Size of the Government, Quality of Institutions and Growth in SAARC Countries

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1. Introduction

Role of the government has attracted the policy makers from centuries. Debate between the proponents of free market and their opponents is still going on. The evolution in economics through different school of thoughts has opposite views regarding the role of the government in the process of growth. Mercantilists during the sixteenth and seventeenth centuries, believed in the need for a government action to direct the development of the capitalist system. In contrast to the mercantilists, the classical economists of the eighteenth century, mistrusted government and believed in the efficacy of the free market mechanism. The Keynesian economics, which developed against the background of the great depression in 1930s, revived the need of the government as a regulating body to overcome market failures. Keynesians advocated the use of both fiscal and monetary policy to regulate aggregate demand. However, the newclassical school which emerged after the failure of Keynesian in 1970s explained stagflation and emphasized on the use of both monetary and fiscal policies with some additional assumption of rational expectations to revive the growth in the economy.

One elusive question still attracts the attention of the researchers and policy makers whether government has a positive or negative role in the growth of a country. Washington consensus depressed the role of the government as an anchor of growth, while the post Washington consensus again focuses on the role of the government as the major player to revive growth. Theoretically, the linkages have been well established between the government spending and growth. However, the extensive use of cross country growth regressions in 1980s and 1990s highlighted the controversies in the empirical testing of these schools of thought using data for different countries and different techniques to prove their hypothesis. Most of these studies concentrated on the developed countries, while few try to explore the structure in developing countries. The question still remains, whether public sector promotes or retards growth.

The objective of this study is to analyze the relationship between size of the government and growth in SAARC countries and to investigate the role of institutions in determining the effect of government spending on growth in developing countries.

The remainder of the paper is organized in the following manner: Section 2 discusses the issues in estimating the relationship between size of the government and growth. Model specification and estimation technique is described in section 3. The empirical results are presented in section 4, while section 5 contains concluding remarks and policy recommendations.

2. Literature Review

The early growth models formulated by Solow (1956) considered technological progress and population growth as the determinants of long run growth. The endogenous growth theory pioneered by the work of Romer (1986, 1990), Lucas (1988), Barro (1990) and Rebelo (1991) pointed out mechanisms by which policy variables could influence the level of output. Since then, the work on the determinants of growth has burgeoned. This also resulted in numerous studies enriching the debate with different empirical evidences on the relationship between size of the government and growth.

Ram (1986, 1989) and Grossman (1988, 1990) concluded that a large government size promotes economic growth, while Landau (1983, 1986) and Barro (1991) concluded that it depresses growth of per capita income. Dowrick (1996) also observed a strong positive correlation between output growth and the government growth, which reverses when endogenity is addressed in growth accounting framework. The inconclusive results led to investigations into the kind of sample taken, variables used and applied techniques which are still on to date.

The proponents of the positive relationship argued that the negative relationship stem from the specification bias and ignoring the simultaneous nature of the two variables. In fact most of the studies that reported negative relationship between the two variables were based on single equations. Also, the other argument for this objection comes from the fact that the negative relationship between government size and growth mostly comes from a panel data of many different countries with different characteristics [Ghali, (1998)] and it may not hold for a single country. However, there are some recent time-series studies that have also reported the negative relationship between the two [Batchelor (1999) Ramayandi (2003)].

Some studies found a nonlinear relationship between the size of the government and growth; initially a negative relationship existed between the size of the government and growth [Colombier (2009) and Straunch (2003)].

As mentioned above, the controversies in the empirical evidence on the relationship between size of the government and growth, leaves the debate inconclusive. There are obvious problems with data inconsistency, classification of expenditure categories, and omitted factors affecting the growth process as can be seen from Table 1.

Table 1: *Literature Review.*

Study	Sample	Explanatory variables	Main results
Landau (1983)	Panel (27 LDCs)	Categories of G	GC has a negative impact.
Kormendi and Meguire(1985)	Panel (N=47)	GC	GC insignificant.
Landau (1986)	Cross-section 65 LDCs (1960-80)	G and various functional types	GC and GI significantly negative. Education is insignificant.
Ram (1986)	115 countries (1960-80)	Private investment, GC and labour force growth rate	Externality effect of G is positive, especially in lower income countries. G has a negative impact.
Grier and Tullock (1989)	113 country panel (1951-80)	GC	GC significantly negative, but positive for Asian subsample
Romer (1990)	Cross-section of 112 countries (1960-85)	G, GC, GI and human capital	G significant and negative but GI has a positive coefficient.
Alexander (1990)	Panel 13 OECD countries (1959- 84)	GC, GI and deficits (growth rate of shares)	GC and inflation have negative impact on growth.
Barro (1991)	98 countries (1960-85)	GC	GC has a negative impact
Chan and Gustafson (1991)	Time series on UK (1955-86)	G less transfers (levels), private consumption and relative prices of public goods	G a positive impact on private consumption
Devarajan, et al (1993)	Panel 14 OECD (1970-90)	Functional types of G (health, education, transport, etc)	Health and infrastructure spending have positive impact,

			education and defence have negative impact.
Easterly and Rebello (1993)	Cross-section of 100 ADCs and LDCs (1970-88)	Government surplus, GI, GC and other types of expenditures and taxes, and human capital	GI has a negative impact on growth, GC a negative impact, but positive impact on private investment. Spending on infrastructure has positive impact on private investment.
Lin (1994)	62 country panel (1960-85)	Government surplus, GI, GC and other types of expenditures and taxes, and human capital	Mixed results. GC insignificant in ADCs, but significantly positive in LDCs.
Hsieh and Lai (1994)	Time series G7 (1885-1987)	G and private investment	No uniform causality.
Hansson and Henrekson (1994)	Cross-section of 14 industries for OECD countries(1970-87)	G, GC, GI, education, transfers, social security	Transfers and G have negative effect. Education spending positive, GI insignificant.
Devarajan et al (1996)	Cross-section 43 LDCs (1970-90)	GC, GI and functional Categories	GC positive, GI negative in LDCs, reverse for ADCs.
Ghali (1998)	Time series, 10 OECD countries (1970:1 1994:3)	G, I, exports and imports	G Granger-causes growth, directly for most countries.
Kneller et al (1998)	Panel of 22 OECD countries (1970-95)	GI, GC other types of expenditures; I, types of taxes	GI enhances growth, GC does not
Dunne and Nikolaidou (1999)	Time series on Greece (1960- 96)	Military expenditure, defense, GC	Military/defense expenditure have a negative effect; GC does not affect growth.
Batchelor et al (1999)	Time series on S. Africa (1964-95)	I, categories of G, income Inequality	Military spending has positive externality, negative size effect
Tanninen (1999)	52 country panel (1970-92)	G and taxes	GC has negative impact. Spending on public goods is growth retarding for large G but not for small G; social security spending is positive.
Fölster andHenrekson(1999)	23 OECD (1970-95) countries		G a significant negative impact
Ramayandi (2003)	Time Series, Indonesia	Private investment over GDP, labor density, real export over GDP, a dummy variable for the 1998 crisis.	Both GC and GI have a negative impact on growth.

Grimes (2003)	Panel of OECD countries	Government expenditure as % of GDP at start of each decade, change in government expenditure during the decade, per capita income,per capita income at the start of each decade and three dummies for decade-specific fixed effects.	GC has a negative impact.
Kuştepeli (2005)	Panel Fourteen countries.	Real exports, labor and capital	Small G has a positive impact, medium G has a negative impact.
Hakro (2009)	Panel data for Asian countries	Total taxes, initial GDP per head current prices, growth rate of labor force and unemployment.	G has a negative and significant impact.
Chen, Chen and Kim (2011)	Panel data for OECD countries	Growth rate of the labor force, growth rate of the real capital stock and growth rate of exports.	GC is positive and significant for low quintile and negative and significant for the high quintiles.

Soure:Kweka and Morrissey, 1999, extended by authors.

3. Data and Methodology

The analysis is done for five South Asian Association for Regional Cooperation (SAARC) countries namely Bangladesh, India, Nepal, Pakistan and Sri Lanka. Bhutan and Afghanistan are also part of the SAARC, but these countries were not included due to non-availability of data. To the best of our knowledge, there is no study that takes these countries separately as a panel study group. The data on the variables is obtained from World Development Indicators (International Financial Statistics of IMF). Since a large number of entries are missing for years prior to 1980, complete data are available from 1980 onwards, hence the period used for analysis ranges from 1981 to 2011.

The data for the index of the quality of governance has been taken from the International Country Risk Guide (ICRG) published by the PRS Group. It is formulated by adding up six indexes i.e., corruption, bureaucratic quality, rule of law, law and order, government stability and military in politics. By construction, each index is assigned a maximum numerical value (risk points), with the highest number of points indicating the lowest potential risk and the lowest

number (0) indicating the highest potential risk. Thus the higher the point against corruption, the lower is the risk.

Theoretical Model

Following Ram (1986), the estimated final equation is

$$Y_{it} = \beta_0 + \beta_1 (I/gdp)_{it} + \beta_2 (GC/gdp)_{it} + \beta_3 (TR/gdp)_{it} + \varepsilon_{it} \quad (1)$$

Where:

Y = growth rate of output per capita.
I = gross domestic investment.
GC =final general government consumption
TR = trade openness
Gdp = gross domestic product

Methodology

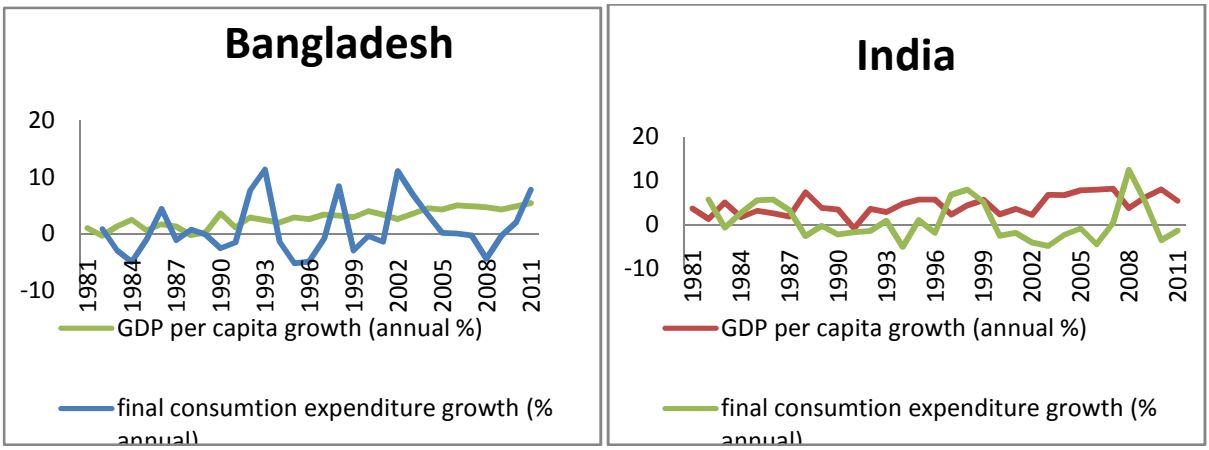
A balanced panel data set is formed for the above mentioned variables for five countries from 1981 to 2011. A major advantage of panel data is increased precision in estimation. This is the result of an increase in the number of observations owing to combining or pooling several time periods of data for each individual. [Cameron and Trivedi (2005)].

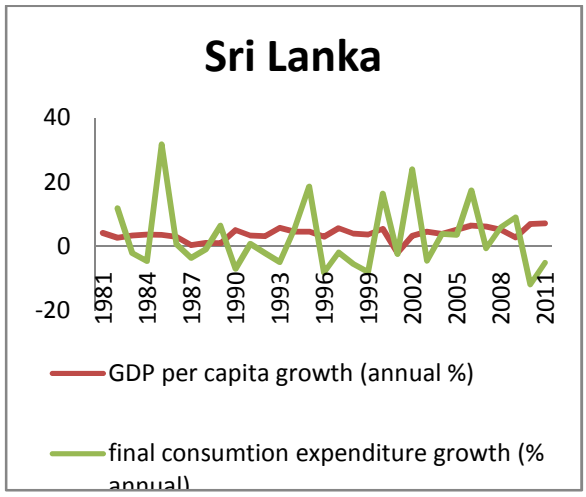
One very obvious problem with the equation (1) is that the explanatory variables are in fact components of the dependent variable. Thus the explanatory variables are measured as shares of GDP [Kweka and Morrissey, (2000)] and GMM estimation procedure developed by Arellano and Bond (1991), Arellano (1993), and Arellano and Bover (1995) is used to overcome endogeneity. The GMM estimation technique also deals with the omitted variable bias (discussed in Lin, 1994; Slemrod, 1995; Folsterand Henrekson, 1999).The STATA X1 has been used for estimation.

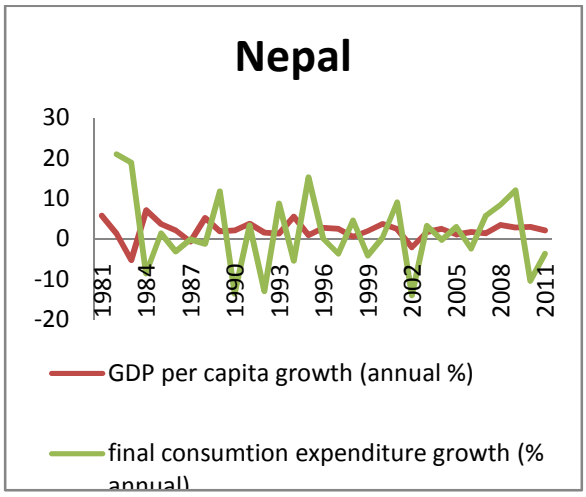
Principle Component Analysis (PCA) is used to capture the institutional characteristics. PCA is a variable deducting method which is used to reduce the dimensionality of a large dataset containing many interrelated variables into a smaller number of representative, uncorrelated (orthogonal), variables with minimum loss of information. The new set of variables is generated by transforming the raw data into a new set of variables called the principle components (PCs).Each PC is the linear combination of the original variables which are ordered in such a way that the first few PCs retain most of the variation presented by the original variables (Jolliffe, 2002). As the few initial PCs retain most of the information and explain maximum variability in the dataset, PCs which explain more than 60% of the variability in the composite index are retained as a rule of thumb (Bishoi et al. (2009). The PC's are calculated using Eviews 7.

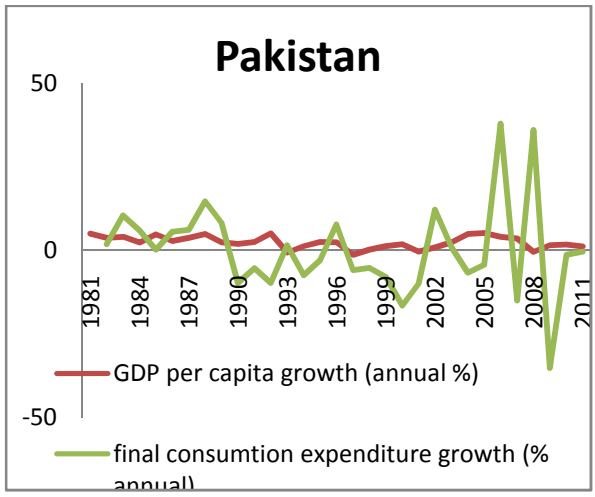
4. Results and Analysis

The graph shows trends in the growth rate of government consumption and growth rate of the final government expenditure for the five SAARC countries. The large fluctuations in the growth rate of the final government expenditure can be clearly observed. The growth rate of gdp per capita is stable in case of Sri Lanka, Nepal and Pakistan, while in case of Bangladesh and India the gdp per capita shows fluctuations during the period of study. These questions remain particularly pertinent given the sharp growth in government size in the last half-century and the sharp disparity in growth rates that has characterized the same period.









The estimation results are reported in the following table.

Unit Root test

Table 2, presents the results of the Im, Pesaran and Shin (IPS) panel unit root test at level indicating that all variables are $I(0)$. The IPS test provides separate estimations of each i section. The null hypothesis of this test is that all series are stationary with the alternative that a fraction of series in the panel are stationary.

Table 2: *Unit Root Test.*

Variables	t-bar
Growth rate of GDP per capita	-4.1076*
Growth rate of Gross capital formation	-5.1999*
Growth rate of final consumption expenditure	-5.6614*

*Indicates significance at 1 percent

In general, the simple linear panel data models are usually estimated with fixed effect method and random effect method. The fixed effect assumes that the each country differs in its intercept and the random effect assumes that each country differs in its error term. The Hausman specification test then assists in the selection of the method. In our case the hausman specification test stat has a probability 0.1378, thus preferring random effects over fixed effects method. However, the generalized method of moments is used to overcome endogenity and omitted variable bias as mentioned earlier.

Table 3:

GMM Estimators of the Size of the Government and per capita Growth, SAARC countries, 1981-2011.

Variables	Coefficients
Growth rate of Gross capital formation	.0642009* (.023127)
Growth rate of final consumption expenditure	-.0341627* (.0168976)
Trade Openness	.0341796* (.0101032)

Notes: The value in parenthesis denotes the standard error.
*Indicates significance at 5 percent

The result highlights that the size of the government has a negative and significant effect on the growth rate of output as found by Landau (1983, 1986), Romer (1990), Barro (1991), Grimes (2003), Ramayandi (2005), etc. The gross capital formation has a positive and significant impact on growth. The trade openness is also found to affect economic growth positively.

The literature provides several justifications that explain the growth retarding impact of government consumption expenditure. The government inefficiencies, excess burden of taxation, distortion of the incentives systems and interventions to free markets, which are more prevalent in the developing countries, makes the impact of government expenditure growth impending [Barro (1991)]. The negative impact of the unproductive government interventions were also pointed out by Slemrod (1995). More precisely, most of those empirical studies that conclude negative effect of government size on growth argue that in most cases, government operations were often conducted inefficiently [Ramayandi (2003)]. Highlighting the fact that it is the combination of government size and the quality of institutions and policy that seems to matter [Commander, Davoodi and Lee (1997)]. To further deepen the study we have incorporated this strand of literature and included the index for the quality of institutions in the growth equation, and therefore harmonize the two strands of literature on growth.

Table 4:

GMM Estimators of the Size of the Government and per capita Growth with quality of Institutions Index, SAARC countries, 1981- 2011.

Variables	Coefficients
Growth rate of Gross capital formation	.1034672* (.0157578)
Growth rate of final consumption expenditure	-.0140037 (.0124673)
Trade Openness	.018637* (.0057436)
Index	.3388057* (.0760634)

Notes: The value in parenthesis denotes the standard error.
*Indicates significance at 5 percent

The quality of the institutions has a positive and significant impact on growth rate of per capita output, while the growth rate of the size of the government becomes insignificant with the inclusion of quality index. The trade openness and growth rate of investment continue to effect per capita growth positively and significantly. Thus it follows that we should not be concerned only with the quantity (size) of the public sector, but also with the quality of public sector institutions [Oto-peralías and Romero-ávila ()].The results are in line with the widespread agreement that good institutions are a precondition for economic growth as pointed out by Hall and Jones (1999), Acemoglu et al. (2001, 2002, 2003), Rodrik et al. (2004) and Easterly and Levine (2003).When quality standards in the public administration are high, politicians, officials and public employees are honest and do not abuse their power. There is no rent seeking and corruption. There is government stability and there is democratic accountability along with the bureaucratic quality, the government size does not necessarily hinder economic growth; it may become positive or neutral.

5. Conclusion

The use of an index representing quality of institutions reveals interesting dynamics of the relationship between size of the government and growth in the five SAARC countries. The relationship is significant and negative. In developing countries, the prevalence of rent seeking, corruption or in other words low quality of institutions leads to more unproductive expenditures or inefficient government operations. These unproductive expenditures financed by high taxes or aid thereby hamper overall growth. However, the inclusion of the quality index makes the government consumption insignificant, although the sign of the parameter is still negative. Thus indicating that the quality of institutions is a more important determinant of growth than the government consumption in these countries.

References

Acemoglu, D., Johnson, S., & Robinson, J. (2001). The colonial origins of comparative development: an empirical investigation. *American Economic Review*, 91 (5), 1369-401.

Acemoglu, D., Johnson, S., & Robinson, J. (2002). Reversal of fortune: geography and institutions in the making of the modern world income distribution. *Quarterly Journal of Economics*, 117 (4), 1231-1294.

Acemoglu, D., Johnson, S., & Robinson, J. And Thaicharoen, Y. (2003). Institutional causes, macroeconomic symptoms: volatility, crises and growth. *Journal of Monetary Economics*, 50, 49-123.

Arellano, M. and O. Bover (1995) Another Look at the Instrumental Variables Estimation of Error-components Models. *The Journal of Econometrics,*68:1, 29 51.

Arellano, M. and S. Bond (1991) Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *Review of Economic Studies,*58:2, 277–297.

Barro, R. J. (1986)Government Spending in a Simple Model of Endogenous Growth, *Journal of Political Economy*, vol. 98(5), pp. S103-S125.

Commander S., H. R. Davoodi and U. J. Lee (1997) The Causes and Consequences of Government for Growth and Well-being

Chen, S. T., Chen, C. C. and Kim Y. (2011) Economic Growth and Government Size in OECD Countries: New Evidencefrom the Quantile Regression Approach, *Economics Bulletin*, vol. 21(1).

Colombier, C. (2009)Growth Effects of Fiscal Policies: An Application of

RobustModified M-Estimator, *Applied Economics*, vol. 41(7), pp.899 – 912.

De Avila, D. R. and Straunch, R (2003) Public Finances and Long Term Growth in Europe – Evidence from a Panel Data Analysis, *Working Paper Series*, Europeon Central Bank, no. 246.

Dowrick, S. (1996) Estimating the Impact of Government Consumption on Growth: Growth Accounting and Endogenous Growth Models, *Empirical Economics*, vol. 21, pp. 163-186.

Easterly, W., & Levine, R. (2003). Tropics, germs, and crops: how endowments influence economic development. *Journal of Monetary Economics*, 50 (1), 3–39.

Grimes, A. (2003) economic growth and the size and structure of government: mplications for new Zealand, *Motu Working Paper* #03-10.

Grossman, P. J. (1988) Government and economic growth: A non-linear relationship,*Public Choice*,vol. 56, pp. 193-200.

Hall, R., & Jones, C. (1999). Why do some countries produce so much more output per worker than others? *Quarterly Journal of Economics*, 114 (1), 83-116.

Hakro, A. N. (2009)Size of Government and Growth Rate of Per Capita Income in Selected Asian Developing Economics,*International Research Journal of Finance and Economics*, vol. 41(7), pp.899 – 912.

Jolliffe, I. T. (2002)Principal Component Analysis, 2nd edition, Springer.

Kustepli, Y. (2005) The relationship between government size and economic growth: evidence form a panel data, *Discussion Paper Series*, no. 05/06.

Landau, D. (1983) Government Expenditure and Economic Growth: A Cross-Country Study, *Southern Economic Journal*, vol. 49(3), pp. 783-792

Oto-peralías, D. and D.Romero-Avila ()Tracing the Link between Government Size and Growth: The Role of Public Sector Quality

Ram, R. (1986) Government Size and Economic Growth: A New Framework and Some Evidence from Cross-Section and Time-Series Data, The American Economic Review, vol. 76(1), pp. 191-203.

Ramayandi, A. (2003) Economic Growth And Government Size In Indonesia: Some Lessons For The Local Authorities, *Working Paper in Economics and Development Studies,* no. 200302.

Rodrik, D., Subramanian, A., &Trebbi, F. (2004). Institutions rule: the primacy of institutions over geography and integration in economic development. *Journal of Economic Growth*, 9, pp. 131-165.

Sheehey, E. J. (1993) The Effect of Government Size on Economic Growth, *Eastern Economic Journal*, Vol. 19(3), pp. 321-328.

Appendix

Normalized weights

Index	Bangladesh	India	Pakistan	Sri lanka
GS	0.165793	0.293981	0.137223	0.238386
MP	0.176003	0.000499	0.141303	0.215394
CORR	0.174681	0.018581	0.212912	0.126356
LO	0.168861	0.316706	0.188085	0.223016
BQ	0.181537	0.059091	0.126428	0.020828
DA	0.133124	0.311142	0.194049	0.176019