

Conference Paper

Bond Market Development, Economic Growth, and the Role of Foreign Investment

Harjum Muharam, Imam Ghozali, and Erman Denny Arfinto

Faculty of Economics and Business, Universitas Diponegoro, Jawa Tengah 50275, Indonesia

Abstract

The aim of this research was to analyze the relationship among bond market development, economic growth, and foreign investment in several countries. The object of the research was sovereign bond with a sample of some developing countries in Asia, America, Europe, and Africa during the period of 2004-2015. The methods used were Vector Autoregressive (VAR), Vector Error Correction Model (VECM), and Granger causality. The result showed that there are short- and long-run cointegrations in each sample. On the other hand, there is no causality in all sample countries but there is only univariate correlation in Indonesia, Thailand, and Mexico.

Keywords: sovereign bond, bond market development, economic growth, and foreign investment

Corresponding Author:

Harjum Muharam
hardjum@gmail.com

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1. Introduction

In the recent decades, bond market in the developing countries has become an attractive investment target for several reasons. First, the markets in the emerging countries have a tendency to grow rapidly. Second, bond market has become the second largest source of financing in the emerging markets since the early 1990s, and third, market liquidity and transparency of bond market in the developing countries have been increasing since the last decade (Virgin et al., 2009 and McGuire and Schrijvers, 2003, 2006). As a result, investors have always been analyzing every possibility to do investment.

Investors, both domestic and foreign, might possess issued bonds from which the issuer of the bonds might capitalize substantial funding. Until 2015, foreign holdings of government securities in Indonesia were still relatively high, 38%, while 62% owned by domestic investors. Although, according to Iamsiraroj and Ulubaşoğlu (2015), foreign investment could provide a significant benefit because the relatively stable fund could increase production capacity, employment, and trade, the encouragement of the government to increase the percentage of domestic investment as source of financing

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is essential. Therefore, domestic investors are expected to be able to dominate the market in order to buffer the economic activity. Following the phenomenon, this study examined the causal relation between bond market and economic growth as well as the impact of foreign investors on bond market and economic growth in some developing countries.

2. Literature Review

Previous researches have proven the impact of bond market on economic growth in developing countries with different results. Abbas and Christensen (2007) found that bond market development positively affects economic growth in the developing countries. Meanwhile, the empirical result of Kapalo and Adaramola (2012) who analyzed the impact of capital markets on economic growth in Nigeria showed that there is a long-term relationship between stock market and economic growth. Kapingura and Markheta (2013) also identified that real economic activity measured by GDP is influenced by bond market development in some African countries. Furthermore, Matei (2015) proved the relationship between bond market development and growth of real GDP using bond yield of 10-year maturity and bond yield of 1-year maturity as proxies of bond market development in sixteen Eurozone countries. His finding showed that economic activity of a country that is significantly affected by bond market dynamics took place only on Portugal, Finland, Italy, Greece, and France during the period of 2001 to 2011. On the contrary, Thumrongvit et al. (2013) who analyzed the relationship between government as well as corporate bonds and economic growth proved that bond does not significantly influence economic growth but partially; government bonds significantly affect corporate bonds; while, corporate bonds do not.

Studies analyzed the impact of economic growth on bond market pointed out the important factor of macroeconomic on bonds in each period. Matei (2015) identified the linkage of real economic to bond market occurring only in Slovenia and Greece. Meanwhile, Dimic et al. (2015) who conducted a study of factors affecting stock market found that the most important factor influencing the linkage of short-term stocks/bonds is monetary policy; while, the biggest factor of the long-term ones is the uncertainty of inflation and stock market. Therefore, as high economic growth was directly proportional to higher demand for financial services, additional bonds coverage was likely needed. Fink et al. (2003) confirmed the causal relationship between bond market development and economic growth. This bidirectional relationship was identified in

the cases in Japan, Finland, and Italy. Matei (2012) and Pradhan et al. (2015) also found a causal relationship between bond markets and economic growth.

Given this situation, the aim of this study was to analyze the linkage between bond market and economic growth in the developing countries. The object of this study was government bonds of the developing countries in Asia, Africa, America, and Eastern Europe. Some countries from each continent were sampled for causality test related to the relationship between bond market and economic growth as well as the integration correlation among countries sampled. In addition, the influence of foreign investors to affect bonds and economic growth was also analyzed.

3. Methods

3.1. Sample and data

The population and sample of this research were bonds of the government of the developing countries from four continents; Asia (Indonesia, Malaysia, and Thailand), Latin America (Mexico), Europe (Poland and Turkey), and Africa (South Africa). The population and sample were selected based on the purpose of the study to analyze the emerging countries and the availability of data. Bond Market Development (BMD), Economic Growth (EG), and Foreign Investment (FI) were analyzed. BMD stands for Bond Market Growth, EG is GDP Growth, and FI is Foreign Investment. The secondary data used in this research were obtained from Bloomberg, World Bank, Asian Bond Online, Republic of Turkey Prime Ministry (Under the secretariat of Treasury), Finance Ministry of Poland, Ministry of Finance of The Republic of Indonesia, and South African Reserve Bank, during the period 2004–2015.

3.2. Methods of analysis

The methods of analysis used were Vector Autoregressive (VAR) test, as time series data were used. However, Augmented Dickey Fuller (ADF) test was first applied to determine the stationary of the data. When the result of the data tested by ADF was not stationary, Vector Error Correction Model (VECM) test was performed to identify the existence of the co-integrated data (un-stationary data at level stage) and to determine the relationship among variables, in both short term and long term. The aim of using VECM model was to determine the significance of the relationship and

the direction of each variable. If the value of t -statistic is higher than that of T -table (t -statistic $> T$ -Table), the relationship is significant. Conversely, if the value of t -statistic is less than that of T -table (t -statistic $< T$ -Table), the relationship is not significant. Then, Granger Causality test was conducted to determine the causal relationship between two variables. These analytical methods were conducted by using EViews application.

4. Results and Discussion

4.1. Short-term relationship between BMD and EG

The short-term relationship between BMD and EG among countries varied, as shown by the result of the VECM test upon the continent of Asia, Europe, America, and Africa. Meanwhile, the case of Indonesia was analyzed using VAR Test, and the result showed that there was a significant relationship between BMD and EG marked by an underline. In VAR equation of bond market growth (BMG) in Indonesia, BMG lag 1, and 4 had positive influence on BGM itself. BMG lag 3 has negative influence on BMG as well as foreign investor (FR). As for the equation of EG, BMG lag 6 positively influenced economic growth (EG). Meanwhile, BMG lag 7 and 10 had negative impact on EG. Furthermore, EG lag-1, 4, and 7 positively influenced EG; however, EG lag 2, 3, 5, and 6 had a negative impact on the EG itself. The result for Malaysia showed that bond market growth lag-2 and 5 positively influenced BMG; while, bond market growth lag 3 significantly and negatively affected BMG. This result was similar to economic growth at lag 3 that significantly showed negative impact on BMG.

On the other hand, the short-term analysis of the economic growth in Malaysia showed that there was a significantly positive relationship of EG lag 1 and 4, but lag 3 of the economic growth significantly showed negative effect on EG. Conversely, the case in Thailand revealed different result. MG lag 3, 6, and 9 significantly and negatively affected BMG. The EG lag 6 significantly and negatively affected BMG. However, EG lag 7 positively influenced BMG. In addition, in the EG equation, there were many variables affecting the dominating EG. The BMG lag 1 through 8 had a significantly negative impact on EG as happened to EG lag 3 and 6 that respectively showed a significantly negative effect on EG; while, EG lag 1, 2, 4, and 7 had significantly positive impact on EG.

The analysis of short-term equation of bond market growth in Mexico showed that economic growth at the first lag has positive significant effect on bond market growth and economic growth at second lag has negative significant effect on bond market

growth. Meanwhile, the analysis of economic growth equation for the short term showed that bond market growth lag 1 has negative significant effect on EG. Moreover, the first lag of the economic growth has positive and significant effect on EG.

In the European cases covering three sample countries, every country showed different result. Referring to the result of Poland case exhibiting in Table 5, economic growth lag 2 and 5 were significantly and negatively affected BMG; while, economic growth lag 3 significantly and positively affected BMG. In the short-term analysis using economic growth equation, BMG lag 1 to lag 5 was not significant effect on EG. Furthermore, economic growth lag 1 and 4 positively influenced economic growth; while, economic growth lag 3 had significantly and negatively affected economic growth.

In Turkey, with three lag of its endogen variables, bond market equation for short-term growth showed that both bond market growth and economic growth lag 1 and 2 did not significantly affected BMG. In the short-term analysis using economic growth equation, BMG lag 1 and 2 did not affect significantly on EG; while, economic growth at the first lag and FR positively and significantly affected EG. There was no significant relation in the first lag of economic growth on the economic growth itself.

Meanwhile, the short-term analysis of Czech Republic showed that both bond market growth and economic growth lag 1 and 2 did not significantly affect BMG. It was different from foreign investor; it showed significant impact on the bond market. In the analysis using economic growth equation for the short term, the bond market growth at lag 1 and 2 was negative and significant effect on EG. Then economic growth at lag 1 showed positive and significant effect on EG.

In South Africa, in the short-term analysis of the BMGequation, BMG lag 1 and 3 had significantly positive effect on BMG at 95% confidence level. Then, economic growth lag 1 and 5 was not significant. However, foreign investors had a significantly negative effect on bond market growth (Ebeke and Lu, 2015). The short term of economic growth bond equation showed that market growth at the third and fifth lag had a significantly positive impact on bond market growth itself. Then, economic growth lag 1 and lag 4 positively affected economic growth. Economic growth lag 3 had a significantly negative impact on economic growth at 95% confidence level.

4.2. Long-term relationship between BMD and EG

The long-term test results were to acknowledge cointegration in long-term relationship of each country. There were only 7 countries conducting long term VECM test, as the case in Indonesia, which was tested with VAR. The countries excluding Turkey

and Czech Republic showed significant result of long-term cointegration. Malaysia, Thailand, Mexico, and Poland were significantly negative, but South Africa long-term cointegration was significantly positive. This result has similar with the result of study that conducted by Pradhan (2005).

Granger causality test results showed that there was no bidirectional causality between BMD and ED in all sample countries. There was only one-way relationship between BMG and EG as stated by Pradhan (2005) and Matei (2012). In Indonesia, BMG was acknowledged to give an impact to EG. This was similar to Thailand and Mexico. Bond market development and economic growth in all countries not be dependent on each other.

4.3. The role of foreign investor

Lucey and Zhang (2011) stated that since the late 1980s, the openness of domestic financial market to foreign investors has been considered a key of structural change in the developing countries. Iamsiraroj and Ulubaşoğlu (2015) indicated that foreign direct investment has a positive impact on economic growth based on which the relationship occurred globally with equal strength in the developing countries. Vo (2009) proved that foreign investors could increase international trade and support economic growth. Vithessonthi and Kumarasinghe (2016) confirmed that financial markets in the developing countries are more attractive for foreign investment than that of in the developed ones. The cross-country trade carried out by investors in order to do diversification internationally to expand networks, increase yield, and reduce portfolio risks.

The finding of Ebeke and Lu (2015) revealed that the growth of real GDP and fiscal play an important role to shape the relationship between foreign investors and dynamics of bond yields. Foreign ownership tends to lower the yield and yields volatility in the country having strong macro-economic fundamental. However, the macro-economic fundamental of a country also influences the benefits generated from the presence of the foreign investors. For that reason, foreign investors in the developing countries in the European continent potentially cause yield discrepancy between one country and others (Comelli, 2012), (Peiris 2010), and (Beltran et al. 2012). Our finding showed that FR had significance effect on BMG in Indonesia, Malaysia, Poland, Turkey, and South Africa. Meanwhile, the short-term positive correlation of foreign holdings to economic growth is found in the cases of Thailand and Turkey.

TABLE 1: The influence of Foreign Investor (FR) on Bond Market Development (BMG) and Economic Growth (EG).

Country	D(BMG)	D(EG)
Indonesia	-0.105221 [-2.41944]	0.000050 [0.07272]
Malaysia	-0.01302 [-3.05365]	0.000165 [0.70047]
Thailand	0.001402 [0.10902]	0.007424 [2.14026]
Mexico	-0.010977 [-0.84624]	0.000146 [0.26633]
Poland	-0.018079 [-1.98973]	0.000004 [0.02115]
Turkey	-0.256073 [-6.21759]	0.015735 [3.15749]
Czech Republic	0.030696 [0.99228]	0.000105 [0.14231]
South Africa	-2.11809 [-5.33446]	-0.036007 [-1.60710]

5. Conclusion

Based on tests conducted in eight countries, this research proves that every country has different results caused by different conditions in each country. According to granger causality test, only Indonesia, Thailand, and Mexico have one-way relationship of bond market development to economic growth as stated in the research of Pradhan (2005) and Matei (2012). Therefore, it could be summed up that there is no causal relationship between economic growth and bond market growth in all sample countries. Indonesia, Thailand, Mexico, and Turkey have short-term negative effects of bond market development on economic growth. Indonesia is proven to have a short-term positive effect, as stated by Thumrongvit et al. (2013). On the other hand, there is a negative short-term impact given by economic growth to bond market development in Malaysia, Thailand, Mexico, and Poland. Meanwhile, the short-term positive impact of economic growth to bond market is proven in the cases of Thailand and Poland.

In addition, long-term negative relationship between economic growth and the bond market development is identified in the cases of Indonesia, Malaysia, Thailand, Mexico, and Poland, but positive impact in South Africa as supported by the research of Pradhan (2005). On the other hand, foreign investors have short-term negative effect on the bond market development in Indonesia, Poland, Turkey, and South Africa according to

the research of Ebeke and Lu (2015). Meanwhile, the short-term positive correlation of foreign holdings to economic growth is found in the cases of Thailand and Turkey. For further study, we suggest to extend the analysis of time period and scope of the countries, and to use other methods in data processing; so that, the results could be obtained optimally.

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