

International Conference on Applied Economics, ICOAE 2015, 2-4 July 2015, Kazan, Russia

CEECs' financial integration: global or regional? Evidence from sovereign bond markets

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Abstract

This paper investigates the degree of global versus regional financial integration in the Central and Eastern European countries (CEECs') sovereign bond markets during the period 2000–2015. We examine global and regional integration in the sovereign bond markets in CEECs' by employing the Johansen cointegration test. Summarizing the results of this empirical study it can be stated that the level of global and regional integration of the CEECs' sovereign bond markets is very low while the most interrelated are CEECs' sovereign bond markets and the strongest interrelation of sovereign bond markets is observed among countries those are economic related and within CEECs' group.

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Selection and/or peer-review under responsibility of the Organizing Committee of ICOAE 2015.

Keywords: EU countries, economic development, financial development, relationship

1. Introduction

The global and regional integration of the European Union (EU) financial markets is an issue of high importance. Many scientists (Bekaert et al. (2006), Fecht et al. (2007), Demyanyk et al. (2008), Caballero and Krishnamurthy (2009), Giannetti and Ongena (2009), Ferguson et al. (2009), Popov and Udell (2012)) have analyzed both stabilizing and destabilizing effects of financial integration. Kim et al. (2006), Abad et al. (2010), Volosovych (2011), Pozzi and Wolswijk (2012), Claeys et al. (2012), Dragomirescu-Gaina and Philippas (2013), Sibbertsen et al. (2014), Răileanu-Szeles and Albu (2015) and other scientists analyzed the process of financial integration just within

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the group of the euro area countries, but a number of papers including into the analysis all the EU Member States or just CEECs’ is limited because the governmental bond market is a relatively underdeveloped comparing to EU-15 countries. But despite the significant progress made in the development of sovereign bond markets, the CEECs’ bond markets are still characterized by structural differences. *The aim of the article* is to assess the degree of global and regional integration of the Central and Eastern European countries (CEECs’) sovereign bond markets. *The research object*: the CEECs’ sovereign bond markets. *The research methods*: the systemic, logical and comparative analysis of the scientific literature, the analysis of the statistical data, the Johansen cointegration test.

2. Literature review

The financial integration of EU countries is the main concern of the European Central Bank (ECB) and many researchers. According to the ECB (ECB (2008, 2014)), “bond market integration in all market segments (government, non-financial corporates and banks) shows signs of slight improvement, although the degree of fragmentation is still higher than before the global financial crisis. In the government bond market, both price- and quantity-based indicators show a clear improvement in the level of integration”. Kim et al. (2006), Abad et al. (2010), Volosovych (2011), Pozzi and Wolswijk (2012), Claeys et al. (2012), Dragomirescu-Gaina and Philippas (2013), Sibbertsen et al. (2014), Răileanu-Szeles and Albu (2015) and other scientists have investigated the financial integration of the EU and the Economic and Monetary Union (EMU) countries sovereign bond markets. However, there are only a few studies (Kim et al. (2006), Cappiello et al. (2010), Christopher et al. (2012), Pungulescu (2013), Christiansen (2014)) that have exclusively analyzed the sovereign bond markets of the new EU member states. For more comprehensive literature review see my previous work (Deltuvaite (2015)). The results of these empirical studies show that CEECs’ bond markets are less integrated than EU-15 countries and the recent financial crisis has caused the deterioration of financial integration in the CEECs’ sovereign bond markets.

3. Research methodology and data

Research methods. Engle and Granger (1987) argue that a linear combination of two or more non-stationary series may be stationary. According to Engle and Granger (1987), if such a stationary linear combination exists, the non-stationary time series are said to be cointegrated and may be interpreted as a long-run equilibrium relationship among the variables. This empirical study applied Johansen cointegration test that was developed by Johansen (1991, 1995).

$$\Delta y_t = \Pi y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta y_{t-i} + Bx_t + \varepsilon_t, \text{ where } \Pi = \sum_{i=1}^p A_i - I, \quad \Gamma_i = - \sum_{j=i+1}^p A_j \tag{1}$$

where: Δy_t – a non-stationary I(1) variable (long-term (10 years) government bonds interest rate) at time t ;
 x_t – a deterministic variable (long-term (10 years) government bonds interest rate) at time t ;
 ε_t – an innovation.

Granger’s representation theorem asserts that if the coefficient matrix Π has reduced rank $r < k$, then there exist $k \times r$ matrices α and β each with rank r such that $\Pi = \alpha\beta'$ and $\beta' y_t$ is I(0). r is the number of cointegrating relations (the cointegrating rank) and each column of β is the cointegrating vector.

Data series may have nonzero means and deterministic trends as well as stochastic trends. Similarly, the cointegrating equations may have intercepts and deterministic trends. Therefore, in order to carry out the Johansen cointegration test, you need to make an assumption regarding the trend underlying your data. This empirical study investigates the number of cointegrating relations under each of the five deterministic trend cases considered by Johansen (1995) as:

1. The level data y_t have no deterministic trends and the cointegrating equations do not have intercepts:

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