The Threshold Effects of the External Debt on the Economic Growth in Eight Developing Countries: Panel Smooth Transition Regression (PSTR) Model

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Extended Abstract

Introduction

One of the economic problems in the developing countries is the debt problem. External debt occurs in the developing countries due to the elimination of the restrictions on the savings gap, the foreign exchange gap, and the fiscal gap in order to form the capital to accelerate the economic growth (Karakoy et al., 2012, p. 491). In contrast, borrowing and rising the external debt could be little in the economic growth of these countries due to theadverse economic effects such as debt overhang problems, crowding out effect, and uncertainty (Karakoy et al., 2012, p. 491). In general, there are three groups of theories regarding how to influence the external debt for the economic growth. The first group of theories relates reasonable debt levels to positive effects on growth; the second relates the high accumulated debt levels to the negative effects on growth (low growth), and the third combines those two effects while arguing that the impact of debt on growth is nonlinear by nature (Oleksandr, 2003). In this regard, the main purpose of this paper is to investigate the non-linear impact of the external debt on the economic growth in 8 Developing (8D) countries group including Indonesia, Iran, Bangladesh, Pakistan,

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Turkey, Malaysia, Egypt, and Nigeria.

Theoretical frame work

For the purpose of this paper, the researcher adopted the *debt overhang theory*. The debt overhang theory is based on the premise that if the debt will exceed the country's repayment ability with some probability in the future, the expected debt service is likely to be an increasing function of the country's output level. Thus, some of the returns from investments in the domestic economy are effectively taxed away by the existing foreign creditors while the domestic and new foreign investors are discouraged (Claessens, 1996). Under such circumstances, the debtor country shares only partially in any increase in output and exports because a fraction of that increase will be used to service the external debt. The theory implies that the debt reduction will lead to the increased investment and repayment capacity, thus, the portion of the outstanding debt becomes more likely to be repaid. When this effect is strong, the debtor is said to be on the wrong side of the debt Laffer curve. In this case, the debt Laffer curve is referred to the relationship between the amount of debt repaid and the size of the debt. However, the idea of the debt Laffer curve also implies that there is a limit at which the debt accumulation stimulates growth (Elbadawi et al., 1996). In reference to the debt Laffer curve, Lensink and White (1999) argue that there is a threshold at which more debt is detrimental to grow.

The liquidity constraint is captured as a *crowding out effect*, by which the requirement for the service debt reduces funds available for the investment and growth. A reduction in the current debt service should, therefore, lead to an increase in the current investment for any given level of future indebtedness (Cohen, 1993). Other channels which can affect the need to service a large amount of external obligations for the higher economic performance include the lack of access to the international financial markets and the stock debt on the general level of uncertainty in the economy (Claessens, 1996). However, debt has to be repaid. Funds borrowed will simply postpone the taxation. Hence, the purpose for which the funds are gained and their relative returns becomes crucial. If the government invests on the infrastructure such investments are capable of leading to the faster growth and the socio-economic development (Mowlaei & Golkhandan, 2014).

Methodology

In order to determine the reaction of the economic growth to the external debt and other traditional sources of growth, the following logarithmic production function in a Panel Smooth Transition Regression (PSTR) model is used. In this model, countries are denoted by the subscript i and the subscript t denotes the time period (1991-2013). Other variables are defined as follows: GDP: Gross domestic product per capita; ED: The ratio of the total external debt to the gross domestic product; INV: The ratio of the fixed gross capital formation to the gross domestic product; EDU: The ratio of the education expenditure to gross the domestic product; GOV: The ratio of the government final consumption expenditure to the gross domestic product; OPEN: The degree of the economic openness index by the ratio of the sum of exports and imports to the gross domestic product; POP: Population; INF: Inflation rate; r: The number of transfer functions; g: Transfer functions; q: Transmission (threshold) variable; γ: Slope parameter; c: The vector of threshold parameters.

Results & Discussion

The linearity test results indicated that there is a strong nonlinear relationship among variables under consideration. Moreover, considering one transition function with one threshold parameter, that represents a two-regime model, is sufficient to specification of nonlinear relationship among variables. The results indicated that the threshold value is 34.12 percent and the estimated slope parameter is 1.83. In order to provide the clearer evidence of the obtained results, two extent regimes were investigated:

First regime $g(q_{it};\gamma,c)=0$:

$$LGDP_{it} = \mu_i - 0.004ED_{it} + 0.164INV_{it} + 0.061EDU_{it} - 0.055GOV_{it} + 0.014LOPE_{it} - 0.481LPOP_{it} - 0.005LINF_{it}$$

Second regime $g(q_{it};\gamma,c)=1$:

$$LGDP_{it} = \mu_i - 0.032ED_{it} + 0.106INV_{it} + 0.036EDU_{it} - 0.071GOV_{it} - 0.008LOPE_{it} - 0.157LPOP_{it} - 0.017LINF_{it}$$

Based on the above results, in the first regime, the external debt has a little negative impact on the economic growth. Beyond the threshold level, in the second regime, this negative impact increases.

Conclusions & Suggestions

This paper investigates the threshold effects of the external debt on the economic growth in eight developing countries from 1991 to 2013 using Panel Smooth Transition Regression (PSTR) model as one of the most prominent regime-switching models. The linearity test results indicated a strong nonlinear relationship among the variables under consideration. Moreover, considering one transition function with one threshold parameter, that represents a two-regime model, is sufficient to specification of nonlinear relationship among variables. This negative impact increases if it is beyond the threshold value in the second regime. Therefore, not only the external debt has not played an important role in the acceleration of the economic growth in the eight developing countries; but also, its increase is the barrier to economic growth in these countries. The results have important implications for the policymakers of the eight developing countries. It is a major challenge for the governments to formulate a prudent debt management policy to control and maintain the level of indebtedness of their countries at a manageable level before it becomes too late and the country becomes involved in a debt overhang situation or, to a lesser extent, is in default.

Keywords: External Debt, Economic Growth, Eight Developing Countries, Panel Smooth Transition Regression (PSTR) Model

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