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The non-linear impact of high and growing government external debt on economic growth: A Markov Regime-switching approach

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ABSTRACT

Today, the major reason for external debt is to finance high public deficits. This study aims to examine the relationship between external indebtedness and growth variables. In this context, Markov-switching model is used because it allows the examination of unobservable variables in an observable model and provides steady algorithm to achieve robust optimization by iterations in a dynamic system, and is more flexible than prior models. This paper concentrates on the analysis of Turkey and utilizes the data set for the period of 1974 to 2009. Throughout the analyses, the relationship between growth and external borrowing is examined in terms of public and private external borrowing. Paper yields that, according to results of multivariate dynamic Markov-switching model, the main growth variables such as investment and human capital have positive impact on growth as expected. Findings can be summarized as follows; firstly, public and/or private external borrowing has negative impact on growth both in regime at zero and regime at one. Secondly, the negative impact of public borrowing on economic growth and development is higher than that of private borrowing on economic growth and development. Eventually, the conclusion reveals that the economic development and borrowing variables do not follow a linear path.

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1. Introduction

External borrowing is considered as an important resource in the finance for development in the developing countries. Since the current deficit of countries became unsustainable as of the 1950s, their tendency to borrow from international organizations so as to nurture the economic development has increased. In the recent 50 years, foreign debt problem has become one of the basic problems that have been faced by the developing countries. The debt crisis which occurred in the early 1980s destabilized the economy of many developing countries with low income, and debt relief incentives were given to the said countries so as to relieve the bad impact of high borrowing on their development? High external borrowing received by the developing countries since the second half of 1990s has become one of the most important factors which have restricted the development of many poor countries. The policy makers for this issue have been increasingly drawing the attentions of public opinion all over the world.

In the recent years, borrowing has become an important economic problem not only for the developing countries but for the developed countries. In many countries, global crisis and expansionary public policies have caused a rapid increase in the external borrowing, and the unsustainable public debt in some European countries (especially Greece, Portuguese, Ireland, Spain, Italy etc.) have increased the attention of politicians and academic members to excessive indebtedness. The Report of Bank for International Settlements for March, 2010 indicated that borrowing was unsustainable in many developed countries. Likewise, International Monetary Fund (IMF) updated that the external borrowing received by the developed countries was unsustainable, and Carlo Cottarelli, Director of IMF's Fiscal Affairs Department, stated that even during big wars, the external borrowing received by the developed countries had not been as high as it was (Cottarelli and IMF, 2010).

The final objective of the economic policies is to achieve a high and stable economic growth level. In the less developed or developing countries, external borrowing is considered as an important resource for financing the economic growth. In the related literature, there is no consensus about the way of impact of the external borrowing on the economic growth. There are study findings indicating that external borrowing can affect the economic growth either positively or negatively depending on the level of borrowing. Because the negative impact of external borrowing on the growth performance of the developed and developing countries overweigh negatively in medium-term and long term, the interest to this issue has increased. Especially governments and academic circles have increased their investigations for determining and finding solution for this problem. Most of the studies in the literature are linear but our estimates are non-linear and, unlike studies in the literature, are considered regime changes. In this regard, first of all,

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the following the questions will be answered in this manuscript: (i) To what extent is the impact of external debt on the economic growth? (ii) Is the relationship between external debt and growth linear? (iii) Does the impact of external debt on the economic growth change depending on public borrowing and private sector borrowing?

2. Literature review

Paper first follows literature review of empirical relationship between the external debt and economic growth. Basically, empirical studies are divided into two groups. The first group consists of the studies which claim that external debt has a positive impact on the economic growth; the second group comprises the studies which claim that it has a negative effect on the economic growth. Such theoretical and empirical studies as Bakar and Hassan (2008), Umutlu et al. (2011), Çiçek et al. (2010), and Cohen (1991) put forward that low borrowing level has a positive relationship with growth. Such other studies as Tornell and Velasco (1992), Sachs (1989), Presbitero (2010), Uysal et al. (2009), Wijeweera et al. (2005), Pattillo et al. (2002) and Kumar and Woo (2010) indicate that the external debt, at high debt level, has a negative impact on the economic activities. Apart from the above-mentioned two types of researches, there are also researches in the literature, indicating that the correlation between debt and economic growth is linear and non-linear. While Schclarek (2004), Blavy (2006) and Schclarek and Ramon-Ballester (2005) claim that they have a linear relationship, some other studies such as Adam and Bevan (2005), Cordella et al. (2005), Pattillo et al. (2002), Smyth and Hsing (1995), and Cohen (1997) argue that they follow a non-linear pattern.

The theoretical literature about the correlation between growth and external borrowing extensively focuses on the adverse impact of the debt burden. Krugman (1988) defines debt burden as the expected payback to be lower than the borrowed value. Cohen (1993), in his article, considers the relationship between the nominal values of investment and borrowing as Laffer Curve. This curve asserts that the more increased the debt level after a threshold level is, the lower the expected payback. In the empirical study, debt burden hypothesis founded our different results? There are only a few studies which assess the direct impact of debt stock on the investment, in terms of econometrics. In many works, variables are employed by considering that the debt stock has both direct (by decreasing the incentives for the structural reforms) and indirect impacts (through the impacts of investment) in the form of equations reduced for growth. As Warner (1992) concludes that debt crisis decreases the investment in the middle income countries, Greene and Villanueva (1991), Serven and Solimano (1993), Elbadawi et al. (1997), Deshpande (1997), Fosu (1999) and Chowdhury (2001) support the debt burden hypothesis.

Pattillo et al. (2002) analyze 93 developing Sub-Saharan African countries and Latin American and Middle-Eastern Countries for the period covering 1969–1998. The article employs many different methodologies (OLS, instrumental variables, fixed effects and GMM system) to show how there are different results in the econometric issues. It is asserted with empirical studies that the appropriate debt level has a positive impact on the growth, but high borrowing can prevent growth. The practical experiences of HIPCs (Heavily Indebted Poor Countries) agree with this idea. It concludes that although at the beginning the external borrowing aimed for financing the domestic investment opportunities (to remedy the commercial shocks)? However, the fact that borrowing continued in the face of negative foreign conditions and policies, it did not made a contribution to growth as it had been expected. Cordella et al. (2005) look for the answer of the following questions. Is the debt relief for supporting the growth? Is there any evidence for HIPCs that suffer high debt problems and is there any need for further debt relief? The main question is to what extent and under what conditions can borrowing become an obstacle before growth? To answer these questions, in this manuscript, the impact of borrowing on investment and growth in the last thirty years in HIPCs and non HIPCs as well as what kind of impact the borrowing at different levels had on the policies or institutions of different qualities in these countries. To flatten the short-term fluctuations, three-year averages of the series have been used. This division has been made from 1970 to 2002. This manuscript is different from many studies in the literature in a few aspects. Firstly, it has been controlled whether the relationship between growth and borrowing among the sub-samples is different as discussed or not (?). After doing that, such methods as many regression techniques which include some threshold estimation and binding regressions. Secondly, when borrowing is measured in the net present value method, this paper follows the data set used in Kraay and Nehru (2004). Thirdly, contrary to some related empirical studies, this manuscript employs official relief and external debt service as the control variable with regard to the relationship between external debt and growth. Fourthly, rather than using proportion of GNP to external indebtedness, the proportion of GDP to external indebtedness has been used because GDP indicates the independent efficiency capacity of a country better. Analyses indicate that the relationship between growth and external borrowing depends on the political and institutional quality of external borrowing. When the external indebtedness variables are considered, a concave relationship seems to exist between growth and external debt only for the non-HIPCs.

Schclarek and Ramon-Ballester (2005) use data for seven periods, each of which consisting of five years between 1970 and 2002 (like 1970–74; 1975–1979) for 20 Latin American and Caribbean countries. For the Latin American and Caribbean countries, the relationship between the total external borrowing and economic growth level is to be found significant and negative. As the total external borrowing consists of private external borrowing and public external borrowing, it is shown that the negative relationship between the foreign borrowing and growth is a negative relationship which results from the public debt and which does not result from the private debt. In other words, it is concluded that, while the high level of public external borrowing is relevant with low economic growth, the high level of private borrowing debt is not relevant with the low economic growth.

Emphasizing the ways through which external borrowing influences growth in low-income countries, Clements and Krolzig (2003) yield strong supports for the debt burden hypothesis in their empirical estimates. They argue that, with the high external borrowing which is beyond a definite threshold, the per capita income is related to low growth rate. Depending on the variables used in the estimation method, they find the threshold value of 30–37% of GDP and 115–120% of export. All results have important estimates about the impact of debt relief on growth in HIPCs. Results explain a correlation stronger than the correlation between external borrowing and growth rate according to recent researches focused on the developing countries. High borrowing rate decreases the economic growth in the low-income countries. Moreover, as mentioned in the debt burden hypothesis, debt has a negative impact on growth after a definite threshold. Smyth and Hsing's (1995) study is a follow-up of Barro(1979), Eisner(1992), and Joines(1991) to analyze the impact of debt on the economic growth and to test whether an optimal debt rate will maximize the economic growth rate or not. It is concluded that, when public borrowing is used in the analysis of maximum debt rate of economic growth, the threshold value will be 38.4% and debt rate above this threshold will have a negative impact on economic growth.

Reinhart and Rogoff's (2010) annual observations on countries are categorized into four groups according to the proportion of debt to GDP: the countries whose proportion of their external indebtedness to their GDP is lower than 30% are the countries with low external indebtedness; those with a proportion between 30 and 60% are the countries with medium external indebtedness rate; those with the said proportion between 60 and 90% are the countries with medium external indebtedness rate and above 90% very high indebtedness. There is no contradiction between foreign indebtment and growth until the debt rate reaches the threshold of 90%. High debt/GDP (of 90% and above)

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