provided for the SCP hypothesis, since market concentration, measured as a fraction of deposits held by the five largest banks in the country (CONCD), has a positive influence on Tobin's Q but not vice-versa. Even when market concentration is measured as the fraction of bank assets held by the three largest commercial banks in the country (CONCA), no support is forthcoming for either the SCP or EFS hypotheses after controlling for a country's political economy aspects. Such differences in the Q_{TOBIN} and CONC coefficients between estimations in Panels A and B underline the importance of considering the endogeneity of bank market concentration, and point to the potential bias of estimations based on an assumption that this variable is exogenous.

If we now focus on the 3SWLS estimations, we observe the relevance of political economy aspects in explaining bank market concentration and charter values. As expected, results indicate that more stringent entry restrictions on banks increase bank market concentration. Greater restrictions on becoming involved in non-traditional activities (securities, insurance, real estate) and restrictions on the bank's ability to own and control non-financial firms reduce bank market concentration, as is shown by the negative coefficients of RESTRICT in the concentration equations. The negative coefficients of RIGHTS, STRUCT and STATE indicate respectively that the lower the protection of property rights is, the more market-orientated a country's financial system is, and also that the greater the state ownership of banks is, the lower bank market concentration will be. The positive coefficient of FOREIGN in the CONCA equation indicates that the presence of foreign shareholders in bank ownership increases market concentration. FOREIGN also has an indirect positive influence on market concentration through its positive effect on Tobin's Q. The level of a country's financial development does not have a statistically significant

[4] Only the direct effect is described, as the reduced form of the system of equations would have to be estimated for the total effect to be known.

influence on either of Panel A's bank market concentration equations. However, it has an indirect positive influence on bank concentration through its positive effect on Tobin's Q.

The next point to be considered is the influence of macroeconomic variables on bank concentration. A higher growth rate of total deposits in a country and a higher per capita GDP are associated with lower bank market concentrations, whereas the inflation rate fails to exert any statistically significant influence on market concentration.

As bank market concentration increases Tobin's Q, the above-mentioned determinants of bank concentration also have an indirect impact on bank charter value. Furthermore, higher charter values are also observed to coincide not only with a greater presence of foreign shareholders in bank ownership, FOREIGN, but also with higher levels of financial development in the country, DEVELOP. However, the degree of restrictions on bank activities (RESTRICT), the quality of protection of property rights in the country (RIGHTS), the relative importance of markets versus banks (STRUCT), and the fraction of banking assets majority-owned by the government (STATE), are not seen to have statistically significant coefficients to explain bank charter values after filtering out the indirect effect that these factors have via bank market concentration.

Finally, the ratio of tangible assets (TANG) is a bank-specific variable that is relevant to explaining lower charter value, while growth rate of total deposits in the country (GROWTH) has a positive influence on charter value.

5.2. The influence of political economy variables on the SCP and EFS hypotheses.

In order to test whether the relative importance of the SCP and EFS hypotheses varies across countries as a function of differing bank regulations, quality of the legal systems, financial structures and financial development, we estimated the system of simultaneous equations defined above, interacting bank concentration and charter values with each of the variables measuring political economy aspects. The coefficients of each of the interaction terms will point to how the respective facets of the political economy mould the relationship between Q_{TOBIN} and bank concentration. The model estimated is:

$$CONC_{i,j} = \gamma_0 + \gamma_1 Q_{TOBIN\,i,j} + \gamma_2 X_{i,j} + \gamma_3 Z_{i,j} + \gamma_4 Z_{i,j} CONC_{i,j} + \xi_{i,j} \quad [3]$$

$$Q_{TOBIN\,i,j} = \theta_0 + \theta_1 CONC_{i,j} + \theta_2 Y_{i,j} + \theta_3 Z_{i,j} + \theta_4 Z_{i,j} Q_{TOBIN\,i,j} + \varsigma_{i,j} \quad [4]$$

Results obtained by applying 3SWLS are presented in Panel A of Table 4 below while those for WLS are in Panel B.

(Insert Table 4)

The interaction terms of Q_{TOBIN}xRESTRICT and Q_{TOBIN}xRIGHTS show negative coefficients. Furthermore, Q_{TOBIN}xSTRUCT presents a negative coefficient when the concentration measure is based on the fraction of assets held by the three largest banks in the country. These three negative coefficients respectively highlight how the validity of EFS hypothesis forecasts decreases as restrictions on bank activity increase, as the quality of protection of rights in a country drops, and as the weight of markets compared to banks in the national financial system increases.

The enhanced validity of the EFS hypothesis in less restricted banking systems and in good quality legal environments is consistent with the enhanced competition described by Claessens and Laeven (2003) in markets that are more lax on bank activities, and it also supports the view that good enforceability of contracts encourages more competitive markets instead of the oligopolistic behavior suggested by the SCP hypothesis.

The economic significance of the effects described in the previous paragraphs is, however, very different. RESTRICT carries major economic significance, since it might even totally offset the positive effect of charter value on bank concentration in countries with stringent legal restrictions. Thus, for instance, using regression 2 and accounting for the interaction term Q_{TOBIN}xRESTRICT, the positive influence of Q_{TOBIN} on CONCA would be cancelled out in countries with a value of 3 or 4 for RESTRICT.

The economic significance of the influence of RIGHTS on EFS hypothesis-based forecasts is lower than that of RESTRICT, as a worsening quality of protection of rights fails to completely cancel out the positive influence of charter value on bank concentration. For instance, using regression 2 and those countries in the sample with the poorest quality of contracting environment, (where RIGHTS has a value of 4), one standard-deviation

increase in Q_{TOBIN} (0.878) will still induce an increase in bank concentration of 0.849, which is seven times the standard deviation of bank asset concentration in the sample.

The reducing effect of STRUCT on EFS hypothesis forecasts has less economic effect than both RIGHTS and RESTRICT, and is only statistically significant in the CONCA equation. For example, using regression 2 and the highest value of STRUCT in the sample (Malaysia, which stands at 2.93), one standard-deviation increase in Q_{TOBIN} will still trigger an important economic effect after accounting for the interaction term Q_{TOBIN}xSTRUCT, which stands at 1.281, ten times the standard deviation of bank concentration.

The interaction terms of Q_{TOBIN} with FOREIGN, STATE and DEVELOP have positive coefficients, thereby highlighting the greater validity of the EFS hypothesis. The effect of the EFS hypothesis' arguments increases in proportion to the share of assets of banks that are majority-owned by foreign shareholders and by the government, and also in line with the greater development of a country's financial system. The fact that EFS forecasts have greater validity the larger the foreign ownership share of banks in the country is consistent with both the increase of competition as foreign bank entry into the national market increases, described by Claessens et al. (2001), and with our second hypothesis. The enhanced validity of the EFS hypothesis in the private banking sector the larger the government ownership of banks in the national market is a new result brought to light in this paper. It would be consistent with a positive effect of government ownership on the efficiency of a nation's private banks. Such improved efficiency might stem from the need to compensate subsidies and financial aid provided to state-owned banks that the private banks compete with.

The positive effect of financial development on the EFS hypothesis is only statistically significant when concentration is measured in terms of bank assets and its economic significance is lower than that of FOREIGN and STATE.

The influence of political economy variables on the relative roles of the SCP and EFS hypotheses also requires an analysis of how these variables affect the influence of bank concentration on Tobin's Q. The coefficients of each of the interaction terms of the bank concentration equation are therefore considered next.

The negative coefficients of CONCxRESTRICT and CONCxSTRUCT respectively indicate that the SCP hypothesis has less validity the greater the restrictions on non-traditional activities for banks are, and the more market-oriented the national financial

system is. The statistically significant economic significance of the reducing effect of CONCxRESTRICT on the SCP hypothesis is similar to the effect observed for the reducing effect of Q_{TOBIN}xRESTRICT on the EFS hypothesis in the Q_{TOBIN} equation. Using regression 2, an increase in bank concentration would only increase Tobin's Q in countries with a score of 1 in the RESTRICT variable, whereas it would even reduce Tobin's Q in countries with a score of 4 for the RESTRICT variable. This result, obtained by interacting RESTRICT with CONC, together with the above-mentioned result for the interaction of RESTRICT with Q_{TOBIN} leads to the conclusion that greater legal restrictions limit the validity not only of both the EFS and SCP hypotheses but also the positive relation between Tobin's Q and bank concentration.

However, the statistical and economic significance of the reducing effect of STRUCT on the SCP hypothesis is greater than the reducing effect of the interaction of this variable on the EFS hypothesis. For instance, applying the results of regression 2 in the most market-oriented country (Malaysia), one standard-deviation increase in Q_{TOBIN} would lead to an increase in bank concentration of seven times its standard deviation in the sample. However, one standard-deviation of CONCA does not induce any statistically significant increase in Q_{TOBIN}. The different degree of effect of the interaction terms of STRUCT point to the fact that a higher market orientation in the country increases the relative importance of the EFS hypothesis.

The influence of financial development is less clear-cut, as CONCxDEVELOP only yields a statistically significant positive coefficient when bank concentration is measured as the fraction of deposits held by the five largest commercial banks in the country (CONCD).

The non-significant coefficients of CONCxRIGHTS, CONCxFOREIGN and CONCxSTATE respectively show that the influence of bank concentration on charter value does not seem to vary according to the quality of the legal environment and enforceability of contracts; nor does the fraction of bank assets held by banks that are majority-owned by foreign shareholders and by the government seem to play a part.

To sum up, when Q_{TOBIN} and CONC equation analyses are combined, the validity of the EFS hypothesis increases, to the detriment of the SCP hypothesis, as the quality of the institutional environment and the weight of the markets compared to banks increase. This also holds true for the enhanced share of bank assets in banks that are majority-owned by foreign shareholders and by the government. Such results are consistent with hypotheses 1

and 2 respectively, for they support the view that good enforceability of contracts and higher foreign bank entry foster more competitive markets.

More stringent limitations on bank activities reduce the positive relation between market concentration and bank charter values, thereby also reducing the validity of both the EFS and SCP hypotheses. This result does not support this paper's hypothesis 3, according to which fewer restrictions on bank activities were assumed to stimulate more competitive banking markets - as the evidence of Claessens and Laeven (2003) suggests - as they were also assumed to increase the explanatory power of the EFS hypothesis. Finally, results are ambiguous as regards the influence of financial development, as they depend on how bank concentration is measured.

The WLS model estimations yield results that are basically similar to 3SWLS results. They show that legal restrictions on banking activities limit both the positive relation between bank concentration and charter value and the validity of both SCP and EFS forecasts. When markets predominate over banks, the explanatory power of the SCP hypothesis drops. Greater development of the financial system also reduces the validity of EFS hypothesis forecasts whilst increasing the power of SCP forecasts.

As for macroeconomic variables, the growth of deposits continues to prove itself to be the only determinant of bank market concentration with a negative influence. The inflation rate in Table 4 substitutes growth of deposits in Table 3 as a factor exerting a positive influence on bank charter value. The likelihood of banks obtaining greater profits in inflationary environments has already been highlighted by Demirgüc-Kunt and Huizinga (2001).

6. Conclusions

This paper analyzes the relative roles of the SCP and EFS hypotheses in explaining how the positive performance-concentration relationship in banking varies in line with bank regulations, institutions, financial structure and the financial development of individual countries. Tests on a sample of 276 banks in 27 countries provide evidence of the influence of these facets of political economy. The results are consistent with the coexistence of the SCP and EFS hypotheses, as a higher concentration favors a higher charter value and a higher charter value favors a higher bank concentration. Certain aspects of political economy are determinants of national bank market concentration and bank charter value.

Lower bank market concentration is associated with stricter regulations on bank activities, poorer quality of the institutional environment, a lower presence of foreign shareholders in bank ownership, higher government-ownership of banks, higher market orientation of the financial system and less developed financial systems. Higher charter value of banks is observed in those countries with a higher presence of foreign shareholders in bank ownership and more highly developed financial systems.

Results also suggest that the explanatory power of EFS forecasts, compared to SCP forecasts, increases as the quality of the legal system and enforceability of contracts both increase, as the weight of the markets compared to banks increases, and as share of banking assets in banks that are majority-owned by foreign owners and by the government goes up. However, greater legal restrictions on the activities banks are allowed to involve themselves in limit the validity of both the EFS and SCP hypotheses, as well as the positive relation between concentration and bank charter value.

Such alternance in the relative roles of the two hypotheses considered here as explanations of the origin of bank market concentration in the national market has a number of implications as regards optimal antitrust policy. In countries where SCP is predominant and, therefore, where higher concentration spawns oligopolistic behavior, antitrust enforcement would be socially beneficial. In contrast, wherever the EFS hypothesis predominates, i.e. where a higher concentration is the consequence of higher banking efficiency, policies that penalize or thwart mergers would have a major social cost attached to them.

As the relative roles of the SCP and EFS hypotheses vary from country to country depending on aspects of political economy, an important policy implication of this paper is that antitrust regulation should differ across countries, in line with the national characteristics of the banking regulations, the quality of institutions, financial structure and financial development; it should also compliment other policies.

Appendix. Definition and sources of the variables

	Variable	*Description and source*
	CONCD	Fraction of deposits held by the five largest commerial banks in each country as of end-1999. Source: Barth, Caprio and Levine (2001).
	CONCA	Fraction of assets held by the three largest commercial banks in each country, average 1995-1999 period. Source: Fitch IBCA's Bankscope Database..
	Q_{TOBIN}	The ratio of the market value of assets to their replacement value at the end of the most recent fiscal year. The market value of assets is proxied by the book value of assets minus the book value of equity minus deferred taxes plus the market value of common stock. The replacement value of assets is proxied by the book value of assets. Source: Worlscope (2001).
Regulatory variables	ENTRY	The sum of eight dummy variables. Each dummy variable considers one type of submission that could be potentially considered by the banking authorities when deciding upon whether or not to grant a license. If the type of submission considered is required, the dummy variable takes a value of 1 and a value of 0 otherwise. The types of submissions are: 1) draft by-laws, 2) intended organizational chart, 3) first 3-year financial projections, 4)financial information on main potential shareholders, 5) background/experience of future directors, 6) background/experience of future mangers, 7) sources of funds to be used to capitalize the new bank, and 8) intended differentiation of new bank from other banks. Source: Barth, Caprio and Levine (2001).
	RESTRICT	A measure of a bank's ability to engage in activities other than banking (including securities, insurance and real estate). A higher score indicates more restrictions on banks to engage in such activities. Source: Barth, Caprio and Levine (2001).
Institutional environment variables	RIGHTS	Index of property rights from the economic freedom index on a scale from 1 to 5, average 1995-1999 period. A lower score indicates better protection of property rights. Source: Heritage Foundation.
	RULE OF LAW	Index of law and order of the International Country Risk Guide (ICRG). This ranges from 0 to 6, with a higher figure indicating a better quality and enforcement of the legal system, average 1995-1999 period. Source: ICRG published by the Political Risk Service Group.
	KKZ INDEX	An indicator of the quality of institutional development in the country. Calculated as the average of six indicators: voice and accountability, political stability, government efectiveness, regulatory quality, rule of law, and control and corruption. Average for the 1998 period. Source: Kaufmann, Kraay, Zoido-Lobaton (2001).
Financial structure variables	STRUCT	Index of financial structure by Demirgüc-Kunt and Levine based on measures of size, activity and efficiency. A higher value of the index indicates more market-based financial systems. Source: Demirgüc-Kunt and Levine (2001).
	STRUCT-ACTIV	The natural logarithm of (total value traded/ commercial bank claims on the private sector), average 1995-1997 period. Source: Beck, Demirgüc-Kunt and Levine (2001).
	STRUCT-SIZE	The natural logaritm of (market capitalization/ commercial bank claims on the private sector), average 1995-1997 period. Source: Beck, Demirgüc-Kunt and Levine (2001).
	STRUCT-AGGR	The first principal component of STRUCT-ACTIV and STRUCT-SIZE, average 1995-1997 period. Source: Beck, Demirgüc-Kunt and Levine (2001).
	FOREIGN	Share of banking assets in banks that are majority owned by foreign shareholders. Source: Barth, Caprio and Levine (2001).
	STATE	Share of banking assets in banks that are majority owned by the government. Source: Barth, Caprio and Levine (2001).
Financial development variables	FINAN-ACTIV	The natural logarithm of (total value traded times financial institution claims on the private sector as share of GDP), average 1995-1997 period. Source: Beck, Demirgüc-Kunt and Levine (2001).
	FINAN-SIZE	The natural logarithm of (market capitalization plus financial institution claims on the private sector as share of GDP), average 1995-1997 period. Source: Beck, Demirgüc-Kunt and Levine (2001).
	DEVELOP	The first principal component of FINAN-SIZE and FINAN-ACTIV, average 1995-1997 period. Source: Beck, Demirgüc-Kunt and Levine (2001).
Macroeconomic variables	INFLATION	Average over the 1995-99 period of the annual change in the consumer price index. Source: International Financial Statistics. IMF.
	GROWTH	Average over the 1995-99 period of the growth rate of the total deposits in the country. Source: International Financial Statistics. IMF.
	LN (PER CAPITA GDP)	The natural logarithm of the average of the per capita GDP over the 1995-99 period. Source: International Financial Statistics. IMF.
Bank variables	SIZE	The natural logarithm of book value of total bank assets, average 1995-99 period. Source: Worldscope (2001).
	TANG	The ratio of book value of tangible assets to total bank assets, average 1995-99 period. Tangibiliy of assets is measured as the ratio of net property, plant and equipment to total assets. Source: Worldscope (2001).
	DEBT	The ratio of deposits to total bank assets, average 1995-1999 period. Source: Worldscope (2001).

7. References

Barth, J.R., G. Caprio Jr. and R. Levine, 2001, The regulation and supervision of banks around the world: a new database" in Robert E. Litan and Richard Herring, Editors, *Integrating emerging market countries into the global financial system*, Brookings-Wharton Papers on Financial Services, Brookings Institution Press.

Barth, J.R., G. Caprio Jr. and R. Levine, 2004, Bank regulation and supervision: What works best?, Journal of Financial Intermediation, Forthcoming.

Beck, T. and R. Levine, 2002, Industry growth and capital allocation: does having a market-or bank-based system matter?, Journal of Financial Economics 64, pp. 147-180.

Beck, T., A. Demirgüc-Kunt, and R. Levine, 2003, Bank concentration and crises, Working paper, January.

Berger, A.N., 1995, The profit-structure relationship in banking-test of market-power and efficient-structure hypotheses, Journal of Money, Credit, and Banking 27, pp.405-431.

Berger, A.N. and T. H. Hannan, 1989, The price-concentration relationship in banking, Review of Economics and Statistics 71, pp.291-299.

Bikker, J.A. and K. Haaf, 2002, Competition, concentration and their relationship: An empirical analysis of the banking industry, Journal of Banking and Finance 26, pp. 2191-2214.

Boot A.W. and A. Thakor, 2000, Can relationship banking survive competition?, Journal of Finance 55, 679-713.

Calem P.S. and G. A. Carlino, 1990, The concentration/conduct relationship in bank deposit markets, Review of Economics and Statistics ,pp. 268-276.

Cebenoyan, S., E.S. Cooperman and C.A. Register, 1999, Ownership structure, charter value, and risk-taking behavior of thrifts, Financial Management 28, pp. 43-60.

Claessens, S., A. Demirgüc-Kunt and H. Huizinga, 2001. How does foreign entry affect domestic banking markets?. Journal of Banking and Finance 25, 891-911.

Claessens, S. and L. Laeven, 2003, What drives bank competition? Some international evidence, World Bank Policy Research Working Paper 3113, August.

Corvoisier, S. and R. Gropp, 2002, Bank concentration and retail interest rates, Journal of Banking and Finance 26, pp. 2155-2189.

Demirgüc-Kunt, A. and H. Huizinga, 2001. Financial structure and bank profitability, in *Financial Structure and Economic Growth*, edited by Demirgüc-Kunt, A. and R. Levine, The MIT Press, Cambridge, Massachusetts, London, 2001.

Demirgüc-Kunt, A., L. Laeven and R. Levine, 2004, Regulations, market structure, institutions, and the cost of financial intermediation, Journal of Money, Credit and Banking, Forthcoming.

Demsetz, R., M. Saidenberg and P. Strahan, 1996, Banks with something to lose: the disciplinary role of franchise value, Federal Reserve Bank of New York Economic Policy Review 2, pp. 1-14.

Fisher, F. and J. McGowan, 1983, On the misuse of accounting rates of return to infer monopoly profits, American Economic review 73, pp.82-97.

Gerschenkron, A., 1962, Economic backwardness in historical perspective. The Belknap Press of Harvard University Press, Cambridge, MA.

Goldberg, L.G. and A. Rai, 1996, The structure-performance relationship for European banking, Journal of Banking and Finance 20, pp. 745-771.

Greenbaum, S., G. Kanatas and I. Venezia, 1989, Equilibrium loan pricing under the bank client relationship, Journal of Banking and Finance 13, pp. pp.221-235.

Greene, W., 1993, Econometric Analysis, Macmillan Press, New York.

Grossman, R., 1992, Deposit insurance, regulation and moral hazard in the thrift industry: evidence from the 1930s, American Economic Review 82, pp.800-821.

Hannan, T.H., 1991, Bank commercial loan markets and the role of market structure: evidence from surveys of commercial lending, Journal of Banking and Finance 15, pp. 133-149.

Hannan T.H. and A.N. Berger, 1991, The rigidity of prices: evidence from the banking industry, American Economic Review 81, pp. 938-945.

Kaufman, D. Kraay and P. Zoido-Lobaton, 2001. Governance matters II: update indicators for 2000/01. Mimeo, Worl Bank.

Keeley, M. C.,1990, Deposit Insurance, risk, and market power in banking, American Economic Review 80, 1183-1200.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer and R.W. Vishny, 1997, Legal determinants of external finance, Journal of Finance 52, pp. 1131-1150.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer and R.W. Vishny, 1998. Law and Finance. Journal of Political Economy 106, 1113-1155.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer and R.W. Vishny, 1999. The quality of government. Journal of Law, Economics and Organization 15, 222-279.

La Porta, R., F. Lopez-de-Silanes and A. Shleifer, 2002, Government ownership of banks, Journal of Finance 57, pp.265-301.

Levine, R. and S. Zervos, S., 1998, Stock markets, banks, and economic growth, American Economic Review 88, pp. 398-428.

Levine, R., N. Loayza and T. Beck, 2000, Financial intermediation and growth: Causality and causes, Journal of Monetary Economics 46, pp. 31-77.

MacFarland, H., 1988, Evaluating q as an alternative to the rate of return in measuring profitability, Review of Economics and Statistics 70, pp. 614-622.

Petersen, M.A., R.G. Rajan, 1994, The benefits of lending relationships: Evidence from small business data, Journal of Finance 49, pp. 3-38.

Rajan, R.G., 1992, Insiders and outsiders: The choice between informed and arm's-length debt. Journal of Finance 47, pp. 1367-1400.

Rajan, R.G. and L. Zingales, 1998, Which capitalism? Lessons from the East Asian crisis, Journal of Applied Corporate Finance 11, pp. 40-48.

Sapienza, P., 2004, The effects of government ownership on bank lending, Journal of Financial Economics, Forthcoming.

Sharpe, S.A., 1990, Asymmetric information, bank lending and implicit contracts: a stylized model of customer relationships, Journal of Finance 45, pp. 1069-1087.

Shleifer, A., 1998, State versus private ownership, Journal of Economic Perspectives 12, pp. 133-150.

Shepherd, W.G., 1986, Tobin's q and the structure-performance relationship:comment, American Economic Review 76, pp.1205-1210.

Smirlock, M., 1985, Evidence on the (non) relationship between concentration and profitability in banking, Journal of Money, Credit, and Banking 17, pp. 69-83.

Smirlock, M., T. Gilligan and W. Marshall, 1984, Tobin's q and the structure.performance relationship, American Economic Review 74, pp. 1051-1060.

Table 1. Mean values of the variables

	# Banks	CONCD	CONCA	Q_{TOBIN}	ENTRY	RESTRICT	RIGHTS	RULE OF LAW	KKZ INDEX	STRUCT	STRUCT-ACTIV	STRUCT-SIZE
Argentina	4	0.48	0.36	1.457	6	2.5	3	5	0.326	-0.25	-1.582	-0.216
Australia	10	0.725	0.63	1.753	8	2	1	6	1.627	0.5	-0.281	0.343
Austria	5	0.38	0.44	1.304	8	1.25	1	6	1.573	-0.73	-2.190	-1.846
Belgium	3	0.74	0.75	1.432	8	2.5	1	5.4	1.210	-0.66	-2.122	-0.509
Brazil	7	0.576	0.45	1.421	8	2.5	3	2.4	0.054	0.65	-0.441	-0.022
Canada	8	0.757	0.56	1.441	8	2.25	1	6	1.622	0.41	-0.39	0.172
Chile	2	0.594	0.48	1.671	3	2.75	1	5	1.084	0.25	-1.364	0.699
Denmark	4	0.786	0.71	1.068	8	1.75	1	6	1.741	0.15	-0.355	0.277
France	4	0.701	0.33	1.217	6	2	2	5.4	1.264	-0.17	-1.247	-0.774
Germany	7	0.120	0.32	1.227	4	1.75	1	6	1.574	-0.1	-1.061	-1.286
India	2	0.420	0.37	1.243	6	3	3	4	-0.067	-0.14	-1.413	0.450
Indonesia	7	0.529	0.51	0.917	7	3.5	4	3.4	-0.696	-0.5	-1.336	-0.500
Italy	24	0.251	0.30	1.464	8	2.25	2	6	0.886	-0.57	0.347	-1.700
Japan	74	0.310	0.27	1.357	6	3.25	2	6	1.153	-0.19	-1.452	-0.500
Korea	4	0.475	0.37	0.854	7	2.25	1		0.517	0.89	-0.406	-0.574
Malaysia	6	0.300	0.45	1.951	7	2.25	3	4.4	0.483	2.93	0.483	1.043
Netherlands	3	0.880	0.81	2.238	8	1.5	1	6	1.848	0.11	-0.274	-0.024
Peru	3	0.812	0.64	1.468	8	2	4	3	-0.170	0.16	-0.906	0.237
Philippines	8	0.456	0.40	1.350	7	2	3	4	0.039	0.71	-0.496	0.633
Portugal	2	0.413	0.46	1.869	7	2	2	5.4	1.267	-0.75	-2.202	-1.294
South Africa	3	0.850	0.78	2.929	8	1.5	3	3.2	0.264	0.83	-1.043	1.103
Spain	14	0.490	0.54	2.021	8	1.75	2	4.8	1.241	0.02	-0.405	-0.553
Switzerland	11	0.650	0.77	1.505	8	1.5	1	6	1.873	2.03	-0.354	-0.252
Thailand	7	0.748	0.66	2.053	8	2.25	2	5	0.204	0.39	-1.377	-0.434
Turkey	4	0.500	0.55	4.015	7	3	3	4	-0.220	1.23	0.615	0.176
USA	48	0.208	0.20	2.498	7	3	1	6	1.532	1.96	0.413	0.466
Venezuela	2	0.638	0.53	2.008	8	2.5	4	4	-0.467	-0.15	-1.133	0.327

Table 1 (continued)

	STRUCT-AGGR	FOREIGN	STATE	FINANCE ACTIV	FINANCE SIZE	DEVELOP	INFLATION	GROWTH OF DEPOSITS	SIZE	TANG	DEBT	LN(PER CAPITA GDP)
Argentina	-0.899	0.49	0.3	-5.003	-3.637	-4.320	0.765	10.228	15.679	0.027	56.138	8.972
Australia	0.031	0.171	0	-0.880	-0.256	-0.568	1.963	10.919	16.780	0.011	67.606	16.834
Austria	-2.018	0.051	0.041	-2.274	-1.930	-2.102	1.375	11.031	15.968	0.017	37.686	10.191
Belgium	-1.316	0	0	-2.987	-1.375	-2.181	1.439	3.637	17.931	0.011	33.616	10.126
Brazil	-0.231	0.167	0.515	-2.947	-2.527	-2.737	19.365	25.241	17.608	0.037	38.134	8.382
Canada	-0.068	0	0	-0.971	-0.490	-0.731	1.603	10.516	18.355	0.009	63.157	9.926
Chile	-0.333	0.320	0.117	-2.461	-0.398	-1.429	6.167	17.473	15.549	0.024	60.321	8.439
Denmark	-0.039	0	0	-2.734	-2.102	-2.418	2.153	6.279	16.486	0.017	53.461	10.404
France	-1.011	0	0	-1.642	-1.691	-1.406	1.232	5.781	19.459	0.009	40.230	10.129
Germany	-1.174	0.042	0.420	-0.981	-1.206	-1.094	1.309	10.416	19.117	0.006	29.989	10.204
India	-0.481	0	0.800	-4.326	-2.463	-3.394	5.714	11.389	16.498	0.007	79.294	6.018
Indonesia	-0.918	0.070	0.440	-2.671	-1.835	-2.253	20.455	19.911	15.547	0.027	77.688	6.722
Italy	-0.677	0.050	0.170	-0.989	-3.037	-2.013	2.985	6.370	16.693	0.018	42.808	9.936
Japan	-0.976	0.059	0.011	-0.589	0.362	-0.114	-0.675	10.549	16.985	0.015	90.925	10.465
Korea	-0.490	0	0.297	-0.677	-0.845	-0.761	4.441	6.215	17.334	0.018	60.235	9.094
Malaysia	0.763	0.180	0	0.570	1.129	0.850	3.883	9.090	16.028	0.013	72.984	8.251
Netherlands	-0.149	0	0.059	0.251	0.500	0.376	2.054	14.380	16.241	0.010	63.987	10.099
Peru	-0.334	0.404	0.025	-4.575	-3.432	-4.004	8.390	28.629	13.919	0.036	71.056	7.687
Philippines	0.068	0.128	0.121	-2.139	-1.010	-1.575	7.856	25.887	14.782	0.039	69.049	6.891
Portugal	-1.748	0.117	0.208	-3.212	-2.303	-2.758	2.912	15.344	16.339	0.032	71.336	9.271
South Africa	0.030	0.052	0	-1.154	0.991	-0.081	7.308	23.880	17.351	0.016	63.634	7.878
Spain	-0.479	0.110	0	-1.077	-1.225	-1.151	2.873	13.673	16.066	0.025	58.742	9.561
Switzerland	-0.303	0.085	0.150	0.862	0.964	0.913	0.803	15.326	16.567	0.013	57.465	10.557
Thailand	-0.905	0.072	0.307	-1.104	-0.161	-0.632	5.118	0.290	16.072	0.026	81.801	7.742
Turkey	0.395	0.663	0.350	-3.151	-3.590	-3.371	80.713	86.309	15.157	0.040	56.149	7.756
USA	0.440	0.047	0	0.515	0.569	0.542	2.354	19.153	16.853	0.014	68.126	10.342
Venezuela	-0.403	0.337	0.049	-6.119	-4.659	-5.389	46.866	51.059	14.537	0.058	66.559	8.116

Table 2. Correlation matrix

Variable definitions and sources are provided in the appendix

	CONCD	CONCA	Q_{TOBIN}	ENTRY	RESTRICT	RIGHTS	RULE OF LAW	KKZ INDEX	STRUCT	STRUC-ACTIV	STRUC-SIZE
CONCD											
CONCA	0.775***										
Q_{TOBIN}	-0.054	-0.034									
ENTRY	0.472***	0.531***	0.143**								
RESTRICT	-0.515***	-0.687***	0.021	-0.530***							
RIGHTS	0.147**	0.085	-0.140**	-0.011	0.152**						
RULE OF LAW	-0.404***	-0.374***	-0.023	-0.227***	0.166***	-0.765***					
KKZ INDEX	-0.184***	-0.114	0.079	-0.060	-0.125**	-0.899***	0.816***				
STRUCT	-0.110	-0.028	0.408***	0.156***	-0.020	-0.342***	-0.006	0.242***			
STRUCT-ACTIV	-0.196***	-0.098	0.379***	-0.062	0.165***	-0.282***	0.045	0.166***	0.657***		
STRUCT- SIZE	-0.264***	0.098	0.321***	0.021	0.145**	-0.043	-0.264***	-0.006	0.736***	0.314***	
STRUCT-AGGR	-0.016	-0.009	0.433***	0.307***	-0.030	-0.211***	-0.122***	0.106	0.855***	0.839***	0.780***
FOREIGN	0.213**	0.225**	0.06***	0.013	-0.063	0.460***	-0.475***	-0.460***	0.064	0.051	0.210***
STATE	0.120**	0.201**	-0.129**	-0.012	-0.140**	0.394***	-0.542***	-0.585***	-0.175***	-0.062	-0.235***
FINAN –ACTIV	-0.415***	-0.309***	0.178***	-0.064	0.165***	-0.629***	0.615***	0.658***	0.541***	0.403***	0.159***
FINAN-SIZE	-0.174***	-0.171***	0.109	-0.309***	0.328***	-0.447***	0.417***	0.517***	0.498***	-0.046	0.473***
DEVELOP	-0.308***	-0.25***	0.151**	-0.201***	0.264***	-0.567***	0.543***	0.620***	0.549***	0.181***	0.340***
CORRUPT	-0.113	-0.054	0.092	-0.051	-0.114	0.445***	-0.552***	-0.570***	0.265***	0.171***	0.061
INFLATION	0.194***	0.215***	0.266***	0.158***	0.026	0.287***	-0.447***	-0.342***	0.080	0.191***	0.150***
GROWTH OF DEPOSITS	0.049	0.057	0.381***	0.059	0.094	-0.603***	0.626***	0.687***	0.320***	0.283***	0.393***
LN (PER CAPITA GDP)	-0.021	-0.036	0.002	0.021	-0.020	-0.283***	0.236***	0.280***	0.018	0.074	-0.025
SIZE	-0.075	-0.127**	0.008	-0.187***	0.051	0.512***	-0.556***	-0.553***	-0.030	-0.033	-0.116
TANG	0.174***	0.147**	-0.018	0.193***	-0.067	0.151***	0.160***	-0.031	-0.091	-0.024	0.057
DEBT	-0,141**	-0.255***	-0.034	-0.360***	0.620***				-0.024	-0.363***	0.244***

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

Table 2. (Continued)

	STRUCT-AGGR	FOREIGN	STATE	FINAN-ACTIV	FINAN-SIZE	DEVELOP	INFLATION	GROWTHD	LN (PER CAPITA GDP)	SIZE	TANG
STRUCT-AGGR											
FOREIGN	0.154**										
STATE	-0.176***	0.234***									
FINAN- ACTIV	0.356***	-0.534***	-0.486***								
FINAN-SIZE	0.241***	-0.424***	-0.235***	0.783***							
DEVELOP	0.314***	0.154***	-0.543***	0.940***	0.948***						
INFLATION	0.212***	0.693***	0.425***	-0.461***	-0.467***	-0.491***					
GROWTH OF DEPOSITS	0.411***	0.678***	0.167***	-0.260***	-0.209***	-0.248***	0.878***				
LN (PER CAPITA GDP)	0.035	-0.159***	-0.470***	0.387***	0.306***	0.366***	-0.367***	-0.274***			
SIZE	0.203***	0.062	-0.412***	0.187***	-0.116	0.170***	0.298***	-0.153**	-0.174***		
TANG	-0.088	-0.272***	-0.006	-0.493***	0.057	-0.481***	-0.552***	0.482***	0.426***	-0.372***	
DEBT	0.017	0.461***	0.264***	0.211***	0.532***	0.399***	-0.025	-0.171***	-0.063	-0.187***	0.004
	-0.099	-0.077	-0.337***								

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

Table 3
Charter value and bank market concentration

Panel A shows the three stage weighted least squares (3SWLS) estimations of model [1]. Panel B shows the weighted least squares (WLS) of model [1]. The inverse of the number of country observations for each country is the weight for each bank in the country. Variable definitions and sources are provided in Table 1. T-statistics are shown in parentheses.

		Panel A: 3SWLS				Panel B: WLS			
		(1)		(2)		(3)		(4)	
		CONCD	Q_{TOBIN}	CONCA	Q_{TOBIN}	CONCD	Q_{TOBIN}	CONCA	Q_{TOBIN}
	INTERCEPT	0.390**	0.422	0.436***	0.229	0.486***	2.733***	0.519***	2.058**
		(2.36)	(0.43)	(3.88)	(0.18)	(3.32)	(3.22)	(5.28)	(2.25)
	CONC		2.302**		2.307**		0.432*		0.351
			(2.37)		(2.18)		(1.67)		(0.93)
	Q_{TOBIN}	0.083*		0.062*		0.020		0.005	
		(1.69)		(1.84)		(1.43)		(0.53)	
	SIZE		0.008		0.013		-0.026		0.013
			(0.27)		(0.48)		(-0.73)		(0.37)
	TANG		-18.816***		-21.071***		-21.491***		-20.257***
			(-3.44)		(-4.02)		(-4.29)		(-4.01)
	DEBT		0.001		0.004		-0.001		0.001
			(0.26)		(1.25)		(-0.37)		(0.31)
	INFLATION	0.004	-0.002	0.000	0.001	0.004*	0.122	0.000	0.007
		(1.46)	(-0.17)	(0.06)	(0.08)	(1.63)	(1.16)	(0.15)	(0.80)
	GROWTHD	-0.006**	0.033***	-0.0003	0.026***	-0.005*	0.022**	0.001	0.026***
		(-2.21)	(2.59)	(-0.19)	(2.93)	(-1.87)	(2.09)	(0.84)	(3.19)
	LN (PER CAPITA GDP)	-0.012	-0.041	-0.016**	-0.044	-0.015*	-0.044	-0.021***	-0.051
		(-1.21)	(-1.03)	(-2.40)	(-1.10)	(-1.65)	(-1.17)	(-3.29)	(-1.36)
Regulation	ENTRY	0.051***		0.058***		0.058***		0.067***	
		(3.62)		(5.77)		(4.52)		(7.45)	
	RESTRICT	-0.070**	0.112	-0.101***	0.154	-0.073***	-0.096	-0.098***	-0.113
		(-2.52)	(0.58)	(-5.28)	(0.67)	(-2.68)	(-0.78)	(-5.37)	(-0.83)
Legal system	RIGHTS	0.001	-0.0045	-0.025*	-0.034	-0.004	0.029	-0.036***	0.008
		(0.06)	(-0.51)	(-1.75)	(-0.43)	(-0.21)	(0.35)	(-2.75)	(0.10)
Financial structure	STRUCT	-0.033	-0.059	-0.040**	-0.073	-0.043*	-0.096	-0.050***	-0.102
		(-1.35)	(-0.58)	(-2.31)	(-0.72)	(-1.90)	(-1.03)	(-3.15)	(-1.06)
	FOREIGN	0.137	1.554***	0.231**	1.661***	0.257*	1.457***	0.326***	1.520***
		(0.80)	(2.62)	(1.89)	(2.69)	(1.77)	(2.62)	(3.10)	(2.63)
	STATE	-0.206***	0.2001	0.027	-0.163	-0.209***	-0.400	0.009	-0.441
		(-2.62)	(0.42)	(0.44)	(-0.40)	(-2.71)	(-1.18)	(0.15)	(-1.24)
Financial development	DEVELOP	-0.010	0.207***	0.025	0.151*	0.008	0.209***	0.038***	0.193**
		(-0.46)	(2.67)	(1.57)	(1.90)	(0.51)	(2.92)	(3.05)	(2.53)
	Adjusted R-squared					0.2200	0.3135	0.4026	0.3118
	Chi-squared	86.75***	132.36***	184.39***	142.95***				
	F					8.05***	10.66***	18.15***	10.62***
	# observations	276	276	276	276	276	276	276	276
	# countries	27	27	27	27	27	27	27	27

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

Table 4

Influence of regulations and institutions on Charter value-concentration relationship.

Panel A shows the three stage weighted least squares (3SWLS) estimations of model [2]. Panel B shows the weighted least squares (WLS) of model [2]. The inverse of the number of country observations for each country is the weight for each bank in the country. Variable definitions and sources are provided in Table 1. T-statistics are shown in parentheses.

		Panel A: 3SWLS				Panel B: WLS			
		(1)		(2)		(3)		(4)	
		CONCD	Q_{TOBIN}	CONCA	Q_{TOBIN}	CONCD	Q_{TOBIN}	CONCA	Q_{TOBIN}
	INTERCEPT	-2.612***	-3.853	-1.756***	-0.999	-0.303*	1.916*	-0.007	0.682
		(-5.85)	(-1.46)	(-5.27)	(-0.60)	(-1.86)	(1.77)	(-0.06)	(0.57)
	CONC		16.707***		6.803*		2.226		2.687
			(2.66)		(1.94)		(1.26)		(1.35)
	Q_{TOBIN}	2.325***		1.679***		0.488***		0.331***	
		(7.82)		(7.70)		(6.64)		(6.63)	
	SIZE		0.013		0.032		-0.029		0.020
			(0.29)		(0.89)		(-0.81)		(0.55)
	TANG		-9.452		-21.331***		-22.041***		-22.978***
			(-1.22)		(-4.15)		(-4.18)		(-4.39)
	DEBT		-0.009*		-0.000		-0.000		0.001
			(-1.67)		(-0.09)		(-0.03)		(0.34)
	INFLATION	0.004	0.071***	0.005	0.023*	0.003	0.020	0.000	0.015
		(1.11)	(2.80)	(1.61)	(1.88)	(1.38)	(1.47)	(0.24)	(1.37)
	GROWTHD	-0.007*	-0.042	-0.007**	0.011	-0.003	0.015	0.001	0.021**
		(-1.82)	(-1.53)	(-2.32)	(1.01)	(-1.53)	(1.04)	(0.51)	(2.21)
	LN (PER CAPITA GDP)	-0.006	-0.109*	-0.009	-0.035	-0.009	-0.002	-0.018***	-0.012
		(-0.44)	(-1.76)	(-0.81)	(-0.83)	(-1.12)	(-0.05)	(-3.05)	(-0.30)
Regulation	ENTRY	-0.011		0.016		0.042***		0.060***	
		(-0.51)		(0.94)		(3.63)		(6.94)	
	RESTRICT	1.150***	3.025***	0.777***	0.991*	0.216***	0.426	0.123***	0.353
		(6.68)	(2.69)	(6.32)	(1.77)	(3.74)	(1.17)	(3.10)	(0.96)
	Q_{TOBIN} x RESTRICT	-0.802***		-0.582***		-0.156***		-0.129***	
		(-7.23)		(-7.38)		(-4.86)		(-5.94)	
	CONC x RESTRICT		-7.159***		-2.874**		-1.463*		-1.326*
			(-2.89)		(-2.18)		(-1.94)		(-1.64)
Legal system	RIGHTS	0.253***	0.238	0.150***	-0.083	0.001	-0.601**	-0.051**	-0.388
		(3.46)	(0.51)	(2.69)	(-0.22)	(0.02)	(-2.33)	(-2.00)	(-1.29)
	Q_{TOBIN} x RIGHTS	-0.269***		-0.178***		-0.020		-0.006	
		(-5.38)		(-5.02)		(-1.04)		(-0.50)	
	CONC x RIGHTS		-0.591		0.270		1.096**		0.849
			(-0.67)		(0.40)		(2.47)		(1.60)
Financial structure	STRUCT	0.398***	0.622**	0.286***	0.669**	0.262***	0.563**	0.070*	0.665**
		(4.13)	(2.14)	(3.66)	(2.53)	(5.00)	(2.14)	(1.81)	(2.50)
	Q_{TOBIN} x STRUCT	-0.064		-0.075*		-0.147***		-0.049**	
		(-1.14)		(-1.79)		(-4.81)		(-2.18)	
	CONC x STRUCT		-1.854***		-1.760***		-1.513***		-1.583***
			(-3.27)		(-3.14)		(-3.10)		(-3.00)
	FOREIGN	-1.926***	-3.812	-1.649***	2.281	-0.682***	3.500	-0.198	3.312
		(-4.22)	(-0.91)	(-4.15)	(0.96)	(-2.92)	(1.32)	(-1.09)	(1.42)
	Q_{TOBIN} x FOREIGN	0.853***		1.073***		0.462***		0.313***	
		(3.64)		(4.91)		(3.66)		(3.11)	
	CONC x FOREIGN		13.252		2.281		-3.531		-3.906
			(1.51)		(0.96)		(-0.72)		(-0.82)
	STATE	-1.766***	0.563	-1.342***	-1.834	-0.674***	-2.180**	-0.222	-2.622*
		(-4.81)	(0.35)	(-4.26)	(-1.29)	(-3.63)	(-2.03)	(-1.53)	(-1.84)
	Q_{TOBIN} x STATE	0.800***		0.754***		0.240**		0.114	
		(3.46)		(3.74)		(1.99)		(1.20)	
	CONC x STATE		-1.653		4.004		4.418**		5.389*
			(-0.50)		(1.25)		(2.16)		(1.67)

Financial development	DEVELOP	-0.168*** (-2.62)	-0.168*** (-2.62)	-0.225*** (-3.72)	-0.010 (-0.03)	-0.121*** (-3.42)	-0.208 (-0.79)	-0.048* (-1.62)	-0.198 (-0.62)
	Q_{TOBIN} x DEVELOP	-0.046 (-1.14)		0.075** (2.21)		0.053** (2.52)		0.036** (2.05)	
	CONC x DEVELOP		0.890* (1.95)		0.314 (0.64)		0.629 (1.55)		0.601 (1.19)
	Asjusted R-squared					0.4024	0.3756	0.4978	0.3525
	Chi-squared	111.71***	159.88***	132.89***	180.22***				
	F					12.05***	9.71***	17..32***	8.91***
	# observations	276	276	276	276	276	276	276	276
	# countries	27	27	27	27	27	27	27	27

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