HOW BANK CAPITAL BUFFERS VARY ACROSS COUNTRIES. THE INFLUENCE OF COST OF DEPOSITS, MARKET POWER AND BANK REGULATION

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Abstract

This paper analyzes the bank and country determinants of capital buffers using the GMM estimator on a dynamic panel data of 1,337 banks from 70 countries. After controlling for adjustment cost and endogeneity of explanatory variables, our results show that capital buffers are positively related to the cost of deposits and bank market power. Moreover, these relations vary across countries depending on regulation, supervision and institutions. The influence of political economy variables is the result of two generally opposing effects: country variables that enhance market discipline increase the positive influence of cost of deposits and foster higher capital buffers; in contrast, country variables reducing market power diminish bank incentives to hold capital buffers. Our findings suggest that only better accounting disclosure rules and stringent restrictions on bank activities have a clear positive net effect on capital buffers.

JEL classification: G21, G28, M41, M42.

Keywords: capital buffers, regulation, supervision, cost of capital, market power, panel data

1. Introduction

Bank capital has been a particular target of most countries' regulations and has also been one of the first facets of banking to be the focus of international coordination.[1] Initial analysis of the efficacy of regulatory capital requirements requires research into the precise extent to which they are binding, as well as whether their efficacy varies across countries depending on other factors of the national bank regulation and on the quality of financial institutions. This paper aims to shed light on both these issues by analyzing bank determinants of capital buffers in seventy countries and by considering how these determinants vary across countries depending on the hallmarks of national banking systems.

Capital requirements were introduced to counteract banks' risk-shifting incentives exacerbated by the provision of a governmental safety net in highly-leveraged companies. In theory, the stabilizing effects of capital requirements are supported by models based on the option-pricing model, whereby an unregulated bank will take excessive portfolio and leverage risks in order to maximize its shareholder value at the expense of deposit insurance (Benston et al. 1986; Furlong and Keeley, 1989; Keeley and Furlong, 1990). Capital requirements can reduce these moral hazard incentives by forcing bank shareholders to absorb a larger part of the losses, thereby reducing the value of the deposit insurance put option. However, the ability of capital requirements to strengthen the stability of the banking system has been challenged in models based on the mean-variance framework. Koehn and Santomero (1980), Kim and Santomero (1988) and Rochet (1992) find that if capital is relatively expensive, the forced reduction in leverage diminishes the bank's expected returns. As a consequence, the bank's owners may choose a higher point in the efficiency frontier, with a higher return and a higher risk. In some cases, the increase in the bank's risk overcompensates the increase in capital and leads to a higher default probability. The introduction of risk-based capital standards can be considered as an attempt to eliminate the potentially perverse effects of capital requirements, with considerable efforts being expended on trying to better align capital requirements with real bank risk.

A common feature of the above-mentioned banking models is that banks will not have capital ratios above the minimum required if bank liabilities are guaranteed by federal insurance and depositors do not demand returns positively related to bank risk (Merton, 1977). However, the banking literature offers two reasons for banks to hold excess

[1] Over 100 countries implemented the 1987 Basel I accord (Barth et al., 2004) targeting regulation of bank capital. The new Basel II accord continues to consider bank capital regulation as one of the three pillars (Pillar 1), alongside official supervision (Pillar 2) and market discipline (Pillar 3).

capital over the minimum legally required levels. First, market discipline: when bank liabilities are not totally insured and depositors demand greater returns to compensate for higher bank risk, bank shareholders may have incentives to increase bank capital to reduce bank risk and, therefore, the cost of deposits. Second, the expectation of earning economic quasi-rents if banks have monopoly protection. There is considerable evidence showing that higher market power reduces bank risk-taking that threatens to destroy high charter value created by monopoly power (Keeley, 1990). For this reason, bank shareholders may find it optimum to contribute capital, instead of funding the bank with cheaper deposits, as long as capital provides a buffer that diminishes the likelihood of failure, and consequently makes receiving a stream of future earnings a more likely outcome.

Empirical studies on the determinants of capital buffers are relatively scant. Lindquist (2004) and Alfon et al. (2004) analyzed the determinants of capital buffers in Norwegian and UK banks respectively. Ayuso et al. (2004) empirically analyzed how capital buffers vary with the business cycle in a sample of Spanish banks. However, all three studies only use bank variables to explain capital buffers, as each of them analyzes data from a single country. The influence of market discipline on capital buffers is empirically analyzed by Flannery and Rangan (2004) using data from the 100 largest US banking firms over a sufficiently extended time scale to allow market discipline variations to be included (1986-2000). They observe that large US bank holding companies increased their capital ratios after 1994, and that none of the 100 largest US banking firms have been constrained by *de jure* regulatory capital standards since 1995. They attribute capital increase in the latter half of the 1990s to enhanced market incentives to monitor and price large banks' default risks. Finally, Nier and Baumann (2006) also unearth evidence of the positive influence of market discipline on capital buffers in a sample of banks from 32 countries. They find that government safety nets result in lower capital whereas stronger market discipline resulting from uninsured liabilities and disclosure results in larger capital ratios. Their results are thus broadly supportive of recent policy initiatives that aim to strengthen financial stability by improving market discipline.

Our paper complements this literature by analyzing an international sample of banks from 70 countries, and makes four main contributions. First, we analyze the influence of market discipline by directly considering the link between the cost of deposits and bank capital buffers. This is the most direct way to measure market discipline, which is traditionally defined as a market-based incentive scheme in which investors in bank liabilities punish banks for greater risk-taking by demanding higher yields on these

liabilities. Second, we explicitly analyze the influence of bank market power on capital buffers as the banking literature has clearly established that bank risk-taking incentives depend critically on market power and charter value. However, this variable has not been included in any of the previous papers that empirically analyze the determinants of bank capital buffers. Third, we consider not only how country variables affect levels of capital buffers but also the mechanism driving this effect, since we focus on how regulation, supervision and institutions across countries modify the influence of cost of deposits and market power on capital buffers. We incorporate additional country variables to those considered in Nier and Baumann (2006), analyzing the influence of official supervisory power and legal restrictions on bank activities alongside disclosure, generosity of deposit insurance and quality of institutions. Finally, unlike Nier and Baumann (2006), our model specification explicitly accounts for the possibility that banks may face impediments in moving towards their optimal capital ratios, which may also change over time as the external contracting environment changes. This dynamic specification is potentially useful, because if banks adjust to their targeted capital levels gradually over time, many cross-sectional relationships between capital and bank characteristics found in the literature might be spurious.[2]

Our results suggest that, on average, bank capital buffers are positively related to the cost of deposits and that bank market power also has a positive effect on capital buffers. However, the influence of cost of deposits and market power varies across countries depending on the regulatory and institutional characteristics: 1) Country variables that increase (decrease) market discipline also increase (decrease) the positive influence of cost of deposits on capital buffers and, therefore, bank incentives to hold capital buffers, and 2) country variables that increase (decrease) market competition reduce (increase) the positive influence of market power on the prudent behavior of banks and, therefore, bank incentives to hold capital buffers. Since variables that enhance market discipline tend also to increase market competition, the predominant effect of each country variable on capital buffers becomes an empirical question.

Our results indicate that only stringent accounting disclosure requirements and more stringent restrictions on bank activities have a clear positive effect on capital buffers. In contrast, the influence of generosity of deposit insurance, official supervision and quality of institutions is the net result of two opposing effects on market discipline and

[2] Cheung and Wei (2006) point out that omitting adjustment costs in the model specification biases the results of the analysis of the relationship between insider ownership and corporate performance. Ayuso et al. (2004) and Alfon et al. (2004) also consider adjustment costs to model capital buffers in Spanish and UK banks, respectively.

market power respectively. Generosity of deposit insurance and official supervision reduce incentives to hold capital buffers by weakening market discipline but at the same time promote greater capital buffers by increasing market power. The net effect on capital buffers is not significant for generosity of deposit insurance and is positive for official supervision. In contrast, strong institutional development increases incentives to hold capital buffers by strengthening market discipline but at the same time promotes lower capital buffers by reducing market power. The net effect is negative in our sample.

The rest of the paper is organized as follows. Section 2 describes the theoretical background of the bank determinants of capital buffers. Section 3 describes the characteristics of the dataset and the empirical methodology, while Section 4 shows the results of the bank determinants of capital buffers. Section 5 analyzes the influence of regulatory and institutional variables on determinants of capital buffers. Finally, Section 6 presents our conclusions.

2. Bank determinants of capital buffers.

Following Froot and Stein (1998), Alfon et al. (2004), Ayuso et al. (2004), Lindquist (2004) and Elizalde and Repullo (2004), we consider three different types of bank capital-related costs to model capital buffers: adjustment costs, cost of funding and cost of financial distress.

2.1. Adjustment costs

Banks may maintain a cushion of capital simply because falling below the regulatory standards is costly. Bank capital ratios may be shocked by earnings surprises and by the unexpected opportunities to invest in positive net present value projects. Offsetting these shocks via changes to equity capital may have a negative impact on banks' common stock values. Equity issues may, in the case of information asymmetries, convey negative information to the market on the bank's economic value (Myers and Majluf, 1984). Moreover, increasing capital ratios via reductions in assets may require foregoing positive net present value projects or selling assets at prices below their value to the bank. As a consequence, banks may prefer to hold a "buffer" of excess capital to reduce the probability of falling under the legal capital requirements, especially if their capital ratio is very volatile. The implications of adjustment costs are that 1) a bank's capital ratio at any point in time may differ from its target ratio because banks may only

adjust towards their target in any given period, 2) banks may find it optimal to maintain a capital cushion above the guidelines to reduce the expected costs of falling below the regulator's standards, and 3) the effective regulatory capital requirement is difficult to measure because it may include a buffer above the regulatory capital minimum to allow the bank to exploit unexpected profitable investment opportunities and to cushion the effects of unexpected negative shocks.

2.2. Cost of funding

Bank shareholders' incentives to hold capital buffers will also depend on the cost of capital compared to the cost of deposits. It is well known that shareholders require higher returns than depositors to offset their greater risk. It is similarly common knowledge that the returns that shareholders demand are positively related to the risk of their claims. However, the sensitivity of cost of deposits to bank risk depends on market discipline. If deposits are totally insured, depositors have no incentive to monitor bank shareholders and they demand a risk-free flat rate, regardless of the risk of deposits. In such a scenario, bank shareholders have no incentives to have capital above what is required by law as there is no benefit in terms of reduction of cost of deposits. Nor is there any relationship between cost of deposits and bank capital ratio because the optimum choice is for bank shareholders to hold the maximum debt, in which case bank capital varies only in response to changes in risk-weighted assets.

However, if deposits are not totally insured, depositors may demand higher returns for higher risk. In this case, higher bank leverage increases bank risk and the return required by depositors, leading bank shareholders to hold a higher capital ratio in order to reduce the cost of funding. Thus, if depositors impose discipline on bank shareholders, we predict a positive influence of the cost of deposits on capital ratios.[3] Moreover, as the marginal cost of deposits per unit of risk increases with market discipline, the optimum capital ratio will also increase with market discipline. For this reason, we predict that the positive relationship between cost of deposits and capital buffers increases with market discipline.

[3] The literature has traditionally considered two types of causality. Papers explaining capital buffers consider it as the endogenous variables, whereas that papers analyzing market discipline usually consider the cost of deposits as the endogenous variables and test whether capital buffers lower that cost (Demirgüc-Kunt and Huizinga, 2004). In this paper, we are interested in explaining the determinants of capital buffers, but we control for the endogeneity of cost of deposits to consider both types of causality using the GMM estimator.

We follow Demirgüc-Kunt and Huizinga (2004) to measure the cost of deposits, defining it for each bank as the ratio of interest expense to interest-bearing debt of the bank minus the government interest rate. The government rate is the Tbill rate where available, otherwise it is the discount rate (COSTDEP).

As a proxy for the opportunity cost of capital, Alfon et al. (2004) and Ayuso et al. (2004) introduced return on equity (ROE), forecasting a negative relationship between ROE and capital. However, ROE is only valid as such a proxy in perfectly competitive bank markets. Unless the market is perfectly competitive, ROE is not a good proxy of cost of equity since it mirrors not only the return required by shareholders but also the positive effect of bank market power on profitability. Moreover, when there are information asymmetries, a significant proportion of fluctuations in bank earnings are kept as retained earnings, and increases in earnings will spark increases in capital ratio so a positive relationship between ROE and capital would be expected. Consistent with this argument, Berger (1995) finds a strong positive relationship between ROE and capital for US banks in the 1980s. Flannery and Rangan (2004) ratify this finding for the 1990s. Similarly, Nier and Baumann (2006) discover a position relationship between ROE and cost of capital in a sample of banks from 32 countries. In contrast, Ayuso et al. (2004) find a negative influence in Spanish banks, as would be expected if ROE were an acceptable proxy of the cost of capital. Given the drawbacks of ROE as a proxy of the cost of capital, it will be employed in this analysis as a control variable rather than as a measurement of the cost of equity.

2.3. Cost of financial distress

Capital reduces the likelihood of bankruptcy and, therefore, of financial distress costs, including both the legal costs of the bankruptcy process and loss of charter value (Keeley, 1990; Acharya, 1996). The banking literature has indicated that a high market power that increases charter value reduces bank risk-taking incentives because a bank with a high charter value has an incentive to avoid high-risk choices that may trigger a drop in its charter value. Consistent with this argument, empirical studies of the US banking industry show an inverse relationship between charter value and bank risk-taking.[4] Therefore, if banks with higher market power and high charter value have low

[4] Keeley (1990) and Demsetz et al. (1996) present evidence for a sample of large US bank holding companies. Grossman (1992) finds that, in the 1930s, US thrifts operating in more competitive regulatory regimes (with lower charter value) were more prone to undertake risky lending activities than those operating in more restrictive regimes. Galloway et al. (1997), Cebenoyan et al. (1999), and Anderson and Fraser (2000) also confirm the negative influence of bank charter value on risk-taking behavior in the United States in the 1980s and 1990s. A negative relationship between charter value and risk-taking is also found by Konishi and Yasuda (2004) for Japanese banks in the 1990s, by Gropp and Vesala (2004)

risk-taking incentives, we would expect higher capital buffers in these banks, as their benefit in terms of avoiding the loss of charter value is higher. The threat of losing high charter value in the event of bankruptcy would suffice in itself to encourage banks to establish capital buffers even if depositors were totally insured (no market discipline) and there were no adjustment cost for regulatory capital.

Although much banking literature acknowledges the influence of bank market power on bank risk-taking incentives, empirical studies of the determinants of capital buffers have failed to consider the issue. Our study uses the Lerner index (LERNER) as the variable capturing expected bankruptcy costs associated with the loss of bank charter value. This index has been widely used in the banking sector as an indicator of degrees of market power (Shaffer, 1993; Angelini and Cetorelli, 2003; Maudos and Fernández de Guevara, 2004). The Lerner index of market power defines the disparity between price (interest rate) and marginal cost expressed as a percentage of price, taking into account that the divergence between product price and marginal cost of production is the essence of monopoly power. [5]

Measurement of the Lerner index of market power requires prices and marginal costs to be estimated separately for loans and for deposits. Unfortunately, the database used (BankScope) does not provide sufficiently detailed information about the profit and loss account for the calculation of separate prices for deposits and loans. For that reason, we use a single indicator of banking activity in the empirical model of this study and, as in Shaffer (1993), Berg and Kim (1994), Maudós and Fernández de Guevara (2004), banking output is proxied by the total assets of each firm. The starting assumption is that the flow of banking goods and services produced by a bank is proportional to its total assets. With this approximation, we construct an average price that includes interest and non-interest income, and both financial and operating costs are computed to estimate marginal costs.

The estimation of marginal costs is based on the usual specification of a translogarithmic function where we use total assets (TA) as a measure of production, and three input prices ω(labor, fixed capital and loanable funds) are computed:

in a sample of EU banks over 1991-1998, and by González (2005) in a sample of banks from 36 countries.

[5] Yearly Lerner indexes can be estimated for each bank, after which data panel techniques can be applied. As a measure of bank charter value, the Lerner index has the advantage over Tobin's Q of enabling both publicly and non-publicly traded banks to be estimated.

$$LnC_i = \alpha_0 + LnTA_i + \frac{1}{2}\alpha_k (Ln\,\mathrm{TA_i})2 + \sum_{j=1}^{3} \beta_j \,\mathrm{Ln}\omega_{ji} + \frac{1}{2}\sum_{j=1}^{3}\sum_{k=1}^{3} \beta_{jk}\,\mathrm{Ln}\omega_{ji}\,\mathrm{Ln}\omega_{ki} + \frac{1}{2}\sum_{j=1}^{3} \gamma_j \,\mathrm{Ln\,TA_i}\,\mathrm{Ln}\omega_{ji} +$$

$$+ Ln\mu_i \qquad (1)$$

where C_i is the bank's total costs including financial and operating costs. The estimation of the costs function is done separately for each country, allowing the parameters of the cost function to vary from one country to another to reflect different technologies. Fixed effects are also introduced to capture the influence of variables specific to each bank.

As higher market power reduces banks' incentives to increase their risk in order to preserve their higher charter value, we expect a positive LERNER coefficient when explaining bank capital buffers. Elizalde and Repullo (2004) extend the traditional positive influence of bank charter value on capital buffers into a theoretical model and posit a possible non-linear effect. On the one hand, according to the traditional argument, with a higher franchise value, shareholders have greater incentives to provide capital in order to preserve franchise value. On the other hand, a higher franchise value provides a source of income in each period, which reduces the need to hold capital as a buffer against losses and works as a substitute of economic capital. According to their model, the expected positive relation between charter value and capital buffers may become negative for high levels of charter value. We introduce the square of the Lerner index (LERNERSQ) to capture these possible non-linear relationships.

On the basis of the above three capital buffer-linked costs (for adjustment, funding and financial distress), our first hypothesis relating to bank determinants of capital buffers reads as follows:

> **H.1.** *Bank capital buffers are positively related to adjustment cost, deposit costs and bank market power.*

3. Database and econometric model

3.1. Database

We obtain consolidated bank balance-sheet and income-statement data (in US dollars and in real prices) from Fitch-IBCA Ltd. BankScope Database for 1995-2002. We use information for banks from 70 countries. Our starting point is the 118 countries included in the World Bank's Bank Regulation and Supervision database for which information about bank capital requirements was available. Seven additional countries

(Colombia, Ecuador, Hong Kong, Malaysia, Norway, Tunisia and Ukraine) are incorporated after examining the web pages of the respective central banks. Nine countries are eliminated because the information needed to calculate the Lerner Index is not available, and a further 17 also have to be left out as Bankscope is unable to provide the other explanatory variables included in our estimations.

3.2. Econometric model

We apply the generalized-method-of-moments (GMM) estimator developed for dynamic models of panel data by Arellano and Bond (1991) to test hypothesis H.1. This methodology is specifically designed to address three econometric issues relevant to the present paper: (i) the presence of unobserved bank-specific effects, which are eliminated by taking first-differences of all variables, (ii) the autoregressive process in the data regarding the behavior of capital buffers (i.e. the need to use a lagged-dependent-variables model to capture the dynamic nature of the capital buffer), and (iii) the likely endogeneity of the explanatory variables. The panel estimator controls for this potential endogeneity by using instruments based on lagged values of the explanatory variables. Amongst empirical studies, only Ayuso et al. (2004) for Spanish banks and Alfon et al. (2004) for a sample of UK banks use this estimator.

The model estimated is:

$$BUF_{i,t} = \beta_0 + \beta_1 \, \mathrm{BUF}_{i,t-1} + \beta_2 \mathrm{COSTDEP}_{i,t} + \beta_3 \mathrm{LERNER}_{i,t} + \beta_4 \mathrm{LERNERSQ}_{i,t} + \beta_5 \mathrm{ROE}_{i,t} +$$
$$+ \beta_6 \mathrm{SIZE}_{i,t} + \beta_7 \left(EX - POST\ RISK_{i,t}\right) + \beta_8 GDPGR_{jt} + \beta_9 \sum_{j=1}^{70} Country_j + \beta_{10} \sum_{t=1995}^{2002} T_t + \nu + \varepsilon_{it} \qquad [2]$$

where $\mathrm{BUF}_{i,t}$ is the capital buffer of bank i in year t. We measure capital buffers in absolute terms (the institution's capital less the requirement to which it is subject, BUF) and in relative terms (the difference between capital and the requirement divided by the requirement, RBUF). All the countries included in our study implemented the Basel I guidelines and differences in requirements basically lie in the percentage of minimum capital required over risk-weighted assets. Requirements and capital buffers by country are reported in Table 1.

Explanatory variables are defined to capture the three types of capital buffer-related costs. The relevance of adjustment costs is captured by using a partial adjustment model that includes the first lag of the dependent variable ($\mathrm{BUF}_{i,t-1}$). A positive, significant coefficient for this variable would indicate that adjustment costs are significant. We

include the cost of deposits (COSTDEP) to incorporate the cost of funds and to evaluate the influence of market discipline. A positive coefficient for this variable would be consistent with market discipline. We include the Lerner index (LERNER) as a measure of bank market power and its square (LERNERSQ) to capture possible non-linear effects. Following Berger (1995), Alfon et al. (2004) and Nier and Baumann (2006), we control for the return on equity (ROE). As explained in an earlier section of this paper, a capital buffer-ROE relationship can be caused for a number of reasons and both negative and positive coefficients are to be expected for this variable.

We also include a set of additional control variables. The influence of bank size (SIZE) is controlled for several reasons. Big banks might be thought to have relatively lower buffers if, as the "too-big-to-fail" hypothesis suggests, they believe that they will receive support from the regulator in the event of difficulties and/or if they have lower risk as a consequence of enhanced diversification of their asset portfolio. These arguments predict a negative coefficient for SIZE. We use the natural logarithm of total bank assets as a measure of bank size.

As the Lerner index does not control for the risk of the bank asset portfolio (if risk is high, the Lerner index would be high, regardless of market power), we include bank loans (LOANS), non-performing loans (NPL) and allowance for loan loss (LLA) as measures of bank risk. These three variables (RISK) are normalized by total bank assets.

Annual growth of real per capita GDP (GDPGR) is incorporated to control for the procyclicality that has been theoretically (Estrella, 2004) and empirically (Ayuso et al., 2004) described for capital requirements under Basel I.[6] A negative relationship between capital buffers and the cyclical position offers support to the view that during upswings institutions tend to underestimate actual risks because they fail to characterize the cyclical nature of output properly. However, a positive relation between capital buffers and GDPGR indicates that banks would be making use of capital buffers to offset the negative effects of pro-cyclical requirements. Data on the GDP growth is obtained from the International Financial Statistics of the IMF.

[6] If capital requirements increase in a recession –when building reserves from decreasing profits is difficult or raising fresh capital is likely to be extremely costly- banks would have to reduce their loans and the subsequent credit squeeze would add to the downturn. This would make the recession deeper, thus setting in motion an undesirable vicious circle that might ultimately have an adverse effect on the stability of the banking system. This is why capital requirements are said to be pro-cyclical despite actually increasing (decreasing) during a downturn (upturn).

A set of country dummy variables ($\sum_{j=1}^{70} Country_j$) are also included to control for specific differences in the level of capital buffers across countries, as are a set of dummy time variables ($\sum_{t=1995}^{2002} T_t$) to capture any unobserved bank-invariant time effects not included in the regression. Finally, ν_i are unobservable bank-specific effects that are constant over time but vary across banks, and ε_{it} is the white-noise error term.

We control for the potential endogeneity of COSTDEP, LERNER, LERNERSQ, ROE, SIZE, and RISK in the GMM estimations using the two to four period lags of the same variables as instruments. The growth of per capita GDP, the country and the time dummy variables were the only variables considered exogenous.

Median values of the bank variables by country are reported in Panel A of Table 1. Correlations in Panel B show that our two measures of capital buffers are very similar (correlation of 0.992) and that, on average, capital buffers correlate positively with cost of deposits and bank market power. However, bank size and the ratios of loans and non-performing loans correlate negatively with bank capital buffers. Although signs of these correlations are consistent with our predictions, we apply the multivariate analysis described in model [1] to incorporate confounding effects that are omitted in a simple correlation analysis.

4. Empirical results

Table 2 reports the results of model [2] in our sample of banks after applying the GMM estimator. Results do not vary whether the dependent variable is the capital buffer in absolute terms (BUF in Panel A) or in relative terms (RBUF in Panel B). Sargan's statistic of over-identifying restrictions is applied to confirm the absence of correlation between the instruments and the error term in the models and the non-significance of the m_2 statistic indicates the lack of second-order serial correlation in the first-difference residuals. Although there is first-order serial correlation (m_1) in the differentiated residuals, it is due to the first-difference of models.

Results are consistent with our hypothesis: the lagged dependent variable exhibits positive coefficients, confirming that there are adjustment costs that impede a full adjustment to the target capital buffer in each period. The cost of deposits (COSTDEP) has the positive coefficients that we predict when depositors impose discipline on bank shareholders.

The coefficients of LERNER and LERNERSQ are positive and negative respectively. This result indicates that the positive influence of market power becomes a negative one at high levels of market power. This change in influence is consistent with capital buffers being less useful as potential 'loss absorbers' in situations in which considerable market power enables losses to be easily absorbed by resources generated in a single period. However, the turning point is a value of 10.69 for LERNER if we take the specification reported in column 3 and a value of 8.15 if we take the specification of column 6 in Panel A. Only one bank in our sample is above the LERNER value at the turning point, indicating that the primary effect of market power is to increase banks capital buffer. The positive influence of market power on capital buffers in our international sample of banks confirms considerable evidence from US studies showing that higher market power reduces bank risk-taking incentives.

Economically, the impact of cost of deposits and market power on bank capital buffers can be considerable. The economic significance of the cost of deposits is particularly marked since, for instance, using regression (1), the impact of a one-standard deviation increase in cost of deposits (0.969) is 18.446, which is 1.95 times the mean value of the capital buffer (BUF) in our sample of banks. In the case of market power, the impact of a one-standard deviation increase in the Lerner index (0.389) is 2.046, which is 0.22 times the mean value of capital buffer.

Since return on equity is positively related to bank market power, it was excluded from three of the estimations in Table 2 to avoid potential correlation difficulties with LERNER. It does not have any statistically significant coefficients in the estimations in columns 2 to 5, in which it was included.

As forecast, our coefficients for bank size (SIZE) are negative. The lower capital buffers of large banks are consistent with a "too-big-to-fail" policy whereby large banks are provided support by the regulator in case of financial distress, somewhat obviating the need for capital buffers. The negative coefficients of LOANS, NPL and LLA suggest that banks that opt to take greater risks with their assets also opt to hold lower capital buffers. Data on NPL and LLA is less available and we could only estimate for 66 countries. GDPGR echoed the negative coefficients reported by Alfon et al. (2004), Ayuso et al. (2004), Lindquist (2004) and Nier and Baumann (2004), which point to the fact that capital buffers increase (diminish) during downturns (upturns), although this is only statistically significant in column (3). This result suggests that banks do not use capital buffers to offset the negative effects of procyclicality originated by capital requirements related to bank risk.

5. The influence of bank regulation, supervision and institutions on bank capital buffers

The previous section has shown that, on average, stronger market discipline and higher market power increase bank capital buffers in our international sample of banks. In this section, we analyze how this positive influence of market discipline and market power varies across countries depending on bank regulation, bank supervision and on country's institutions.

Differences across countries can be expected because regulatory and institutional country variables affecting market discipline and/or the ability of bank market power to counteract bank risk-taking incentives will also lead to different incentives across countries to hold capital buffers. For instance, country variables that exercise a positive effect on bank market competition would reduce the ability of bank market power to reduce bank risk-taking incentives and would favor lower capital buffers. Moreover, if a regulatory and institutional variable that increases market discipline were to reduce bank market power, it would have two opposing effects on capital buffers. In such a case, knowledge of the dominant effect becomes a relevant empirical question.

The country variables analyzed in this paper are the quality of the accounting system, the generosity of deposit insurance, official supervisory power, restrictions on bank activities, and the quality of the legal system and institutions. Appendix A describes all the variables included in the analysis and their sources.

5.1.Methodology

An interaction term for each country variable with the cost of deposits is incorporated sequentially into model 2 to consider the influence that the country variable has on capital buffers depending on its influence on market discipline. The coefficient of each interaction term measures the influence of the respective regulatory and institutional variable on the relation between the cost of deposits and capital buffers. A positive coefficient would indicate that the positive relation between the cost of deposits and capital buffers increases with the country variable and would be consistent with greater market discipline.

We also sequentially interact each country variable with the Lerner index to analyze how country variables affect the influence of market power on bank capital buffers. A positive coefficient (negative) of the interaction term would point to an enhanced

capacity of market power to prevent bank risk from increasing (reducing) with the country variable, fostering larger (smaller) capital buffers.

Instead of using the observed values of each country variable, we use instruments for them in order to identify their exogenous component and control for potential simultaneity bias. The instruments of country variables are defined following Barth et al. (2004). These are four binary variables indicating an English, German, French or Scandinavian legal origin based on the classification of La Porta et al. (1998), the latitudinal distance from the equator and three religious composition dummy variables. Religious composition is measured as the percentage of population in each country that is Roman Catholic, Protestant, Muslim or "other".

The paucity of instruments, the extensive number of country variables and the need to use interaction terms indicate that it is best to incorporate each of the coefficients separately rather than incorporating the interaction terms of all country variables at the same time.[7] Country dummy variables measure the influence of the remaining regulatory and institutional characteristics that are not explicitly included in the equation.

5.2. Capital buffers and quality of the accounting information

Pillar 3 of Basel II encourages greater bank disclosure to strengthen market discipline. Empirical evidence is consistent with this view, showing that the monitoring of banks by investors requires the development of accounting and information disclosure mechanisms providing information on the value of banks' claims.[8] Therefore, if the quality of the accounting information favors greater market discipline, we expect the positive influence of cost of deposits on bank capital buffers to be greater in countries with better accounting standards, and forecast a positive coefficient for the interaction of COSTDEP and the proxy of the quality of the accounting information (ACCOUNT).

[7] A similar sequential procedure was also used by Barth et al. (2004) to analyze the influence of regulatory and supervisory practices on bank development.

[8] Qian and Strahan (2004) point out that financial covenants are more common, loan concentration is higher (suggesting better monitoring), and loan maturity is longer wherever the accounting regime produces better information for investors. Fernández and González (2005) show the usefulness of information disclosure requirements in reducing bank risk-taking even after controlling for other regulatory and supervisory devices. Nier and Baumann (2006) show in a sample of banks from 32 countries that greater bank disclosure strengthens market discipline and results in larger capital buffers.

Regarding the influence of accounting disclosure requirements on charter value, Yu (2005) showed that accounting transparency reduces the cost of capital, reporting that the quality of firms' information disclosure is negatively related to credit spreads. This reduction may increase bank valuations and, therefore, diminishes bank risk-taking incentives, thereby encouraging larger capital buffers. This argument leads us to forecast a positive coefficient for the interaction of ACCOUNT and LERNER.

Accounting and information disclosure requirements are measured by the ACCOUNT variable, calculated by Barth et al. (2004), which can theoretically range from 0 to 6, with higher values indicating more information disclosure requirements.

Table 3 reports the results when bank buffers are measured in absolute terms. Results do not change when buffers in relative terms (RBUF) are used as an alternative dependent variable. NPL and LLA are not included as control variables so that as many countries as possible can be included and because they do not affect our basic results. Results are consistent with a positive influence of the quality of the accounting information on capital buffers. The positive coefficients of LERNERxACCOUNT in columns (3) and (4) indicate that better accounting transparency increases the ability of charter value to reduce bank risk-taking incentives and, therefore, increases bank incentives to hold higher capital buffers. In contrast to our forecast, the non-significant coefficients of COSTDxACCOUNT fail to confirm that higher accounting disclosure increases capital buffers by strengthening market discipline.

Thus, our results confirm the effectiveness of recent initiatives to improve the quality of bank disclosure in an attempt to raise bank stability. However, they indicate that this positive effect on bank stability stems from the influence on bank valuation rather than that on market discipline.

5.3 Capital buffers and the generosity of deposit insurance

The generosity of deposit insurance (HAZARD) is used as a further proxy of market discipline. It has long been suggested that more generous deposit insurance reduces the market discipline enforced by depositors and encourages banks to take greater risks (Merton, 1977; Bhattacharya and Thakor, 1993). Recent empirical evidence confirms this effect, showing that deposit insurance increases the likelihood of banking crises (Demirgüc-Kunt and Detragiache, 2002) and the interest rate required by depositors (Demirgüc-Kunt and Huizinga, 2004), and that loss-control features such as risk-sensitive deposit insurance premiums, coverage limits, and coinsurance temper the risk-

shifting incentives exacerbated by the introduction of explicit deposit insurance (Hovakimian et al. 2003). According to this evidence, if more generous deposit insurance reduces market discipline, it will also reduce the sensitivity of the cost of deposits to bank risk and the optimum capital ratio for banks. For this reason, we forecast that the positive relationship between the cost of deposits and capital ratio diminishes with the generosity of the deposit insurance and a negative coefficient is expected for COSTDEPxHAZARD.

There is a dearth of literature on the influence of the generosity of deposit insurance on bank charter values. To our knowledge, only González (2005) offers evidence on this issue, finding a positive relationship between the presence of explicit deposit insurance in the country and charter values of banks in 32 countries. This positive relationship would provide banks that have explicit deposit insurance with incentives to hold capital buffers to preserve their higher charter value, in which case a positive coefficient would be expected for LERNERxHAZARD.

To measure the generosity of deposit insurance we follow Demirgüc-Kunt and Detragiache (2002) and define the HAZARD variable as the sum of eight dummy variables that are positively related to the moral hazard of deposit insurance. HAZARD ranges from the value of 1 for Switzerland to the value of 8 for Mexico in our sample.

The results shown in Table 4 confirm that the generosity of deposit insurance has the two forecasted opposite effects on capital buffers. On the one hand, the negative coefficients of COSTDEPxHAZARD are consistent with the reduction of market discipline in countries with more generous deposit insurance and, therefore, with the lower benefits of capital buffers as regards reducing banks' funding cost in these countries. On the other hand, the positive coefficients of LERNERxHAZARD hint that more generous deposit insurance increases the ability of market power to counteract bank risk-taking incentives and leads banks to hold larger capital buffers.

The two opposing effects offset each other so we do not observe a significant change in capital buffers in response to changing generosity of deposit insurance. Using, for instance, the coefficients from regression (4) and the mean values of COSTDEP and LERNER, a standard deviation increase in generosity of deposit insurance (1.017) would translate into a non-significant increase in capital buffers of 1.70, which is only 0.18 times the mean value of the capital buffer in our sample.

5.4. Capital buffers and restrictions on bank activities

An additional regulatory variable considered in this paper is whether banks are allowed to take part in activities that generate non-interest income (securities, insurance, real estate and bank ownership of non-financial firms). More stringent restrictions on bank activities (RESTRICT) may reduce depositors' incentives to monitor banks, as the reduction of a bank's range of activities diminishes the opportunities for bank managers to undertake risky investments. Diminishing market discipline will reduce the benefits for a bank of holding capital buffers. In this respect, Flannery and Rangan (2002) have shown that when longstanding restrictions on permissible bank activities were removed in the US in the 90s, banks increased their capital ratios as a consequence of enhanced market discipline. We thus forecast that stricter restrictions on bank activities will reduce the sensitivity of cost of deposits to bank risk and, therefore, result in a negative coefficient for the interaction of COSTDEP and RESTRICT.

Furthermore, recent empirical studies concur that restricting bank activities has a negative influence on market competition and increases bank market power (Claessens and Laeven, 2004). According to this evidence, we would expect that the tighter the restrictions on bank activities, the greater the positive influence of market power on capital buffers. Therefore, a positive coefficient is expected for the interaction variable of LERNER and RESTRICT.

We use the measure of regulatory restrictions on non-traditional bank activities developed by Barth et al. (2004). This indicator ranges from 4 to 16, with higher values indicating more restrictions on bank activities and non-financial ownership and control.

The results reported in Table 5 concur with the hypothesis that greater restrictions on bank activities increase the ability of market power to counteract bank risk-taking incentives. This positive influence is suggested by the positive coefficients of LERNERxRESTRICT in columns (3) and (4). In contrast, the non-significant coefficients of COSTDEPxRESTRICT lend no support to our expectation of reduced market discipline in countries with tighter restrictions on bank activities. The positive influence on the ability of bank charter value to counteract bank risk-taking incentives and the non-influence on market discipline lead to a positive relation between restrictions on bank activities and capital buffers.

5.5. Capital buffers and official supervision

Official supervisory power (OFFICIAL) may affect capital buffers in a number of ways. First, if there is greater official supervision consisting, for example, of early closure of failing banks or early substitution of bank managers in difficulties, this may become a tool to reduce risk undertaken by banks' boards and will have a direct positive link on capital buffers. Aggarwal and Jacques (2001) document that the prompt corrective action provision of the Federal Deposit Insurance Corporation Improvement Act (FDICIA) passed by the US Congress in 1991 was effective in raising capital ratios and reducing credit risk. Such an effect would be mirrored in a positive coefficient for the OFFICIAL variable in our specification.

Second, if official bank supervision is a stand-in for private supervision, it may have a negative effect on capital buffers by reducing market discipline. Any official control that curbs investor incentives to monitor would downwardly affect the sensitivity of the cost of funding to bank risk. Because of this effect, we expect banks in countries with more official supervisory power to have a lower positive relationship between capital ratio and cost of deposits, and negative coefficients for COSTDEPxOFFICIAL.

Third, official oversight may affect bank charter values and, therefore, incentives to hold capital buffers in two different ways. On the one hand, effective supervision may increase investor confidence regarding expropriation and boost charter values. Moreover, official supervision may curb some bank decisions and bank market competition, which would also encourage higher charter value and greater Lerner indexes. On the other hand, as bank supervision aims to reduce excessive risk-taking by owners and to protect depositors, it could actually reduce bank charter values by forcing bank risk below what equityholders would choose in the presence of government insurance. The empirical evidence provided by Caprio et al. (2004) for a sample of publicly traded banks from 44 countries does not show a significant influence of official supervisory power on bank valuations. In the light of these opposing arguments, we do not have a clear forecast for the LERNERxOFFICIAL coefficient.

A country's official supervisory power is measured, following Barth et al. (2004), by adding a value of one for each affirmative answer to 14 questions that gauge the power of supervisors to undertake prompt corrective action, to restructure and reorganize troubled banks and to declare a deeply troubled bank insolvent. This variable may range from 0 to 14, with a higher value indicating more official supervisory power.

Our results in Table 6 do indeed confirm the opposing effects of official supervision on bank capital buffers. The negative coefficients of COSTDEPxOFFICIAL are consistent with the diminished ability of bank capital to reduce the cost of deposits when more stringent official supervision reduces market discipline. In contrast, the positive coefficients of LERNERxOFFICIAL suggest that official supervisory power increases the ability of market power to reduce bank risk.

The net effect on capital buffers of the two opposing effects is positive for most banks in our sample. Using, for instance, the coefficients from regression (4) and the mean values of COSTDEP and LERNER, a standard deviation increase in official supervision (2.881) would translate into an increase in capital buffers of 31.139, which is 3.29 times the mean value of the capital buffer in our sample.

5.6. Capital buffers and institutions

A burgeoning amount of new banking literature highlights that well-functioning markets rely on contracts and their legal enforceability, suggesting a positive relation between the quality of the contracting environment and the market orientation of the financial system, which also has a positive knock-on effect on financial development (La Porta et al., 1997, 1998). As the enforceability of contracts is the prime reason why investors have incentives to monitor and why markets develop and progress, market discipline by depositors will increase with the quality of the legal and institutional environment. We thus expect higher market discipline in good quality contracting environments to increase the sensitivity of capital buffers to cost of deposits and we predict a positive coefficient for the interaction variable of COSTDEP and the proxy of institutional quality.

However, greater competition promoted by better institutions may have a negative impact on capital buffers by reducing bank market power. As Keeley (1990), Demsetz et al. (1996) and Galloway et al. (1997), among others, have demonstrated for US banks, the reduction of market power and bank franchise value reduces banks' incentives to hold capital buffers. For this reason, we expect better institutions to reduce the ability of market power to control bank risk-taking incentives and we predict a negative coefficient for the interaction of LERNER and the proxy of institutional quality.

To indicate the quality of a country's legal environment we use the KKZ index (KKZ) 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. We also check 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 Economic Freedom Index (FREEDOM) of the Heritage Foundation, which measures which individuals and firms feel free to conduct their business; 2) the property rights index (RIGHTS) from the Economic Freedom Index used initially by La Porta et al. (1998), and 3) the law and order index of the International Country Risk Guide (LAW). All these variables are applied separately to the estimations so as to avoid correlation problems. Results are not significantly different to those reported in Table 7 using the KKZ index.

The results reported in Table 7 concur with the opposing effects of institutional quality on incentives for banks to hold capital buffers. The positive COSTDEPxKKZ coefficients are consistent with enhanced market discipline and with greater benefits of holding capital buffers to reduce the cost of funding in high quality legal systems. However, the negative LERNERxKKZ coefficients point to enhanced quality of the institutional environment having a negative effect on capital buffers by curbing the ability of market power to provide incentives for banks to behave prudently.

The net effect on capital buffers of the two opposing effects is negative in our sample. Again, using the coefficients from regression (4) and the mean values of COSTDEP and LERNER, a standard deviation increase in institutional quality (4.572) would translate into a reduction in capital buffers of 52.403, which is 5.54 times the mean value of the capital buffer in our sample.

6. Conclusions

This paper analyzes the determinants of bank capital buffers using a data panel of 1,337 banks from 70 countries between 1995-2002. We apply the GMM difference estimator to control for unobservable heterogeneity and potential endogeneity of the explanatory variables. Our results suggest that banks hold more capital the higher the cost of deposits and the greater their market power. The positive influence of cost of deposits mirrors the existence of market discipline in the countries in our sample while the positive influence of market power is consistent with evidence showing that banks with higher charter value have fewer risk-taking incentives and need less supervision and control.

Moreover, our results highlight that bank regulation, supervision and institutions alter the influence of cost of deposits and of market power on capital buffers across countries. Their impact is a spin-off of two generally opposing effects on market discipline and market power. For instance, generosity of deposit insurance and official supervision reduce incentives to hold capital buffers by weakening market discipline but at the same time promote greater capital buffers by increasing market power. The net effect on capital buffers is not significant for generosity of deposit insurance and is positive for official supervision. In contrast, institutional quality increases incentives to hold capital buffers by strengthening market discipline but at the same time promotes smaller capital buffers by reducing market power. The net effect is negative in our sample.

Finally, only stringent accounting disclosure requirements and tighter restrictions on bank activities clearly foster larger capital buffers by sparking greater market power and thus increasing bank incentives to behave prudently.

Our study has three basic implications for regulatory policy. First, academic and industry models of banking firms should not assume that supervisory capital standards always constrain a bank. Market discipline and/or market power may induce banks to hold capital above the minimum stipulated, thereby reducing the power of capital requirements as instruments of financial stability. Second, bank regulators and supervisors should consider that the effectiveness of regulatory capital requirements varies across countries depending on other bank regulation (restrictions on bank activities, generosity of deposit insurance), official supervision, and the quality of accounting information and institutions. The third implication ties in with the second and affects the implementation of Basel II: given that official supervision (Pillar 2) and market discipline (Pillar 3) affect the effectiveness of regulatory capital requirements (Pillar 1), defining the optimum mix for each pillar is far more relevant to optimizing Basel II than striving to develop each pillar separately, irrespective of its maximum potential.

Appendix A. Description and sources of the country variables

Variable	*Description and source*
ACCOUNT	Index of information disclosure requirements. Adds one for an affirmative response to each for the following 6 questions: 1) Are financial institutions required to produce consolidated accounts covering all bank and any non-bank financial subsidiaries? 2) Are off-balance sheet items disclosed to supervisors? 3) Are off-balance sheet items disclosed to the public? 4) Must banks disclose their risk management procedures to the public? 5) Are bank directors legally liable if information disclosed is erroneous or misleading? and 6) Do regulations require credit ratings for commercial banks?. Source: Barth et al. (2004).
HAZARD	Index of moral hazard elaborated as the sum of eight dummy variables. Each dummy variable adds the value of one in each of the following cases: 1) if membership is mandatory, 2) nominal coverage limits are not specified, 3) coinsurance does not exist for any depositors, 4) deposit-insurance obligations are funded in some way, 5) funding comes partially or totally from government, 6) the system is partially or totally managed by the government, 7) foreign-denominated deposits are explicitly covered, 8) interbank deposits are formally guaranteed. All these characteristics are positively related to moral hazard of deposit insurance and, therefore, a higher value of HAZARD would indicate a country's greater moral hazard problems originated by deposit insurance. Source: Demirgüc-Kunt and Detragiache (2002).
OFFICIAL	Index of official supervisory power. Adds one for an affirmative response to each for the following 14 questions: 1. Does the supervisory agency have the right to meet with external auditors to discuss their report without the approval of the bank? 2. Are auditors required by law to communicate directly to the supervisory agency any presumed involvement of bank directors or senior managers in illicit activities, fraud or insider abuse? 3. Can supervisors take legal action against external auditors for negligence 4.Can the supervisory authority force a bank to change its internal organizational structure? 5. Are off-balance sheet items disclosed to supervisors? 6. Can the supervisory agency order the bank's directors or management to constitute provisions to cover actual or potential losses? 7. Can the supervisory agency suspend the directors' decision to distribute: a) Dividends? b) Bonuses? c) Management fees? 8. Can the supervisory agency legally declare, with such a declaration superseding the rights of bank shareholders, that a bank is insolvent? 9. Does the Banking Law give authority to the supervisory agency to intervene, that is, suspend some or all ownership rights, in a problem bank? 10. Regarding bank restructuring and reorganization, can the supervisory agency or any other government agency do the following: a) Supersede shareholder rights? b) Remove and replace management? c) Remove and replace directors? Source: Barth et al. (2004).
RESTRICT	Variable indicating whether bank activities in the securities, insurance and real estate markets, and bank ownership and control of non-financial firms are (1) unrestricted, (2) permitted, (3) restricted, or (4) prohibited. This indicator can theoretically range from 1 to 4, with higher values indicating more restrictions on bank activities and non-financial ownership and control. Source: Barth et al. (2004).
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 effectiveness, regulatory quality, rule of law, and control and corruption. Higher values correspond to better governance outcomes. Average for the 1998 period. Source: Kaufmann et al. (2001).
FREEDOM	Composite of 10 institutional factors determining economic freedom: trade policy, fiscal burden of government intervention in the economy, monetary policy, capital flows and foreign investment, banking and finance, wages and prices, property rights, regulation, and black market activity. Individual factors are weighted equally to determine overall score of economic freedom. It ranges from 1 to 5 with greater values signifying better protection of freedom (calculated at 6 minus the property rights index of the Heritage Foundation). Source: Heritage Foundation..
RIGHTS	Annual indicator of the degree to which private property rights are protected and the degree to which the government enforces laws that protect private property. It also accounts for the possibility that private property will be expropriated. In addition, it analyzes the independence of the judiciary, the existence of corruption within the judiciary, and the ability of individuals and businesses to enforce contracts. This index ranges from 1 to 5, with a high score signifying greater legal protection of property (calculated at 6 minus the property rights index of the Heritage Foundation). Source: Heritage Foundation.
LAW	Annual 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. Source: ICRG published by the Political Risk Service Group.

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Table 1.
Summary statistics by country

Median values by country. Capital requirement shows the percentage of minimum capital required over risk-weighted assets defined following Basel I. BUF is the bank capital less the requirement, RBUF is BUF divided by the requirement, COSTDEP is the cost of deposits, LERNER is the LERNER index, ROE is the return on equity, SIZE is the logarithm for total bank assets, LOANS is the ratio of total loans to total bank assets, NPL is the ratio of non-performing loans to total bank assets, and LLA is the ratio of the total allowance for loan loss to total bank assets. ***, **, and * represent significance at the 1%, 5% and 10% levels, respectively.

Panel A: Descriptive statistics

Country	Capital Requirement	BUF	RBUF	COSTDEP	LERNER	ROE	SIZE	LOANS	NPL	LLA	# observations	# banks
						Median values						
Argentina	11.5	3.810	0.331	0.045	0.032	0.158	15.060	0.567	0.056	0.035	14	2
Australia	8	3.100	0.387	0.044	0.285	0.189	16.053	0.785	0.007	0.008	113	16
Austria	8	2.730	0.341	0.036	0.237	0.115	13.259	0.529	0.036	0.033	46	10
Bahrain	12	8.765	0.730	0.048	0.248	0.117	14.663	0.525	0.049	0.053	36	6
Bangladesh	8	4.195	0.524	0.057	0.267	0.464	12.129	0.582	0	0.023	26	5
Brazil	11	6.250	0.568	0.138	0.096	0.175	13.894	0.354	0.065	0.049	288	56
Colombia	9	2.425	0.269	0.127	0.026	0.098	13.770	0.599	0.050	0.025	54	4
Croatia	10	6.600	0.660	0.040	0.147	0.058	13.816	0.477	0.117	0.138	32	5
Cyprus	8	3.680	0.460	0.052	0.365	0.167	15.440	0.589	0.071	0.041	20	4
Czech Republic	8	7.610	0.951	0.054	0.221	0.103	13.676	0.375	0.098	0.093	57	10
Chile	8	4.200	0.525	0.057	0.088	0.139	14.513	0.623	0.015	0.022	76	15
Denmark	8	5.625	0.703	0.028	0.270	0.139	12.676	0.594	0.011	0.051	396	53
Ecuador	9	5.000	0.556	0.060	0.425	0.093	13.480	0.544	0.107	0.114	19	5
El Salvador	11	-1.000	-0.091	0.068	0.124	0.177	14.238	0.613	0.031	0.031	25	3
Estonia	10	4.010	0.401	0.032	0.394	0.165	12.659	0.518	0.057	0.022	34	5
Finland	8	3.360	0.420	0.034	0.046	0.120	16.364	0.512	0.010	0	46	8
France	8	3.440	0.430	0.046	0.026	0.119	14.509	0.469	0.069	0.046	401	64
Germany	8	2.100	0.262	0.039	0.141	0.128	17.041	0.545	0.032	0.028	101	16
Greece	8	4.190	0.524	0.059	0.176	0.297	16.679	0.387	0	0.033	31	3
Hong Komg	12.5	8.895	0.712	0.052	0.197	0.124	14.986	0.541	0.030	0.021	234	32
Hungary	8	5.175	0.647	0.064	0.066	0.197	14.620	0.524	0.029	0.018	34	5
Iceland	8	2.310	0.289	0.053	0.274	0.140	14.257	0.731	0.038	0.025	29	3
India	8	3.260	0.407	0.070	0.114	0.204	14.236	0.428	0.069	0.051	378	57
Indonesia	8	6.150	0.769	0.101	0.334	0.155	12.519	0.592	0.095	0.033	217	38
Ireland	8	3.100	0.387	0.042	0.548	0.220	16.894	0.605	0.019	0.017	30	4
Israel	9	1.135	0.126	0.049	0.086	0.103	14.965	0.710	0.073	0.025	84	14
Italy	8	4.095	0.512	0.032	0.051	0.118	14.295	0.536	0.063	0.029	520	95
Jamaica	10	16.570	1.657	0.062	0.135	0.419	14.466	0.289	0.067	0.038	7	1
Japan	8	1.895	0.237	0.016	-1.092	0.028	18.784	0.690	0.056	0.025	36	5
Jordan	12	2.240	0.186	0.049	0.168	0.156	13.925	0.399	0.138	0.076	23	4
Kazakhstan	12	23.250	1.937	0.048	0.261	0.204	11.127	0.543	0.035	0.050	26	2
Kenya	7.5	13.750	1.833	0.075	0.177	0.249	10.881	0.601	0.213	0.095	23	5
Korea	8	2.755	0.344	0.062	0.041	0.038	17.557	0.554	0.116	0.031	60	10
Kuwait	12	9.100	0.758	0.052	0.370	0.135	15.316	0.407	0.133	0.132	26	4
Lithuania	10	6.490	0.649	0.041	-0.021	0.081	11.871	0.477	0.097	0.057	44	8
Luxembourg	8	4.255	0.532	0.058	0.120	0.234	15.650	0.166	0	0.031	120	19
Malawi	8	14.000	1.750	0.116	0.377	0.723	11.692	0.307	0.112	0.053	14	2
Malaysia	8	5.320	0.665	0.040	0.261	0.148	14.465	0.638	0.060	0.040	161	27
Malta	8	9.090	1.136	0.041	0.238	0.187	13.088	0.390	0.052	0.030	36	5
Mauritius	10	8.240	0.824	0.072	0.329	0.180	13.042	0.609	0.151	0.042	18	4
Mexico	8	4.630	0.579	0.189	1.356	0.076	16.087	0.680	0.074	0.066	31	7
Moldova	12	33.000	2.750	0.074	0.423	0.189	9.932	0.519	0.131	0.084	10	2
Namibia	8	6.900	0.862	0.088	-0.355	0.414	12.629	0.733	0.075	0.036	20	3
Netherlands	8	6.600	0.825	0.048	0.014	0.106	14.790	0.535	0.020	0.017	135	20
Nigeria	8	5.280	0.660	0.043	0.214	0.301	13.347	0.255	0.318	0.211	16	3
Norway	8	2.960	0.370	0.052	-0.017	0.140	14.538	0.840	0.027	0.019	74	10
Oman	12	4.375	0.365	0.046	0.303	0.152	13.475	0.736	0.079	0.041	42	7
Peru	9	1.430	0.157	0.067	-0.021	0.031	14.355	0.579	0.105	0.095	13	2
Philippines	10	6.230	0.623	0.055	0.064	0.046	13.790	0.642	0.136	0.056	62	11
Poland	8	5.605	0.701	0.084	0.780	0.184	13.792	0.479	0.120	0.051	106	17
Portugal	8	3.900	0.487	0.047	-0.101	0.117	15.780	0.442	0.032	0.023	77	13
Romania	8	21.290	2.661	0.159	0.251	0.174	12.232	0.346	0.041	0.056	62	11
Russian	12	13.550	1.129	0.063	0.332	0.184	11.987	0.426	0.007	0.082	99	15
Saudi Arabia	8	8.540	1.067	0.036	0.152	0.171	15.739	0.404	0.058	0.045	27	4
Singapore	12	8.800	0.733	0.033	0.288	0.105	17.022	0.601	0.106	0.050	32	6
Slovakia	8	4.495	0.562	0.075	0.277	0.109	13.127	0.363	0.052	0.067	30	6
Slovenia	8	5.900	0.737	0.052	0.189	0.165	13.525	0.523	0.081	0.061	62	10
South Africa	8	3.200	0.400	0.104	0.762	0.190	14.095	0.777	0.044	0.024	53	10
Spain	8	2.810	0.351	0.038	0.066	0.157	15.950	0.513	0.019	0.022	115	20
Sri Lanka	8	5.250	0.656	0.073	0.396	0.080	11.349	0.593	0.150	0.021	25	5

Sweden	8	4.670	0.584	0.047	0.358	0.165	16.165	0.624	0.022	0.107	53	8
Switzerland	8	5.960	0.745	0.032	0.280	0.135	15.291	0.394	0.053	0.052	63	10
Thailand	8	3.720	0.438	0.033	-0.485	-0.171	15.919	0.716	0.236	0.076	39	9
Trinidad and Tobago	8	4.220	0.527	0.065	0.295	0.411	13.709	0.638	0.024	0.006	7	1
Tunisia	8	1.970	0.246	0.029	0.250	0.163	13.820	0.707	0.133	0.099	20	4
Turkey	8	4.740	0.592	0.146	0.095	0.317	14.474	0.401	0.039	0.030	29	4
Ukraine	8	22.000	2.750	0.085	0.133	0.116	11.089	0.493	0.080	0.117	32	2
United Kingdom	8	7.900	0.975	0.050	0.142	0.147	15.073	0.479	0.028	0.021	194	28
USA	8	4.300	0.537	0.034	0.227	0.210	14.683	0.635	0.005	0.015	2922	408
Venezuela	10	9.790	0.979	0.070	0.1328	0.187	11.982	0.437	0.052	0.066	145	26

Panel B: Correlations

Variables	BUF	RBUF	COSTDEP	LERNER	ROE	SIZE	LOANS	NPL	LLA
BUF	1								
RBUF	0.992***	1							
COSTDEP	0.109***	0.107***	1						
LERNER	0.073***	0.069***	-0.002	1					
ROE	0.008	0.008	-0.002	0.047***	1				
SIZE	-0.273***	-0.256***	-0.071***	-0.024**	0.002	1			
LOANS	-0.293***	-0.285***	-0.067***	0.046***	-0.008	0.107***	1		
NPL	-0.070***	-0.090***	0.203***	-0.289***	-0.068***	-0.126***	0.003	1	
LLA	0.022	0.018	0.046***	-0.114***	-0.011	-0.062***	-0.120***	0.178***	1

Table 2. Bank determinants of capital buffers

Regressions are estimated using the Arellano and Bond (1991) GMM difference estimator for panel data with lagged dependent variables. In Panel A the dependent variable is the capital buffer in absolute terms (BUF), and in Panel B the dependent variable is the capital buffer in relative terms (RBUF), where BUF is divided by the requirement. As explanatory variables in both Panels we include one lag of the dependent variable (BUF_{t-1}), the cost of deposits (COSTDEP), the Lerner index (LERNER) as a measure of the bank's market power, the square of the Lerner index (LERNERSQ), the natural logarithm of bank assets (SIZE), the ratio of loans to total bank assets (LOANS), the ratio of non-performing loans to total bank assets (NPL), the ratio of the total allowance for loan loss to total bank assets (LLA), the return on equity (ROE), and the GDP growth in the country (GDPGR). Regressions are estimated for 1995-2002. Year and country dummy variables are included for all the estimations but are not reported. T-statistics are in parentheses. ***, **, and * represent significance at the 1%, 5% and 10% levels, respectively.

	Predicted sign	Panel A. Dependent variable BUF					
		(1)	(2)	(3)	(4)	(5)	(6)
$BUFt_{-1}$	+	0.263***	0.228***	0.245***	0.319***	0.211***	0.303***
		(36.46)	(33.15)	(42.50)	(52.06)	(37.11)	(62.85)
COSTDEP	+	19.035***	18.611***	19.743***	20.299***	19.403***	21.268***
		(1.26)	(10.81)	(16.79)	(15.82)	(12.47)	(19.65)
LERNER	+	5.257***	8.251***	10.977***	1.054	6.493***	6.019***
		(8.15)	(13.95)	(17.08)	(1.54)	(10.12)	(9.40)
SIZE	-	-2.904***	3.811***	-2.208***	-3.667***	3.655***	-3.256***
		(-6.58)	(7.51)	(-5.12)	(-9.74)	(8.51)	(-9.19)
LOANS		-3.405	-9.359***	2.733	-5.342**	-10.732***	-1.493
		(-1.26)	(-5.84)	(1.36)	(-2.26)	(-9.52)	(-0.84)
NPL			1.182			-1.030	
			(0.69)			(-0.70)	
LLA			-0.448***			-0.450***	
			(-14.45)			(-15.80)	
LERNERSQ	-			-0.514***			-0.369***
				(-8.03)			(-6.02)
ROE	-/+				-0.234	0.126	-0.169
					(-0.80)	(1.13)	(-0.63)
GDPGR	-	0.00003	-0.083***	0.0001	-0.0002	-0.082***	-0.00003
		(0.11)	(-17.50)	(0.46)	(-0.68)	(-18.86)	(-0.10)
Year dummies		Yes	Yes	Yes	Yes	Yes	Yes
Country dummies		Yes	Yes	Yes	Yes	Yes	Yes
m_1		-1.75*	-0.59	-1.75*	-1.72*	-0.60	-1.73*
m_2		1.02	-0.32	1.05	1.07	-0.26	1.08
Sargan Test		127.17	216.90*	163.16	155.53	260.40**	189
# observations		5202	3577	5202	5202	3577	5202
# banks		1337	978	1337	1337	978	1337
# countries		70	66	70	70	66	70
	Predicted sign	Panel B. Dependent variable RBUF					
		(1)	(2)	(3)	(4)	(5)	(6)
$RBUFt_{-1}$	+	0.282***	0.275***	0.270***	0.339***	0.258***	0.327***
		(44.73)	(40.50)	(49.11)	(61.33)	(46.73)	(70.17)
COSTDEP	+	2.303***	3.156***	2.613***	2.473***	3.113***	2.708***
		(14.40)	(13.36)	(19.03)	(15.85)	(16.31)	(21.70)
LERNER	+	0.715***	0.903***	1.162***	0.202***	0.756***	0.633***
		(9.52)	(12.30)	(15.32)	(2.63)	(10.25)	(8.40)
SIZE	-	-0.308***	0.512***	-0.297***	-0.404***	0.522***	-0.365***
		(-5.75)	(8.50)	(-4.02)	(-9.19)	(10.82)	(-8.72)
LOANS		-0.257	-0.889***	0.632**	-0.514*	-1.132***	-0.010
		(-0.77)	(-4.60)	(2.41)	(-1.78)	(-9.15)	(-0.04)
NPL			-0.076			-0.424**	
			(-0.36)			(-2.28)	
LLA			-0.062***			-0.060***	
			(-15.94)			(-17.16)	
LERNERSQ	-			-0.038***			-0.030***
				(-5.00)			(-4.22)
ROE	-/+				-0.032	0.008	-0.034
					(-0.91)	(0.67)	(-1.04)
GDPGR	-	0.000006	-0.0097***		-0.00003	-0.0096***	-0.0000
		(0.14)	(-17.69)		(-0.57)	(-19.60)	(0.02)
Year dummies		Yes	Yes	Yes	Yes	Yes	Yes
Country dummies		Yes	Yes	Yes	Yes	Yes	Yes
m_1		-1.66*	-0.45	-1.69*	-1.62*	-0.46	-1.65*
m_2		1.00	-0.57	1.02	1.03	-0.49	1.04
Sargan Test		126.35	215.51	165.61	152.54	261.58**	188.25
# observations		5202	3577	5202	5202	3577	5202
# banks		1337	978	1337	1337	978	1337
# countries		70	66	70	70	66	70

Table 3
Capital buffers and quality of the accounting information

Regressions are estimated using the Arellano and Bond (1991) GMM difference estimator for panel data with lagged dependent variables. The dependent variable is the capital buffer (BUF). As explanatory variables we include one lag of the dependent variable (BUF_{t-1}), the cost of deposits (COSTDEP), the Lerner index (LERNER) as a measure of the bank´s market power, the square of the Lerner index (LERNERSQ), the natural logarithm of bank assets (SIZE), the ratio of loans to total bank assets (LOANS), and the GDP growth in the country (GDPGR). ACCOUNT is the index for information disclosure requirements. Regressions are estimated for 1995-2002. Year and country dummy variables are included for all the estimations but are not reported. T-statistics are in parentheses. ***, **, and * represent significance at the 1%, 5% and 10% levels, respectively.

	Predicted sign				
		(1)	(2)	(3)	(4)
BUFt-1	+	0.245*** (42.50)	0.242*** (53.41)	0.263*** (51.11)	0.262*** (66.03)
COSTDEP	+	19.743*** (16.79)	90.833* (1.73)	17.543*** (17.56)	51.937 (1.06)
LERNER	+	10.977*** (17.08)	10.314*** (17.19)	-45.584*** (-3.95)	-28.239** (-2.43)
LERNERSQ	-	-0.514*** (-8.03)	-0.590*** (-10.61)	-0.378*** (-7.57)	-0.417*** (-9.44)
SIZE	-	-2.208*** (-5.12)	-2.042*** (-5.37)	-2.436*** (-6.26)	-1.802*** (-5.41)
LOANS		2.733 (1.36)	1.463 (0.86)	1.098 (0.67)	1.510 (1.06)
GDPGR	-	0.0001 (0.46)	0.00006 (0.19)	0.00002 (0.07)	-0.00002 (-0.07)
ACCOUNT		-0.980 (-1.12)	-0.261 (-1.19)	-1.480* (-1.72)	-1.296 (-1.18)
COSTDEPxACCOUNT	-		-17.756 (-1.40)		-8.518 (-0.72)
LERNERxACCOUNT	+			2.933*** (4.66)	8.707*** (3.14)
Year dummies		Yes	Yes	Yes	Yes
Country dummies		Yes	Yes	Yes	Yes
m_1		-1.75*	-1.73*	-1.67*	-1.68*
m_2		1.05	1.06	1.04	1.04
Sargan Test		163.16	187.97	185.77	204.33
# observations		5202	5202	5202	5202
# banks		1337	1337	1337	1337
# countries		70	70	70	70

Table 4
Capital buffers and generosity of deposit insurance

Regressions are estimated using the Arellano and Bond (1991) GMM difference estimator for panel data with lagged dependent variables. The dependent variable is the capital buffer (BUF). As explanatory variables we include one lag of the dependent variable (BUF_{t-1}), the cost of deposits (COSTDEP), the Lerner index (LERNER) as a measure of the bank market power, the square of the Lerner index (LERNERSQ), the natural logarithm of bank assets (SIZE), the ratio of loans to total bank assets (LOANS), and the GDP growth in the country (GDPGR). HAZARD is the index for moral hazard associated with the generosity of deposit insurance. Regressions are estimated for 1995-2002. Year and country dummy variables are included for all the estimations but are not reported. T-statistics are in parentheses. ***, **, and * represent significance at the 1%, 5% and 10% levels, respectively.

	Predicted sign				
		(1)	(2)	(3)	(4)
BUFt-1	+	0.245*** (42.50)	0.247*** (40.44)	0.239*** (41.44)	0.241*** (38.81)
COSTDEP	+	19.743*** (16.79)	19.033*** (17.41)	16.302*** (13.82)	15.864*** (14.26)
LERNER	+	10.977*** (17.08)	11.778*** (19.01)	11.416*** (17.49)	11.976*** (18.52)
LERNERQ	-	-0.514*** (-8.03)	-0.626*** (-10.46)	-0.958*** (-16.49)	-0.997*** (-18.15)
SIZE	-	-2.208*** (-5.12)	-1.981*** (-4.78)	-2.137*** (-4.80)	-1.946*** (-4.49)
LOANS		2.733 (1.36)	-2.639 (-1.47)	0.373 (0.17)	-3.111 (-1.56)
GDPGR	-	0.0001 (0.46)	0.00003 (0.12)	0.00003 (0.10)	-0.00001 (-0.03)
HAZARD		0.019 (0.05)	-0.269 (0.77)	0.201 (0.44)	0.024 (0.06)
COSTDEPxHAZARD	-		-1.504*** (-8.60)		-1.005*** (-5.67)
LERNERxHAZARD	+			0.430*** (5.15)	0.433*** (5.35)
Year dummies		Yes	Yes	Yes	Yes
Country dummies		Yes	Yes	Yes	Yes
m_1		-1.75*	-1.53	-1.69*	-1.55
m_2		1.05	1.03	1.07	1.06
Sargan Test		163.16	167.29	166.59	168.40
# observations		5202	5202	5202	5202
# banks		1337	1337	1337	1337
# countries		70	70	70	70

Table 5
Capital buffers and restrictions on bank activities

Regressions are estimated using the Arellano and Bond (1991) GMM difference estimator for panel data with lagged dependent variables. The dependent variable is the capital buffer (BUF). As explanatory variables we include one lag of the dependent variable (BUF_{t-1}), the cost of deposits (COSTDEP), the Lerner index (LERNER) as a measure of the bank market power, the square of the Lerner index (LERNERSQ), the natural logarithm of bank assets (SIZE), the ratio of loans to total bank assets (LOANS), and the GDP growth in the country (GDPGR). RESTRICT is the measure of regulatory restrictions on bank activities. Regressions are estimated for 1995-2002. Year and country dummy variables are included for all the estimations but are not reported. T-statistics are in parentheses. ***, **, and * represent significance at the 1%, 5% and 10% levels, respectively.

	Predicted sign				
		(1)	(2)	(3)	(4)
BUFt-1	+	0.245*** (42.50)	0.242*** (54.03)	0.261*** (48.65)	0.263*** (59.45)
COSTDEP	+	19.743*** (16.79)	18.139* (1.72)	11.209*** (9.64)	33.772** (2.19)
LERNER	+	10.977*** (17.08)	9.986*** (16.97)	-77.656*** (-13.81)	-80.945*** (-14.61)
LERNERQ	-	-0.514*** (-8.03)	-0.494*** (-8.44)	-1.137*** (-14.78)	-1.142*** (-15.65)
SIZE	-	-2.208*** (-5.12)	-2.571*** (-6.75)	-2.019*** (-4.27)	-2.543*** (-5.83)
LOANS		2.733 (1.36)	0.515 (0.30)	-1.780 (-0.95)	-3.487** (-2.07)
GDPGR	-	0.0001 (0.46)	-0.00003 (-0.10)	0.00003 (0.98)	
RESTRICT		0.175 (1.12)	0.240 (1.64)	0.248** (2.06)	0.244 (1.57)
COSTDEPxRESTRICT	-		0.051 (0.05)		-2.131 (-1.43)
LERNERxRESTRICT	+			9.157*** (15.31)	9.437*** (15.97)
Year dummies		Yes	Yes	Yes	Yes
Country dummies		Yes	Yes	Yes	Yes
m_1		-1.75*	-1.74*	-1.55	-1.56
m_2		1.05	1.05	1.00	1.01
Sargan Test		163.16	185.99	228.75**	251.92**
# observations		5202	5202	5202	5202
# banks		1337	1337	1337	1337
# countries		70	70	70	70

Table 6
Capital buffers and official supervision

Regressions are estimated using the Arellano and Bond (1991) GMM difference estimator for panel data with lagged dependent variables. The dependent variable is the capital buffer (BUF). As explanatory variables we include one lag of the dependent variable (BUF_{t-1}), the cost of deposits (COSTDEP), the Lerner index (LERNER) as a measure of the bank market power, the square of the Lerner index (LERNERSQ), the natural logarithm of bank assets (SIZE), the ratio of loans to total bank assets (LOANS), and the GDP growth in the country (GDPGR). OFFICIAL measures the power of official bank supervision. Regressions are estimated for 1995-2002. Year and country dummy variables are included for all the estimations but are not reported. T-statistics are in parentheses. ***, **, and * represent significance at the 1%, 5% and 10% levels, respectively.

	Predicted sign	(1)	(2)	(3)	(4)
BUFt-1	+	0.245*** (42.50)	0.237*** (59.05)	0.248*** (45.53)	0.244*** (62.60)
COSTDEP	+	19.743*** (16.79)	40.446*** (7.55)	15.928*** (14.10)	60.731*** (14.68)
LERNER	+	10.977*** (17.08)	10.011*** (16.94)	-16.023*** (-4.22)	-20.628*** (-7.57)
LERNERQ	-	-0.514*** (-8.03)	-0.485*** (-8.22)	-0.448*** (-8.27)	-0.345*** (-8.13)
SIZE	-	-2.208*** (-5.12)	-3.183*** (-8.46)	-2.086*** (-4.50)	-3.042*** (-7.25)
LOANS		2.733 (1.36)	-1.306 (-0.80)	-1.017 (-0.53)	-2.703* (-1.90)
GDPGR	-	0.0001 (0.46)	0.00006 (0.20)	-0.0001 (-0.56)	-0.00006 (-0.18)
OFFICIAL	+	0.121 (1.12)	0.187** (2.58)	-0.481 (-0.36)	0.161* (1.92)
COSTDEPxOFFICIAL	-		-1.618*** (-3.60)		-3.321*** (-9.10)
LERNERxOFFICIAL	-/+			2.452*** (7.37)	2.740*** (10.91)
Year dummies		Yes	Yes	Yes	Yes
Country dummies		Yes	Yes	Yes	Yes
m_1		-1.75*	-1.73*	-1.66*	-1.66*
m_2		1.05	1.05	1.03	1.03
Sargan Test		163.16	197.16	224.71**	271.35***
# observations		5202	5202	5202	5202
# banks		1337	1337	1337	1337
# countries		70	70	70	70

Table 7
Capital buffers and institutions

Regressions are estimated using the Arellano and Bond (1991) GMM difference estimator for panel data with lagged dependent variables. The dependent variable is the capital buffer (BUF). As explanatory variables we include one lag of the dependent variable (BUF_{t-1}), the cost of deposits (COSTDEP), the Lerner index (LERNER) as a measure of the bank market power, the square of the Lerner index (LERNERSQ), the natural logarithm of bank assets (SIZE), the ratio of loans to total bank assets (LOANS), and the GDP growth in the country (GDPGR). KKZ is the indicator of institutional quality in the country. Regressions are estimated for 1995-2002. Year and country dummy variables are included for all the estimations but are not reported. T-statistics are in parentheses. ***, **, and * represent significance at the 1%, 5% and 10% levels, respectively.

	Predicted sign				
		(1)	(2)	(3)	(4)
BUFt-1	+	0.245*** (42.50)	0.239*** (54.98)	0.245*** (40.35)	0.235*** (51.22)
COSTDEP	+	19.743*** (16.79)	9.894*** (4.60)	23.647*** (20.09)	1.792 (1.07)
LERNER	+	10.977*** (17.08)	12.344*** (19.07)	12.284*** (18.60)	12.699*** (22.10)
LERNERQ	-	-0.514*** (-8.03)	-0.753*** (-14.26)	-0.252*** (-3.84)	-0.280*** (-5.08)
SIZE	-	-2.208*** (-5.12)	-3.595*** (-8.92)	-1.799*** (-4.22)	-4.118*** (-12.72)
LOANS		2.733 (1.36)	-2.534 (-1.58)	-6.661*** (-3.57)	-5.399*** (-4.68)
GDPGR	-	0.0001 (0.46)	0.0001 (0.46)	0.0005* (1.73)	0.0004 (1.42)
KKZ		-0.056 (-0.63)	0.009 (0.18)	0.116 (1.50)	0.196** (2.02)
COSTDEPxKKZ	+		0.546** (2.01)		2.169*** (9.73)
LERNERxKKZ	-			-2.891*** (-18.56)	-2.977*** (-21.70)
Year dummies		Yes	Yes	Yes	Yes
Country dummies		Yes	Yes	Yes	Yes
m_1		-1.75*	-1.64	-1.81*	-1.84*
m_2		1.05	1.04	1.15	1.14
Sargan Test		163.16	187.04	212.01	252.15**
# observations		5202	5202	5202	5202
# banks		1337	1337	1337	1337
# countries		70	70	70	70

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