Chapter 5
Early Warning Tools for Financial System Distress
Current Drawbacks and Future Challenges

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ABSTRACT

In the last decade, economic literature has consistently and imperatively promoted the need to create and use early warning models to prevent the various types of crises, especially as the coverage of bank risks has widened, as a result of the financial liberalization process, innovation and cross border financial activity. Although several supervisory authorities and central banks have already in place different types of early warning systems (Austria, Czech Republic, France, Italy, Romania, UK), the recent global financial crisis has put into question the ability of these statistical tools to monitor financial or banking distress and make accurate predictions. The aim of the chapter is twofold: i) to review the existing typologies of EWSs, developed at micro prudential and macro prudential levels; and ii) to answer several questions related to the low predictive power recorded by early warning models with respect to the current financial crisis and to depict the main international approaches towards their future structural reconfiguration and role.

INTRODUCTION

Traditionally, the main objective of banking supervision has been to check banking activity's compliance with prudential regulations in force and to monitor the credit institutions' risk profile. The most frequent quantitative output is the CAMELS rating system. However, in the last decade, some supervisory authorities have begun to implement a new statistical tool, called early warning system (EWS), to put emphasis on forward looking analyses. Their stated purpose is to identify a causality relationship between banking systems' episodes of crisis or distress and microeconomic, macroeconomic or institutional factors.

EWSs are perceived by researchers and policy makers as sophisticated statistical tools designed for monitoring a series of economic and financial variables and for computing the likelihood of impairment, so as to accurately predict the im-

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minence of various episodes of banking intrinsic vulnerability or financial instability (inadequate capitalization, credit institutions' rating downgrade, banking crises, currency or debt crises).

Nevertheless, early warning literature is the field of ample controversies about the optimal set of indicators, which are able to accurately predict the imminent deterioration of credit institutions' activity. There isn't a common denominator because warning systems' configurations reflect mainly the peculiarities related to the openness of an economy, the level of development and complexity of the financial system, the number, size and concentration of credit institutions, the financial crises typology and intrinsic banking systems' vulnerabilities.

In this context, it has been noticed a growing research area which focuses on identifying or developing new early warning indicators, whose informational content could be useful in signaling the occurrence of a distress phenomenon. But the global financial crisis has put into question the ability of these statistical tools to monitor and make accurate predictions.

The first part of the chapter is meant to give a concise overview of the contemporaneous state of EWSs in Europe, with the aim of establishing which is the most spread and used type of EWS: micro prudential versus macro prudential. It will consist of practical examples of operational EWSs, developed by central banks and supervisory authorities across Europe.

The second part of the chapter launches and answers few questions, meant to provide an in-depth understanding about the mix of causes that have diminished the capacity of operational early warning models to forecast/signal the current financial crisis and to reveal the role that international financial institutions will allocate in the future, for this type of instrument. It classifies the causes that have contributed to mitigating EWSs sensitivity in two categories: methodological deficiencies in EWSs architecture and lack of preventive reaction from international financial institutions. In addition, it provides a snapshot of the methodological improvements that can be made to the current early warning systems (statistical method chosen, expansion of the in-sample time horizon, standardization or time lags for explanatory variables, the choice of the dependent variable etc.), in order to boost their future predictive performance.

TYPOLOGY OF OPERATIONAL EARLY WARNING SYSTEMS

Early warning systems are flexible, dynamic tools that have to be permanently connected and adjusted to the theory of systemic risk, the evolution of financial markets and the availability of information (Oet et al. 2014). Regardless of the purpose for which they are designed, each EWS is a combination of five dimensions: the set of candidate variables, sample period, sample of countries or individual financial institutions, the definition of a crisis or distress phenomena and the statistical method applied (Beckmann et al. 2006).

The core objective of EWSs is to provide a reliable and as accurate as possible estimation of the likelihood of a financial distress episode, over a given time horizon. The timing for issuing warning signals is an important feature, as it allows monetary decision makers to identify, monitor and mitigate potential risks or vulnerabilities in an incipient stage.

Recent studies (Candelon et al., 2012; Knedlik 2014) outline that EWSs have become a valuable and promising instrument in the monetary decision-making process, as the authorities might rely on their forecasts in order to decide if there is the case to initiate preventive actions or implement policies to alleviate the impact of a financial turmoil.

Economic literature and current practice allow the delineation between two main categories of early warning systems:

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