Macroeconomic determinants of the credit risk in the banking system: The case of the GIPSI

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ARTICLE INFO

ABSTRACT

In this paper, we analyze the link between the macroeconomic developments and the banking credit risk in a particular group of countries – Greece, Ireland, Portugal, Spain and Italy (GIPSI) – recently affected by unfavourable economic and financial conditions.

Employing dynamic panel data approaches to these five countries over the period 1997q1–2011q3, we conclude that the banking credit risk is significantly affected by the macroeconomic environment: the credit risk increases when GDP growth and the share and housing price indices decrease and rises when the unemployment rate, interest rate, and credit growth increase; it is also positively affected by an appreciation of the real exchange rate; moreover, we observe a substantial increase in the credit risk during the recent financial crisis period. Several robustness tests with different estimators have also confirmed these results.

The findings of this paper indicate that all policy measures that can be implemented to promote growth, employment, productivity and competitiveness and to reduce external and public debt in these countries are fundamental to stabilize their economies.

1. Introduction

The recent financial crisis has called the attention to the consequences that banking crises can have on the economy (Agnello and Sousa, 2011; Agnello et al., 2011). At the same time, it has also stimulated some economists to look again at the factors that may trigger a banking crisis (De Grauwe, 2008; Laeven and Valencia, 2008, 2010). Macroeconomic factors are considered to play an important role on this matter (Demirgüç-Kunt and Detragiache, 1998; Llewellyn, 2002). More specifically, adverse economic conditions, where growth is low or negative, with high levels of unemployment, high interest rates and high inflation, are favourable to banking crises (Demirgüç-Kunt and Detragiache, 1998). Llewellyn (2002) also notices that in any banking crisis there is an interaction between economic, financial and structural weaknesses. Moreover, most of the banking crisis is preceded by changes in the economic environment that move the economy from a growth cycle to a recession.

A banking crisis may also arise because, in first place, banks can be struggling with liquidity and/or insolvency problems caused by the increase of bad or nonperforming loans in their balance sheets. This also means that before looking at the causes of banking crisis, we must give attention to the conditionings of the banking credit risk. Several studies have focussed their attention on this matter and have concluded that the macroeconomic environment is the most important factor in the determination of the credit risk.[1]

In this paper, we intend to understand this link between the macroeconomic developments and the credit risk in a particular group of countries (Greece, Ireland, Portugal, Spain and Italy — henceforth, GIPSI) recently affected by unfavourable economic and financial conditions and to which the literature has not given a particular attention yet on this matter. The unfavourable conditions that they are facing (recession and unemployment), the high levels of public deficits and debts that they present and the difficulties that they have felt in borrowing money to finance their economies were critical in our decision of choosing them for this analysis. This deterioration of the economic environment may increase the risk of credit default in these countries. Therefore, it becomes pertinent to study how macroeconomic variables are affecting the credit risk in this more vulnerable group of countries and the respective policy implications. As the risk of default is highly influenced by the way families and companies are affected by the economic environment, we believe that some macroeconomic factors will take a substantial part in the explanation of the credit risk.

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[1] See, for example, Salas and Saurina (2002), Jiménez and Saurina (2006), Quagliarello (2007), Jakubík (2007), Aver (2008), Bohachova (2008), Bonfim (2009), Kattai (2010), Festic et al. (2011), Nkusu (2011) and Louzis et al. (2012), among others.

Employing a proper dynamic panel data approach, that relies on the Arellano–Bond estimator, over this particular group of countries spanning the period from the first quarter of 1997 to the third quarter of 2011, we conclude that the credit risk in these five countries is significantly affected by the macroeconomic environment. In particular, the credit risk increases when GDP growth, the share price indices and the housing prices decrease, and rises when the unemployment rate, interest rate, and credit growth increase. It is also positively affected with an appreciation of the real exchange rate. Moreover, we observe a substantial increase in the credit risk during the recent financial crisis period. Several robustness tests with different estimators have also confirmed these results.

In terms of policy implications, this means that structural measures and programmes that can be implemented to promote external competitiveness, to increase productivity, to reduce external and public debt and to support growth and employment in these countries are fundamental to stabilize their economies.

This article is organized as follows. Section 2 reviews the existing literature on the determinants of the credit risk. Section 3 describes the data and the hypotheses to test. The econometric model is explained in Section 4. The empirical results are presented and discussed in Section 5. Section 6 concludes emphasizing the main findings of this article.

2. Review of the literature

There are several empirical studies that analyze the influence of macroeconomic and specific banking sector factors on the credit risk or nonperforming loans. In general, the credit risk is defined as the risk of a loan not being (partially or totally) paid to the lender. The analysis of the credit risk is essential because it can provide signs of alarm when the financial sector becomes more vulnerable to shocks. This can help the regulatory authorities to take measures to prevent a possible crisis (Agnello and Sousa, 2011; Agnello et al., 2011).

In the literature, we find an important distinction between the kinds of factors that can affect banking credit risk: factors influencing the systematic credit risk; and factors influencing the unsystematic credit risk.[2] The factors influencing the systematic credit risk are: (i) macroeconomic factors like the employment rate, growth in gross domestic product, stock index, inflation rate, and exchange rate movements; (ii) changes in economic policies like changes in monetary and tax policies, economic legislation changes, as well as import restrictions and export stimulation; (iii) and political changes or changes in the goals of leading political parties. All these variables can have an important influence on the likelihood of borrowers paying their debts, but as changes in economic policies and political changes are difficult to examine, the literature has mainly focussed on the macroeconomic factors.

The factors influencing the unsystematic credit risk are specific factors: (i) to the individuals like their individual personality, financial solvency and capital, credit insurance; (ii) and to the companies like management, financial position, sources of funds and financial reporting, their ability to pay the loan and specific factors of the industry sector.

A great deal of studies looks at the macroeconomic factors that affect the credit risk. In particular, Salas and Saurina (2002), Jiménez and Saurina (2006), Jakubík (2007), Aver (2008), Bohachova (2008), Bonfim (2009), Kattai (2010) and Nkusu (2011), among others, concentrate their research essentially on the influence of macroeconomic variables over the credit risk growth and stress that those variables should be included into the analysis since they have considerable influence on the changes of credit risk.

Aver (2008) shows that the credit risk of the Slovenian banking loan portfolio depends especially on the economic environment (employment and unemployment), long-term interest rates and on the value of the stock exchange index. Kattai (2010) and Fainstein and Novikov (2011) reach the same conclusion in a study for three Baltic States (Estonia, Latvia and Lithuania) banking systems. Their results highlight the importance of economic growth and interest rates to the soundness of the banking system.[3] Salas and Saurina (2002) and Jakubík (2007), in studies for the Spanish and Czech banking sectors, respectively, also point out GDP growth and interest rates as the main macroeconomic factors affecting the credit risk.

In the same line, Bohachova (2008) concludes that the business cycle plays an important role in the evolution of the credit risk: in OECD countries, banks tend to hold higher capital ratios during business cycle highs; in non-OECD countries, periods of higher economic growth are associated with lower capital ratios (pro-cyclical behaviour). Thus, banks accumulate risks more rapidly in economically good times and some of these risks materialize as asset quality deteriorates during subsequent recessions. Nkusu (2011) also analyses this issue for a sample of 26 advanced economies and confirms the adverse link between macroeconomic developments and nonperforming loans.

The implications of macroeconomic factors on credit default are also explored in this literature. Ali and Daly (2010) employ a logit model over Australian and US data for the period 1995–2009 and find that the level of economic activity, interest rates and total debt provide meaningful indicators for aggregate default.[4] They also notice that the US economy is more vulnerable to adverse macroeconomic shocks than the Australian economy.

In a close line of research, Pesola (2005) analyses the macroeconomic determinants of banking sector distresses over a panel of some industrial countries and show that high customer indebtedness combined with adverse macroeconomic surprise shocks to income and real interest rates contributed to the distress in banking sector.

In particular, Pesola (2005), Jiménez and Saurina (2006), Bohachova (2008) and Bonfim (2009) conclude that the outcome of wrong decisions of financing becomes apparent only during recessions and this causes an increase in non-performing loans and loan losses.

Other authors like, for example, Quagliarello (2007), Festic et al. (2011) and Louzis et al. (2012) combine the systematic and unsystematic credit risk factors. Quagliarello (2007) uses a large panel of Italian banks over the period 1985–2002 to analyse the movements of loan loss provisions and new bad debts over the business cycle using both static fixed-effects and dynamic models. His results confirm that banks' loan loss provisions and new bad debts are affected by the evolution of the business cycle but several bank-level indicators also play an important role in explaining the changes in the evolution of banks' riskiness.

In a dynamic panel data analysis for nine Greek banks over the period 2003–2009, Louzis et al. (2012) find that not only the real GDP growth rate, the unemployment rate and the lending rates have a strong effect on the level of nonperforming loans, but also some bank-specific variables such as performance and efficiency indicators possess additional explanatory power. Considering a panel of five new EU member states (Bulgaria, Romania, Estonia, Latvia, and Lithuania), Festic et al. (2011) also show that the mix of slowdown in economic activity, growth of credit and available finance and lack of supervision are harmful to banking performance and deteriorate nonperforming loans dynamics.

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[2] See, for example, Ahmad and Ariff (2007), Casu et al. (2006) and Aver (2008).

[3] Contrary to Kattai (2010), Fainstein and Novikov (2011) also notice that the rapid growth of indebtedness has been crucial to the growth of non-performing loans.

[4] Similar results are also found for Turkey by Cifter et al. (2009).