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Early warning indicators of asset price boom/bust cycles in emerging markets[☆]

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ABSTRACT

We apply recently developed early warning indicator systems to a cross-section of emerging markets. We find that, with little or no modification, models designed to predict asset price booms/busts in advanced countries may be useful for emerging markets. The concept of monitoring a set of asset prices, real activity and financial indicators is generally found to be efficacious. We also find that, in addition to this set of variables, early warning indicator systems for emerging countries may be augmented with capital flow indicators.

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1. Introduction

The recent financial crisis has underscored the growing importance of asset price fluctuations for macroeconomic performance. As is the case for developed countries, a number of emerging market economies (particularly in Central and Eastern Europe¹) seem to be quite prone to such shocks, as the rapid rise and subsequent decline of asset prices have presumably contributed significantly to the pre-crisis overheating of these economies as well as to the following contraction. Therefore, a system of early warning indicators that would help with early identification of emerging imbalances in asset markets is a much sought-after tool for policy-makers.

[☆] The views expressed in this paper are those of the author and do not necessarily represent the position of the Bank of Russia.

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¹ See Gardó and Martin (2010) and Égert and Martin (2008) for general review, Brixiova et al. (2010) for the specific case of Estonia, Kuodis and Ramanauskas (2009) for the case of Lithuania and Mumtaz et al. (2012) for the case of Russia.

Development of such a system via the country-specific approach is often impossible because of data limitations. Therefore the standard approach is to make estimations for a group of countries (that may or may not include the analyzed country) and apply the resulting model to the economy in question.² A number of recent studies use this method and report on models that can be used to predict asset price booms and busts. These may be valuable to the policy-maker. The caveat here is that most of these models have been fitted to explain asset price fluctuations in industrialized countries. It is not clear how useful these models are for emerging markets, as movements in many of the macroeconomic variables used as early warning indicators are remarkably different in the developed and emerging markets. For example, one may find it difficult to distinguish between excessive credit growth that leads to an asset price bubble and the convergence of an underdeveloped banking sector to a level commensurate with the industrialized countries. For transition economies, it may also be challenging to identify “overheating” based on growth rates of real sector variables that fluctuate dramatically as the economy undergoes substantial transformation. In fact, asset prices as such are known to be volatile in emerging markets and therefore difficult to interpret. For these reasons the early warning indicator approach needs to be thoroughly studied before it finds its use in predicting asset price cycles in emerging markets. Indeed, as emphasized in the work of [Reinhart and Rogoff \(2009\)](#), data coverage is crucial for financial crisis analysis. The main contribution of this paper is the application of asset price boom/bust analysis to the new dataset on emerging markets (most notably former Soviet Union countries).

The rest of the paper is structured as follows. [Section 2](#) provides a review of recent contributions in the development of asset price cycle early warning indicator models. [Section 3](#) describes the dataset, comprising a cross-section of emerging market economies, on which we conduct the empirical analysis. [Section 4](#) outlines and implements methods to identify boom and bust events that occurred in emerging markets. [Section 5](#) presents an evaluation of the efficacy of existing models for predicting asset price developments in emerging markets and reports on the models fitted here to predict asset price booms/busts in the purely emerging market dataset. [Section 6](#) concludes.

2. Literature review and modeling strategy

Although a number of recent studies address the issue of asset price fluctuations and the designing of early warning indicators for emerging markets, none of these, to our knowledge, address specifically the problem of predicting asset price booms and busts. [Herrera and Perry \(2003\)](#) assess the relative importance of domestic and external factors for determining the probability of an asset price bubble for a cross-section of Latin American countries. [Lo Duca and Peltonen's \(2011\)](#) work is a comprehensive study that develops a model for predicting systemic financial stress episodes for a sample of countries that includes emerging markets. They find that (in particular, global) measures of asset price misalignments and credit booms are generally useful as leading indicators. [Tenjo and López \(2010\)](#) construct an early warning indicator system for banking crises in a group of Latin American countries, in which asset price indicators play a crucial role. [Bunda and Ca'Zorzi \(2010\)](#) study whether asset price and credit booms can be used as an early warning indicator of financial (banking or currency) crisis, on the basis of a mixed sample of advanced and developing countries. They identify a number of macroeconomic variables that help to distinguish between benign and costly episodes. [Olaberria \(2012\)](#) conducts an empirical analysis of the relationship between capital inflows and booms in stock prices and finds that there is a close association (in particular for debt related inflows). [Égert and Mihaljek \(2007\)](#), [Stepanyan et al. \(2010\)](#), [Posedel and Vizek \(2011\)](#) and [Ciarlone \(2012\)](#) examine house price developments in selected emerging economies and find a strong link between house-price fluctuations and macroeconomic fundamentals. [Posedel and Vizek \(2011\)](#) also find that house price persistence coupled with a slow and asymmetric house price adjustment to fundamentals process might have facilitated the house price boom in some transition countries.

In contrast, there is a vast literature on asset price booms and busts in developed countries. We selected three studies dedicated to early prediction of asset price cycle developments and utilized different methods of identifying asset price boom/busts and a different modeling strategy. As outlined in chapter 6

² See [Gómez and Rozo \(2008\)](#) for the example of country specific analysis, [Tenjo and López \(2010\)](#) for the cross-section analysis and Chapter III in [BIS \(2012\)](#) for out-of sample application of existing models.

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