THE INTERNATIONAL JOURNAL OF BUSINESS & MANAGEMENT

Political Instability and the Prediction of Financial Distress in European Banks

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Abstract:
This paper presents an investigation into the connection between the instability of political systems and financial distress in the banking industry. The purpose of the study was to build a model to predict financial distress and to investigate whether the inclusion of political stability factors could enhance the predictive ability of the model. Data from 103 European banks during the period 2013-2015 and the logistic regression technique were used to create the model. The results show that among the political variables, control of corruption and regulatory quality are significant indicators of financial distress. The findings also demonstrate that the inclusion of such variables does improve the predictive ability of the model.

Keywords: Political stability, financial distress, regression, Texas ratio

1. Introduction

Since the financial crisis, a great deal of research has been carried out in order to identify the vulnerable variables which can be used to predict financial distress in the banking industry. Researchers such as Betz *et al.* (2014) and Boyacioglu *et al.* (2009) tried to assess the vital role of the CAMEL rating system ratios as early indicators of a bank's financial distress. Other scholars have focused on the role of non-CAMEL ratios in signalling financial distress. Mare (2015), for example, explored the role of macro-economic factors in predicting bank distress and Jin *et al.* (2011) focused on the role of accounting and auditing variables; Poghosyan and Čihák (2009) considered the role of market concentration and Schaeck *et al.* (2009) examined the role of competition. Little is known, however, about the role of political instability in predicting bank distress. Liu and Ngo (2014) stated that there is an intimate relationship between politics and the banking industry and that governments play a role in establishing the banking system but often look to it as a means of ensuring their own political survival. On this basis, the instability of a political system could affect the dual role which governments play and consequently affect the overall banking situation. Brexit, for example, is leading to a rise in political instability in Europe (Holodny, 2016). In this paper, therefore, I shall investigate whether the inclusion of indicators of political instability will contribute to the prediction of banks' financial distress.

This study contributes to the literature in several ways. First, to the best of my knowledge it is the first study which has considered the role of political instability as an indicator of financial distress. Second, it enriches the research into the prediction of distress in European banking. Finally, to the best of my knowledge this is the first study which has not only used political indicators to predict financial distress in banks, but has also shown how the inclusion of this variable increases the predictive ability of the model.

2 Literature Review

Whether a company works in the financial sector or in the non-financial sector, all its transactions and their effects will end in what is called a balance sheet. This balance sheet can be simply expressed by the following accounting equation:

Assets = Liabilities + Shareholders' equity

In the banking industry, this equation represents the three important relationships which are the fundamental elements of a bank's business operation. First, the *Liabilities*; these contain the main source of a bank's funds, such as customer deposits. So a reduction in those deposits or any large or sudden withdrawal from those deposits will cause the bank to suffer from a shortage of liquidity. On the liability side of the equation, banks provide liquidity on demand to depositors, and demands for liquidity could happen at an inconvenient time for the bank and force the fire-sale liquidation of illiquid assets (Diamond & Rajan, 2001).

Second, *Shareholders' equity*; this represents the capital which the bank holds as a hedge against any economic shock. According to Gorton and Winton (2017), higher bank capital can reduce the probability of bank failure. Third, *Assets*; these represent the bank's use of its sources in conducting its business and generating profits. Traditionally, banks invest those sources in loans; they make loans to borrowers which enhances the flow of credit in the economy (Diamond & Rajan, 2001). A mismatch in these three elements will result in liquidity risk, credit risk and insufficient capital. As Cabral (2013) argued, the balance sheet expansion and the mismatch between assets and liabilities are among the reasons of bank failure. Although a considerable amount of research has been carried out on ways to predict financial distress in the

banking industry, the focus of this current study is on previous work which has addressed the relationship between any of those three elements and banks' financial distress as they proved as main sources of bank distress (i.e. Capital, credit and liquidity risk).

2.1. Bank Capital and Financial Distress

Capital has long been recognized by scholars as an important indicator of financial distress.According to Christoffersen (2012), the structure of capital and its cost are a major source of corporate defaults.   Estrella *et al.* (2000), for example, found a strong relationship between capital and failure in US banks; Gomez-Gonzalez and Kiefer (2009) studied the determinants of bank failure in Colombian banks and demonstrated that among the variables used, capital is the most important indicator for bank failure. Higher capital, according to them, is negatively associated with bank failure. Wheelock and Wilson (2007) studied the reasons behind the disappearance of US banks and found that banks with small capital holdings are closer to being insolvent. A comparable study by Beltratti and Stulz (2012) focused on the characteristics of the better performance of banks during the credit crisis and produced evidence that banks with higher capital were performing better than their underperforming counterparts. Scholars continue to study insufficient capital as an indicator of a bank's financial distress: in a recent study, Mayes and Stremmel (2014) investigated whether capital adequacy is an important indicator of bank financial distress and found that bank capital is a significant factor in explaining distress and failure in banks. Vazquez and Federico (2015) showed that low capital was the reason behind the failure of banks, stating that 48% probability of bank failures during the crisis were the result of a 3.5% increase in pre-crisis capital buffers. More recently, Chiaramonte and Casu (2017) found that for large banks in the EU, the capital ratio is a significant indicator of bank distress. Mayes and Stremmel (2014) stated that capital works as a cushion to absorb losses and shocks and that a decrease in capital could lead to financial distress. It could therefore be important to consider this factor when predicting bank distress.

2.2. Credit Risk and Financial Distress

Credit risk refers to the inability of a counterparty to fulfil its obligation in part or in full on the agreed date (Christoffersen, 2012). Because banks are mainly engaged in lending activity, credit risk becomes the most important risk that a bank can face (Basel Committee on Banking Supervision, 2001). Increasing this kind of risk could lead to detrimental effects on a bank's situation. Tabari et al. (2013) suggested that an increase in such risk will lead to an increase in non-performing loans and thus negatively affect a bank's profitability and performance. It will also negatively affect a bank's stability (Ghenimi *et al.*, 2017), so it is important to consider this risk when predicting financial distress because most bank failures are found to be linked with credit risk (Heffernan, 2005). The relationship between credit risk and bank distress has been addressed by several scholars. Cole and Wu (2009) provided empirical evidence that in the case of small banks, a higher non-performing loans ratio leads to bank failure. Barth and Landsman (2010) stated that, on average, loans comprise a significant proportion of banks' assets and are therefore critical in determining the health of a bank. Jin *et al.* (2011) examined the ability of different indicators in predicting bank distress and demonstrated that non-performing loans, loan loss provisions, the proportion of securitized loans, growth in loans and loan mix are all important indicators of bank distress. In a subsequent study, Cole and White (2012) reported that loans play a crucial role in distinguishing between healthy and failed banks and Apergis and Payne (2013) also showed that credit risk has an important role in predicting distress in European banks. The relationship between credit risk and bank failure has been demonstrated by other writers: Jia-Liu (2015) reported a positive and significant relationship between bank failure and credit risk and Leung *et al.* (2015) found a positive relationship between non-performing loans and bank risk. Those results were confirmed by Zhang *et al.* (2016) who investigated the determinants of financial distress in large financial institutions and showed that the non-performing loan ratio is the most significant indicator of financial distress. In brief, the higher the non-performing loan ratio, the higher the probability of bank failure (Negnevitsky, 2017).

2.3. Liquidity Risk and Bank Financial Distress

Liquidity risk is another type of risk that banks might face. It represents the inability of a bank to meet its liabilities on their maturity dates (Heffernan, 2005). According to the Basel Committee on Banking Supervision (2001), liquidity risk is one of the primary risks typically faced by banks. It has been described as the risk of funding crisis (Santomero, 1997). This was supported by King (2013), who noted that the banking crisis of 2007-2009 was due to a shortage of liquidity. This means that those banks were suffering from liquidity risk. According to Acharya and Mora (2015), during the 2007-2009 crisis, banks were likely to be in liquidation without the liquidity support provided by central banks and the governments. Liquidity risk has been the focus of many researchers, especially during the financial crisis. Diamond and Dybvig (1983) investigated the connection between banks' liquidity, bank runs and the role of deposit insurance and showed that a shortfall in liquidity could result in a bank run. Tabari *et al.* (2013) investigated the effect of liquidity risk on banks' performance and found that the higher the liquidity risk, the lower the bank's performance. Vazquez and Federico (2015) found that in the period preceding the financial crisis, banks with weaker liquidity were more likely to fail. Chiaramonte and Casu (2017) demonstrated that increasing bank liquidity is negatively associated with bank failure and distress. Other scholars have focused on the interaction between risks and its effect on a bank's situation. Imbierowicz and Rauch (2014) investigated the relationship between liquidity risk and credit risk and found that both kinds of risk are the main cause of bank distress. Ghenimi *et al.* (2017) found that both risks together have a positive relationship with bank instability.

2.4. Political Instability and a Bank's Situation

Uncertainty in a country's political institutions could have consequent effects on its financial system and economy. In European countries, political risk has been considered as the major threat for banks, especially after particular events such as Brexit (Troiano *et al.*, 2016). Political instability and its consequent effects have recently attracted the attention of some scholars. Aisen and Veiga (2013) offered empirical evidence that political instability has a negative effect on countries' economic growth and has serious harmful effects on economic performance, macro-economic policies, productivity growth rates and physical and human capital accumulation. Those findings were recently confirmed by Uddin *et al.* (2017) who investigated the effect of political stability on economic growth in 120 developing countries over the period 1996-2014 and found that political instability had a negative influence on economic growth through investment and human capital accumulation channels. It can therefore be argued that banks could be directly or indirectly affected by political instability as they are among the main drivers of a country's economic development and growth. Jiménez and Delgado-Garcıa (2012) found a significant positive relationship between political stability and the performance of Spanish multi-national enterprises. Tamadonnejad *et al.* (2017) found that country-specific factors such as political conditions, regulatory environments and country risk negatively affect banks' efficiency. Less efficient banks have been found to be prone to financial distress (Cleary & Hebb, 2016). The relationship between banks' situations and political instability was confirmed by Chang (2007), who argued that there is a relationship between financial crises and political instability. Vaugirard (2007) focused on political instability and solvent banks' bailouts and found that political instability does increase financial instability. More recently, Ashraf (2017) found that the stability of political institutions positively affects banks' risk-taking and also showed that the relationship between political and legal institutions has an impact on banks' risk-taking behaviour.

3. Empirical Methodology and Data

3.1. Sample and Data Source

The sample for this current study was drawn from European banks which had been identified in a European Union stress test. According to an EU-wide stress test results report prepared by the European Banking Authority (2014), there are 123 banks across Europe which have assets exceeding 70% of the total EU banking assets, but because of the unavailability of the data from some of them, only 103 banks were considered in this study. Those banks cover 22 European countries. The data on these banks were obtained from the Orbis Bank Focus database. The political stability data were obtained from the Worldwide Governance Indicators (WGI).The gross domestic product (GDP) data extracted from the World Development Indicators available on the World Bank website.

3.1.1. Defining Bank Distress

There is no unanimity between writers about what is meant by financial distress. According to González-Hermosillo *et al.* (1997), DeYoung *et al.* (1999) and Arena (2008), a bank can be deemed to be in distress if it is recapitalized or requires liquidity or regulatory support from a central bank or government agencies. Männasoo and Mayes (2009), on the other hand, stated that a bank will be in financial distress if it has been reported as bankrupt, dissolved or in liquidation or has a negative net worth. According to Betz et al. (2014), if a bank fails to pay interest or principal on financial obligation or if one of those obligations has been repurchased or replaced by other instruments with a reduced total value, it is in financial distress. In this current study, in order to determine whether a bank is in financial distress, the Texas ratio was used. According to Siems (2012), this ratio can be used to determine whether a bank will fail or not. The ratio is a simple measure of a bank's financial health according to its balance sheet data(European Central Bank, 2016). Basically, this ratio can be simply calculated by dividing non-performing loans including other real estate owned by tangible equity capital plus loan-loss reserves (Siems, 2012; European Central Bank, 2016). Hence, this ratio is calculated by the formula

$$\text{Bank Texas ratio} = \frac{\text{Total impired loans} + \text{Other realstate owned}}{\text{common equity cabital} + \text{loan loss researve} - \text{Intangible assets}}$$

According to Wu and Hong (2012), a bank is in financial distress if its Texas ratio is more than or equal to 100%. This equation was applied to the sample banks' data as of 31 December 2015. If a bank's Texas ratio on that date was less than 100%, it was classified as healthy, otherwise it was classified as in distress. Using this equation, the study sample was classified into two groups. Table 1 shows the sample classification.

Total Banks	Bank classification according to Texas ratio	
	Healthy	Distress
103	61	42
Participant Countries: Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, Malta, Norway,Netherlands, Poland, Portugal, Slovenia, Spain, Sweden, U.K.		

Table 1: Classification of the Study Sample

It can be seen from Table 1 that the sample contained 61 healthy banks and 42 distressed banks. For each bank, annual data covering the three years from 2013 to 2015 were collected. This resulted in 178 healthy bank observations and 126 distressed bank observations (there were five missing observations).

3.1.2. The Study Variables

The dependent variable in this study was 1 if the bank is classified as in distress and zero if it is classified as healthy.

As a country control variable, annual GDP was used to control the macro-economic changes across countries.

Independent variables comprised two sets described below.

3.1.2.1. Bank Level Variables

3.1.2.1.1. Loan-Loss Reserve to Gross Loans

This is the ratio of loan-loss reserves which banks set aside to cover the expected loans loss. It is calculated as

$$LLRGL = \frac{Loan\ loss\ reserves}{Total\ Loans} * 100$$

Actually, loan-loss reserves represent the cumulative value of loan-loss provision which banks extract from their income. According to Farruggio and Uhde (2015), an increase in such reserves leads to a decrease in the quality of the loans portfolio and consequently to an increase in credit risk exposure. This ratio is therefore expected to have a positive relationship with bank distress.

3.1.2.1.2. Total Capital Ratio

This ratio represents the ability of a bank's capital to cover its risk-weighted assets. The ratio has been calculated in different ways: some scholars, such as Betz *et al.* (2014) and Estrella *et al.* (2000), calculated the ratio using tier-1 capital whereas Cleary and Hebb (2016) used tier-1 and total capital to calculate the ratio. Although they calculated the ratio in different ways, they were all of the opinion that the higher the bank capital, the lower the probability of bank distress. For this current study, the ratio was represented as

$$TCR = \frac{Total\ Capital}{Risk\ Weighted\ Assets}$$

3.1.2.1.3. Net Loan to Total Assets Ratio

This ratio represents the relationship between a bank's assets and its loans and was used in this study as a proxy for bank liquidity. According to Vodovà (2012) and Cerrato *et al.* (2012), the ratio shows the percentage of a bank's assets which are tied up in loans and an increase in this ratio is negatively associated with bank liquidity (that is, the higher the ratio, the less liquid the bank is). Following Cerrato *et al.* (2012), the ratio was calculated as

$$NLTA = \frac{Net\ Loans}{Total\ Assets}$$

The descriptive statistics of these ratios are shown in Table 2.

3.1.2.2. Political Stability Variables

As proxies for political stability, three indicators were used in this current study to measure political stability:

3.1.2.2.1. Control of Corruption (CCOR)

According to the WGI database and Kaufmann *et al.* (2009), this indicator represents the perceptions of the extent to which public power is exercised for private gain.

3.1.2.2.2. Regulatory Quality (REGQ)

This indicator represents the ability of the government to formulate and implement sound policies and regulations which permit and promote private sector development (WGI; Kaufmann *et al.*, 2009).

3.1.2.3. Political Stability and Absence of Violence/Terrorism (PSAVT)

This indicator reflects perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism (WGI; Kaufmann *et al.*, 2009).

The value of each of these three indicators falls between -2.5 and 2.5, in which the positive sign is the most advantageous (WGI; Kaufmann *et al.*, 2009).

According to Kaufmann *et al.* (2009), the WGI is not only important and meaningful for carrying out between-country comparisons, but also helped in monitoring progress over time.

Ratio	OBS		Mean		STD		Median	
	Healthy	Distress	Healthy	Distress	Healthy	Distress	Healthy	Distress
Texas	178	126	52.82783	164.49022	34.361501	132.036017	50.43064	129.61739
LLRGL	178	126	3.65576	7.75537	4.556412	5.731173	1.95300	6.48950
TCR	178	126	16.81753	14.82399	3.670441	2.954483	16.30000	14.41600
NLTA	178	126	50.68642	60.19851	15.769468	10.532618	51.35050	61.37750

Table 2: Summary Statistics for Bank Level Variables
Note: Variables Are Winsorized at .5 and .95 to Avoid the Effect of Extreme Values

3.1.3. Study Model

Binary response was used in this study as a dependent variable and various other variables were used as predictors, so logistic regression was chosen as the analysis technique. According to Field (2009), logistic regression is multiple regression but with an outcome variable which is a categorical variable and predictor variables which are continuous or categorical. The formula of this regression as shown by

$$y = c + b1X1 + b2X2 + \cdots + bnXni + \varepsilon i$$

Where c is a constant and b is the regression coefficient of the corresponding variable X. The probability of distress is referred to as P(Y) and calculated as

$$P(Y) = \frac{1}{1 + e^{-(b0+b1X1i+b2X2i+\cdots+bnXni)}}$$

4. Empirical Results and Discussion

Hierarchical logistic regression was usedto determine the contribution of each political instability indicator to financial distress. The observations were divided into 213 observations (70%) as a training sample and 91 observations (30%) as a test sample. Four models were constructed as shown in Table 3.

Regarding the bank level variables, the LLRGL in the four models is a significant indicator of financial distress with positive sign. This means that an increase in credit risk leads to an increase in the likelihood of financial distress. This results supports the findings of Cole and Wu (2009), Jin *et al.* (2011), Cole and White (2012), Apergis and Payne (2013), Jia-Liu (2015), Leung *et al.* (2015), Zhang *et al.* (2016) and Negnevitsky (2017) that credit risk is an important indicator of financial distress.

TCR was also found to be significant in all models. The sign of this ratio, which is negative, supports the findings of Estrella *et al.* (2000), Gomez-Gonzalez and Kiefer (2009), Mayes and Stremmel (2014), Vazquez and Federico (2015) and Chiaramonte and Casu (2017) that a decrease in banks' capital leads to financial distress.

The NLTA ratio shows positive significance in all models. This means that an increasing liquidity risk is associated with increasing probability of a bank's financial distress. The results therefore support those of Diamond and Dybvig (1983), Imbierowicz and Rauch (2014), Vazquez and Federico (2015) and Chiaramonte and Casu (2017) that liquidity risk is one of the key reasons for bank distress. As for the political stability variables, the CCOR variable is significant in three of the models, showing that the level of corruption in a country is an indicator of bank financial distress. With negative significance, this means that the less the country controls corruption, the higher the probability that banks will face financial distress. This result supports the findings of Park (2012) and Bougatef (2015), for example, who found that corruption aggravates the problem with non-performing loans (impaired financing in the case of Islamic banks) and that better control of corruption leads to a reduction in banks' non-performing loans (Boudriga *et al.*, 2010). According to Chen *et al.* (2015), higher levels of corruption increase banks' risk taking and also negatively affects bank lending (Weill, 2011) and the allocation of bank funds (Park, 2012).

REGQ as a political stability indicator was found to be significant indicator of bank distress in two models. With a positive sign, this means that an increase in regulatory quality leads to an increase in bank financial distress. Although Boudriga *et al.* (2010) found that an improvement in regulatory quality leads to a decrease in bank risk, the result of this current study is in agreement with that of Williams (2014), who demonstrated that such an improvement leads to an increase in bank risk taking. The final political stability proxy is PSAVT. Table 3 shows that there is no relationship between PSAVT and financial distress. It can therefore be argued that this variable is insignificant as an indicator of bank financial distress in European countries.

Variables	Base Model		Model2(control of corruption includes		Model3(Regulatory Quality included)		Model4(Political Stability and Absence of Violence/Terrorism	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
LLRGL	.126	.000	.084	.013	.102	.005	.102	.005
TCR	-.170	.002	-.125	.032	-.123	.039	-.119	.047
NLTA	.030	.011	.030	.014	.029	.016	.030	.014
GDP	-.008	.941	.046	.678	-.019	.870	-.014	.902
CCOR	-	-	-.612	.022	-1.898	.001	-1.874	.001
REGQ	-	-	-	-	2.726	.013	2.866	.011
PSAVT	-	-	-	-	-	-	-.370	.574
constant	-.019	.987	.139	.910	-1.786	.223	-1.857	.205
Model's predictive ability on training(test) observations	74.6% (66.92%)		76.5% (68.31%)		81.2% (76.54%)		80.8% (74.24%)	

Table 3: Results of Regression Models
Note: Variables Are Winsorized At .5 And .95 To Avoid The Effect Of Extreme Values.

Regarding the four study models, the base model was built using bank-specific variables as well as the control variable in order to determine the ability of the model to predict banks' financial distress. The model exhibited an overall

predictive ability of 74.6% in the training sample. In the second model, the control-of-corruption indicator was added to the model and the resulting model showed that the inclusion of this political stability factor increased the overall predictive ability by 1.9%, from 74.6% to 76.5%. The model was then rebuilt to determine the effect of the regulatory quality indicator on the previous model. The results show that the inclusion of REGQ in the model improved the predictive ability of the model from 76.5% to 81.2%. Overall, the inclusion of CCOR and REGQ jointly led to an increase in the overall predictive ability of 6.6%. In the final model, the PSAVT was included and this led to a decrease in the overall predictive ability from 81.2% to 80.8% because the variable is an insignificant indicator of financial distress.

For GDP, it can be seen that this variable was insignificant in all of the models. It was included in all of the models because it was the study control variable and its inclusion, despite it being found to be insignificant, enhanced the overall predictive ability of the models. For example, in model two, the inclusion of GDP increased the overall predictive ability from 75.1% to 76.5% and reduced the type-1 error by 7.4%

The same pattern was found, as can be seen in Figure 1, when the models were applied to the test sample.
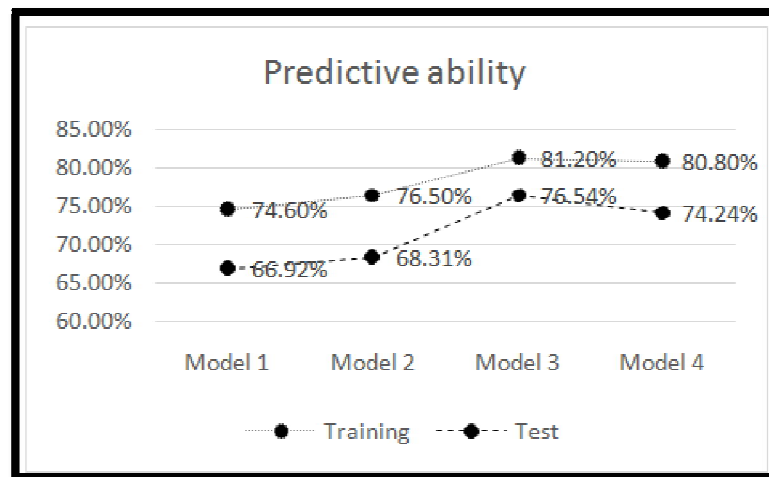

Figure 1: The Pattern of Models' Predictive Ability on Test Observations

Overall, the regression results provide empirical evidence that the inclusion of political stability indicators does contribute to the prediction of bank financial distress. Accordingly, this study has contributed to the literature in two ways. First, it has shed light on the effect of political instability on the banking industry, showing that any deterioration in the stability of political institutions could negatively affect the health of the banking sector. Second, it has provided support to the use of political stability indicators for predicting bank distress as they were found to have a positive effect on the overall predictive ability.

5. Conclusion

The purpose of this study was to investigate the contribution which political stability indicators can make when predicting bank financial distress. Three bank-level variables, a macro-economic variable and three political stability indicators were used. The results of the study demonstrate the importance of using political instability factors for predicting bank financial distress. The inclusion of these variables in this study led to an increase in overall predictive ability of more than 6.5%. The study also has implications for future research; as this research considered only three WGIs as proxies for political stability, future studies could use all WGIs for the same purpose. Other studies could also compare the effects of political instability on the banking industry in developed and developing countries.

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