

An Application of CAMELS and Z-Score Methodologies in a Comparative Analysis Between the Four Systemic Banks in Greece for the Period 2006-2016

Apostolos G. Christopoulos, National and Kapodistrian University of Athens, Athens, Greece

ABSTRACT

The recent crisis which accelerated after the collapse of Lehman Brothers in 2008 revealed that relationships between the real economy and the financial sector are decisive for the stability of the world economy, even in cases of well operating banking systems operating in competitive economies. In the present article, the authors focus on Greece, the weakest member of the Eurozone, but with a financial system which seemed to operate on a sound basis, avoiding initially the effects of the US financial crisis. The goal of this article is to examine the performance of the Greek banking sector for the critical decade before and after the crisis, assessing the financial position of the four systemic Greek banks for the period 2006-2016. For this purpose, two alternative methods, CAMELS and Z-scores, are applied, comparing the results obtained from the two methodologies. As expected, the results of both methodologies show that the failure risk during the crisis period 2011-2016 for the four systemic banks was significantly higher compared to the pre-crisis period 2006-2010.

KEYWORDS

CAMELS, Failure, Financial Crisis, Financial Performance, Systemic Banks, Z-Score

1. INTRODUCTION AND LITERATURE REVIEW

The economies of several countries, even in the euro area, were deteriorated after the USA crisis in 2008 as indices, debt-to-GDP and deficit-to-GDP, worsen dramatically. In 2009, the newly elected socialist government in Greece publicized that the deficit-to-GDP ratio of the country was over 16% instead of the 4% which was officially reported by the conservative administration. The need for a bailout was inevitable and the so-called Troika (ECB, EC and the IMF) came to fill-in the funding needs of the country as the markets did not trust the Greek securities to invest. In return, Greece had to follow the implemented austerity programs set by the Troika. However, the sovereign crises turned into a banking crisis as there was a massive withdrawal of deposits and an outstanding increase of Non-Performing Loans. Although Greece is only a small member state within the euro area, the adoption of the Euro currency implies certain obligations for all member states. Nevertheless, several recent studies show that the impact of bad news about Greece has effect in all euro area economies.

DOI: 10.4018/IJCF.2019010102

Polyzos, Abdulrahman and Christopoulos (2018) examine a series of banking crises in the USA and Europe. To test the determinant factors for bank viability they employ an agent-based model in distressed periods. Their investigation covers both management and financial factors which affect institutions' capability to overpass difficult periods. The findings of their predicting risk model are in line with previous studies. Magnis and Iatridis (2017) use banks from the USA, UK, Germany and France to investigate manipulation issues in banks based on two dimensions, the earnings and capital management. They find that auditor reputation restricts the motivation for earnings manipulation while they also prove that banks in the post-Basle II period limit earnings and capital adequacy management. Ladas, A., Negkakis and Samara (2017) use a sample of banks from the Eurozone countries to examine the relationship between capital structure, stock crash-risk and deferred taxation. To do so they apply stock crash risk measures and they find that the recording of deferred tax components can lead to capital structure and to future stock crash risk. They also show that banks with high deferred tax assets have lower future stock crash risk in the case of crisis-affected countries, implying that deferred tax can reflect better future stock crash. Finally, banks domiciled in crisis-affected countries with capital-structure problems and high deferred tax assets have more possibilities of future crash risk.

Hamdaoui (2016) applies an uncertainty multinomial logit model based on Bayesian Model Averaging to examine early warning systems that can prevent banking crises. The aim of this work is to introduce some new variables that can estimate the exposure of a domestic banking sector to the international markets. The model examines 49 countries, both developing and developed and the prediction works successfully for most of the cases. Andrieş and Ursu (2016) use a frontier technique to find the differences in the impact of the global financial crisis on 783 EU banks for the period 2004–2010. They distinction between large and small banks and they show that crisis has a significant impact on the cost and profit of EU banks and mainly those of the eurozone. Da Rocha and Solomou (2015) exercise the impact of systemic banking crises on GDP for 24 countries over a period of eight years. According to their findings, the negative effects of systemic banking crises on GDP and industrial production last over the entire period affecting negatively macroeconomic variables. Last but not least, they find that banking crises affect macroeconomies in a similar way either during the inter-war period or the post-war period. Caballero (2015) examines whether the level of a de facto banking integration increases the frequency of systemic banking crises in a country. The financial integration is based on the participation of banks in inter-bank syndicated loans globally. The model applies a cross-section analysis for the period 1980–2007 and finds that financial integration of the average bank is a significant determinant of banking crises. Chiaramonte, Croci and Poli (2015) use a sample of European banks over the period 2001–2011 to investigate the accuracy of the Z-score, for bank soundness. They apply a comparative analysis between the Z-score and the CAMELS methodologies based on a probit and a log-log models, and they find that the Z-score identified distress for the whole period during the crisis 2008–2011, at least as good as the CAMELS methodology, but with the need of less data. Therefore, the Z-score proves to be more effective for commercial banks. Mobarek and Kalonov (2014) investigate the performance of Islamic versus conventional banks during the recent crisis based on two frontier efficiency approaches in banking. They also use Z-score to examine the soundness score of banks based on the relationship between efficiency and financial stability. By applying DEA they find that conventional banks are more efficient than Islamic banks while Z-score shows that Islamic banks financially were more stable than conventional banks although they lost this advantage after crisis.

Reverchuk, Lobozyńska and Megits (2013) use cluster analysis to determine the efficiency of banking systems in crisis periods. To apply a specialized tool to regulate the stability of the banking system they identify the relationship between different derivatives. They also assess the effectiveness of national banking systems compared with other countries for the period 2004–2009. Mink and de Haan (2013) find that news about a Greek bailout are interpreted positively by the markets leading to abnormal returns for investors who receive bailout news as a signal by the Troika that will help. Dimelis, Giotopoulos and Louri (2013) investigate how bank credit affected the growth of firms

18 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/article/an-application-of-camels-and-z-score-methodologies-in-a-comparative-analysis-between-the-four-systemic-banks-in-greece-for-the-period-2006-2016/227418

Related Content

Disclosure of Financial Information via the Internet by the Portuguese Local Authorities

Helena Carla Antunes Mendes, Carlos Santos, Augusta Ferreira, Rui Pedro Figueiredo Marques, Graça Azevedo and Jonas da Silva Oliveira (2020). *Tools, Strategies, and Practices for Modern and Accountable Public Sector Management* (pp. 196-226).

www.irma-international.org/chapter/disclosure-of-financial-information-via-the-internet-by-the-portuguese-local-authorities/242800

The Effect of Corporate Governance on Bank Performance Evidence From UAE

Muhamad AbdulAziz Muhamad Saleh Jumaa (2020). *International Journal of Corporate Finance and Accounting* (pp. 16-38).

www.irma-international.org/article/the-effect-of-corporate-governance-on-bank-performance-evidence-from-uae/261857

Carbon-Efficient Supply Chains

Christos Kalogeropoulos, Eleftheria Missou, Nikolaos Elias Pavlis and Dimitris Psychoyios (2015). *International Journal of Corporate Finance and Accounting* (pp. 1-24).

www.irma-international.org/article/carbon-efficient-supply-chains/134861

Impact of the Volatility of Macroeconomic Variables on the Volatility of Stock Market Returns: Nigeria's Experience

Emeka Nkoro and Aham Kelvin Uko (2014). *Global Strategies in Banking and Finance* (pp. 218-230).

www.irma-international.org/chapter/impact-of-the-volatility-of-macroeconomic-variables-on-the-volatility-of-stock-market-returns/94447

Self-Service Technology Banking Preferences: Comparing Libyans' Behaviour in Developing and Developed Countries

Fouad Omran Elgahwash and Mark Bruce Freeman (2015). *Banking, Finance, and Accounting: Concepts, Methodologies, Tools, and Applications* (pp. 714-727).

www.irma-international.org/chapter/self-service-technology-banking-preferences/115360