

Evaluation the Impact of Government Size on Economic Growth: A Comparison of Developed and Developing Countries

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Abstract

Due to the importance of the government size impact on economic growth, the current study investigates the impact of government size on economic growth in economies of the developed and developing countries by using a panel data approach over the period 1990-2010. The results indicate that government size has positive effect on economic growth and negative effect on per capita production growth in developed countries, but, it has negative and significant effect on economic growth and per capita production growth in developing countries. Therefore, reducing the government size is very important for increasing the economic growth in developing countries such as Iran. Also, based on the results, investment growth and consumption expenditure growth have positive and significant effect on economic growth and per capita production growth in both developed and developing countries. However, Trade openness effect on economic growth and per capita production growth is positive and significant in developed countries, but is negative in developing countries.

Keywords: Government size, Economic growth, Developed countries, Developing countries , Panel Data.

Introduction

Governments often tend to be in the economy and attract society resources'; therefore, they believe, their presence will affect economic growth and development. However, their presence and involvement are not necessarily a sufficient condition for the success of the countries' Economies (Afonso and Jalles, 2011). The lack of government intervention and its zero percent present in the economy, make restricts development programs and economic growth of countries. Similarly, the desire to find a 100% position leads to the inefficiency of the economy and the emergence of a monopoly situation in many activities (Afonso and Jalles, 2011). On the other hand, it seems that the situation and economic structure of Iran compare to other countries, also, the role of private sector in economic activities are important in influencing government size on economic growth (Bergh and Henrekson, 2011).

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Accordingly, in economic literatures, there are different views and opinions about government's presence in economic activities. Up to 1930s, there were two extreme theories about government's presence in the economy (Pirae and Noroozi, 2012): a) big government which was supported by physiocrat and classical schools, b) small government supported by Marxists and Socialists. Therefore, economists demanded the presence or absent of government in the economics of counties in terms of economic conditions in different decades. There are contradictory results about presence or absent of government in economy in various studies. The results show different methodological choices about the way of government effectiveness on economy (economic growth - income level - GDP, employment level, etc.), the way of choosing a country (one country alone) or different countries in the study (developed - developing - the euro area, etc.), and, the way of define the size of government (the share of government expenditures in GDP - tax rates, etc.). Asimakopoulos and Karavis (2016), established the optimum size of 9.12% for developing and 17.96% for developed countries. The result of Chen et al. (2011) in 24 member of OECD countries shows that increasing government size with economic growth depends on the country's economic situation. If the economy be in a low growth level, increasing the size of government will increase economic growth. And, if the economy be in a high level of growth, increasing the size of the government will slow down the economic growth. Romero Avilla and Strach (2008) showed a negative relationship between growth and consumption of the public sector and government revenues in 25 countries of the euro area during the 1960-2001. Flostar and Ekstesson (2001) in a sample of rich countries during 1995-1970 showed a strong negative relationship between growth and total government expenditures. There was also a relatively strong relationship between growth and government tax revenues. The results of the study by Bagdigan and Hakan (2008) in Turkey indicated that the size of government did not affect the economic growth. Higgins et al. (2006) concluded in a study in federal level that there is a negative relationship between economic growth and government size in state and federal level in some cases. Ramiyandi (2003) showed an increase in government size leads to decline in economic growth in Indonesia, in a stable economic situation. Nilway et al. (2003), by using combined data for 30 developed countries, concluded that the cost of government capital has positive effects, and current costs have a negative effect on the economic growth of the countries.

Pirae and Noroozi (2012) have shown that Army curve is not approved for the size of government in Iran. Sadeghi et al. (2011) showed that the size of government in the low-income countries had a negative effect on the economic growth, which increasing one percent in government size would decrease 0.086 percent to 0.214 percent in the economic growth. The results of Heydari et al. (2010) about the relationship between government size and economic growth in 6 OPEC countries of the Persian Gulf regarding that the size of the government in these countries is large, and, due to dependency of the government on oil revenues, the size of government has a negative effect on private sector investment and GDP. Dezhpasand and Goodarzi (2010) investigated the size of government and economic growth in Iran using threshold regression. The results showed that, economic growth will increase by increasing government size to the threshold, and, then, an increase in government size will reduce economic growth. Also, government expenditures has the most impact on the economic growth when government size is between 23 and 30 percent. Komijani and Nazari (2009) showed that the effect of government spending on economic growth is positive and is consistent with the theoretical foundations of Keynesian economics, by examining the effect of government size on economic growth in Iran. Sayadzadeh et al. (2007) showed that the current size of the government in Iran is bigger than its optimal size, and, there must be some actions to minimize and rationalize it.

According to the studies, we can conclude that there is a certain convergence in terms of the effect of government size on economic growth based on the different economic indicators in countries. Although, most studies have emphasized the existence of a negative relationship between economic growth and government size. In other words, the country's position in terms of income level and its position of development has great importance to explain the relationship between government size and economic growth. The main purpose of this study is to examine the effect of government size on economic growth and the growth of per capita production in two groups of developing and developed countries, over the past two decades (1990-2010).

Materials and Methods

In this section, the panel model and empirical results will be evaluated. One of these tests is the unit root test, and, we use it to prevent false relationships among variables, because of the existence of time series in panel data. One of the advantages of panel data is increasing the efficiency and reliability of the results obtained from estimated model that makes more reliable the results obtained from cross-sectional studies or time series (Baltaji, 2005).

For the empirical investigation the neoclassical aggregate production function serves as the platform on which the empirical model is formulated as follows:

$$Y=f(K,L) \quad (1)$$

Where, Y denotes the level of output, K denotes the stock of domestic physical capital, and L is the labor force. Following Forte and Magazzino (2016), Altunc and Aydin (2013), Asghari et al. (2014), Alexiou (2009), Feder (1982), Ram(1982), and Grossman (1988), government expenditure for capital formation(G), consumption variables (C) and the external sector (H) can be incorporated in (2) as an independent variables and formulated as:

$$Y=f(K,L,C,H,G) \quad (2)$$

This production function can be rewritten by differentiation as a function of economic growth. If production use as per capita, the growth rate of computations can also be expressed per capita. In summary, the final model considered in this study is based on two forms of economic growth and growth of per capita production as follows:

$$y_{it} = \beta_0 + \beta_1 k_{it} + \beta_2 c_{it} + \beta_3 h_{it} + \beta_4 g_{it} \quad (3)$$

$$ypc_{it} = \beta_0 + \beta_1 k_{it} + \beta_2 c_{it} + \beta_3 h_{it} + \beta_4 g_{it} \quad (4)$$

Two patterns (3) and (4) are considered for two groups of countries in this study. The first group includes developed countries with a degree of development (1), which includes 35 countries, and, the second group includes developing countries with a degree of development (2) (According to World Bank (2012) which includes 15 countries, including Albania, Armenia, Bahamas, Brazil, Bulgaria, Colombia, Costa Rica, Cuba, Ecuador, Iran, Malaysia, Mauritius and Mexico.

In relations (3) and (4), y_{it} growth rate of GDP (2000 prices base). ypc_{it} is the growth of GDP per capita, which is based on GDP per capita growth rate. k_{it} is the investment growth (based on investment at constant prices in 2000), c_{it} is consumption growth per capita (based on per capita consumption at constant prices of 2000), h_{it} The variable of external trade sector, which is derived from the ratio of total foreign trade to GDP, is also referred to as trade openness. g_{it} is also the size of the government, which is the ratio of government expenditures to GDP.

Several indicators are used to measure government size, which are divided into two general categories, absolute and relative indices. In absolute indicators, government size is measured

with variables such as expenditures or total government expenditure Public sector expenditure, public funding, and tax revenues. While in relative indices, given the importance of relative values in comparison with absolute values, because of the positive role of relative values in providing the possibility of comparison, this study use the following variables the ratio of public expenditure to gross domestic product, the ratio of government investment to GDP, the ratio of budget to gross domestic product, the ratio of government deficit to gross domestic product and the ratio of general employment to total employment (Komeyjani and nazari, Heydari et al., 2010, Leaf and Carlson, 2011).

Results and discussion

Unit root test

The static test of the model is presented in the following table using Shin W-stat Im, Pesaran and in two groups of countries consist of developed countries (35 countries) and developing countries (15 countries), for the period of 2008-2015. Based on the results, the variables studied in developing countries are stationary in level, and trade openness, government size and investment growth are stationary with intercept and trend. Therefore, all variables are stationary in level and investment growth is stationary with trend, in the pattern of developed countries.

Table 1. Results of unit root tests of model variables in two groups of countries

Variables	Developing countries			Developed countries		
	Im, Pesaran & Shin	Trend	Prob	Im, Pesaran & Shin	Trend	Prob
Economic growth	-3.02600	without	0.002	-10.0997	without	0.000
per capita production growth	-2.34800	without	0.050	-6.26547	without	0.030
Investment growth	-6.012	trend	0.008	-4.5925	trend	0.050
per capita consumption growth	-2.91200	without	0.020	-5.2814	without	0.003
Trade openness	-5.8410	trend	0.050	-8.57690	without	0.011
government size	-5.7501	trend	0.000	-3.17577	without	0.020

Chow (F) and Hausman test

It is necessary to determine the type of data panel estimation before estimating. So, we use F test; the results are presented in Table 2 for developed countries. The hypothesis of the least squares method is rejected, and each of the sections should have an individual intercept, given the F test and its probability level. Hausman test was used to indicate the method of estimation by constant or random effects. Based on the result, the model should be estimated with constant effects. So each country must have an individual intercept and the model must be estimated by constant effects.

The results (table 3) of estimating two patterns of economic growth and per capita production growth in developed countries, based on constant effect model, showed that government size has a positive and significant effect (0.21) on their economic growth in developed countries.

Some studies, also, indicated positive effect of government size on economic growth (Shafie et al., 2004, Komeyjani and Nazari, 2009 and Noroozi, 2012). Therefore, the presence of the government and its increase will rise economic growth, in 30 developed countries. Also, the size of government has a negative and significant effect on the production growth per capita of these countries. An increase in one unit of government size will reduce the production growth per capita by 0.11 percent. In general, the size of government has a positive effect on economic growth and has a negative impact on per capita production growth in developed countries.

Table 2. results of test Estimate panel patterns in Developed countries

Test	Economic Growth Model		per capita production growth model	
	Statistic	Prob	Statistic	Prob
Chow test (F)	28.43	0.000	27.55	0.000
Hausman test(χ)	31.25	0.000	16.78	0.004

The Effect of Government Size on Economic Growth

Based on the results, investment growth has a positive and significant effect on economic growth and per capita production growth in developed countries. It means that one unit increase in investment growth in developed countries make 1.22 unit increase in economic growth and 1.64 unit increase in per capita production growth in economic growth pattern, and, they are significant in both patterns. In general, investment expands the use of capital goods, also, increases the efficiency and productivity of production by new equipment and along with more labor attraction. On the other hand, investment will increase production and economic growth by increasing the productivity of factors of production, the expansion of the market, the balance of supply and demand, creating side effects, creating better competitive conditions, and increasing the level of welfare. The results are consistent with Aisen and Viga (2001).

Another variable is per capita consumption growth which has a positive and significant effect on the two models, which every one unit increase in per capita consumption growth will increase 0.04 percent the economic growth and 0.07 percent the per capita production growth. So, its effect on per capita production growth is more than economic growth.

Trade openness has positive and significant effect on economic growth and production growth per capita in developed countries. Every increase in trade openness will increase 0.002 percent of economic growth and 0.001 percent of production growth per capita. Because greater trade openness in trade will lead to development of techniques and increasing the level of specialization and economic efficiency. So, the development of techniques and economic efficiency will help to boost economic growth.

Also, based on the results we can conclude that the government size has great influence in stimulating economic growth and production growth per capita in developed countries. Thus, the abandonment of production and the lack of intervention does not have economic justification. And, perhaps, it would return to the lack of attractiveness for the private sector and the inadequacy of competition.

Table 4 shows the result of Chow and Hausman tests regarding to the selection of a general pattern and fixed and random effect patterns in developing countries. Based on the significance level, panel patterns are preferred to general pattern in both model. And, based on Hausman test, Panel pattern with random effects is confirmed in developing countries.

The results of estimating economic growth and production growth per capita in two model shows that the government size has a negative and significant effect in developing countries (Table 5). One increase in government size will reduce 1.31 unit the economic growth and

1.35 unit the production growth per capita. Therefore, reducing the size of government and its share in economic makes a significant increase in economic growth and growth in production growth per capita, in developing countries. Considering that Iran is one of the developing countries, so, change in government size and position in economy have a great impact on economic growth and production growth per capita. As a result, we can conclude that move towards reducing the size public sector have a crucial effect on economic growth in developing countries.

Table 3. Results of Estimation of Two Patterns of Economic Growth and production growth per capita in Developed Countries

Variables	Economic Growth Model			per capita production growth model		
	Coefficient	Statistic	Prob	Coefficient	Statistic	Prob
Investment growth	0.0541	3.01	0.000	0.0214	2.32	0.0013
per capita consumption growth	0.04323	1.94	0.000	0.075437	3.20	0.0015
Trade openness	0.002132	2.14	0.01	0.001789	3.36	0.0004
Trend	-0.0012	0.14	-	-0.0015	0.15	-
government size	0.21987	3.98	0.001	-0.117007	-4.08	0.0000
Intercept	0.177876	6.614	0.05	0.199793	-2.52	0.01230
Number of countries		30			30	
R ²		0.85			0.75	
F-State		962.18			917.40	
Prob		0.0000			0.0000	
Dorbin-Watson		1.45			1.32	

Table 4. Results of test Estimate panel patterns in Developing countries

Test	Economic Growth Model		per capita production growth model	
	Statistic	Prob	Statistic	Prob
Chow test (F)	14.56	0.008	16.23	0.0010
Hausman test (χ)	5.57	0.35	2.13	0.82

Table 5. Results of Estimation of Two Patterns of Economic Growth and production growth per capita in Developing Countries

Variables	Economic Growth Model			per capita production growth model		
	Coefficient	Statistic	Prob	Coefficient	Statistic	Prob
Investment growth	1.3891	3.21	0.000	0.9624	2.421	0.018
per capita production growth	0.0023	-1.92	0.008	0.0015	2.01	0.000
Trade openness	0.078	-1.24	0.029	0.057	-0.2741	0.781
government size	-1.310388	-7.80	0.000	-1.35	1.851	0.016
Intercept	1.775	1.02	0.051	1.1913	0.7841	0.071
Number of countries		15			15	
R ²		0.65			0.7600	
F-State		212.32			214.01	
Prob		0.0000			0.0000	
Dorbin-Watson		1.97			2.34	

Investment growth in another variable which has a positive and significant effect on economic growth by 1.38 unit and 0.96 unit on per capita production growth of developing

countries. Also, expenditure consumption growth has a positive and significant effect on both patterns, and, every one unit increasing in this variable will increase economic growth by 0.0023 unit and 0.0015 unit the production growth per capita.

Trade openness increases economic growth and production growth per capita in developing countries, and, the computational coefficients in two patterns of economic growth and production growth per capita is 0.78 and 0.57. Trade openness will encourage different types of investment, accumulation of skills, transfer of technology, efficient use of investments and increased competitiveness, and, consequently, sustainable economic growth. The results are consistent with the results of the Ayn Voyga (2011), Razmi et al. (2009), Naderi and Oghly syrup (2007), Jafari Samimi and Azmand (2009).

The size of government's influence on economic growth and production growth per capita in developed countries is much higher than in developing countries. Also, Trade openness stimulates economic growth and production growth per capita in developed and developing countries. The share of expenditure consumption per capita on economic growth and production growth per capita in developing countries is smaller than developed one. Finally, the impact of investment growth on economic growth and production growth per capita is high in developing countries.

Conclusion and Recommendations

Sustainable economic growth is one of the final goals of any economy which requires the expansion of growth bases and internalization, through mechanisms such as capital accumulation, human capital development, promoting the productivity of factors of production and etc. The statistics indicates the huge difference and increase in this inequality between the countries in economic growth, per capita income and the level of economic well-being.

This study analyses the effect of government size and variables such as investment growth, consumption growth per capita and Trade openness on economic growth and the growth of per capita production in two groups of developing and developed countries over the past two decades (1990-2010). Panel data method were used for this purpose. A constant effect pattern was used for developing countries and random effect for developed countries. As a result, government size has a negative and significant effect on economic growth and production growth per capita in developing countries, also, a negative impact on per capita production growth, but, a positive impact on economic growth in developed countries. Therefore, declining the government's position has a significant impact on economic growth and per capita production growth, especially, in developing countries such as Iran.

Considering that some part of government expenditures are being invested, and, investment growth has positive and significant effect on economic growth and per capita production, in both group of countries, the government size should be reduced with priority to reduce the current costs, which has great impact on increasing the economic growth of investigated countries.

Indeed, Trade openness has positive impact on economic growth and per capita production growth in developed countries and developing countries. As a result, if increasing the economic growth become a prior policy, thus, only Trade openness will reduce the economic growth in developing countries. Accordingly, providing the necessary infrastructure is very important for developing the foreign trade in developing countries.

Finally, investment growth and consumption expenditures per capita growth impact was positive and significant in developed countries. Hence, increasing investment is important in increasing economic growth and per capita production growth, as well as, consumption expenditures per capita little affect them.

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