Early Warning Indicators for Banking Crises: A Conditional Moments Approach

by

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Abstract

This paper presents a novel methodology to calculate thresholds in an early warning signalling framework for extracting signals useful to predict the occurrence of banking crises. The conditional moments based methodology does not rely on assumptions on an objective function trading off Type I and Type II errors and leads to the identification of zones corresponding to different intensities of the signal. The signalling performance of these signalling zones is similar to that of the traditional early warning method based on the optimisation of a policymaker's loss function; our methodology in fact outperforms the latter for a number of indicators. The methodology is then extended to allow for country specificities, which leads to a substantial improvement of the signalling power. On average, across all indicators, the country-specific signalling zones outperform the pooled approach, resulting in a larger average true positive rate and a lower false alarms rate.

1. INTRODUCTION

The recent financial crisis resulted in increased attention for macro-prudential policy to maintain financial stability. The translation of the Basel III framework[2] into European legislation[3] provided national authorities with a range of macro-prudential policy instruments. A number of countries are in fact already applying such macro-prudential policy instruments, such as countercyclical capital buffers, additional capital requirements on real estate exposures or caps on loan-to-value or debt service-to-income ratios, to dampen systemic risk. The European Systemic Risk Board (ESRB) strongly encourages European countries to develop sound macroprudential policy strategies to frame such actions, which include the identification of leading indicators and associated thresholds signalling excessive developments that may lead to systemic risk.[4]

In recent years, policymakers as well as academics focused on the identification of early-warning indicators signalling excessive developments in credit growth and leverage in the run-up to a banking crisis. One of the most common methodologies used to identify early warning indicators and obtain thresholds is the signalling approach, as introduced in the pioneering study by Kaminsky and Reinhart (1999). The signalling approach results in the computation of a threshold above which an indicator signals the potential occurrence of a banking crisis over the relevant prediction horizon. Such signals could be used by macro-prudential policymakers as an initial trigger for an in depth investigation of systemic risk and potential policy actions.

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[2] Basel Committee of Banking Supervision (2011).

[3] The CRD IV Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, and the CRR Regulation (EU) No. 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms.

[4] See ESRB Recommendation of 4 April 2013 on Intermediate objectives and instruments of macro-prudential policy (ESRB/2013/01) and ESRB (2014).