

INSTITUTIONAL QUALITY AND FINANCIAL INSTABILITY

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Abstract: *This paper assess the impact of the institutional quality on banking stability using an intensive and extensive margin analysis. The empirical study highlights that the exposure to systemic risk of financial institutions and the probability of banking crisis in a given country is positively associated with a high level of corruption, political instability and low regulatory quality. Additional, we found that the effect of the rule of law on the probability of crisis occurrences depends on the level of country development, while for the systemic risk the effect is positive in both developed and developing economies.*

Keywords: *banking crisis, systemic risk, institutional quality, rule of law, corruption, regulatory quality, political stability, logit technique*

JEL Classification: *G01, G21, G28, D02,*

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INTRODUCTION

The recent financial crisis, driven by a combination of the assets price increase and credit bubble that led to excessive leverage has gripped the global economy, highlighting the weaknesses of macroeconomic policies and banks’ regulatory and supervisory frameworks. The agencies responsible for regulation, supervision and risk management did not always have specific directives and tools following these mandates, which led to international inconsistencies and policies’ incoherence. Given the standard features related to financial crises found in the literature, there also may be additional country-specific dimensions that may drive financial instability. This paper looks at two measures of risks with the purpose of understanding the determinants of banking crises, and signal the role of institutions that are helping at reducing the risks of the banking crisis, or alternatively, to increase this risk. Additionally, understanding how systemic risk responds to the quality of institutions is important for assessing the overall financial stability of a country. Although rating the relative contributions of the different determinants for the financial stability is not without dispute, adding together the relevant institution’s characteristics will help explain the magnitude and complexity of the banking crises, and the potential failure of different policy measures. Until now, the extent to which institutional quality is effective in strengthening financial stability and reducing the incidence of financial crises is limited.

Therefore, we are interested to see if countries with strong institutional quality have a lower probability of suffering a banking crisis and if they are less exposed to systemic risk.

Institutions' analyses and their assessments have been at the forefront of economic questions as they can explain the differences in legal rules and their successful implementation from one country to another and, further their role in enhancing banking stability, the development of the financial system, and hence the growth of the economy as a whole (Bermpei et al., 2018, Boudriga and Ghardallou, 2012, Belkhir et al. 2020). Demirguc-Kunt and Detragiache (1998, 2005) show that the occurrence of banking crises can be explained by the spread of corruption, poor law enforcement efficiency or legal system vulnerabilities. In general, poor quality of regulation and supervision frameworks leads to moral hazard problems, higher risk-taking and possible banking crises. La Porta et al. (2008) emphasise that countries with a strong legal environment are better in managing risk and achieving performance. Guillaumont and Kpodar (2006) also show that bank instability is higher in societies characterised by high inflation with the lower rule of law. After the financial crisis episode, both the developing and developed economies have stepped up the use of macroprudential policies in order to contain the risk of possible future crises and strengthen the resilience of financial stability (Akinci and Olmstead-Rumsey, 2018). Although it is commonly accepted that tighter banking regulation and supervision (Podpiera, 2004; Demirgüç-Kunt et al. 2008) would improve financial sector resilience, there is conflicting empirical evidence on the impact of regulation and supervision on financial stability (Agoraki et al., 2011; Anginer et al., 2014; Barth et al., 2004). The reason for such inconclusiveness is that this relationship could be indirectly affected by different factors. In the literature, we found that the effects of bank regulation and supervision on financial stability depend on the institutional quality (Bermpei et al., 2018, Klompe and Haan, 2014), macroeconomic environment (Klomp and Haan, 2015) and corporate governance (Laeven and Levine, 2009).

In this paper, we quantify the extensive margin of the financial instability measured in our case by the probability of banking crisis and the intensive margin of the financial instability of a country, measured by its systemic risk. Using a sample comprising of 48 countries over the 2003-2013 period, the institutional indicators provided by World Bank, the banking crisis database of Laeven and Valencia (2018) and a measure of systemic risk, we found that the institutional quality reduces the probability of banking crises and the exposure to systemic risk of financial institution. In particular, for the extensive margin analysis, we found that low level of corruption, political stability and regulatory quality are key factors in reducing the systemic risk and probability of a banking crisis, these effects being more important for developed countries. As for the rule of law, we found that it is increasing the occurrence of banking crisis for developed economies while it has a hampering effect for the emerging countries.

The intensive margin analysis projects somehow a similar story as the extensive margin analysis with few exceptions. We see that for systemic risk, controlling for corruption is more important for emerging countries than for developed ones, while for the rule of law, the effect remains positive and significant for both groups of countries, with the effect being stronger for the developed countries. Political stability, however, remains negative across the two groups of countries but is losing its significance.

This work contributes to the existing literature on identifying new factors that may lead future banking crises by examining the relationship between institutional quality and

the incidence of banking crises and systemic risk using an extensive and intensive margin analysis. The paper is organised as follows: section two describes the data, section three presents the methodology, section four discusses the results, and section five concludes.

DATA

The sample of the study is based on a balanced panel of 48 emerging and developed economies over the 2003-2013 period. This period is characterised by significant financial systems changes and at the same time by intense banking crises waves. For this analysis, we have used four World Governance Indicators provided by the World Bank (Kaufmann et al. 2009), namely Control of corruption, Rule of law, Regulatory quality and Political Stability (The definitions are taken from the following URL: <http://info.worldbank.org/governance/wgi2007/faq.htm>). The outcomes for the extensive and intensive margin analyses are banking crisis dummy based on the database of Laeven and Valencia (2012) and the Marginal Expected Shortfall (MES) developed by Acharya et al. (2017). As control variables, we have used a macroprudential index developed by Cerutti et al. (2017), inflation, GDP per capita growth, financial freedom and market power (Lerner index). All these variables are defined in Appendix 1.

METHODOLOGY

The paper aims to identify the institutional determinants of financial stability comparing developed and emerging economies. In particular, an extensive margin analysis is proposed to understand the role of institutions in measuring the probability of a banking crisis, while an intensive margin analysis is used to understand the relationship between institutional quality and systemic risk of a specific country.

Extensive Margin Analysis

The paper uses Laeven and Valencia (2012) database to determine the banking crises across a large sample of countries. The observed outcome variable is a dummy variable that takes value 1 if a banking crisis was occurring in country i at time t , and 0 otherwise. The benchmark model is a reduced form probability model of banking crisis (BC) in which the latent dependent variable is defined by:

$$BC_{it} = \Pr(\alpha_i + \beta IQ_{it} + \gamma MPI_{i,t-1} + \theta C_{i,t-1}) + u_{it}$$

where IQ_{it} is a set of institutions specific to country i at time t , $MPI_{i,t-1}$ is an index of macroprudential policies and $C_{i,t-1}$ is a set of country-specific controls defined at time $t-1$ (to avoid potential endogeneity due to simultaneity), α_i are country-specific effects and u_{it} are random logistically distributed errors. This model tests the direction of the effect of the institution quality on the risk of a banking crisis. Additionally, to the benchmark model, we test if the effects of the institutions on the probability of crises are different between emerging and developed economies.

Intensive Margin Analysis

| VARIABLES | Crisis dummy (all sample) | Crisis dummy (emerging and developing counties) | Crisis dummy (developed countries) |
|-------------------------|---------------------------|---|------------------------------------|
| Control of corruption | -3.249*** (0.262) | -2.461** (0.966) | -4.088*** (0.298) |
| Political stability | -0.497*** (0.129) | 0.505 (0.364) | -0.592*** (0.163) |
| Rule of law | 4.883*** (0.381) | -1.026* (0.535) | 7.276*** (0.520) |
| Regulatory quality | -0.708** (0.344) | 1.262 (1.087) | -1.650*** (0.393) |
| Financial freedom | 0.309*** (0.0511) | 0.156 (0.247) | 0.302*** (0.0549) |
| Macroprudential Index | -0.0833* (0.0440) | -0.429*** (0.102) | 0.0495 (0.0563) |
| L.inflation | 3.436*** (0.948) | 5.124*** (1.546) | 2.792* (1.461) |
| L.GDP per capita growth | -9.876*** (2.235) | -2.698 (4.294) | -11.68*** (2.813) |
| L.lerner indicator | -2.159*** (0.478) | -3.493*** (1.069) | -1.675*** (0.516) |
| Constant | -4.336*** (0.362) | -3.131** (1.239) | -5.576*** (0.395) |
| Observations | 524 | 314 | 210 |

*Note: Results obtained using Robust standard errors; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$*

The control variables have the expected sign. Particularly, the GDP per capita growth is negative and statistically significant with the banking crises binary variable. Thus, low real economic growth is strongly correlated with a high probability of banking distress, which reinforces the belief that a fall in real GDP growth rate is a major cause of banking crisis creation. Inflation has a positive and statistically significant coefficient, meaning that a weak macroeconomic environment characterised by high inflation increases the likelihood of banking crises.

Intensive margin analysis results

In this subsection, we are testing the importance of institutions on systemic risk (MES). We employ a panel fixed effects estimator. This estimator is particularly relevant for this analysis as we want to eliminate the sources of potential endogeneity that relates the institutions of a country with the systemic risk associated with that country. As the change in institution quality is slow in countries, may exist the possibility to have correlation between these institutions and the country-specific unobserved heterogeneity. Using fixed effects, we allow for this correlation between the country-specific institutions

and the unobserved heterogeneity. Additionally, by using lags of the controls, we eliminate any other source of endogeneity that may relate the controls to the unobservables.

The results (Table 2) are similar to the ones obtained when the effect of institutional characteristics on the risk of the banking crisis was measured. Controlling for corruption has the strongest negative impact on the systemic risk of a country, while the rule of law has a significant positive impact on the MES. Additionally, political stability reduces systemic risk. Looking at the effects of these institutions across the emerging and developed countries, we see that controlling for corruption is more important for emerging countries than for developed ones. The result is reversed to the one obtained when the risk of banking crises was measured.

Table 2. Intensive margin analysis: The effects of institutional quality on MES

| VARIABLES | (1) MES (all sample) | (2) MES (emerging and developing countries) | (3) MES (developed countries) |
|-------------------------|-------------------------|--|----------------------------------|
| Control of corruption | -1.583*** (0.491) | -2.012** (0.884) | -1.225** (0.564) |
| Political stability | -0.619* (0.350) | -0.427 (0.325) | -1.124 (0.737) |
| Rule of law | 3.120*** (0.822) | 2.854** (1.024) | 3.170** (1.313) |
| Regulatory quality | -0.173 (0.590) | -0.342 (0.956) | -0.442 (0.874) |
| Financial freedom | 0.0950 (0.106) | 0.0499 (0.0766) | 0.0893 (0.192) |
| Macroprudential Index | 0.316*** (0.0524) | 0.354*** (0.0784) | 0.306*** (0.0774) |
| L.inflation | -3.036 (1.835) | -4.794*** (1.596) | 14.52** (6.729) |
| L.GDP per capita growth | -3.817*** (1.377) | -0.878 (1.993) | -7.078** (2.808) |
| L.lerner indicator | -0.0807 (0.415) | 0.433 (0.708) | -0.314 (0.525) |
| Constant | 0.392 (0.896) | 0.416 (0.424) | 0.331 (2.040) |
| Observations | 524 | 314 | 210 |
| R-squared | 0.152 | 0.343 | 0.139 |

*Note: Results obtained using Robust standard errors; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$*

As for the rule of law, the effect remains positive and significant for both group of countries, with the effect being stronger for the developed countries (in the extensive margin analysis the rule of law affected the emerging and developed countries differently, with the developed being the most affected). Political stability remains negative, but it is

losing its significance across the two groups of countries. Regulatory quality does not play any significant effect neither for the full sample nor for the two subsamples.

CONCLUSION

The increase in the number of banking crises raises the debate on bank stability which has become a primary concern for financial authorities. Several empirical studies have been conducted to understand banking crises with the purpose of reducing their occurrences. These studies led to a variety of variables explaining banking sector instability, underlying the importance of institutional environment characteristics. Questions about the impact of institutional quality on banking instability, becoming the core of theoretical debates. However, this issue has rarely developed in empirical literature. In this context, we propose to emphasise the role of the institutional environment in understanding the financial stability of a country. To do this, we conducted an empirical study on a sample of 48 emerging and developed countries during the period between 2003 to 2013. The analysis highlights the following findings: the exposure to systemic risk of financial institutions and the probability of banking crisis in a given country is positively associated with a high level of corruption, political instability and low regulatory quality. Additionally, we found that the effect of the rule of law on the probability of crisis depends on the level of country's development, while for the systemic risk, its impact is positive in both developed and developing economies.

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Appendix 1. Description of variables

| | | |
|-----------------------|---|--|
| Bank crisis dummy | Dummy variable takes the value of 1 if there is a banking crisis in the country i and during the year t, and 0 otherwise. | Laeven and Valencia (2012) |
| MES | Defined as the average return on banks market capitalisation on the days, the total market capitalisation of the sample experienced a loss higher than specified threshold C indicative of market distress. ($MES_{t-1}^i = E_{t-1}(R^i R^{System} < C)$). For these analyses, we compute an average value for each country and year. | Own calculation in accordance to Acharya et al. (2017) |
| Control of corruption | This is a measure of the perceptions of the extent to which public power is exercised for private gain, including both small and large forms of corruption. The index ranges from -2.5 to +2.5, higher values indicating tighter corruption controls. | World Bank |
| Political instability | Measures perceptions of the probability of political instability and/or politically-motivated violence, including terrorism. The index range from -2.5 to +2.5, higher values indicating a more stable political environment. | World Bank |
| Rule of law | Mesures perception of the degree to which agents trust and abide by society rules, in particular the quality of the contract enforcement, property rights, courts, and police, as well as the possibility of crime and violence. The index ranges from -2.5 to +2.5, higher value indicating stronger rule of law. | World Bank |
| Regulatory quality | Measures perceptions of the Government's ability to formulate and enforce sound policies and regulations that encourage and facilitate the development of the private sector. | World Bank |

| | | |
|-----------------------------|--|------------------------|
| Macroprudential index (MPI) | The index is the sum of the score of 12 macroprudential instruments, namely General Countercyclical Capital Buffer/Requirement (CTC); Leverage Ratio for banks (LEV); Time-Varying/Dynamic Loan-Loss Provisioning(DP); Loan-to-Value Ratio (LTV); Debt-to-Income Ratio (DTI); Limits on Domestic Currency Loans (CG); Limits on Foreign Currency Loans (FC); Reserve Requirement Ratios (RR); and Levy/Tax on Financial Institutions (TAX); Capital Surcharges on SIFIs (SIFI); Limits on Interbank Exposures (INTER); and Concentration Limits (CONC). The index ranges from 0 to 12, higher values indicating an increasing usage of macroprudential policies by financial institutions. | Cerrutti et al. (2017) |
| Lerner Indicator | It is defined as the ratio of total bank revenue over assets (using total assets as a proxy for bank production). It is a measure of market power. | World Bank |
| Financial Freedom | It is a measure of banking efficiency and independence from government control and financial-sector intervention. | Heritage Foundation |
| GDP per Capita Growth (%) | Annual GDP per capita Growth | World Bank |
| Inflation (%) | Annual inflation rate | World Bank |

Appendix 2. Summary statistics

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|-----------------------------|-----|------|-----------|-------|-------|
| Crisis dummy | 524 | 0.08 | 0.27 | 0.00 | 1.00 |
| Marginal Expected Shortfall | 524 | 1.82 | 1.53 | 0.00 | 15.07 |
| Control of corruption | 524 | 0.63 | 1.06 | -1.38 | 2.59 |
| Political stability | 524 | 0.19 | 0.97 | -2.81 | 1.66 |
| Rule of law | 524 | 0.61 | 0.96 | -1.99 | 2.12 |
| Regulatory quality | 524 | 0.73 | 0.84 | -1.86 | 2.26 |
| Macroprudential index | 524 | 2.06 | 1.80 | 0.00 | 8.00 |
| Financial freedom | 524 | 6.03 | 1.80 | 1.00 | 9.00 |
| Inflation | 524 | 0.04 | 0.07 | -0.05 | 1.10 |
| GDP per capita growth | 524 | 0.02 | 0.04 | -0.15 | 0.16 |
| Lerner indicator | 524 | 0.25 | 0.17 | -1.61 | 1.08 |

Source: Author's calculation



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