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The Impact of Public and Private Sector's Financing through Debt Securities on the Economic Growth: Case Study of Developed and Emerging Countries

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ABSTRACT

In this paper, because of the importance of debt securities in the public sector and the private sector and the role of financial resources in the process of economic growth, the impact of debt securities (public and private) on economic growth studied in the group of developed and the emerging countries. To do this, data and information of selected countries collected from World Bank database and Bank for International Settlements in the period 2000-2015. In this study, by dividing the debt securities into public and private sector, two models were estimated. After the unit root tests of variables in the model, both models estimated using the software reviews 7.0 and panel data approach. The results showed that at a significance level of 5%, the stock market value and volume of bank deposits have positive and statistically significant impact on economic growth. The impact of government spending on economic growth is positive and at the significant level of 10 percent, trade openness has positive impact of on economic growth. Other variables related to the financial market as well as market value of public and private debt securities and market value of repurchase agreements have a positive impact on economic growth in the studied countries. This effects are very small compared with the banking sector and other relevant variables of stock market effects on economic growth. Inflation as an indicator of macroeconomic instability, has negative impact on economic growth, but this effect not statistically significant at the significance level of 5%.

Keywords: Financial Market, Debt Securities, Economic Growth, Panel Data.

1. INTRODUCTION

According to the theories of the macroeconomics, physical capital accumulation is considered as one of the necessary conditions for the growth of the national economy. This can be accelerated through financial markets because financial markets play an essential role in collecting resources through small and large savings exist in the national economy, optimizing the flow of financial resources and leading them toward the costs and investment needs in the productive sectors of economic. From this perspective, some economists believe that the difference between developed and underdeveloped economies is not in the high-tech access of developed countries but in their integrated, active, widespread and financial markets. The notion that financial markets promote economic growth was presented by Schumpeter for the first time in early 1911. Following this and passing the time other economists also empirically examined this and came to the view that the development of financial markets is an essential prerequisite for achieving high rates of economic growth (Goldsmith 1969, McKinnon 1973 and Shaw 1973). In subsequent empirical experiments, the existence of relationship between financial markets and economic growth has generally been identified through cross-country growth regressions. Evidence from these kinds of studies indicates that well-developed stock markets and banking systems are factors for these countries economic growth in the future. Especially in the early stages of economic development in which the average rate of economic growth is in line with accelerating the pace of financial development.

In this regard, most of the models and empirical studies are emphasizing that markets and financial intermediaries with good performance allocate the resources efficiently by improving the flow of information and lowering transaction costs and thus they accelerate long-term economic growth (Bencivenga and Smith, 1991, Bencivenga et. al, 1995 and King and Levine, 1993). Theoretically, well-developed stock market leads to economic growth by encouraging savings and reducing transaction costs which in turn improves the allocation of resources.

However, economic and financial structure of Iran is based on the banking system and less attention is given to the capital market. The disadvantages of these methods of financing have been reported in numerous studies so that financing strategies such as borrowing from the central bank, issuing bonds and borrowing from other banks not only have failed to improve the financing method but also increased general level of prices and fueled the growth of inflation. Given that Iran is a developing country and requires new funds to finance its development projects, therefore, the use of debt instruments in the financial markets can provide efficient means to finance both the government and the private sector.

Despite the successful experience of various countries in the field of financing, one of the major financing bottlenecks in Iran is the lack of development in debt instruments. The development of debt market-based financial instruments is recommend because in addition to creating greater transparency in financial markets it leads to deeper financial market and more freedom in banking system and also its inflationary effects will be less.

Given the inflationary effect of financing government debt through borrowing from the banking system, the government can manage its debts through the issuance of debt securities in the capital market. In this regard, the debt market is one of the important sites in different countries to finance government debt. Most of these debts are government obligations to private sector contractors in the implementation of infrastructure projects.

One of conventional debt instruments in financial literature is repurchase agreements. In the repurchase agreement, the central bank or government, through selling debt securities such as Treasury bills to people, borrows money from them and simultaneously agrees to repurchase the securities equivalent at a given date.

Hence, given the importance of debt instruments in the process of financing and the role of financial resources in the process of economic growth and development, this research aims to use econometric methods to investigate the effect of debt securities (separating public sector and private sector) on the economic growth in selected countries. These include developed and emerging countries such as India, South Korea, Germany, Japan, Turkey, England, USA, Singapore, Malaysia, Spain, Chile, Switzerland, Sweden, Hong Kong, Canada, China and Ireland.

2. THEORETICAL FOUNDATIONS

It has been long time since the attitude of the classical economists who believed that financial markets played a secondary role to the real part of the economy lost its credibility. This view has been replaced in the economic literature with the public debate that financial markets promote economic growth not only through increasing capital accumulation, but also through accelerating the distribution and allocation of resources and technical innovation (Levine 2001, Wachtel 2001). It should be noted that economic growth depends on the characteristics of each country and the time of the study. In the literature growth, the direction of causality and the effect of financial development on economic growth is divided into three modes (Beck and Levine, 2004, Hassan Sanchez and Yu, 2011). On the one hand, empirical evidence indicates a positive relationship between financial development and economic growth. For example, La Porta et. al., (1998) found that countries with legal and integrated systems which encourage and audit good corporate governance have faster economic growth. Goldsmith (1969), King and Levine (1993) Rousseau and Wachtel (2000) and Beck and Levine (2001) have also confirmed the positive impact of banking and effective stock market on economic growth.

On the other hand, Lucas (1998) and Favara (2003) are uncertain about the impact of financial markets on economic growth. Rajan and Zingales (2003) Allen, Qian and Qian (2005), Shyn and Oh (2008), Ergungor (2008) and Jalil and colleagues (2010) reject the positive impact of financial markets on economic growth. In particular, Ergungor (2008) recognizes the relationship between economic growth and the development of the financial system as one-sided and states that the country's financial sector structure is irrelevant to economic growth. Rajan and Zingales (2003) indicate the reverse movement of economic growth in Argentina in the twentieth century despite its success in the financial development. Allen (2005) and Shyn and Oh (2008) note South Korea and China's rapid economic growth without regard to the development of financial markets.

However, the majority of the literature on the relationship between financial markets and economic growth emphasize on two key institutions i.e. banks and stock markets and less work can be seen in the debt markets. There are two major reasons for the lack of interest of scientists in the bond market:

First: financing by issuing bonds is considered as a form of debt financing that has been done by banks from the past. This is especially true about countries in which banking system due to its high capital and liquidity has monopolized the bond market in general and corporate bonds in particular (We et. al., 2006).

Second: despite the stock that is traded in the market transparently and based on stock market price discovery process and its data is available and applicable for the study, bonds are traded in markets out of the stock market where trading data are not clear and are available to the public.

The debt securities markets is increasingly recognized in the world as an important factor in the financial development. Likewise, this markets are recognized as an important part of a financial market with an appropriate performance. In many respects, the banking system and debt securities market are complementary. Tamronoit and et. al., (2013) study can be noted as an influential study on the impact of the debt market on economic growth in which authors used data from 38 developed and developing countries for the period 1989 to 2010 to examine the effect of stock markets, banks and debt markets on the economic growth of the countries. Tamronoit and colleagues considered dependent variable by the rate of GDP per capita. The independent variables were divided into two groups that one represents financial development and the other brought as control variables. They considered three criteria for financial development that are the development of banking, stock market development and development of the debt securities market.

As it is stated in the article of Beck and Levine (2004), development of the banking sector or banking credit is equal to the claim of private sector of the bank deposits of GDP. The development of the stock market is achieved by stock turnover that equals to the dividing the value of stock trading in a domestic market on the total value of the listed stocks in that stock market. Debt securities market development is also equal to the issued domestic debt securities divided by GDP. Other calculations for the liquidity of debt securities such as total value of debt securities transactions might be more appropriate. Tamronoit et. al., (2013) used real GDP per capita, the share of imports and exports in GDP and inflation rate as control variables. Aforementioned effects estimation in this analysis are calculated by the following function.

$$G_i = \alpha + \beta F_i + \lambda X_i + u_i$$

where, G_i represents growth of GDP per capita, F_i set of indicators related to financial development, X_i set of control variables and u_i is the error. The results of this study are as follows:

1. The development of the capital market positively correlated with economic growth.
2. The effective role of bank credit on economic growth will reduce the effect of the development of domestic debt securities markets on economic growth.
3. Government debt securities are positively correlated with economic growth while the effects of debt securities changes from negative to positive due to the expansion of the domestic financial sector structures in the size and variety.

3. PREVIOUS STUDIES

Various studies, at home and abroad, have been conducted on the impact of financial markets on economic growth of the countries. Eslamloueyan and Sakha'i (1390) used error correction models for panel data to examine the short-term and long-term causality relationship between financial development and economic growth in the Middle East. The results show that there is a two-way Granger causality between financial development and economic growth in the short and long term for the collection of these countries. So, the results confirm the third view in the literature that emphasizes on the reflective and two-way effect

between financial sector development and crop growth. In other words, the development of the financial sector can promote growth and crop growth, in turn, could lead to financial development. Mohammadian and colleagues (1390) examined the relationship between financial development and economic growth in the period 1960 to 2006 through using GMM dynamic panel method for 12 countries in the MENA region and concluded that financial development has a negative impact on economic growth. This negative effect could be due to the liberalization of financial markets, the weakness of the financial system and absence of an integrated and regulated financial market which leads to lower investment through non-optimal allocation of resources. Sameti et. al., (1391) in an article entitled “The comparative analyses of the effect of financial development on economic growth under asymmetric information (the study case: selective developed and developing countries)” studied the relationship between financial development and real growth of an economy under asymmetric information. In this study, the rate of economic growth was considered as the criterion of real sector growth and variable such as stock market value to GDP was considered as measure of financial sector development. Also, logarithm of the standard deviation of the total index of stock market price and index of bank credit to the private sector used as measures of asymmetric information in financial and monetary markets. Aforementioned model is estimated by using panel data for selected developed and developing countries over the period 2008-1993. The results indicate the higher efficacy of the financial markets than monetary markets in developed countries. The financial structure of developed and developing countries are different and this is because of the high and developed degree of information asymmetry in this country. But in developing countries the monetary market is more powerful than financial market. Makian and Izadi (1394) in an article entitled “Study of the relationship between financial system development and economic growth” studied the relationship between financial structure and financial development, as indices of financial system growth, on economic growth of selected Islamic countries during 1989-2011 by using Fully Modified Ordinary Least Squares method (FMOLS). The results confirm that the effect of both variables i.e. financial structure and financial development as indicators of financial system development are positive and significant on economic growth. The findings also indicate that market-based financial system has stronger effect on economic growth. The results also show that in the short term there is a one-way causal relationship between the variables of financial system development and economic growth and in the long term there is two-way relationship that confirms Patrick hypothesis of developed stage.

Kabir Hassan and colleagues (2011) in a study entitled “Financial Development and Economic Growth: New Evidence from combined data” examined the role of financial development on economic growth in countries with low and average income levels. They found that in developing countries there is a positive relationship between financial development and economic growth. The authors also concluded that there is a two-way causal relationship between financial development and economic growth in most of the countries under the study. Jalil and Fereydoon (2011), using annual data from 1975 to 2008, examined the relationship between financial development and economic growth in Pakistan and concluded that there is a strong relationship between financial development and economic growth in this country. Manoel Bittencourtrt (2012) in an article titled “Financial Development and Economic Growth in Latin America” studied the relationship between financial development and economic growth in four Latin American countries (Argentina, Bolivia, Brazil and Peru) in the period 1980 to 2007. This study confirmed the view of Schumpeter and shows that financial development promotes the economic growth. Zhang, Susheng Wang and Lanfang Wang (2012) in an article titled “Financial Development and Economic Growth: New

Evidence from China” examined the relationship between financial development and economic growth by using data from 286 cities in China in the period 2001 to 2006 and concluded that traditional indicators of financial development and economic growth are positively correlated.

Mandief (2015) in an article entitled “The effect of financial development on economic growth: The analysis of financial development gap between Cameroon and South Africa”, using vector error correction model, was looking for the short-term and long-term relationship between economic growth and financial development in the two countries Cameroon and South Africa. The author concluded that in both countries there are short and long term relationship between economic growth and financial development. Li et al., (2015) in an article entitled “Financial development, environmental quality and economic growth” studied the relationship between financial development, environmental quality and economic growth in 102 countries in the period 1980-2010 by using Generalized Method of Moment GMM. They found that both economic development and environmental quality has a significant impact on economic growth. The relationship between financial development and economic growth will be in the form of reversed “U”. As can be seen in most studies, the positive impact of financial markets on economic growth is approved in the studied countries.

Also, Braun and Briones (2005), Fink et. al. (2006) and Biais et. al., (2006) Fink et. al., (2003) used a test to investigate globally the effect of the development of debt markets on real output of 13 developed countries in the period 1950-2000 and some evidence has been found about the effects of the debt market development on the real sector of economy. However, Abbas and Christensen study (2007) about the role of domestic debtors in 93 low income and emerging countries in the period 1975 to 2009, showed little statistical evidence indicating the relationship between the development of corporate debt securities markets and economic growth.

4. THE MODEL ESTIMATION AND ANALYSIS OF RESULTS

Consider the following model to estimate the effect of debt securities on economic growth in the countries under the study.

$$G_i = \alpha + \beta F_i + \lambda X_i + u_i$$

where, G_i represents growth of GDP per capita, F_i set of indicators related to financial development, X_i set of control variables and u_i the error. In this study, explanatory variables include; the variable of development of the banking sector (banking sector credit paid to the private sector as a percentage of GDP), the market value of repurchase agreements (the dollar value of repurchase agreements transactions), the ratio of stock market turnover (the total value of traded shares in domestic price divided by the total value of shares of companies listed on the stock market) and market value of debt securities (in dollars). And variables like Government expenditure, the ratio of exports and imports to GDP and inflation rate are taken as control variables in the model. In this study, data and information have been extracted from the database of the World Bank, the IMF and the Bank for International Settlements in the period 2000-2015. As innovation variable of market value of repurchase agreements also included as an explanatory variable in the model. According to reports of the Bank for International Settlements, domestic debt securities data are divided in two category: the securities issued by the private sector and the securities issued by the government (including long-term debt securities, commercial securities and short-term debt securities). Thus, two separate models were estimated by the use of each of these variables as an explanatory variable.

Before estimating the model, the unit root test is done to check the stability or non-stability of the model and to check that estimated equation regression is not spurious. To do this, several tests are embedded in Eviews software. In this section, the Fisher ADF test used and the results of the unit root test for all variables in the model have been reported in Table 1.

Table 1
Results of the unit root test

| <i>Condition</i> | <i>Variable</i> | <i>Variable level</i> | <i>Result</i> |
|----------------------------|--|-----------------------|---------------|
| With y-intersect and trend | GDP growth per capita | 58.3 (0.00)* | I(0) |
| With y-intersect and trend | Stock market turnover | 55.8 (0.00)* | I(0) |
| With y-intersect and trend | Banking sector development | 62.21 (0.00)* | I(0) |
| With y-intersect and trend | Inflation rate | 70.1 (0.00)* | I(0) |
| With y-intersect and trend | government spending volume | 53.2 (0.00)* | I(0) |
| With y-intersect and trend | Export-Import volume to GDP | 52.4 (0.00)* | I(0) |
| With y-intersect and trend | The market value of public sector debt securities | 56.7 (0.00)* | I(0) |
| With y-intersect and trend | The market value of private sector debt securities | 59.83 (0.00)* | I(0) |
| With y-intersect and trend | The market value of repurchase agreements | 48.3 (0.00)* | I(0) |

*Rejection of the unit root null hypothesis at a significance level of 5%

Source: Research findings

It can be observed that all variables are static at variable level and in other words they do not have a unit root. So, the models can be estimated by using the variable level.

At the next step, the studied models can be estimated as Pooled or Panel. Limer F-test is used to detect this. The null hypothesis of this test suggests the estimation of the model as Pooled. Therefore, at the significance level of 5%, if the calculated F value is greater than the F in the table, null hypothesis of the test is rejected at the 95% confidence level and it cannot be ruled out the fixed effects model against the joint effects model. In order to perform this test first of all the model was estimated as fixed effects and then fixed-effects redundancy test was done. The test is done for both model in Eviews software and results will be presented.

First, assume public sector debt securities is as an explanatory variable in the model. Limer F-test results indicate that the null hypothesis can be rejected and the model can be estimated as panel data Table 2. At the second step it should be determined which method (fixed effects or random effects) is appropriate for Panel estimation. Hausman test (1980) is used to do this. In Hausman test the null hypothesis means that there is no connection between the element disturbing the equation and explanatory variables and they are independent from each other. However, the opposite hypothesis means that there is a correlation

between the disturbing element and explanatory variables. Given the fact that when there is correlation between the disturbing element and explanatory variables the coefficients get biased and inconsistent, so in the case of the rejection of the null hypothesis it is better to use the fixed effects model. The results of this test are given in Table 2. Based on the results of Hausman test, the studied model should also be estimated as fixed effects.

Table 2
Results of Limer F and Hausman tests

| <i>Result</i> | <i>Significance level</i> | <i>Test statistics</i> | <i>Test type</i> |
|--|---------------------------|------------------------|------------------|
| Confirming panel data model against pooled data | 0.00 | 11.2 | Limer test |
| Confirming fixed effect model against random one | 0.00 | 108.5 | Hausman test |

Source: The research calculations

Now the model is estimated as panel data and fixed effects and the results are presented in Table 3.

Table 3
Results of the model estimation (dependent variable: GDP growth per capita)

| <i>Variable</i> | <i>Coefficient</i> | <i>T value</i> | <i>Significance level (P-value)</i> |
|--|--------------------|----------------|-------------------------------------|
| <i>y</i> -intersect | 1.18 | 2.24 | *0.03 |
| Stock market value | 0.077 | 3.2 | *0.00 |
| Bank deposits volume | 0.16 | 2.53 | *0.01 |
| Inflation rate | -0.034 | -0.41 | 0.78 |
| Government expenditure volume | 0.24 | 2.8 | *0.01 |
| Export-import volume to GDP | 0.073 | 1.84 | 0.07 |
| Market value of public debt securities | 0.034 | 3.41 | *0.00 |
| Market value of repurchase agreement | 0.025 | 2.27 | *0.03 |
| | R2 = .64 | | DW = 1.91 |

*Indicates the coefficient significance at 5% significance level.

Results obtained from the Eviews Software show that the stock market value and volume of bank deposits had a positive impact on economic growth and the impact is statistically significant at the 5% significance level. This positive impact reflects the fact that the financial sector can be a positive factor for economic growth and promote it. This is correspond to theoretical and empirical studies. Based on the results, in the long term and having other factors constant, if the index of the banking sector (banking sector credit paid to the private sector as a percentage of GDP) and stock market index (the total value of shares traded on the domestic price divided by the total value of shares of companies listed on the stock market) increase one percent the economic growth in the studied period and considered countries will increase 0/16 and 0/077 percent respectively. This shows the positive impact of both sectors on economic growth and demonstrates the further effects of the banking sector on economic growth. In this study, at the significance level of 5% the government expenditures have also a positive and significant impact on economic growth of the studied countries. This indicates that public sector spending has been effective in the economic growth process. Inflation as an indicator of economic instability, has negative impact on the

economic growth, but this effect at a significance level of 5% is not statistically significant. Trade openness has also a positive impact on economic growth. This effect was not significant at the 5% significance level and is significant at the confidence level of 90%. The market value of public sector debt securities and repurchase agreements market value have positive but little effect on economic growth of the countries. This effect is statistically significant at the significance level of 5%.

Coefficient of determination of the model is 0/64 which is appropriate and acceptable and shows that almost 64 percent of the changes in the dependent variable explained by the independent variables that were included in the model. Also, Durbin-Watson Statistic of the model is close to the number 2 and indicates the absence of autocorrelation between error terms of the regression.

Now, debt securities of the private sector are considered as an explanatory variable. In this case, the values of Limer and Hausman test have been presented in Table 4 and based on them the model can be estimated by panel data and fixed effects.

Table 4
Results of Limer F-test and Hausman test

| <i>Result</i> | <i>Significance level</i> | <i>Test statistics</i> | <i>Test type</i> |
|--|---------------------------|------------------------|------------------|
| Confirmation of panel data model against pooled data | 0.00 | 9.4 | Limer test |
| Confirmation of fixed effect model against random effect | 0.00 | 102.7 | Hausman test |

Source: The research calculations

The results of the model estimation have been presented in Table 5. Based on these results at a significance level of 5%, the same as the previous model, stock market value and the volume of bank deposits have a positive impact on economic growth. This effect is statistically significant and shows the importance of the financial sector in the economic growth. Another variable is government spending that at a significance level of 5% has a significant and positive impact on the economic growth of the countries. This points out the positive impact of the government expenditure on the economy. Other variables related to the financial market such as market value of the private sector debt securities and market value of repurchase agreements, at the significance level of 5%, have a positive effect on the economic growth of the countries but this effect is little and has little effect on economic growth compared to the banking sector variables and other variables of the stock market. This effect is statistically significant. Inflation at the macro level, presents the economy as unstable and has a negative impact on the economic growth. However, this influence at the significance level of 5% is not statistically significant. At the significance level of 5%, the ratio of trade openness has also a positive impact on economic growth as the previous model. In this model, coefficient of determination is 0/69 and shows that almost 69% of the changes in the dependent variable explained by the independent variables that were included in the model. Durbin-Watson statistic of the model is 1/96 and indicates the absence of autocorrelation between error terms of the regression.

5. CONCLUSION

In this study, the impact of debt securities of the public sector and the private sector were separately studied on economic growth of a group of developed and emerging countries. To do this, data and information were extracted from the database of the World Bank and Bank for International Settlements in the period

Table 5
Results of the model estimation (dependent variable: GDP growth per capita)

| <i>Variable</i> | <i>Coefficient</i> | <i>T value</i> | <i>Significance level (P-value)</i> |
|--|--------------------|----------------|-------------------------------------|
| y-intersect | 1.54 | 2.37 | *0.02 |
| Stock market value | 0.064 | 3.3 | *0.00 |
| Volume of bank deposits | 0.14 | 2.1 | *0.04 |
| Inflation rate | -0.063 | -0.58 | 0.71 |
| Volume of the government expenditures | 0.21 | 2.7 | *0.01 |
| Volume of export-import to GDP | 0.093 | 1.97 | *0.05 |
| Market value of the private sector debt securities | 0.022 | 2.8 | *0.00 |
| Market value of repurchase agreement | 0.018 | 2.89 | *0.00 |
| | R2=.69 | | DW=1.96 |

Indicates that coefficients are significant at the 5% significance level.

2000-2015. Then, the research model proposed and after that the model was estimated by using the data, software eviews 7.0, and panel data. In order to avoid spuriousness of regression relationship, before estimating the model, it was investigated by using unit root tests to see the model variables are static or not. If the variables are non-static, the estimated regression will be spurious and its reliability will be lower. The results of this test showed that the variables are static and do not have a unit root. In this study, two models were estimated by dividing the debt securities into public and private sector. Before estimating the model, Limer F-test and Hausman test were performed on both models to find the best method of estimation. The results of these tests showed that the models should be estimated by using data panel and in the form of fixed effects.

The results of the estimation of these two models were almost identical and it showed that at a significance level of 5%, the stock market value and volume of bank deposits have positive and statistically significant impact on economic growth. Positive effects of the banking sector and the stock market are shown in multiple studies and in this study its importance also confirmed in the economic growth process. Government spending also had a positive effect on economic growth and it is statistically significant at the significance level of 5%. The impact shows the right targeting of government spending on the economy. Other variables related to the financial market such as the market value of debt securities (private and public) and the market value of the repurchase agreement have also a positive effect on the economic growth of the studied countries at the significance level of 5%. Although this effect is statistically little compared to the effect of banking sector and other relevant variables of the stock market on the economic growth, this shows the importance and positive impact of these securities on economic growth. In other words, not only do they help finance the government and the private sector but also they promote economic growth using various instruments. Regarding the inflationary impact of financing the government debt through borrowing from the banking system, the government can manage its debts through the issuance of debt securities in the capital markets. In this regard, the debt market is one of the important sites in different countries to finance government debts. Most of these debts are obligations that the government gives to private sector contractors in the implementation of infrastructure projects in the country. And settling these debts through the issuance of debt securities in the capital market make the reactivation of the private sector

in infrastructure projects and therefore economic growth possible. Inflation as an indicator of instability in macroeconomic level has a negative impact on economic growth. This effect at a significance level of 5% is not statistically significant. The effect of trade openness on economic growth is positive and statistically significant at the significance level of 10%.

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