An essay on optimal size of government: a case study of Pakistan

Un ensayo sobre el tamaño óptimo del gobierno: un estudio de caso de Pakistán
Um ensaio sobre o tamanho ideal do governo: um estudo de caso do Paquistão

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Abstract

Pakistan is a developing country and faces the problem of the fiscal deficit since government expenditures are higher than revenues. In this situation the government has to raise loans to cover this deficit and the burden of loans and debt service is increasing significantly. Additionally, most of the budget has gone to service the debt. Under these circumstances, this study is an attempt to find the optimal size of the government and compare it with the actual size of the government. To calculate the optimal threshold level of government spending, the methodology used by Heerden (2008) for Pakistan is adopted. Finally, this study provides a guide for policymakers, either to reduce or increase the size of governme.

Keywords: Government, Pakistan, development, budget, expenditure.

Resumen

Pakistán es un país en desarrollo y enfrenta el problema del déficit fiscal dado que los gastos del gobierno son más altos que los ingresos. Ante dicha situacion el gobierno tiene que levantar préstamos para cubrir este déficit y la carga de los préstamos y el servicio de la deuda está aumentando significativamente. Adicionalmente la mayor parte del presupuesto se ha ido para el servicio de la deuda. Bajo estas circunstancias, este estudio es un intento de encontrar el tamaño óptimo del gobierno y compararlo con el tamaño real del gobierno. Para calcular el nivel umbral óptimo de gasto gubernamental, se adopta la metodología utilizada por Heerden (2008) para Pakistán. Por último, este estudio proporciona una guía para los responsables de la formulación de políticas, ya sea para reducir o aumentar el tamaño del gobierno.

Palabras claves: Gobierno, Pakistán, desarrollo, presupuesto, gastos.

Resumo

O Paquistão é um país em desenvolvimento e enfrenta o problema do déficit fiscal, já que os gastos do governo são mais altos do que as receitas. Nesta situação, o governo tem de contrair empréstimos para cobrir esse déficit, e o ônus dos empréstimos e do serviço da dívida está aumentando significativamente. Além disso, a maior parte do orçamento foi para o serviço da dívida. Sob essas circunstâncias, este estudo é uma tentativa de encontrar o tamanho ideal do governo e compará-lo com o tamanho real do governo.

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Para calcular o nível ideal de limiar de gastos do governo, a metodologia usada por Heerden (2008) para o Paquistão é adotada. Finalmente, este estudo fornece um guia para os formuladores de políticas, seja para reduzir ou aumentar o tamanho do governo.

Palavras-chave: Governo, Paquistão, desenvolvimento, orçamento, despesas.

Introduction

Economic growth is alleged to be the most important macroeconomic indicator of the overall performance of an economy. A sustainable level of economic growth is necessary to overcome the vicious circle of poverty. Fiscal policy is an important tool which can be used to affect income distribution and mass poverty that are the critical determinants of economic growth. Fiscal policy can be used to attain the long run economic growth in order to maximize the overall welfare of an economy using public spending and taxation for this purpose (Tanzi, 2006). Government size is the most frequently employed variables, since it is directly related to the government policies. Different people have followed different approaches to measure the Government size. Some people use taxes as a proxy for the government size, whereas, some others have used government expenditure as a proxy for the government says. In addition, some others have employed the "employment level" to explain the government size. The optimal size of the government is the problem that has attracted the attention of many scholars. In developing countries government spending is above the optimal level, in contrast to many other countries.

There are three conflicting views about the relationship between the size of the government and economic growth. As per Keynesian view, a larger government or equivalently large size of the government is likely to enhance the economic growth. High level of government consumption is associated with high level of both private and government demand for goods and services which in turn enhances production of goods and services. This stimulates employment and investment. The government has the authority to regulate and deal with negative externalities. Government plays an important role in removing interest conflicts between private and public sector. Barro argued that the government size is more likely to affect economic growth negatively (Barro, 1990). He argues that it creates inefficiency in the private

market as well as cause many distortions in some other markets due to the unnecessary government interventions. There is another class of opinions who argues that the impact of government size on the economy leads to inverted U shape cure. This implies that government size enhances growth up to certain threshold level and then starts to fall beyond that threshold level (Barro, 1990; Armey, 1995). In the light of above mentioned three views, relationship between government size and economic growth is ambiguous. There seems no consensus among the researchers.

Objective of the Study

Our objective of this study is to estimate the optimal size of government for Pakistan. We are using Heerden method for this purpose (Heerden, 2008).

Growth and Expenditures Pattern of Pakistan

Pakistan has observed many ups and downs in economic growth since independence. Historically, in some decades a high and sustained economic growth has been observed while, in some other decades the economy has shown very miserable performance. Moreover, there has been observed a continuous increasing trend in public expenditure as a percentage of the GDP. After two decades of independence, the economy has shown highest rate of growth in South Asia, particularly during 1960-70. There are several factors that are responsible for this outstanding performance of the economy in 1960's. The main reasons of excellent growth were the implementation of the green revolution on a large scale, swings in trade policies, particularly the adaptation of the import substitution policies that had resulted in a boom in private investment. During this decade of excellent performance of the economy, the annual growth rate of physical capital had been observed to be 13.1 percent.

Likewise, the economy has shown miserable performance in 1970. This was due to the policy of nationalization that resulted in inefficiency and increase in the oil prices that had resulted in a reduction in private investment. Similarly, in 1980's the economy has experienced the lowest rate of growth in Asian economies. After that, Pakistan remained the slowest growing economy in South Asia. The average growth remained around 5 percent from 1985-95 but afterwards it declined to 1.6 percent only in 2002. This massive reduction in the growth rate was due to the imposition of sanctions by the world after the atomic explosions which were conducted on May 28, 1998. The economy regained its momentum and showed an amazing growth rate of more than 5 percent in 2003. After this the economy, has shown mixed performance.

The historical trends show that since independence, Pakistan has observed the favourable economic growth only in certain decades that include the decades of 1960's, 1980's and 2000's. The growth rate in these decades remained more than 6 percent, while in 1950's, 1970's and 1990's, the growth rate was around 4 percent. Improvement in the growth rate during 2000-05 was due to the adaptation of the stabilization policies (improvement of lower macroeconomic volatility and real exchange rate overvaluation), structural reforms (improvement in public infrastructure and expansion of trade openness) and cyclical reversions. During the period of 1983-84 to 1987-88 and 2002-03 to 2005-06 the economy grew approximately by an average growth rate of 7 percent due to favourable external environment.
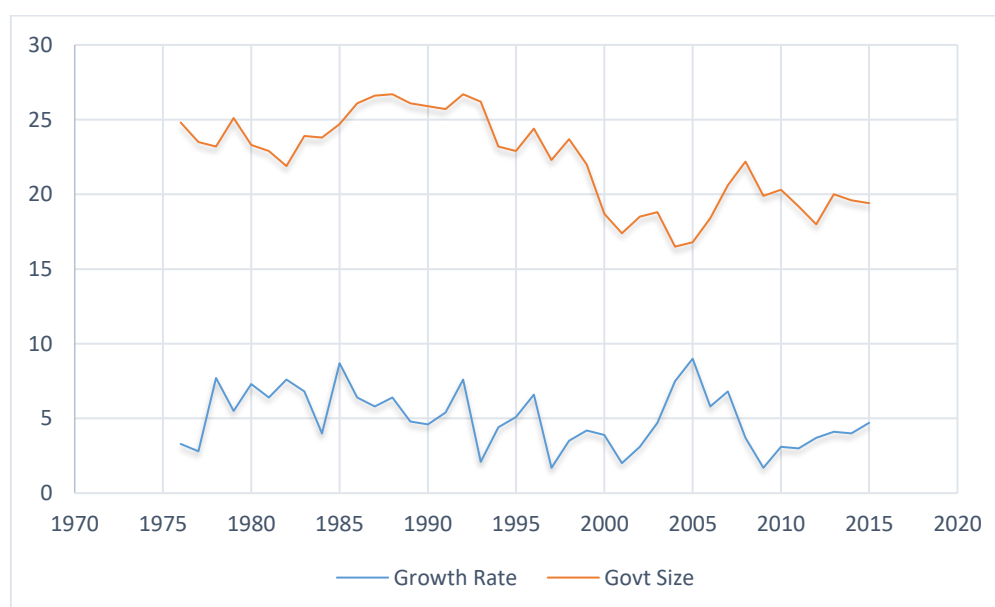

Figure 1. Behaviour of Growth rate and Government Size

The above figure, shows the behaviour of government size and growth rate of economic. Initially, the behaviour of size showed somewhat increasing trend over the period, but after 1990, it showed a declining trend over the period. During 1975- 85, the ratio of public expenditure to GDP remained around 23 percent. The reason of this large size of the government or equivalently increase in the ratio of government expenditure to GDP during this period was due to surge in defence expenditures, nationalization of the public-sector institutions as well as the attempt by the government to increase employment in the economy. Public expenditure further increased during 1985-95 i.e., to 25.48 in 1995 percent of GDP against 23 percent in 1985.

This highlights the increasing government intervention in economic activities that have resulted into a surge in government expenditure.

However, public expenditure as percentage of GDP decreased from 24 percent of the GDP to 17 percent of during 1996-2005. During the last eight years, the government expenditure has shown a declining trend and that is why the government size has come down to 19.50 percent in 2014-15 from 22.2percent in2007-08. This reduction in the government size is primarily due to floods that has caused into a massive reduction in the agricultural production.

The behaviour of total government expenditure as a percent of the GDP, the current and development expenditure and their relation to the growth rate is shown in above figure. The figure shows that current expenditures as a percentage of GDP increasing over time, but after 1987 it shows somewhat constant trends and falls after 1997. Likewise, development expenditures as a percent of GDP falls over time, i.e., these were around 10 percent of GDP in 1976 against 4.5 percent about in 2015.
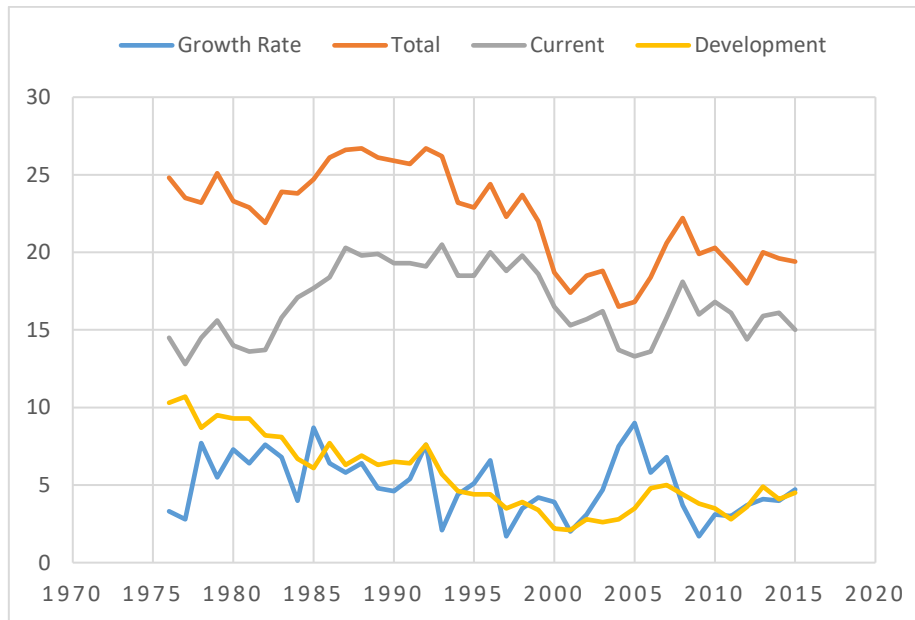

Figure 2. Behaviour of Total, Current and Development Expenditures

Literature Review

There are lots of studies done, but there seems no consensus regarding the relationship of government size and economic growth. Some scholars argue that government size hinders economic growth when it crosses the threshold level due to inefficiencies inherent in government. In addition, provision of goods and services and protection of property rights enhances economic growth. There are some studies depict the nonlinear relationship.

Scully has shown that the optimal tax rate or equivalently the optimal size of the government ranges from 19 to 23 percent. The study has also affirmed that the optimal tax rate for New Zealand on average is 19.7 percent of the GDP over the period 1927-94. Furthermore, the study revealed that government spending on public goods such as national defence and protection of property rights enhances economic growth. But after a certain point government spending becomes nonproductive because of the excessive welfare expenditure. This study has found that higher taxes are needed to finance transfer payments and other government welfare spending which have a negative and adverse impact on economic growth (Scully, 2008).

Heerden has estimated the optimal size of government in terms of revenues and expenditures. Time series data have been used over time span 1960-2006 in South Africa. The results have shown that the optimal tax rate is 21.94 percent, which lies within the range ofScully from 19 to 23 percent. This reveals that the growth, maximizing tax rate is lower than the realized one. In addition, the tax burden has an adverse impact on economic growth because of lying on the downward sloping portion of the Laffer curve (Heerden, 2008).

Karagiani has depicted a nonlinear causal relationship between national income and public expenditure by employing the nonlinear Granger causality test for some of the European countries with six alternative functional forms of the Wagner's law. Hearth has concluded a nonlinear relationship between government expenditure and economic growth over the period 1959-2003 for Sri Lanka. The Armey curve was used for the analysis, which had shown that the

government expenditure and economic growth are positively related up to the threshold level but negatively related beyond that level (Karagiani, 2009; Hearth, 2009).

Facchini and Melki have identified a non-linear relation between the level of "public expenditure" and "economic growth" for France using annual data for the period 1871-2008, by employing the Armey curve for the purpose. This curve states that the state and the market failures can be helpful in understanding the inverted U-shaped relationship between the two variables mentioned above. It is evident that the market failure meant for the positive impact of public spending with decreasing marginal productivity. It is highlighted by the upward sloping portion the rising part of the curve. On the other hand, the failure of the state explains the negative impact of public spending with increasing marginal effect (Facchini and Melki, 2011).

Husnain has estimated the optimal government size in Pakistan following the methodology of

Scully. The findings have shown that the threshold level of the government expenditure is 21.48 percent of GDP, which is lower than the current size of the government (Husnain, 2011).

Theoretical Background and Specification of the Model of Optimal Government Size

To compute the optimum government size or equivalently the threshold level of government expenditure, we are employing the methodology used by Heerden (2008). As we know that both the public as well as private sectors contribute to the gross domestic product. The public sector provides goods and services which are financed with tax collections from the people. This becomes the public-sector spending. On the other hand, the private people give taxes to the government and fraction of the rest of their income is saved which in turn is used to produce goods and services. The fraction of the income of the private people given to the government is given by

$$\frac{T}{Y} = \tau$$

Where T is the total taxes and τ is the associated tax rate and Y is the GDP. Or in other words, τ is the share of the public sector in GDP. The share of the private sector in GDP is "1- τ". (1- τ) is the share of the income of the people left

with them after taxation which leads to the production of goods and services. The functional form of this relationship is given by the following Cobb-Douglas production form as

$$Y = \gamma (\frac{G}{Y})^{\alpha}(1 - \tau)^{\beta} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 1$$

α and β are the shares of the public and private sectors respectively. Equation (1) is a nonlinear production. „Y‟ is GDP and G is government

expenditure. 'τ' shows the ratio of tax to GDP and 'γ' shows total factor productivity.

The log transformation of equation 1 is

$$\ln Y = \ln\gamma + \alpha\ln (\frac{G}{Y}) + \beta\ln (1 - \tau)\dots\dots\dots\dots\dots.2$$

Taking first derivative

$$\frac{\partial lnY}{\partial G} = \alpha (\frac{Y}{G})(\frac{1}{Y}) = \alpha G^{-1}$$

Taking second derivative

$$\frac{\partial^2 lnY}{\partial^2 G} = - \alpha G^{-2}$$

This exercise shows that the value of the first derivative is positive while the second derivative is negative as is shown by the negative sign of the second derivative. This shows that public

expenditure affects economic growth positively, but the magnitude of this effect decreases over the time i-e it affects economic growth at a decreasing rate afterward. This results into non-

linear relationship between "public expenditure" and "economic growth". As it is reviewed that at a low level of government expenditure, the increase in the tax rate stimulates economic growth, since at this level, public spending on infrastructures, communications etc. is more productive. On the other hand, at high levels of the government spending, a tax increase is associated with a reduction in economic growth since most of the government spending at this level is concerned with welfare spending, which do not promote economic growth (Scully, 1994; Heerden, 2008; Husnain, 2011). Now to find the optimal tax rate or equivalently the threshold level of government size, we follow Heerden (2008) to impose the restriction of a balance budget of the Pakistan, i-e (G = T). So, to impose this balanced budget restriction the tax rate is given by

$$\frac{G}{Y} = \tau$$

now τ is called the anticipated tax rate. Where G is government spending and Y is GDP.

Now substitute $\frac{G}{Y} = \tau$ into equation (2), we get

$$\ln Y = \ln \gamma + \alpha \ln (\tau) + \beta \ln (1 - \tau)………………3$$

So, to find growth, maximizing tax rate or more specifically the threshold level of government size, we will differentiate the equation (3) with respect to τ. Differentiating we will get

$$\frac{\partial \ln Y}{\partial \tau} = \frac{\partial \alpha \ln \tau}{\partial \tau} + \frac{\partial \beta \ln (1-\tau)}{\partial \tau} \;\; = \;\; 0$$

$$\frac{\alpha}{\tau} - \frac{\beta}{1-\tau} = 0$$

Solving for τ we will get

$$\beta \tau = \alpha (1 - \tau)$$

And finally, we will find

$$\tau^* = \frac{\alpha}{\alpha + \beta} ……………4$$

τ^* is the optimal size of government.

Data Sources

Per capita GDP data is taken from world development indicator (WDI). Government expenditure (both current and development) as a percentage of GDP is taken from Pakistan Economic Surveys.
Government expenditures as percentage of GDP is used as a proxy for government size.

Estimation Procedure

To find the optimal size of the government, we estimate the „3" equation to find the values of α and β. But like any usual estimation, we have employed the ADF test to see the order of integration and then to convert them into stationary variables since estimation of the optimal size of the government needs the variables to be stationary.

- Unit Root Test:

Table 1. Augmented Dickey Fuller Test

| | | | P- Statistics | | |
| | | | | | |
Variables	Test for Unit Root	Included in Test Equation	ADF Test Statistics	Critical value	Order of Integration
ln Y	Level	Intercept	-2.172	-2.607***	
		Trend and intercept	-2.572	-3.196***	I (1)
ln τ	Level	Intercept	-1.487	-2.607***	I (1)
		Trend and intercept	-2.159	-3.196***	
Ln (1- τ)	Level	Intercept	-1.440	-2.60***	
		Trend and Intercept	-2.110	-3.196***	I (1)
1st Difference					
ln Y	Level	Intercept	-4.637	-2.609***	I (0)
ln τ	Level	Intercept	-6.05	-2.609***	I (0)
Ln (1- τ)	Level	Intercept	-6.27	-2.609***	I (0)

Note: *, **, *** indicate the critical value at 1%, 5%and 10% significance level respectively.

Unit root test results are shown in the following table. All variables are not stationary at level. As shown in the table that Augmented Dickey Fuller test statistics are less than the critical value. So the null hypothesis that the "series is not stationary" is not rejected. For applying OLS all variable of model should be stationary at level. To make the data stationary, we have taken 1st difference and then check the stationarity at level.

All variables are now stationary at level after 1st difference.

The OLS results are given

$$\ln Y = 0.0215 - 0.1119\ln (\tau) - 0.4937\ln (1 - \tau)$$

To calculate the optimal size or the threshold level of government size, we used the equation (3). So, substituting the values of "α" and "β"in equation 4, we get

$$\tau^* = \frac{-0.1119}{-0.1119-0.4937} *100$$
$$\tau^* = 18.47 \%$$

Table 2. Optimal level of public expenditure in developed countries

Country	Size of government (% of GDP)	Optimum size (% of GDP)
Italy	44.90	37.09
France	54.73	42.90
Finland	58.74	38.98
Sweden	65.02	45.95
Germany	48.72	38.45
Ireland	39.60	42.28
Netherland	51.97	44.86
Belgium	52.97	41.91

Reproduced from Pevcin (2004) [% of GDP in 1996]

The optimal size of the government or equivalently the optimal size of the public spending or taxes is found to be around 18.47 percent of the GDP as is shown by the above empirical analysis against 19.4 percent of GDP in 2015. This reflects a reduction in public spending over the last year. On the other hand, the actual size of the government spending is 19.4 percent. But the estimated optimal size is 18.47 percent. This finding is very much interesting since it highlights that the current size of government in Pakistan is above the optimum level or size and there is still scope of reduction in total government spending to the GDP ratio in Pakistan.

Our result of the optimal size of government satisfies the Friedman ̈s proposition that the optimal size of governments is found to be in the range of 15 percent of the GDP to 50 percent of gross domestic product (Friedman, 1997). Likewise, our result is also inconsistent with the conclusion of Scully who have highlighted that the optimal tax rate in the United State is 19.3 percent. On the other hand, the findings are also in accordance with the findings of Vedder and Gallaway and Mavrov (Scully, 2008; Vedder and Gallaway, 1998; Mavrov, 2007).

Conclusions and Policy Implications

The optimum size of the government is 18.47 percent. This implies that the growth, maximizing level of the government expenditure or equivalently the threshold level of the government size is less than the current or the actual level of the government size which is 19.4 percent. Therefore, the study recommends reduction of total government spending to arrive at the growth, maximizing level of the government size. This can be possible via reducing the unnecessary government spending and diversion of the unnecessary non-development government expenditure towards development spending. It is important to increase the efficiency of government expenditure and economic growth.

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