

# Why are net-interest margins across countries so different?

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In this study, we use panel data from 96 countries over the period 1994 – 2008 to provide new evidence regarding why bank margins differ across countries. More specifically, we test whether, and, if so, by how much, country-level governance variables and bank-specific factors explain the net-interest margins over time. We find that both bank-specific factors and country-level governance variables are important determinants of the interest margins. We also investigate whether these determinants vary by the level of economic development by splitting our sample into developed and developing countries. We find significant differences in the determinants of margins between developed and developing countries.

*Key Words:* Commercial Bank, Corporate Governance, Creditors' Rights, Developing Countries, Legal Origin, Net-Interest Margin, Market Development, Judicial Efficiency

*JEL Classification:* D21, G15, G21

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# Why are net-interest margins across countries so different?

## 1. Introduction

The net-interest margin, defined as the difference between a bank's interest income and interest expense expressed as a percentage of interest-earning assets, varies widely across countries, as well as between developing and developed countries. The margin is widely considered, and often used, as a proxy for the efficiency of financial intermediation (Demirguc-Kunt and Huizinga, 1999).

Wide margins result from market frictions, such as transaction costs, information asymmetries and regulatory inefficiencies (Stiglitz and Weiss, 1981). Margins are also a function of a country's laws and institutions (Demirguc-Kunt *et al.*, 2004; Laeven and Majnoni, 2005; Qian and Strahan, 2007; Bae and Goyal, 2009).

In this study, we provide new evidence on the determinants of margins across different countries. Specifically, we use country-level data from 96 countries over the period 1994-2008 to explore how a country's governance structure affects the efficiency of financial intermediation after controlling for bank-specific determinants of margins, such as overhead expense and asset quality. Our work builds upon Demirguc-Kunt and Huizinga 1999, Demirguc-Kunt *et al.* 2004, and Laeven and Majnoni 2005, in using data from multiple countries to explore determinants of the bank margins, especially the influence of country-level governance factors.

We contribute to this literature in at least four important ways. First, we test a number of new governance variables, such as the efficiency of enforcement as proposed by Djankov *et al.* 2003 and refined by Djankov *et al.* 2007 and the importance of information sharing as proposed by Djankov *et al.* 2007. Second, we split our sample into developing and developed countries in order to provide new evidence on whether determinants of the net interest margins differ across

these two groups of countries. Governance and institutions are less developed in developing countries and several studies find that the importance of governance factors differs across these two groups of countries (Djankov *et al.*, 2007; Cole *et al.*, 2008). Third, we provide evidence from more recent years, including 2001-2008, whereas previous studies have analyzed data only through 2000. Fourth, we employ panel data techniques that enable us to control for clustering at the country level.

The remainder of this paper is organized as follows. In Section 2, we provide a review the literature most closely related to our study. In Section 3, we develop and describe our empirical model of the net-interest margin. In Section 4, we specify and describe our data and methodology. In Section 5, we present the main results and discuss tests of robustness. In Section 6, we summarize our findings and draw conclusions.

## **2. Related Literature**

The study of bank interest margins can be traced back to 1945, when Samuelson explained how an increase of the interest rate affected the banking system (Samuelson, 1945). In another early work, Ho and Saunders (1981) applied a two-step procedure to explain the determinants of bank interest spreads in panel data samples. This model has been extended (McShane and Sharpe, 1985; Allen, 1988; Angbazo, 1997) and tested in various studies (e.g., Saunders and Schumacher, 2000; Brock and Suarez, 2000; Afanasieff *et al.*, 2002; Gischer and Juttner, 2003; Maudos and de Guevara, 2004; Martinez Peria and Mody, 2004).

Many studies find an important role for macroeconomic factors in explaining bank interest margins. The macroeconomic view sees interest margins driven by monetary policies and by economic cycles. Inflation can affect bank margins if monetary shocks are not passed

through to the same extent to deposit and lending rates or adjustment occurs at different speed. Furthermore, the rate of inflation is also often used as a measure of macroeconomic instability (Boyd *et al.*, 2001) or as a proxy for informational asymmetries (Huybens and Smith, 1999). Business cycle effects, as usually proxied by GDP growth, also affect lending rates, as the creditworthiness of borrowers varies over the business cycle (Bernanke and Gertler, 1989; Kiyotaki and Moore, 1997).

For a more extensive review of the literature on spreads, we refer the reader to Demirguc-Kunt *et al.* (2004); we confine the remainder of our review to five recent studies of the cost of credit that are especially relevant to our own study.

Demirguc-Kunt and Huizinga (1999) investigate the determinants of bank interest margins using bank-level data for 80 countries over the period 1988-1995. The set of regressors includes several variables accounting for bank specific factors, macroeconomic conditions, deposit insurance regulation, overall financial structure and underlying legal and institutional indicators. They find that differences in interest margins reflect a variety of determinants: bank characteristics, macroeconomic conditions, deposit-insurance regulation, overall financial structure, and underlying legal and institutional factors.

Demirguc-Kunt *et al.* (2004) examines the impact of bank regulations, concentration, inflation and national institutions on bank net interest margins and overhead costs, using data from 1995 – 1999 on more than 1,400 banks in 72 countries. They employ a number of bank-specific characteristics as control variables, while focusing on country-level factors. They find that net interest margins are narrower in countries with better institutions (including better property rights), and that inflation has a positive and robust impact. They also report that bank-specific controls explain a substantial portion of the variability in margins.

Laeven and Majnoni (2005) investigate the effect of judicial efficiency on banks' lending spreads using data from 2000 for 106 countries at the country level and for 32 countries at the level of the individual banks but aggregated at a country level. They find that judicial efficiency and inflation rates are the main drivers of interest rate spreads across countries. Their results suggest that improvements in judicial efficiency and judicial enforcement of debt contracts are important to lower the cost of financial intermediation for households and firms.

Qian and Strahan (2007) examine a sample of loans to large firms from 43 countries for evidence on how laws and institutions, and, in particular, creditor rights, affect the terms of credit, including price. They find that terms of credit, including price, are more favorable when a country has stronger creditor rights.

Bae and Goyal (2009) also examine how governance affects the terms of credit using a sample of loans to large firms in 48 countries. They look at property rights as well as creditors' rights and property rights, and find that creditor rights affect spreads but not loan size or maturity, while property rights affect all three terms of credit in a positive manner.

### **3. Determinants of the Net-Interest Margin**

In a neoclassical model where there are no market frictions or transaction costs, deposit and lending rates should be approximately equal. However, intermediation costs associated with screening and monitoring, as well as processing savings and payment services drive a wedge between the interest rate paid to savers and the interest rate charged to borrowers. The larger the inefficiencies are, the wider is the spread. A wider spread reduces the demand for loans and investments, thus lowering economic development. As banks allocate society's savings, the

efficiency of financial intermediation has substantive repercussions on economic performance (Rajan and Zingales, 1998; Wurgler, 2000).

An efficient system of corporate governance that enforces legal contracts and protects creditors' rights is generally thought to enhance a country's financial development (La Porta *et al.*, 1997, 2000), lead to lower interest rates and improved financial intermediation (Bae and Goyal, 2009), and thereby improve the performance of a country's economy (King and Levine, 1993; Levine, 1998; Levine and Zervos, 1998; Rajan and Zingales, 1998). However, theory suggests that the net impact of corporate governance on the net-interest margin is ambiguous because of two countervailing effects.

On the positive side, good governance should narrow the margin because losses in the event of defaults should be narrower. Better protection of creditors' rights should improve the amount and speed of recovery on a defaulted loan (Djankov *et al.* 2003, 2007). The larger amount of recovery and a shorter time required to take possession of collateral in the event of loan default allow banks to decrease their required margin.

On the negative side, good governance can negatively affect margins because of its influence on the composition of a bank's credit portfolio. According to Stiglitz and Weiss (1981), banks ration credit to some borrowers as risks increase. Consequently, some riskier bank customers who would be credit-constrained in a country with poor governance will be able to obtain bank credit in a country with stronger creditors' rights and more efficient judicial enforcement, albeit at higher loan rates than those charged to pre-existing and less risky customers. Hence, the average margins can actually widen as a result of good governance because of the higher risk-premiums charged to compensate for lending to high-risk borrowers (Bianco *et al.*, 2005).

The determinants of the interest rate margin are expected to vary significantly among developing and developed countries because of differences in the development of markets and institutions, as well as differences in the rights and protection of creditors (La Porta *et al.* 1997, 2000). Consequently, we divide our sample into developed and developing countries, and test for differences in the bank margins and its determinants across these two groups.

### **3.1 Dependent variable**

Our dependent variable is the cost of financial intermediation as measured by net-interest margin, which is defined as the difference in interest income and interest expense divided by interest-bearing assets. We measure net-interest margin at the individual bank level, but aggregate it to the country level.

The net-interest margins are based on balance sheet information provided by the Bankscope database. An important advantage of using Bankscope data is that the value of the average rates charged by a homogeneous sector of the banking system can be computed. This fact greatly enhances the comparability across countries. However, using bank-level data from balance sheet and income statements also means that interest rates have to be imputed from the interest income and expenses items, given that banks do not report the interest rates at the bank level. In case the banks do not have to separately report the interest income by loan type, but only their total, certain information get lost. Given the focus of our study, we believe that the advantage of having comparable data outweighs this potential information loss.



### 3.2 Independent variables

Our empirical analysis is based on a cross section of bank lending spreads and assesses the sensitivity of such spreads to the quality of the legal system and to a number of other country-specific and banking specific variables. Furthermore, we take into account that the spreads differ within and across countries and that the explanatory variables might differ whether we are analyzing developing or developed countries.

First, we test how different measures of country-level corporate governance variables influence the net interest margin. Our first set of variables are measures of **Legal Origin**, as first suggested by LLSV (1998). LLSV hypothesize that the legal system, rules and institutions left by a country's colonizer have lasting impacts on the legal protection and enforcement available in the country. Specifically, countries with English common-law heritage are expected to have better rules and institutions than countries with French civil-law heritage. Legal origin is measured by a series of a five dummy variables that identify the legal origin of the company law or commercial code of a country: English, French, German, Scandinavian and Socialist.

La Porta *et al.* 1997 make the important distinction between legal rights and the enforcement of those rights. One can have strong legal rights but poor enforcement of those rights, or efficient enforcement but weak legal rights, either of which will negatively impact a banker's pricing of credit. It is important to have both strong legal rights and efficient enforcement in order to maximize the impact of governance on the price of credit.

We use the index of **creditors rights** first proposed by LLSV (1998) and updated by Djankov *et al.* (2007) as our primary measure of a creditor's legal rights. This index of four binary indicator variables measures the legal rights of creditors against defaulting debtors in different jurisdictions. The index is constructed as of January of each year between 1978 and

2003 for a sample of 129 countries. It measures four powers of secured lenders in bankruptcy. The first measure CR1 is whether secured creditors are able to seize their collateral once a reorganization petition is approved. The second measure CR2 is whether restrictions such as creditor consent must be observed when a borrower files for reorganization, as opposed to debtors seeking unilateral protection from creditors' claims by filing for rehabilitation. The third measure CR3 is whether secured creditors are paid first out of the proceeds of liquidation a bankrupt firm or if third-party claims take priority. The fourth measure CR4 is whether creditors or an administrator is responsible for running the business during reorganization, rather than having the debtor continue to run the business. Djankov *et al.* (2007) add a value of one to the index for each of the powers that a country's law and regulations provide to secured lenders. They find that laws change slowly as there is a high degree of persistence in the creditor-rights index with differences persisting over a 25-year period. Consequently, we assume that the creditor rights variable does not change between 2003 and 2008.

We use **contract enforcement days** as our primary measure of the efficiency of enforcement of a creditors' legal rights, as first proposed by Djankov *et al.* 2003 and then refined by Djankov *et al.* 2007. Our measure is taken from the data of Djankov *et al.* (2007), and measures the number of calendar days to enforce a contract of unpaid debt worth 50% of the country's GDP per capita. The variable is constructed as of January 2003. We assume that the variable does not change during our sample period.

We also test an alternative set of governance variables provided by the World Bank research database. The data are provided by the governance indicators research database of the World Bank (Kaufmann, Kraay and Mastruzzi, 2009). Our primary variable of interest is the

**Rule of Law**, which is a measure of the rules of society and, particularly, measures the quality of contract enforcement, property rights, as well as the likelihood of crime and violence.

In addition, we test whether the degree to which credit information is **publicly** available, as first proposed by Djankov *et al.* (2007), affects the price of credit as measured by the net-interest margin. Using data from the World Bank Credit Registries database, we construct a dummy variable that takes value of one if (i) a public credit registry operates in the country or (ii) a private bureau operates in the country, and takes on a value of zero otherwise. A public registry is defined as a database owned by public authorities that collects information on the standing of borrowers in the financial system and makes it available for financial institutions. A private bureau is defined as a private commercial firm or nonprofit organization that maintains a database on the standing of borrowers in the financial system and its primary role is to facilitate exchange of information amongst banks and financial institutions. The variables are available for every year from 1978 to 2003.

We include two control variables to account for differences in a country's macroeconomic environment. First, we control for the rate of **inflation**, using data from the World Development Indicators database. Inflation can be used as a measure of macroeconomic instability. Boyd *et al.* (2001) show that countries with high inflation have underdeveloped financial systems and banks. Huybens and Smith (1999) stress out that inflation leads to higher informational asymmetries and, therefore, to larger interest spreads. Laeven and Majnoni (2005) and Demirguc-Kunt and Huizinga (1999) find that inflation rates are important drivers of interest spreads across countries. We expect a positive relationship between inflation and interest rate spreads whether inflation captures macroeconomic instability or informational asymmetries.

Furthermore, we account for potential effects of macroeconomic developments by including a variable for GDP Growth. Controlling for **GDP Growth** allows us to control for business cycles effects that might affect lending rates as the creditworthiness of borrowers varies over the business cycle (Bernanke and Gertler, 1989; Kiyotaki and Moore, 1997). The GDP growth is expected to have a negative relationship with the net interest margin. According to empirical results from Keeton and Morris (1988) and Sinkey and Greenawalt (1991), we assume that the average probability of default of a loan is highly correlating with economic development. While the risk premium can be lower in times of economic booms, the probability of default of the borrowers and thus the net interest margin are increasing in economic slowdowns. However, developing countries with higher GDP growth are likely to exhibit higher default probabilities compared to developed countries, and it is thus à priori unclear which effect will dominate when analyzing the whole sample.

We also control for bank heterogeneity by including several bank-specific variables. A first reason for the gap between lending and deposit rates are market frictions such as **operational costs** and information asymmetries. Transaction or operational costs associated with screening and monitoring borrowers drive a wedge between the interest rate paid to depositors and the interest charged to borrowers. This intermediation costs contain an important fixed-cost element. Beside these directly occurring costs, there are also indirect operational costs incurring (e.g. marketing or compliance costs within a bank). These indirect operational costs also have to be included in the pricing models of the banks. The perfect proxy for the operational costs would include the exact screening and monitoring costs as well as the “correct” amount of indirect operational costs for the credit transactions. As this information is not available, we use the bank overhead costs as a proportion of total assets ratio of the whole bank as a proxy for the costs that

occur within the credit department (e.g. Demirguc-Kunt and Huizinga, 1999; Maudos and Fernandez de Guevara, 2004). This variable provides information on variation in bank operating costs across banking systems. It reflects variation in employment as well as in wage levels. The higher the costs for screening and monitoring are the higher is the expected interest rate. Consequently, firms that incur high unit costs will logically need to work with higher margins to enable them to cover their operating costs. Even in the absence of market power, a positive margin will be necessary in order to cover the operating costs.

The ratio of **loan loss provisions over total loans** is a measure of a bank's credit quality. The loan loss provisions are reported on a bank's income statement. A higher ratio indicates a lower credit quality. We expect net interest margins to be higher if the credit quality is lower. Thus, we expect a negative effect of the loan loss provisions relative to total loans on net interest margins.

The **regulatory capital costs** cover the unexpected loss. We expect the minimum capital-to-asset ratio requirement to have a positive impact on the net interest margin. The data for this variable come from the regulation and supervision of banks database of Barth *et al.* (2001).

To control for the impact of the structure of the banking system on the net interest margin, we use the **bank concentration** ratio. (e.g. Demirguc-Kunt *et al.*, 2004; Beck *et al.*, 2004). We will measure the bank concentration rate by the fraction of bank assets held by the three largest commercial banks in the country. The bank concentration is computed using bank-level data from the BankScope database and is drawn from the Financial Structure Dataset from Beck *et al.* (2000, 2008).

Despite of the fact and differing beliefs about the effect of bank concentration, in this paper, we held the view that monopolistic power creates an environment in which a few

powerful banks stymie competition. According to the Structure-Conduct hypothesis, banks in highly concentrated markets earn monopoly rents, as they tend to collude (Gilbert, 1984). As collusion results in higher rates being charged on loans and less interest rates being paid on deposits and as this market structure might be perceived as intimidating to other rivals or potential entrants, we expect that a higher bank concentration is positively related to a higher margin. High concentration rates lead to a high profit contribution rate and interest rate margin respectively, and are therefore a signal for an uncompetitive and inefficient market (e.g. Demirguc-Kunt *et al.* (2004). Bossone *et al.* (2002) found that interest rate spreads are determined by the market structure (bank concentration). Demirgüc-Kunt and Huizinga (1999) found that a lower market concentration ratio leads to lower margins and profits. They concluded that more competitive systems are expected to see more efficient banks with lower spreads and margins as there are no collusive or monopolistic rents possible in this case.

Finally, we control for the level of economic development. We divide our sample into developed and developing countries, and test for differences in the margins and its determinants across these two groups.

## **4. Data and methodology**

### **4.1 Data**

Our data include country-specific and bank-specific information, with the latter being aggregated at the country level. As outlined above, the data used in our analyses are taken from different sources. The main data sources for the country-specific variables are as follows: The creditor-rights data and contract-enforcement data are provided by LLSV (1998) and Djankov *et al.* (2003 and 2007), respectively. The availability of credit information data are taken from the

World Bank Credit Registries database, and the rule of law information from the governance indicators research database of the World Bank. LLSV (1998) also provided the legal origin information. Macroeconomic data such as inflation rate and GDP growth were provided by the World Development Indicators database.

The bank-specific data, which are aggregated at the country level, are based on balance-sheet information taken from the BankScope database, except for the variable for regulatory capital costs, which is taken from the regulatory database of Barth *et al.*, 2001. BankScope's coverage by assets is very comprehensive in most countries, with included banks accounting for roughly 90 percent of all bank assets. As our paper focuses on lending by commercial banks, we exclude central banks, investment banks, non-banking credit institutions and securities houses from our sample. The bank concentration rate is computed using bank-level data from the BankScope database and is drawn from the Financial Structure Dataset of Beck *et al.* (2000, 2008). The categorization of countries in developing and developed is based on the World Bank income classification, i.e., developing countries include the countries classified as low income and lower middle income, while developed countries include those in the categories of upper middle income and high income. Overall, our sample includes 1,251 country-year observations from 47 developing and 49 developed countries over the time period from 1994 to 2008.

## 4.2 Methodology

As a first step, we present a set of descriptive statistics in order to explore basic relationships in our data. In particular, we use a *t*-test to check for statistically significant differences in the means between our two groups of countries – developing and developed. Based on the median of each the explanatory variables, we split up the sample into two groups

(below the median and above the median), and analyze whether the net interest margins between the two subsamples differ from each other by constructing a  $t$ -test. We carry out procedure for our full sample, and then separately for our groups of developing and developed countries. To the extent that the differences in means are statistically significant, these tests provide univariate evidence on determinants of margins.

In a second step, we assess the impact of the various factors on the net-interest margin in the credit market by estimating linear regressions of the following form:

$$\text{Margin}_{it} = \alpha + \beta' \text{Governance} + \gamma' \text{Bank} + \varphi' \text{Control} + \varepsilon_{i,k} \quad (1)$$

where:

*Margin* is the net interest margin for bank  $i$  in country  $j$  during year  $t$ ;

*Governance* is a vector of country-level governance variables;

*Bank* is a vector of bank-level and country-level banking variables;

*Control* is a vector of country-level control variables;

$\varepsilon$  is an i.i.d error term; and

$\alpha$ ,  $\beta$ ,  $\gamma$ , and  $\varphi$  are parameters to be estimated.

We use OLS regressions with robust standard errors to estimate the coefficients in our model. Also, we control for serial correlation within countries by clustering on the country level. Given the purpose of our paper, we estimate the model separately for the full sample, for developing and developed countries.



## 5. Results

### 5.1 Descriptive Statistics and Univariate Results

In Table 2 are descriptive statistics for our full sample. The mean net-interest margin is 526 basis points, whereas the median is 412 basis points, indicative of the skewness of the distribution where the minimum margin is 61 basis points and the maximum is 4,200 basis points.

Among the country-level explanatory variables, the average score on the Creditors' Rights index is 2.05, the average number of Contract Enforcement Days is 364, and the average score for the Rule of Law index is 0.23. More than eight of ten countries have either a public credit registry or a private credit bureau. By legal origin, 43.7% are French, 7.4% are Socialist, 15.2% are German, 4.4% are Scandinavian and the remaining 27% are English.<sup>4</sup> Average annual GDP growth is 4.23% and average annual inflation is 12.97%.

Among the bank-level explanatory variables, the average ratio of provisions to loans is 2.14%, the average overhead ratio is 4.46%, the average concentration ratio is 0.66 and the average minimum capital requirement is 9.2%.

In Table 3, we explore differences in the means of our regression variables between the two subsamples developing and developed countries. The net-interest margin for developing countries is 679 basis points, but is only 396 basis points for developed countries; the 283 basis-point difference is highly significant with a  $t$ -statistic of 13.95. As expected, margins are much narrower in developed countries, given that financial intermediation is much more efficient.

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<sup>4</sup> This does not total to 100% because we are unable to classify Bahrain.

Among the explanatory variables, we also expect to find strong differences between the means of the governance variables for developing and developed countries. The average score for the *Creditors' Rights* index is 1.85 for developing countries, but 2.22 for developed countries, indicative for the superior protection of legal rights in developed relative to developing countries. The average number of *Contract Enforcement Days* is 389 in developing countries, but only 342 in developed countries, reflecting superior enforcement procedures in developed relative to developing countries. The average value of the *Rule of Law* index is -0.58 in developing countries, but is 0.92 in developed countries, indicating a stronger adherence to the rule of law in developed countries. The percentage of countries with a credit registry or bureau is only 73% in developing, but is 90% in developed, countries, demonstrating the superior information available to creditors in developed relative to developing countries. Note that all the differences between the means are highly significant.

Among the banking variables, *Loan Loss Provisions* as a percentage of total loans are much smaller in developed (1.60%) than in developing countries (2.77%). *Bank Overhead Expenses* are a much smaller percentage of assets in developed (3.78%) than in developing countries (5.26%). The *Minimum Capital Ratio* is only 8.9% in developed countries, but amounts to 9.4% in developing countries. Again, each one of these differences is highly significant. The *Bank Concentration Ratio*, however, is roughly comparable, at 0.65 and 0.67, respectively.

As to our macroeconomic control variables, both *Inflation Rate* and *GDP Growth* are significantly higher in developing countries when compared with developed countries. Annual inflation in developing countries (20.2% per year) is roughly triple that in developed countries (6.8% per year).

In Tables 4 – 6, we present descriptive statistics for the net interest margin based upon the full sample, the developing-country sample and the developed-country sample, respectively. In each table, we split the sample into a high (above median) and a low group (below median), based on the country-specific median of each explanatory variable. We then calculate the average margin for the high and the low group, and construct a *t*-test for differences in the means between the two groups. To the extent that the differences in means are statistically significant, these tests provide univariate evidence regarding which margin determinants matter. We carry out these tests for the full sample, as well as for the two subsamples of developing and developed countries.

Table 4 presents results for our full sample, including both developed and developing countries. We find that net interest margins are wider when the *Creditors' Rights Index* indicates lower creditor protection, where the number of *Contract Enforcement Days* is greater, where the *Rule of Law* is not followed, where legal origin is *French* or *Socialist*, where inflation is higher, where bank concentration is lower, and where loan loss provisions, bank overhead expenses and minimum capital ratios are higher.

Results for developing countries (shown in Table 5) are very similar, except that the legal origin and the *Bank Concentration Ratio* are not significant, whereas *GDP Growth* is significant (and associated with lower margins).

Results for developed countries (shown in Table 6) are also similar to the ones for the full sample with a few notable exceptions. The existence of a *Credit Registry/Bureau* is not significant, whereas margins are much larger at high growth countries (4.48%) relative to low growth countries (3.34%).

## 5.2 Multivariate Results

In Tables 7 – 9 are our multivariate results, where we regress the net interest margin against our explanatory variables. Table 7 presents results for the full sample, including developed and developing countries, whereas Tables 8 and 9 present results separately for developed and developing countries, respectively. In each table, we present four columns of results based upon (i) control variables (*GDP Growth* and *Inflation*) (ii) governance variables only; (iii) banking variables only; and (iv) both governance and banking variables along with the two control variables. This enables us to evaluate the relative explanatory power of the governance and banking variables.

### 5.21 Full Sample

Table 7 presents results for our full sample of developed and developing countries. As shown in column 1, each of the two control variables is highly significant at better than the 5% level. This result stands in line with the results of Demirguc-Kunt and Huizinga (1999) and Laeven and Majnoni (2005), who provided evidence that macroeconomic factors, and, specifically, inflation rates capturing macroeconomic instability or informational asymmetries, are important drivers of interest spreads across countries. Our governance variables in column 2 explain 33% of the variability in the margin. Among the governance variables, *Rule of Law* is negative and significant at the 1% level, indicating that greater adherence to the Rule of Law is associated with significantly lower margins; and *CR1* is negative and significant, indicating that margins are narrower when there are restrictions for a debtor to file for reorganization. *CR2* is significant but positive, which seems to be counterintuitive. Among the dummies for legal origin, only the *Scandinavian* dummy is significant; it is positive indicating that margins are wider at Scandinavian countries relative to countries of other legal origins.

In column 3, our banking variables explain 53% of the variability in the margin. Higher values of *Loan-Loss Provisions* to loans, *Overhead Expenses* to assets and *Minimum-Capital Requirement* are associated with higher interest margins. Each variable is statistically significant at better than 1%.

In column 4, our full model explains 64% of the variation in the margin. Among the governance variables, *Rule of Law* and *CR2* are significant. Among the dummies for legal origin, the *German* dummy is significant; it is negative indicating that margins are tighter at German countries relative to the *English* legal origin, which is our reference category. The *Scandinavian* legal origin dummy becomes insignificant. Among the banking variables, *Loan Loss Provisions* and *Overhead Expense* remain positive and significant, but the *Minimum-Capital Ratio* loses its significance. Among the control variables, *Inflation* and *GDP Growth* remain significant. The coefficient of the annual GDP growth is negative whereas the coefficient of the annual inflation rate is positive.

### 5.22 Developed Countries

In Table 8 reports our multivariate results for developed countries. As shown in column 1, our control variables are important determinants of the net interest margins in developed countries. In contrast to the control variables, country-level governance variables do not play a prominent role in countries where institutions and markets are well developed. The only governance variable to be significant is *Rule of Law*. This specification explains 36% of the variability in the margin. Hence, most of the explanatory power is coming from the banking variables, explaining 57% of the variability in the margin. *Overhead Expense* and *Minimum-Capital Requirement* are statistically highly significant. The coefficient of the *Loan-Loss*

*Provisions* is positive and significant at the 10% level. Bank concentration is also statistically significant and negative at the 10% level.

In our full model, shown in column 4, we are able to explain 72% of the variability in the margins. Results for the full sample are similar to the results in columns 1 to 3 with a few notable exceptions. The net interest margins in countries with *German* legal origin are lower, whereas margins at *Scandinavian* countries are wider relative to the *English* legal origins. Furthermore, *Loan-Loss Provisions* becomes insignificant.

### 5.23 Developing Countries

In Table 9 are our results for developing countries. The results for our governance variables, shown in column 2, explain 19% of the variability in the margin. However, only *Rule of Law* and *CR 2* are statistically significant. Among our banking variables, *Loan-Loss Provisions*, *Overhead Expense* and *Bank Concentration Ratio* are statistically significant. Finally, in our full model, shown in column 4, the results are generally consistent with those in columns 1 and 2. Our control variables *GDP Growth* and *Inflation* are highly significant, and *Loan-Loss Provisions* and *Overhead Expense* remain positive and significant.

## 6. Conclusions

Net-interest margins vary widely across countries, particularly between developing and developed countries. We use data from 96 countries over the period from 1994 through 2008 to explain net interest margins by country-specific governance variables, bank-specific characteristics, as well as factors related to the macroeconomic environment. We use both univariate tests and a multivariate regression framework that allows us to investigate the effects of the different determinants. In order to take into account the level of economic development,

which is an important determinant of net interest margins, we split up our sample into developed and developing countries.

Overall, our results reveal significant differences between developing and developed countries, with respect to the variables included in our analyses, as well as with respect to the determinants of net interest margins. Our model specifications are able to explain up to 72% in the variation of the dependent variable, where the fit is slightly better for the subsample with developed countries. As our regression results indicate, the governance variables seem to matter more for developing countries, whereas the bank-specific factors included in our model are more important determinants of net interest margins in developed countries.

The main contributions of our paper are as follows. First, we test the importance of new governance variables, such as the creditors rights index, the efficiency of enforcement and the importance of information sharing, which have not been considered before in this particular context, and add to our understanding of what determines net interest margins. Second, we split our sample into developing and developed countries in order to provide new evidence on whether, and if so, why determinants of the net interest margins differ across these two groups of countries. Finally, we consider a time period up through 2008, so that we are able to provide empirical evidence on the determinants of net interest margins across countries based on the more recent historical experience. This seems even more important in view of the recent economic developments and, in particular, in view of the recent the financial crisis, which is likely to have a massive impact on net interest margins.

We believe that our results provide new insights for a better understanding of the mechanisms behind the large differences in net interest margins between countries. Our work, however, is limited from several points of view. First, it would be interesting to investigate

potential impacts from the financial crisis on the determinants of net interest margins by splitting up our sample in a pre- and post-crisis time. It is likely that these massive financial market turbulences have different effects on financial institutions in developing and developed countries. Second, even though we are able to explain a large amount of the variation in the explanatory variables, it might be fruitful to include additional governance variables into our model. Namely, factors like information about the existence of a deposit insurance or information about the regulatory quality and the control of corruption are expected to provide additional insights. Furthermore, a regression analysis on bank- instead of country-level might allow analyzing additional banking specific factors such as bank size, capital structure, and ownership. We leave these issues to be addressed in future research.



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**Table 1:  
Definitions of Variables**

<b>Variable:</b>	<b>Description</b>	
<b>Dependent</b>		
<i>Net Interest Margin</i>	Accounting value of bank's net interest revenue as a share of its interest-bearing (total earning) assets. (in %). Source: Bankscope.	
<b>Independent</b>		<b>Expected</b>
<b>Governance Factors</b>		<b>Sign</b>
<i>Creditor Rights – CR1, CR2, CR3, CR4</i>	CR1 (dummy variable): If there are restrictions, such as creditor consent or minimum dividends, for a debtor to file for reorganization 1, 0 otherwise. CR2 (dummy variable): If secured creditors are able to seize their collateral after the reorganization petition is approved 1, 0 otherwise. CR3 (dummy variable): If secured creditors are paid first out of the proceeds of liquidating a bankrupt firm 1, 0 otherwise. CR4 (dummy variable): If management does not retain administration of its property pending the resolution of the reorganization 1, 0 otherwise. Defined as in Djankov <i>et al.</i> 2007.	-
<i>Contract Enforcement Days</i>	Number of days to resolve a payment dispute through courts. Defined as in Djankov <i>et al.</i> 2007.	+
<i>Rule of Law</i>	Variable capturing the rules of society and particularly measuring the quality of contract enforcement and property rights. Defined as in Kaufmann, Kraay and Mastruzzi, 2009.	-
<i>Credit Registry/Bureau</i>	A dummy variable that is equal to 1 if a public credit registry and/or a private credit bureau operates in the country, 0 otherwise. Defined as in Djankov <i>et al.</i> 2007.	-
<i>Legal Origin: English, French, German, Scandinavian, Socialist</i>	A set of five dummy variables indicating different legal origins (English, French, German, Scandinavian, Socialist). Defined as in Djankov <i>et al.</i> 2007.	+/-

**Table 2 (cont.):  
Definitions of Variables**

<i>Macroeconomic and Banking Factors</i>		
<i>GDP Growth</i>	The yearly real gross domestic product (GDP) growth (in %). Source: World Bank Development Indicators.	+/-
<i>Inflation</i>	The annual inflation rate (in %). Source: World Bank Development Indicators.	+
<i>Loan-Loss Provisions</i>	Loan loss provisions divided by total loans (in %). Source: Bankscope.	+
<i>Bank-Overhead Expense</i>	Accounting value of a bank's overhead costs as a share of its total assets (in %). Source: Bankscope.	+
<i>Bank-Concentration Ratio</i>	The total assets of three largest banks as a share of the total assets of all commercial banks (in %). Defined as in Beck <i>et al.</i> 2008.	+
<i>Minimum-Capital Requirement</i>	The minimum capital to asset ratio requirement is a bank regulation, which sets a framework on how banks and depository institutions must handle their capital (in %). Source: Barth <i>et al.</i> 2001	+

**Table 3:**  
**Descriptive Statistics – Full Sample**

<b>Dependent variable</b>	<b>Mean</b>	<b>Median</b>	<b>Std. dev.</b>	<b>Min</b>	<b>Max</b>
<i>Net interest margin</i>	5.265	4.124	3.756	0.611	42.03
<b>Independent variables</b>	<b>Mean</b>	<b>Median</b>	<b>Std. dev.</b>	<b>Min</b>	<b>Max</b>
<i>Legal Origin:</i>					
<i>French</i>	0.437	0	0.496	0	1
<i>Socialist</i>	0.074	0	0.261	0	1
<i>German</i>	0.152	0	0.359	0	1
<i>Scandinavian</i>	0.044	0	0.207	0	1
<i>English</i>	0.270	0	0.444	0	1
<i>Governance Variables:</i>					
<i>Creditors' Rights Index</i>	2.046	2	0.488	0	4
<i>CR 1</i>	0.350	0	0.477	0	1
<i>CR 2</i>	0.450	0	0.497	0	1
<i>CR 3</i>	0.722	1	0.448	0	1
<i>CR 4</i>	0.524	1	0.499	0	1
<i>Contract Enforcement Days</i>	364.39	350.00	222.34	27	1390
<i>Rule of Law</i>	0.229	0.076	0.983	-1.735	2.080
<i>Credit Registry/Bureau</i>	0.823	1	0.382	0	1
<i>Banking Variables:</i>					
<i>Loan-Loss Provisions</i>	2.143	1.247	2.987	-7.893	29.83
<i>Bank-Overhead Expense</i>	4.460	3.818	2.839	0.177	26.98
<i>Bank Concentration Ratio</i>	0.658	0.648	0.193	0.201	1
<i>Minimum-Capital Ratio</i>	0.092	0.08	0.015	0.06	0.15
<i>Macro-Economic Controls:</i>					
<i>GDP Growth</i>	4.225	4.193	3.807	-22.93	34.50
<i>Inflation</i>	12.97	4.392	74.231	-8.516	2,075.9
Note: Variables are defined in Table 1.					

**Table 4:**  
**Differences in Means between developing and developed countries**

(1)	(2)	(3)	(4)	(5)
Variables		Developing Countries	Developed Countries	Difference
<i>Net-Interest Margin</i>	Obs.	577	674	
	Mean	6.789	3.962	2.827***
	S.E.	0.169	0.111	0.203
	t-statistic			<b>13.951</b>
<i>CR 1</i>	Obs.	577	674	
	Mean	0.352	0.349	0.003
	S.E.	0.019	0.018	0.027
	t-statistic			<b>0.117</b>
<i>CR 2</i>	Obs.	577	674	
	Mean	0.326	0.556	-0.230***
	S.E.	0.020	0.019	0.027
	t-statistic			<b>-8.429</b>
<i>CR 3</i>	Obs.	577	674	
	Mean	0.610	0.818	-0.208***
	S.E.	0.020	0.015	0.025
	t-statistic			<b>-8.234</b>
<i>CR 4</i>	Obs.	577	674	
	Mean	0.562	0.491	0.071**
	S.E.	0.022	0.020	0.030
	t-statistic			<b>2.492</b>
<i>Contract Enforcement Days</i>	Obs.	577	674	
	Mean	389.40	342.98	46.42***
	S.E.	6.777	10.055	12.125
	t-statistic			<b>3.829</b>
<i>Rule of Law</i>	Obs.	577	674	
	Mean	-0.575	0.920	-1.495***
	S.E.	0.019	0.295	0.035
	t-statistic			<b>-42.684</b>
<i>Credit Registry/Bureau</i>	Obs.	577	674	
	Mean	0.731	0.902	-0.171***
	S.E.	0.018	0.011	0.022
	t-statistic			<b>-7.855</b>
<i>Loan-Loss Provisions</i>	Obs.	577	674	
	Mean	2.770	1.605	1.165***
	S.E.	0.146	0.090	0.171
	t-statistic			<b>6.802</b>
<i>Bank-Overhead Expense</i>	Obs.	577	674	
	Mean	5.257	3.778	1.479***
	S.E.	0.131	0.089	0.159
	t-statistic			<b>9.286</b>



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<i>Bank-Concentration Ratio</i>	Obs.	577	674	
	Mean	0.671	0.647	0.024**
	S.E.	0.008	0.008	0.011
	t-statistic			<b>2.185</b>
<i>Minimum-Capital Requirement</i>	Obs.	577	674	
	Mean	0.094	0.089	0.005***
	S.E.	0.001	0.001	0.001
	t-statistic			<b>6.221</b>
<i>GDP Growth</i>	Obs.	577	674	
	Mean	4.650	3.861	0.789***
	S.E.	0.182	0.123	0.219
	t-statistic			<b>3.591</b>
<i>Inflation</i>	Obs.	577	674	
	Mean	20.239	6.754	13.485***
	S.E.	4.490	0.536	4.522
	t-statistic			<b>2.982</b>

Based upon two-sample *t*-test with unequal variances.

\*, \*\*, \*\*\* indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

For more details, please see Appendix

**Table 5:**  
**Univariate Tests: Net Interest Margin—Full Sample**

(1) Variable	(2)	(3)	(4)	(5)
	<i>Low (0)</i>	<i>High (1)</i>	<i>Difference</i>	<i>t-Stat</i>
<i>CR 1</i>	5.390	5.034	0.356	1.579
	<i>Low (0)</i>	<i>High (1)</i>	<i>Difference</i>	<i>t-Stat</i>
<i>CR 2</i>	5.043	5.537	0.494	2.234**
	<i>Low (0)</i>	<i>High (1)</i>	<i>Difference</i>	<i>t-Stat</i>
<i>CR 3</i>	6.065	4.957	1.108	5.012***
	<i>Low (0)</i>	<i>High (1)</i>	<i>Difference</i>	<i>t-Stat</i>
<i>CR 4</i>	5.123	5.395	0.272	1.295
	<i>Low</i>	<i>High</i>	<i>Difference</i>	<i>t-Stat</i>
<i>Contract Enforcement Days</i>	4.879	5.664	0.785	3.727***
	<i>Low</i>	<i>High</i>	<i>Difference</i>	<i>t-Stat</i>
<i>Rule of Law</i>	7.073	3.420	3.653	19.808***
	<i>Yes</i>	<i>No</i>	<i>Difference</i>	<i>t-Stat</i>
<i>Credit Registry/Bureau</i>	3.598	6.715	3.117	3.385***
	<i>Low</i>	<i>High</i>	<i>Difference</i>	<i>t-Stat</i>
<i>Loan-Loss Provisions</i>	3.599	6.715	3.116	16.753***
	<i>Low</i>	<i>High</i>	<i>Difference</i>	<i>t-Stat</i>
<i>Bank-Overhead Expense</i>	2.966	7.432	5.266	26.811***
	<i>Low</i>	<i>High</i>	<i>Difference</i>	<i>t-Stat</i>
<i>Bank-Concentration Ratio</i>	5.559	4.938	0.621	2.925***
	<i>Low</i>	<i>High</i>	<i>Difference</i>	<i>t-Stat</i>
<i>Minimum Capital Requirement</i>	6.445	6.238	1.898	9.153***
	<i>Yes</i>	<i>No</i>	<i>Difference</i>	<i>t-Stat</i>
<i>French Legal Origin</i>	5.854	4.808	1.044	4.971***
	<i>Yes</i>	<i>No</i>	<i>Difference</i>	<i>t-Stat</i>
<i>Socialist Legal Origin</i>	7.082	5.121	1.961	4.157***
	<i>Yes</i>	<i>No</i>	<i>Difference</i>	<i>t-Stat</i>
<i>German Legal Origin</i>	4.160	5.464	1.304	5.254***
	<i>Yes</i>	<i>No</i>	<i>Difference</i>	<i>t-Stat</i>
<i>Scandinavian Legal Origin</i>	2.768	5.383	2.615	14.228***
	<i>Yes</i>	<i>No</i>	<i>Difference</i>	<i>t-Stat</i>
<i>English Legal Origin</i>	4.886	5.423	0.537	2.197**
	<i>Low</i>	<i>High</i>	<i>Difference</i>	<i>t-Stat</i>
<i>GDP Growth</i>	5.208	5.317	0.109	0.504
	<i>Low</i>	<i>High</i>	<i>Difference</i>	<i>t-Stat</i>
<i>Inflation</i>	3.677	6.934	3.257	16.816***

\*, \*\*, \*\*\* indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

**Table 6:**  
**Univariate Tests: Net Interest Margin—Developing Countries**

(1) Variable	(2)	(3)	(4)	(5)
<i>CR 1</i>	<i>Low (0)</i> 7.100	<i>High (1)</i> 6.214	<i>Difference</i> 0.886	<i>t-Stat</i> 2.380**
<i>CR 2</i>	<i>Low (0)</i> 5.878	<i>High (1)</i> 8.671	<i>Difference</i> 2.793	<i>t-Stat</i> 7.071***
<i>CR 3</i>	<i>Low (0)</i> 6.699	<i>High (1)</i> 6.846	<i>Difference</i> 0.147	<i>t-Stat</i> 0.449
<i>CR 4</i>	<i>Low (0)</i> 6.495	<i>High (1)</i> 7.018	<i>Difference</i> 0.523	<i>t-Stat</i> 1.599
<i>Contract Enforcement Days</i>	<i>Low</i> 7.128	<i>High</i> 6.438	<i>Difference</i> 0.690	<i>t-Stat</i> 2.053**
<i>Rule of Law</i>	<i>Low</i> 7.648	<i>High</i> 5.876	<i>Difference</i> 1.772	<i>t-Stat</i> 5.389***
<i>Credit Registry/Bureau</i>	<i>Yes</i> 7.346	<i>No</i> 6.584	<i>Difference</i> 0.762	<i>t-Stat</i> 1.685*
<i>Loan-Loss Provisions</i>	<i>Low</i> 4.892	<i>High</i> 8.366	<i>Difference</i> 3.474	<i>t-Stat</i> 11.921***
<i>Bank-Overhead Expense</i>	<i>Low</i> 4.331	<i>High</i> 8.833	<i>Difference</i> 4.502	<i>t-Stat</i> 16.876***
<i>Bank-Concentration Ratio</i>	<i>Low</i> 6.914	<i>High</i> 6.608	<i>Difference</i> 0.306	<i>t-Stat</i> 0.853
<i>Minimum Capital Requirement</i>	<i>Low</i> 6.445	<i>High</i> 8.152	<i>Difference</i> 1.707	<i>t-Stat</i> 3.919***
<i>French Legal Origin</i>	<i>Yes</i> 6.934	<i>No</i> 6.630	<i>Difference</i> 0.304	<i>t-Stat</i> 0.912
<i>Socialist Legal Origin</i>	<i>Yes</i> 7.436	<i>No</i> 6.687	<i>Difference</i> 0.749	<i>t-Stat</i> 1.377
<i>German Legal Origin</i>	<i>Yes</i> 7.542	<i>No</i> 6.734	<i>Difference</i> 0.808	<i>t-Stat</i> 1.016
<i>English Legal Origin</i>	<i>Yes</i> 6.592	<i>No</i> 6.881	<i>Difference</i> 0.289	<i>t-Stat</i> 0.726
<i>GDP Growth</i>	<i>Low</i> 7.372	<i>High</i> 6.073	<i>Difference</i> 1.299	<i>t-Stat</i> 3.971***
<i>Inflation</i>	<i>Low</i> 5.708	<i>High</i> 8.043	<i>Difference</i> 2.335	<i>t-Stat</i> 7.104***

\*, \*\*, \*\*\* indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

**Table 7:**  
**Univariate Tests: Net Interest Margin—Developed countries**

(1) Variable	(2)	(3)	(4)	(5)
<i>CR 1</i>	<i>Low (0)</i> 3.933	<i>High (1)</i> 4.016	<i>Difference</i> 0.083	<i>t-Stat</i> 0.360
<i>CR 2</i>	<i>Low (0)</i> 3.956	<i>High (1)</i> 3.967	<i>Difference</i> 0.011	<i>t-Stat</i> 0.051
<i>CR 3</i>	<i>Low (0)</i> 4.904	<i>High (1)</i> 3.751	<i>Difference</i> 1.153	<i>t-Stat</i> 3.824***
<i>CR 4</i>	<i>Low (0)</i> 4.111	<i>High (1)</i> 3.806	<i>Difference</i> 0.305	<i>t-Stat</i> 1.364
<i>Contract Enforcement Days</i>	<i>Low</i> 3.034	<i>High</i> 4.946	<i>Difference</i> 1.912	<i>t-Stat</i> 8.940***
<i>Rule of Law</i>	<i>Low</i> 5.231	<i>High</i> 2.662	<i>Difference</i> 2.569	<i>t-Stat</i> 12.971***
<i>Credit Registry/Bureau</i>	<i>Yes</i> 4.172	<i>No</i> 3.928	<i>Difference</i> 0.244	<i>t-Stat</i> 0.864
<i>Loan-Loss Provisions</i>	<i>Low</i> 3.023	<i>High</i> 4.879	<i>Difference</i> 1.856	<i>t-Stat</i> 8.845***
<i>Bank-Overhead Expense</i>	<i>Low</i> 2.558	<i>High</i> 5.524	<i>Difference</i> 2.966	<i>t-Stat</i> 14.731***
<i>Bank-Concentration Ratio</i>	<i>Low</i> 4.381	<i>High</i> 3.522	<i>Difference</i> 0.859	<i>t-Stat</i> 3.919***
<i>Minimum Capital Requirement</i>	<i>Low</i> 3.468	<i>High</i> 4.922	<i>Difference</i> 1.454	<i>t-Stat</i> 5.562***
<i>French Legal Origin</i>	<i>Yes</i> 5.063	<i>No</i> 3.221	<i>Difference</i> 1.842	<i>t-Stat</i> 7.517***
<i>Socialist Legal Origin</i>	<i>Yes</i> 5.105	<i>No</i> 3.937	<i>Difference</i> 1.168	<i>t-Stat</i> 1.463
<i>German Legal Origin</i>	<i>Yes</i> 3.286	<i>No</i> 4.157	<i>Difference</i> 0.871	<i>t-Stat</i> 4.972***
<i>Scandinavian Legal Origin</i>	<i>Yes</i> 2.768	<i>No</i> 4.069	<i>Difference</i> 1.301	<i>t-Stat</i> 6.852***
<i>English Legal Origin</i>	<i>Yes</i> 3.161	<i>No</i> 4.258	<i>Difference</i> 1.097	<i>t-Stat</i> 5.309***
<i>GDP Growth</i>	<i>Low</i> 3.342	<i>High</i> 4.477	<i>Difference</i> 1.135	<i>t-Stat</i> 5.179***
<i>Inflation</i>	<i>Low</i> 2.629	<i>High</i> 5.326	<i>Difference</i> 2.697	<i>t-Stat</i> 13.518***

\*, \*\*, \*\*\* indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

**Table 8:**  
**Regression Results—All Countries**

	(1)	(2)	(3)	(4)
<i>Net interest margin</i>	<b>Control Variables</b>	<b>Governance Variables</b>	<b>Banking Variables</b>	<b>All Variables</b>
<i>GDP growth</i>	-0.171** (0.077)	-	-	-0.117*** (0.039)
<i>Inflation</i>	0.014** (0.006)	-	-	0.007* (0.004)
<i>CR1</i>	-	-0.973* (0.534)	-	-0.389 (0.343)
<i>CR2</i>	-	1.351** (0.557)	-	0.863** (0.347)
<i>CR3</i>	-	-0.662 (0.635)	-	-0.407 (0.414)
<i>CR4</i>	-	-0.129 (0.519)	-	0.102 (0.304)
<i>Contract Enforcement Days</i>	-	0.000 (0.001)	-	-0.000 (0.001)
<i>Rule of Law</i>	-	-2.129*** (0.286)	-	-1.138*** (0.177)
<i>Credit Registry/Bureau</i>	-	-0.076 (0.787)	-	-0.043 (0.477)
<i>French Legal Origin</i>	-	0.096 (0.661)	-	-0.227 (0.361)
<i>Socialist Legal Origin</i>	-	1.035 (1.212)	-	0.350 (0.662)
<i>German Legal Origin</i>	-	-0.383 (0.608)	-	-1.004** (0.423)
<i>Scandinavian Legal Origin</i>	-	1.546** (0.616)	-	0.671 (0.423)
<i>Loan-Loss Provisions</i>	-	-	0.215*** (0.069)	0.126** (0.057)
<i>Bank-Overhead Expense</i>	-	-	0.802*** (0.103)	0.618*** (0.089)
<i>Bank-Concentration Ratio</i>	-	-	0.471 (0.829)	0.135 (0.745)
<i>Minimum-Capital Requirement</i>	-	-	36.607*** (11.525)	17.524 (11.159)
<i>Constant</i>	5.808*** (0.509)	5.889*** (1.023)	-2.449** (1.092)	1.492 (1.480)
Observations	1251	1251	1251	1251
Adjusted R-squared	0.12	0.33	0.53	0.64

\*, \*\*, \*\*\* indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

Robust standard errors in parentheses

**Table 8:**  
**Regression Results—Developed Countries**

	(1)	(2)	(3)	(4)
<i>Net interest margin</i>	<b>Control Variables</b>	<b>Governance Variables</b>	<b>Banking Variables</b>	<b>All Variables</b>
<i>GDP growth</i>	-0.096* (0.055)	-	-	-0.073* (0.043)
<i>Inflation</i>	0.130*** (0.021)	-	-	0.068*** (0.016)
<i>CR1</i>	-	-0.622 (0.589)	-	-0.356 (0.275)
<i>CR2</i>	-	0.240 (0.589)	-	0.194 (0.327)
<i>CR3</i>	-	-0.596 (0.891)	-	-0.603 (0.394)
<i>CR4</i>	-	-0.252 (0.609)	-	0.064 (0.273)
<i>Contract Enforcement Days</i>	-	-0.001 (0.001)	-	-0.001 (0.000)
<i>Rule of Law</i>	-	-2.393*** (0.530)	-	-0.996*** (0.198)
<i>Credit Registry/Bureau</i>	-	0.172 (0.766)	-	0.582 (0.372)
<i>French Legal Origin</i>	-	0.060 (0.673)	-	-0.350 (0.309)
<i>Socialist Legal Origin</i>	-	0.315 (0.766)	-	-0.326 (0.455)
<i>German Legal Origin</i>	-	-0.673 (0.594)	-	-0.666** (0.294)
<i>Scandinavian Legal Origin</i>	-	1.023 (0.714)	-	0.855** (0.388)
<i>Loan-Loss Provisions</i>	-	-	0.122* (0.061)	0.021 (0.049)
<i>Bank-Overhead Expense</i>	-	-	0.771*** (0.153)	0.521*** (0.103)
<i>Bank-Concentration Ratio</i>	-	-	-1.534* (0.786)	-1.328* (0.698)
<i>Minimum-Capital Requirement</i>	-	-	46.872*** (13.925)	31.955*** (10.643)
<i>Constant</i>	3.453*** (0.351)	6.947*** (1.267)	-2.350* (1.199)	1.089 (1.320)
Observations	674	674	674	674
Adjusted R-squared	0.42	0.36	0.57	0.72

\*, \*\*, \*\*\* indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

Robust standard errors in parentheses

**Table 9:**  
**Regression Results—Developing Countries**

	(1)	(2)	(3)	(4)
<i>Net interest margin</i>	<b>Control Variables</b>	<b>Governance Variables</b>	<b>Banking Variables</b>	<b>All Variables</b>
<i>GDP growth</i>	-0.260** (0.105)	-	-	-0.151*** (0.056)
<i>Inflation</i>	0.009** (0.004)	-	-	0.006* (0.003)
<i>CR1</i>	-	-1.344 (0.840)	-	-0.231 (0.635)
<i>CR2</i>	-	2.623*** (0.951)	-	1.620*** (0.601)
<i>CR3</i>	-	-1.111 (0.849)	-	-0.169 (0.548)
<i>CR4</i>	-	0.426 (0.858)	-	0.548 (0.507)
<i>Contract Enforcement Days</i>	-	0.001 (0.003)	-	0.001 (0.002)
<i>Rule of Law</i>	-	-2.222* (1.219)	-	-0.271 (0.822)
<i>Credit Registry/Bureau</i>	-	-0.161 (1.259)	-	-0.093 (0.678)
<i>French Legal Origin</i>	-	0.217 (1.172)	-	0.157 (0.642)
<i>Socialist Legal Origin</i>	-	1.610 (1.636)	-	1.043 (0.976)
<i>German Legal Origin</i>	-	0.680 (0.997)	-	-1.853* (0.947)
<i>Scandinavian Legal Origin</i>	-	0.000 (0.000)	-	0.000 (0.000)
<i>Loan-Loss Provisions</i>	-	-	0.209** (0.093)	0.146* (0.080)
<i>Bank-Overhead Expense</i>	-	-	0.764*** (0.137)	0.649*** (0.123)
<i>Bank-Concentration Ratio</i>	-	-	2.317* (1.310)	1.118 (1.228)
<i>Minimum-Capital Requirement</i>	-	-	10.965 (17.383)	3.101 (16.136)
<i>Constant</i>	7.814*** (0.676)	4.760*** (1.294)	-0.403 (2.010)	1.218 (1.833)
Observations	577	577	577	577
Adjusted R-squared	0.16	0.19	0.46	0.55

\*, \*\*, \*\*\* indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

Robust standard errors in parentheses

## Appendix:

### Descriptive Statistics for Developing countries (see Table 3)

<b>Dependent variable</b>	<b>Mean</b>	<b>Median</b>	<b>Std. dev.</b>	<b>Min</b>	<b>Max</b>
Net interest margin	6.789	6.109	4.064	1.614	42.032
<b>Independent variables</b>	<b>Mean</b>	<b>Median</b>	<b>Std. dev.</b>	<b>Min</b>	<b>Max</b>
CR 1	0.352	0	0.478	0	1
CR 2	0.326	0	0.469	0	1
CR 3	0.610	1	0.488	0	1
CR 4	0.562	1	0.497	0	1
Contract Enforcement Days	389.40	380.00	162.03	27	1028
Rule of Law	-0.576	-0.594	0.453	-1.735	0.511
Credit Registry/Bureau	0.731	1	0.443	0	1
Loan-Loss Provisions	2.771	1.754	3.497	-7.893	29.82
Bank-Overhead Expense	5.257	4.896	3.160	0.522	26.98
Bank-Concentration Ratio	0.671	0.663	0.186	0.331	1
Minimum-Capital Requirement	0.095	0.100	0.014	0.06	0.12
French Legal Origin	0.478	0	0.499	0	1
Socialist Legal Origin	0.135	0	0.342	0	1
German Legal Origin	0.067	0	0.251	0	1
Scandinavian Legal Origin	-	-	-	-	-
English Legal Origin	0.319	0	0.466	0	1
GDP Growth	4.650	4.695	4.374	-22.93	34.50
Inflation	20.23	7.131	107.86	-8.516	2075.88



**Descriptive Statistics for Developed Countries (see Table 3)**

<b>Dependent variable</b>	<b>Mean</b>	<b>Median</b>	<b>Std. dev.</b>	<b>Min</b>	<b>Max</b>
Net interest margin	3.961	3.092	2.894	0.611	23.518
<b>Independent variables</b>	<b>Mean</b>	<b>Median</b>	<b>Std. dev.</b>	<b>Min</b>	<b>Max</b>
CR 1	0.349	0	0.477	0	1
CR 2	0.556	1	0.497	0	1
CR 3	0.817	1	0.387	0	1
CR 4	0.491	0	0.500	0	1
Contract Enforcement Days	342.97	300	261.05	48	1390
Rule of Law	0.919	0.848	0.848	-1.475	2.080
Credit Registry/Bureau	0.902	1	0.297	0	1
Loan-Loss Provisions	1.606	0.957	2.340	-2.970	22.65
Bank-Overhead Expense	3.778	3.359	2.328	0.177	14.55
Bank-Concentration Ratio	0.647	0.636	0.197	0.201	1
Minimum-Capital Requirement	0.089	0.080	0.02	0.08	0.15
French Legal Origin	0.402	0	0.491	0	1
Socialist Legal Origin	0.021	0	0.143	0	1
German Legal Origin	0.224	0	0.417	0	1
Scandinavian Legal Origin	0.083	0	0.276	0	1
English Legal Origin	0.270	0	0.444	0	1
GDP Growth	3.861	3.855	3.202	-11.03	18.29
Inflation	6.754	2.744	13.91	-3.959	154.76