Relationship between Public Debt and Key Economic Variables: A case study of Pakistan

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Abstract

The study is about finding out the relationship between public debt and economic growth in Pakistan. The study is based on annual time series data starting from 1981-2010. The dependent variables which have been considered for this research are GDP growth rates, Investment and manufacturing rates which were regressed in separate regression models against a single independent variable that is Public debt. The estimations show a negative relationship between public debt and all the three dependent variables. The results of the study shall help the policy makers in formulating appropriate debt management policy. It shall also encourage further research in this area.

1. Introduction

Many economists in Pakistan suggest that national debt is playing negative role towards the economic growth and development because in Pakistan public debt is to finance the budget deficit while in the rest of the world public debt is used to finance the short and long term developing projects.

There are two main factors behind this, one is the fiscal imbalance and the other is high amount of debt servicing which government of Pakistan pays every year on the principal. The tax base structure in Pakistan is low which lead to low revenue so the budget deficit is finance by borrowing from local bank mainly in case of domestic debt. The budget deficit of Pakistan is increasing year by year because of high expenditure on military and debt servicing. Debt servicing is the amount of interest paying on principal to lenders or to those from whom the government took loans. In 1995-1996 the military expenditure and debt servicing of Pakistan reached up to 81% to the current expenditure. The local debt is also high. It is almost 54% of the total GDP and total foreign debt is 40% of the total GDP. The short term debt is of the GDP. The debt servicing amount of Pakistan is very high therefore large portion of government revenue is lost to pay interest on principal. So very low amount of government revenue is lift for developing works and for the welfare of citizens so GDP growth is low which result low economic growth and development.

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High public debt affects the economic debt directly and as well as nonlinearly. There are many factors of growth but capital accumulation is the main and effective factor of economic growth. High public debt effect capital accumulation very badly because due to high debt the domestic as well as foreign investment is discourage due to high tax charge because government usefully charge high rate of tax in order to collect more and more revenue to finance the public debt servicing. It decrease the real net income level of peoples because they pay high taxes to government than before so the capital accumulation rate is decrease. High public debt also decrease production because peoples think that if they produce more and more, they will pay more and more tax on it so high tax rate discourage production in this way which in result effect economic growth negatively. The negative effect of high public debt is the low investment of the government in developing projects and future planning because of low government revenue. Beside this government is also neglect the investment in human capital like health and education which are very important for economic growth, so I can say that low the investment in human capital, less will be the economic growth.

The aim of this paper is to find out the impact of public debt on economic growth and other factors like investment rate and manufacturing rate with a view to recommend some policy guideline for the policy maker for managing public debts.

2. Literature Review

There are different approaches about the public debt. These researchers explained the effect of public debt on economic growth in different ways and in different direction. They try to find out all the channels through which the public debt effects the economic growth. They also pointed out those microeconomics variables which are usually affect by high public debt. Some of these microeconomic variables are gross domestic product (GDP), Investment, Export, Expenditure, etc. When these variables are not going well than the economic growth is badly affected. So I am trying to explain some of the approaches about public debt and its effects on economic growth.

Deshpande (1990) study thirteen countries like Philippines, Peru, Morocco, Zambia, Mexico, Egypt, Ivory Coast, Kenya, Venezuela, Sierra Leone Argentina, Algeria which have high public debts. He took a single microeconomic variable that is investment. He found that in starting time period there was a positive effect of high public debt on investment. It was increasing regularly than before. But after some time the effect became opposite. The high public debt affected the investment negatively. So decreasing trends become start in all 10 countries. The researcher fined that there is negative relationship between public debt and investment. This means that when public debt is increase than investment is decrease.

Hameed, Ashraf and Chaudhary (2008) are also studies the relationship of public debt on economic growth of Pakistan. These researchers took the production function and annul time series data and study the effect of public debt on economic growth of Pakistan. They find the effect of debt servicing on economic growth. Their study show that there is inverse relation is existed. The debt servicing has negative effect on economic growth of Pakistan. Because due to the high debt service the productive capacity of labor and capitals became slow and low so as a result the economic growth is decreased. They study the effect of debt servicing both in long and in short time period. But still the effect was negative on economic growth.

Reinhart and Rogoff (2010), Caner, Grennes and Koehler-Geib (2010), Kumar and Woo (2010). These researchers are agreeing upon one conclusion. They found that public debt is not a problem for development countries. They say that high foreign debt such as up to 90% will only delay and slow the economic growth of high development countries. The high public debt has no serious negative effect on economic growth of development countries. The researchers found that the main reason behind this is that development countries have well develop and high efficient institution which manage the high public debt very well. There economy is stable. They make good and efficient policies which have positive effect in handling high public debt. So therefore it has no negative effect on economic growth of developed countries.They also found that the low income or the underdevelopment countries can not able to manage the public debt because they have no well manage and efficient institutions. Their economies are not stable. There polices or not good and efficient enough to give positive output. So therefore the public debt of less developed countries has serious negative effect on economic growth.

Cunningham (1993) analyzed the relationship between public debt and economic growth. He investigates the effect of public debt on some important microeconomics variable such as capital, labor and export. He found that labor and capitals production have same effect on economic growth like export. So these factors of production is effected in same way by debt public and there negative effect on economic growth will be same be these are the main effective factor of production in any economy. The researcher say that the high public debt have high debt service so large amount is going to external creditors. Less amount is left in country which become difficult for the government that how to utilize the capitals and labor for production due to availability of less resources. As we know that the output or the extra gain from capitals and labor production will go to debt servicing so there will be no investment and new capital accumulation. Therefore it will decrease the overall production of the economy due to this finally it will affect the economic growth.

Krugman (1988), Sachs, (1989) and Cordon (1989) investigate different channels through which public debt effect the economic growth. They say that not only investment effects the economic growth but it is also effected trough low productivity of growth. He explains his argument in light of debt overhang theory. He find out that only investment is not a single factor which has negative effect due to high government on economic growth but the less productivity is also became a serious problem for economic growth. The Author have that government economic condition such as political instability, policies and debt management and its activity is also effect is economic growth very badly specially for those countries which low productive resources because it will be difficult for the government to allocate more and more resources for high productivity. The output of the present capitals will go to debt servicing so it decreased the government incentives to take efficient decisions and reform for the management of high public debt. The debt servicing is also a big problem for many countries especially for low developed countries because they have low productive capacity to meet the debt payments. The main harmful effect of high debt servicing is that it discourage both domestic and foreigner investors to invest in new projects and business. So I can say that the high public debt cut the private investment. When investment is low than automatically the economic growth will affected in negative way. Because if there is no new investment than there will be no new production capitals. So the overall output of the economy will not changed for long time.

Hassan (1999) have study the effect of huge public debt and debt servicing on economic growth. He pointed out that the high amount of public debt has high payment of interest on principal amount. Both high public debt and high debt servicing are became serious problems for fiscal adjustment of Pakistan. He conclude that due high debt servicing each year in development expenditure and projects because government is paying regular high portion of the national revenue as interest on loan which is borrowed from local and foreign resources. so less portion of national revenue is left behind therefore government investment is low in development projects which led to low economic growth.

The researcher said that the problem of public debt become very serious due to short term spending of government to finance the important internal and foreign obligations. He notices the effect due to variation in important components of public debt mainly on foreign debt. He say that the variation in these components including "non interest current account ratio to gross domestic product, real gross domestic product, the ratio of non debt capitals inflow to the economy and devalue of exchange rate. These all component of public debt have high negative effect on total external debt specially the exchange rate.

3. Sampling

The sample of the study consists of thirty years. It includes annual data from 1981 to 2010.we have used annual time series data of these years in my study. I select three macroeconomic variables which include Gross domestic product growth rate, Investment, Manufacturing.

4. Economic variables used in this study

4.1 GDP growth rate

GDP stand for gross domestic growth. It is main and important growth indicator and economic variable which clearly show the growth and position of the economy. It shows the quantity of all goods and services producing in the economy. Higher gross domestic growth rate show that the economy is strong and growing rapidly. The gross domestic growth rate of Pakistan economy is 5.3% in 2008, 2.7%in 2009, 4.3% in2010, 2.70% in 2011. From these data we can conclude that the gross domestic growth rate of Pakistan economy is high in 2008 but it decrease rapidly in 2009 almost more than half. In year 2010 economic condition become good than before so therefore gross domestic growth rate again increased up to 4.3%. As we note that it is decline again in 2011 nearly half of the previous year. Higher the gross domestic production rate, higher will be the economic growth rate as result the economy will be strong and more stable.

4.2 Investment rate

Investment acts as a back bone for the economic growth in any country and any economy. It is very important economic variable. Without investment in new capitals, the economic growth is totally impossible because there is no alternative to investment which can be used for the economic growth. All others growth indicator is mainly based on investment in the economy. High the investment high will be the economic growth because it has direct relationship with economic growth. The investment rate in economy of Pakistan is 15.3% in 2006, 15.6 %in 2007, and 21.3% in 2008, 20% in 2009, 17% in 2010. The investment rate is quite high in the economy of Pakistan. These values show that in 2006 and 2007, the investment was not so high. It became high in 2008 and in 2009 than before. But if we see clearly we will not that the investment is decline in year 2010. The main reason behind this is low stability in the economic condition. It discourages the peoples more in economy. High investment is very important for high economic growth.

4.3 Manufacturing rate

Manufacture growth rate is also very important in economic growth. It also plays a vital role in increasing of gross domestic production rate. Because both manufacturing and gross domestic rate are closely and positively related. It means that when manufacturing rate is increased than automatically the gross domestic production rate will increase which result in high gross domestic production per capita. The manufacturing rate in Pakistan economy in 2006 is 8.65 %, in 2007 is 8.17 %, in 2008 is 5.4 %, in 2009 is 4.6 %, and in 2010 is 5.3%. In 2006 the manufacturing rate is high as compeer to the remaining years. It is decreased very rapidly in 2008 and 2009. There are many factor are responsible for it including low investment in the economy etc.

4.3 Public debt

Public debt means government borrowing from local and external financial resources. It is the main objectives of every government to give facilities to their citizens. Government used its own resources to finance and to provide these facilities to their citizens. If government have no enough resources to effort and finance these facilities, than government will borrow it from local and external lenders. Public debt is mainly used to fulfill the government expenses obligation. High public debt and borrowing is not bad. Public debt is not a big problem. Every government is borrowing. But the problem regarding to public debt is the management and use of the public debt. It depend on the government polices, utilization of public debt, way of investment of public debt etc. But unfortunately in case of Pakistan public debt is used in non development and non productive ways. It is used mainly to finance the high government budget deficit. The public debt management department is failed in Pakistan to use the high public debt in proper and productive ways

5. Analytical technique

To find the effect of high public debt on economic growth of Pakistan we have selected three economic variables. I used some single type of equations. All the equations are estimated on simple OLS method. The purpose of single equation is to find the effect of high public debt more properly and correctly on these variables. This will show that which variable will affect more by high public debt and which variable will affect the economic growth more than the other. To find the effect of high public debt, we have used the annual time series data. The whole data which is used in my study is secondary data. All the data of these variables are represent in percentage form. All the economic variables which we have selected for the study are dependent variables. The high public debt is the only independent variable. The single models which we have used in my research study are the following.

1. GDP = f(DB)
2. Manf = f(DB)
3. Inv = f(DB).

GDP = is the real gross domestic production growth rate.

DB = is the public debt burden as a percentage of GDP.

Manf = is the manufacture growth rate.

Inv = is the investment growth rate.

6. Estimation and Data analysis

The effects and relationship of high public debt burden on economic growth of Pakistan is estimated on simple OSL method. The following are the final results of regression on selected economic variables.

GDP Growth rate and public debt.

Dependent Variable is GDP Growth rate
Independent Variable is Public debt.

	Coefficient			
Variable	t	Std. Error	t-Statistic	Prob.
C	100.1127	8.597918	11.64383	0.0000
Y_G	-3.538814	1.534645	-2.305949	0.0287
R-squared	0.159598	Mean dependent var		81.44900
Adjusted R-squared	0.129584	S.D. dependent var		17.03130
S.E. of regression	15.88954	Akaike info criterion		8.433539
Sum squared resid	7069.368	Schwarz criterion		8.526953
Log likelihood	-124.5031	F-statistic		5.317402
Durbin-Watson stat	0.331741	Prob (F-statistic)		0.028732

The result shows that the effect of high public debt of Pakistan is negative on gross domestic (GDP) growth rate. Its value is negative which is -3.538814. The negative value of investment shows that it is inversely related to public debt of Pakistan. It means that when the public debt is increase than investment will decrease because it has negative effect on investment. The Probability value is highly significant because it is less than 0.5. It shows that the result is correct. The t-statistic and F-statistic value are also significant.

Manufacturing rate and public debt.

Dependent Variable is Manufacturing Growth rate.
Independent Variable is Public debt.

	Coefficient			
Variable	t	Std. Error	t-Statistic	Prob.
C	14.19710	2.970128	4.779961	0.0001
D_Y	-0.091171	0.035719	-2.552439	0.0164
R-squared	0.188757	Mean dependent var		6.771333
Adjusted R-squared	0.159784	S.D. dependent var		3.573974
S.E. of regression	3.276022	Akaike info criterion		5.275477
Sum squared resid	300.5049	Schwarz criterion		5.368890
Log likelihood	-77.13215	F-statistic		6.514947
Durbin-Watson stat	1.283624	Prob (F-statistic)		0.016438

The result shows that the effect of public debt of Pakistan is negative on manufacturing growth rate in Pakistan. The value of manufacturing growth rate is negative in this result which is -0.91171. It has inverse relationship with public debt of Pakistan. It shows that when public debt is increase than manufacturing growth rate will decline and it will be negative. The probability is high significant which show that result is correct. The value of t-statistic and F-statistic are also highly significant. The manufacturing growth rate in Pakistan is low and negative because there is low investment in the economy of Pakistan. The low investment and low manufacturing rate affect the economy negatively. So the economic growth rate becomes slow.

From the table we can note that the effect of public debt of Pakistan is negative on investment growth rate in Pakistan economy. The investment also

Investment and public debt.

Dependent Variable is Investment rate.
Independent Variable is Public debt.

	Coefficient			
Variable	t	Std. Error	t-Statistic	Prob.
C	28.40863	7.089957	4.006883	0.0004
D_Y	-0.170888	0.085265	-2.004206	0.0548
R-squared	0.125460	Mean dependent var		14.49000
Adjusted R-squared	0.094227	S.D. dependent var		8.216852
S.E. of regression	7.820153	Akaike info criterion		7.015626
Sum squared resid	1712.334	Schwarz criterion		7.109039
Log likelihood	-1032344	F-statistic		4.016840
Durbin-Watson stat	1.144537	Prob (F-statistic)		0.054807

has negative relationship with public debt of Pakistan. Its value is negative that is -0.170888. It means that when public debt increase than the investment will decrease, because the relationship between these two variables is negative. The probability value is also significant. It shows that the result is correct. The values of t-statistic and F-statistic are also significant. From this result I can conclude that the main reason of low investment in Pakistan is the high public debt. This is because high public debt has high debt servicing. High debt servicing is consuming a large portion of Pakistan revenue so very low portion or amount of government revenue is left for investment in the economy. So the overall effect on economic growth is negative.

7. Conclusion

The objective of the study was to establish the relationship between public debt and macro economic variables such as GDP growth rate, investment rate and manufacturing rate. The study concludes that in the case of Pakistan public debt has negatively affected the three main variables. However, in other cases the relationship is not certain, which may lead us to say that the mismanagement of debt not the debt it self is the primary reason for the negative association between public debt and the covariates. The results of the study shall help the policy makers in reevaluating public debt policy.

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