

Domestic Debt and Economic Growth in Pakistan: An Empirical Analysis

Muhammad Ramzan Sheikh

Lecturer, Department of Economics
Bahauddin Zakariya University, Multan
Email: ramzansheikh@bzu.edu.pk

Muhammad Zahir Faridi

Assistant Professor, Department of Economics
Bahauddin Zakariya University, Multan
Email: zahirfaridi4u@yahoo.com.

Khadija Tariq

M.Phil student, Department of Economics
Bahauddin Zakariya University, Multan
Email: Khadija_bzu@yahoo.com.

Abstract

Pakistan is surrounded in serious socio-economic problems. Due to low tax base and twin deficits, Pakistan has to rely on both external and internal capital flows. The foreign capital flows are not easily accessible but domestic capital flows are approachable at all times. The study investigates the impacts of domestic debt on economic growth in Pakistan applying the OLS technique for the period of 1972 to 2009. The study indicates that the stock of domestic debt affects the economic growth positively in Pakistan. This clearly means that the resources generated through domestic borrowing have been used partially to finance those expenditures of government which contribute the economic growth. The study also observes that there is an inverse relationship between domestic debt servicing and economic growth. This result is due to the fact that huge burden of non-development expenditures impedes the economic growth. The findings of study reveal that the negative impact of domestic debt servicing on economic growth is stronger than positive impact of domestic debt on economic growth. The study also suggests some policies to settle the outstanding domestic debt.

Keywords: Domestic Debt; Worker's Remittances; Money Supply; Debt Servicing

I. Introduction

In less developed countries, governments use public debt as an imperative tool to finance its expenditures. Economic growth can be increased by effective and proficient utilization of resources to achieve macroeconomic goals. However, if the public debt is not properly utilized, it would restrict economic growth and become the biggest curse for the economy.

Public debt is one of the major economic issues facing the governments of South countries. There is a lot of debate on foreign debt issue but domestic debt has not

occupied the central stage in research and economic planning. External debt has therefore, historically received the attention it deserves. Until the late 1990s, developing countries did not address the risks and challenges of internal debt. Pakistan is using domestic borrowing to pay the foreign debt servicing. The growth of public domestic debt in Pakistan has not been restricted to make sure that the plenty of resources are available after debt servicing to finance government expenditures of various nature.

There are several reasons of public domestic debt. First, it is used to finance budget deficit. Second, it is used to implement monetary policy through open market operations. Third, there is need to develop and deepen the financial markets by the instruments of domestic debt.

Domestic debt can have severe implications for the economy as well. Domestic debt servicing absorbs a major part of government revenues. So, government has fewer resources to spend on development projects. In this way, internal debt servicing is more harmful for the economic growth than the stock of internal debt. Moreover, in shallow financial markets, as the domestic debt increases, the interest cost also rises due to holding a large amount of debt in short term instruments.

There is an inadequate literature on the effects of domestic debt on the economy of Pakistan. In addition, the available studies on public debt and economic growth have typically focused on external debt. This study aims at filling this gap by using the most recent data from the period 1972 to 2009 to investigate the impact of domestic debt on economic growth in Pakistan. The rest of the paper is arranged as follows: In section II, views on the relationship between domestic debt and growth are explained. A brief review of the empirical studies is given in Section III. The composition and trends of domestic debt in Pakistan have been discussed in section IV. The econometric specification is briefly mentioned in section V. The discussion on the data, methodological issues and empirical results is presented in section VI. Finally, the conclusions are presented in section VII.

II. Theoretical Issues

In this section, a discussion on the theoretical issues on domestic debt and its relationship with economic growth is presented. Economic growth is one of the most important objectives of economic policies in almost every country. It depends on primary factors of production, technological progress and on a blend of socio-political and institutional factors.

Domestic debt may have positive as well as negative impacts on economic growth. The impacts of domestic debt on economic growth can be analyzed in the context of two different views i.e. traditional and Ricardian view.

In the traditional view, a tax cut financed by government borrowing would have many effects on the economy. The immediate impact of the tax cut would be to motivate consumer spending. Higher consumer spending affects the economy in both short run and long run. In the short run, higher consumer spending would raise the demand for goods and services and thus raise output and employment. As the marginal propensity to consume is higher than marginal propensity to save, the increase in private savings falls

short of government dissaving. This increases the real interest rate in the economy encouraging capital inflow from abroad.

In the long run, the higher interest rate would discourage investment and thus crowd out private investment. The lower domestic savings mean a smaller capital stock. The inflow from abroad would result in greater foreign debt. The higher aggregate demand results in a higher price level that adjusts over time and the economy returns to a natural rate of output. The lower investment eventually leads to a lower steady state capital stock and a lower level of output. Therefore, the overall impact when considering the long run period would be smaller total output and eventually lower consumption and reduced economic welfare. This is also referred to as the burden of public debt, as each generation burdens the next, by leaving behind a smaller aggregate stock of capital [Meltzer 1951; Modigliani 1961; Ferguson 1964].

In the Ricardian view, government debt is considered equivalent to future taxes [Barro1974]. Bearing in mind that consumers are rational and forward-looking, the discounted sum of future taxes is equivalent to the current deficit. So, the shift between taxes and deficits does not produce aggregate wealth effects. The increase in government debt does not affect consumption. The rational consumer facing current deficits saves for future rise in taxes and consequently total savings in the economy are not affected. A decrease in government dissaving is matched by increase in private savings. In view of unchanged total savings, investment and interest rates are also unaffected and so is the national income.

Proponents of domestic debt stress its positive impact on growth, inflation, and savings from deeper and more sophisticated capital markets which increase the volume and efficiency of private investment. They are of the view that moderate levels of non-inflationary domestic debt exert a positive impact on economic growth enhancing private savings and financial intermediation.

III. Review of Literature

Various studies on the relationship of domestic debt and economic growth in context of developed countries are presented. We have reviewed some important empirical studies on domestic debt and economic growth.

Fry (1997) studies the impact of alternative deficit financing strategies on economic growth for sixty six low-income countries and emerging markets for the period of 1979-1993. The study shows that market based domestic debt issuance is the least cost method of financing the budget deficit as contrasting with external borrowing and seignorage. All of these methods reduce growth, domestic savings and increase inflation.

Singh (1999) explores the relationship between domestic debt and economic growth in India by applying co integration technique and Granger causality test for the period of 1959-95. The author considers two theoretical views of domestic debt and economic growth one is traditional view of long-run negative impacts of domestic debt on economic growth and second is Ricardian Equivalence hypothesis that shows neutrality of domestic debt to growth. The results of the Engle-Granger co integration test indicate that the domestic debt and economic growth and not co-integrated. The study

supports the Ricardian equivalence hypothesis between domestic debt and growth in India.

Kemal (2001) explains the debt accumulation and its implications for growth and poverty in Pakistan. The study shows that debt accumulation (domestic and external) and debt servicing affects the poor adversely. The findings of the study illustrate that even though debt burden as a percentage of GDP of Pakistan exceeds that of all South Asian countries but it is not still so high as to go for debt write off. This means that Pakistan has the capacity to service the debt.

Uzochukwu (2003) investigates the quantitative effects of public debt (domestic and external) and economic growth on poverty in Nigeria by applying the per-capita income approach using annual data of 1970 to 2002. The study uses growth and debt variables and suggests that these variables have played very vital role towards poverty acceleration in Nigeria.

Schlarek (2004) observes the relationship between gross government debt and per capita GDP growth in developed countries. The results of the paper show that there is no strong evidence of a statistically significant relationship between gross government debt and per capita GDP growth for a sample of 24 industrial countries with data from 1970 to 2002.

Abbas and Christensen (2007) highlight the impact of domestic debt on economic growth for ninety three low-income countries from the period of 1975-2004 by applying Granger Causality Regression model. The analysis shows that moderate levels of marketable domestic debt as a percentage of GDP have significant positive, non-linear impacts on economic growth, but debt levels exceeding thirty five percent of total bank deposits have negative impact on economic growth.

Maana *et al* (2008) analyze the economic impact of domestic debt on Kenya's economy. Authors examine the impacts of domestic debt on private sector lending by applying ordinary least square technique using annual data over the period 1996 to 2007. The study finds that domestic debt does not crowd out private sector lending in Kenya during the period due to substantial level of financial development in Kenya. The study also examines the effects of domestic debt on real output by using a modified Barro growth regression model. The results indicate that increase in domestic debt has a positive but insignificant effect on economic growth during the period. The study suggests that government should employ wider reforms that promote investment in treasury bonds and encourage institutional investors.

Muhdi and Sasaki (2009) examine the roles of external and domestic debt in Indonesia's macroeconomic situation. The authors have applied ordinary least square (OLS) estimation using annual data from the period 1991 to 2006. The study shows that the rising trend of external debt has become a central policy to overcome deficit. It has created positive effects on both investment and economic growth. But aside from these positive effects, the policy produces domestic currency depreciation. Conversely, rising trend of domestic debt discouraged private investment due to crowding-out effect, which reduces capital stock and total production.

Adoufu and Abula (2009) investigate the effects of rising domestic debt on the Nigerian economy by applying OLS technique using time series data from 1986-2005. The findings of the study reveal that several factors responsible for rising domestic debt in Nigeria are high budget deficit, low output level, increased government expenditures, high inflation rate and narrow revenue base. The analysis shows that domestic debt has negatively affected the growth of the economy and recommends that government should made efforts to resolve the outstanding domestic debt.

Checherita and Rother (2010) determine the average impact of government debt on per capita GDP growth for twelve euro area countries over a period of about 40 years from 1970-2009. The channels through which government debt impact the economic growth are private savings, public investment, total factor productivity and real interest rates. The study shows non-linear negative impact of government debt on economic growth.

The above mentioned studies show a mixed impact of domestic debt on economic growth. Some studies are of the view that domestic debt impedes the economic growth but some are in the opinion that domestic debt positively affects the economic growth.

IV. Composition and Trends in Domestic Debt

In this section, composition and trends of domestic debt in Pakistan are presented. Composition of domestic debt in Pakistan has changed in different time periods. The classification of domestic debt in Pakistan consists of permanent debt, floating debt and unfunded debt. Now we discuss these components in detail.

Permanent Debt

Permanent debt (funded debt) covers irredeemable loans. The holders can earn interest for the period they hold bonds of permanent debt. Government has no obligation to purchase these bonds. These bonds can be sold in the stock exchange at their market value. The permanent debt of the government is the long term debt. It consists of long term market loans with maturities of between seven and twenty years and is usually held by institutions such as insurance companies and commercial banks. Some instruments of permanent debt are denominated in domestic currency and some are expressed in foreign currency.

Floating Debt

Floating debt is a short-term debt. It includes cash credit by commercial banks to the government for its working capital needs.

Unfunded Debt

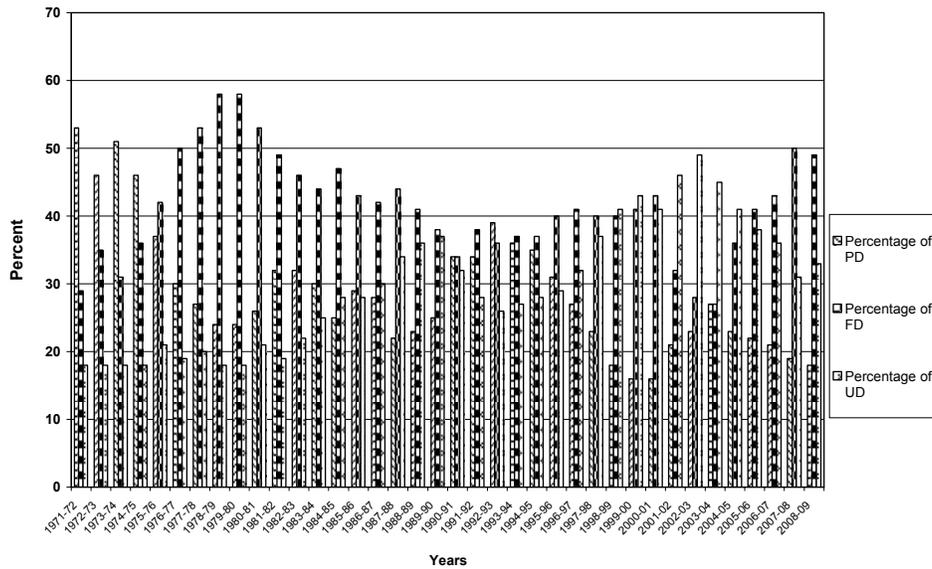
Unfunded debt is a Medium term debt. It is made up of voluntary savings schemes aimed at the general public largely comprising the National Savings Scheme instruments. Now we discuss composition of domestic debt. Figure 1 shows the overall composition of domestic debt in Pakistan from 1972-2009. It is evident from the graph that composition of domestic debt has changed from permanent debt to floating debt during 80s. The percentage of floating debt was very high to 58%. After this period share of unfunded debt has increased due to high interest rates on national saving certificates. The percentage of unfunded debt was 49% during 2003. The composition has changed again

from unfunded to floating debt that was 50% in 2008 whereas percentage of permanent debt remains almost same in the period of 2000.

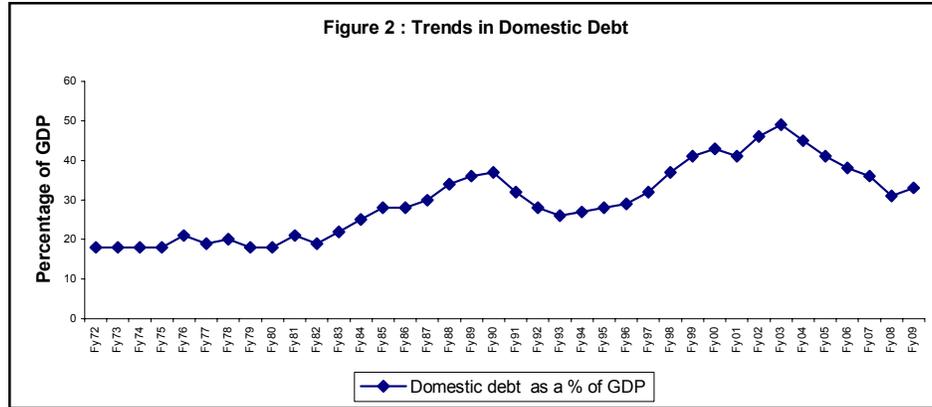
In the past four decades, debt position of Pakistan has worsened very rapidly. For a meaningful descriptive analysis and proper understanding of the debt accumulation process, it is important to trace the time profiles of such economic indicators that have direct bearing on debt accumulation.

Figure 2 traces the trends in domestic debt over the past 40 years. It shows that domestic debt as a percentage of GDP has been increasing during the past four decades especially during 1990s till 2003. From 1972 to 1980 domestic debt has almost remained constant. From 1983-90 domestic debt has an increasing trend.

Figure 1. Composition of Total Domestic Debt from 1972 - 2009



The average of domestic debt in 1980s and 1990s has been 28 percent and 32.8 percent respectively. From 1991-97 domestic debt has decreasing trend, after this domestic debt has increased rapidly and in 2003 has reached maximum 49 percent due to decrease in external debt government has resorted to domestic resources. After 2003 domestic debt as a percentage of GDP has decreased sharply. During 1997-2003 domestic debt has increased due to many factors.



These include low level of saving rates, fiscal space and tax revenues as a percentage of GDP. In addition, after nuclear explosions in 1998, developed countries imposed economic sanctions against Pakistan. Thus, in this situation government had to borrow from internal sources.

V. Econometric Specification

In the light of above discussion, we have formulated the following specifications in order to evaluate the effects of domestic debt or domestic debt servicing on economic growth. The study has used domestic debt and domestic debt servicing in separate equations just to avoid multicollinearity. We construct the following mathematical models for analysis.

$$GDP = f (GE, TDD, EX, WREM) \text{ ----- (1)}$$

$$GDP = f (M_2, INT_DD, ER, FDI) \text{ ----- (2)}$$

The econometric equations specified in linear forms are given as follows:

$$GDP = \alpha_1 + \alpha_2 GE + \alpha_3 TDD + \alpha_4 EX + \alpha_5 WREM + \mu \text{ ----- (3)}$$

$$GDP = \beta_1 + \beta_2 M_2 + \beta_3 INT_DD + \beta_4 ER + \beta_5 FDI + \mu \text{ -----(4)}$$

$$\alpha_2, \alpha_3, \alpha_4, \alpha_5, \beta_2, \beta_4, \beta_5 > 0$$

$$\beta_3 < 0$$

Where:

GDP = Gross Domestic Product

GE = Total Government Expenditures

TDD = Total Domestic Debt

EX = Exports

WREM = Worker Remittances

M₂ = Money Supply

INT_DD = Domestic Debt Servicing

ER = Exchange Rate

FDI = Foreign Direct Investment

μ = Error Term

VI. Results and Discussion

The equations 1 and 2 are mathematical models and equations 3 and 4 are econometric models. For the estimation of growth functions, we use time series (annual data) for the period 1971-72 to 2008-09. All the data are taken from various issues of *Annual Reports* of State Bank of Pakistan and *Economic Survey* of Ministry of Finance, the government of Pakistan. All variables are in nominal terms. All the equations are estimated by the method of OLS (Ordinary Least Square). By and large, it is the method of OLS that is used extensively in regression analysis primarily because it is intuitively appealing and mathematically much simpler.

The results of estimation of the growth equations are arranged in Table 1. The estimated equation 3 has five variables. GDP is dependent variable used to show economic growth, whereas worker remittances, total domestic debt, exports and government expenditures are independent variables. The expected direction of relation of each explanatory variable with GDP is positive except domestic debt servicing.

From the table we observe that value of regression coefficient of worker remittances is 3.16 which means that an increase in one million-worker remittances increase the GDP by about 3.16 million. This effect is very strong and statistically significant. Workers' remittances can positively affect growth through a number of channels. Firstly, remittances may reduce credit constraint of household receipts so that entrepreneurial activity and private investment could increase (Yang, 2004; Woodruff and Zenteno, 2004). In developing countries, households face less efficient financial markets so that access to credit markets appears to be their prime concerns. Remittance inflows could assist households to set up their entrepreneurial activity and also help to finance education and health which are main variables in enhancing long-term economic growth. Secondly, remittances could develop a country's creditworthiness and thus boost its access to international financial markets. World Bank (2006) explains that the country credit ratings also depend on its size of remittance flows. Thirdly, remittance inflows could produce positive effects to economic growth through multiplier effect mechanisms. There are backward and forward linkages in investment activities so an increase in investment of one household could increase the other household income. In the context of increasing returns, the expansion of one sector could increase the size of other sectors. Many studies exhibit the positive connection between household investment and workers' remittances in South countries. For example, Brown (1994) examines the relationship between remittances, savings and investment in Tonga and Samoa and finds that remittances make a significant contribution to savings and investment.

The value of coefficient of exports is 2.32 demonstrating that if an increase in one million worth of exports would add to GDP by 2.32 million. This impact of exports on GDP is very high and statistically significant. According to the national income accounting, GDP is the sum of consumption, investment, government expenditures and net exports. Therefore, net exports and GDP should be positively related. According to traditional Keynesian theory, an increase in exports can stimulate demand which lead to increase in output. According to Abou-Stait (2005), an export led growth strategy provides producers incentives to export their commodities by various government policies. The strategy also increases the capability of producing goods that can compete in the world market. Exports can help the country to amalgamate in the world economy and help in reducing external shocks. Many studies found positive relationship between

exports and both per capita GDP and foreign exchange reserves[Ruppel (1997), Gopinath and Vasavada (1999), Young (2002, Saima, et al. (2008)]. Therefore, all the above-mentioned studies' results are compatible with our findings.

We have observed that value of regression coefficient of government expenditures is - 6.05, which imply that one million increases in government expenditures will lead to decrease in 6.05 million GDP. This value of coefficient is negative and statistically significant. This result is contradicted to theory. The possible reason of the paradoxical result may be as follows: Higher government expenditure may slowdown overall performance of the economy. For example, in an attempt to finance rising expenditure, government may increase taxes and/or borrowing. Higher income tax discourages individual from working for long hours or even searching for jobs. This in turn reduces income and aggregate demand. Similarly, higher profit tax tends to increase costs and reduce investment expenditure as well as profitability of firms. Moreover, if government increases borrowing especially from the banks in order to finance its expenditure, it will compete and crowds-out the private sector, thus reducing private investment. Furthermore, politicians and government sometimes increase expenditure and investment in unproductive projects or in goods that the private sector can produce more efficiently. Thus, government activity sometimes produces misallocation of resources and hinders the growth. Laudau D (1983) examined the effect of government's consumption expenditure on economic growth and discovered a negative effect of government expenditure on growth of real output. Komain J (2007) analyzed the relationship between government expenditures and economic growth in Thailand and found that government expenditures and economic growth are not co-integrated. Barro and Sala-i-Martin (1992) categorize expenditures as productive and unproductive and believe that productive expenditures have a direct impact on economic growth and the unproductive expenditures have an indirect or no effect. So, we can say that in Pakistan government spend money for non-development purposes, that's why our GDP growth is negatively related to government expenditures.

Now we come to the value of regression coefficient of total domestic debt, which is our concerned and focused variable. Value of regression coefficient is 4.09, which suggest that an increase in total domestic debt worth of one million would enhance the GDP by 4.09 million. The sign of coefficient is positive and statistically significant. The reason may be that Market-based domestic borrowing creates macroeconomic stability, reduce external real and domestic monetary shocks, domestic savings generation and private investment as compared to borrowing from central bank. Floating debt and unfunded debt both are marketable and they comprise a major portion of domestic debt in Pakistan, whereas permanent debt that is taken from central bank is less in percentage so domestic debt impacts positively on GDP. Many studies show that domestic debt expansion has a positive effect on economic growth[Maana *et al* (2008), Christensen and Abbas (2007)]. Therefore, the studies' results are compatible with our findings.

In the table 1, we observe that our specified model of equation 3 performs quite well in terms of overall explanatory powers of the model. The value of R^2 is 0.87 in the growth function. Thus, our model explains about 87% of variation in growth. To remove the problem of autocorrelation we have used first- order moving average scheme. In equation 3 estimated, the DW-statistic does not fall in the rejection range and lies within

the acceptance range. Thus, we can accept the null hypothesis that autocorrelation is absent from the regression errors.

Now we consider the values of regression coefficients of equation 4. The model specified in equation 4 consists of five variables. GDP is dependent variable used to show economic growth whereas exchange rate, foreign direct investment, money supply and domestic debt servicing are independent variables. Now we explain the values of regression coefficients of each variable in detail.

The value of regression coefficient of exchange rate is 82836.04, which show that as the exchange rate increases by one-dollar, GDP goes up by about 82836.04 million. This effect is very strong and statistically significant. The reason may be that when rupee depreciates, the lower value of domestic currency makes domestic goods cheaper than foreign goods, thereby causing a rise in net exports and hence in aggregate output. Rodrik (2009) argues that real exchange rate depreciation promotes economic growth, increases the profitability of the tradable sector, and leads to an expansion of the share of tradable in domestic value added.

The expansion of the tradable sector which is injured by institutional weaknesses and market distortions more than the non-tradable sector promotes economic growth. Levy-Yeyati and Sturzenegger (2007) show that an undervalued real exchange rate increases productivity growth by an increase in savings and capital accumulation. Korinek and Serven (2010) argue that real exchange rate undervaluation can enhance growth through learning-by-doing externalities in the tradable sector, which are sub-optimally produced in the absence of policy intervention.

**Table 1: Parameters Estimates of GDP Equation
(Dependent variable is GDP)**

Independent Variables	Equation 3	Equation 4
Intercept	265637.4 (6.829647*)	-711155.2 (-6.425910*)
Worker Remittances	3.163070 (2.367389*)	-----
Total Domestic debt	4.096952 (10.15752*)	-----
Debt servicing on Total Domestic debt	-----	-6.786737 (-4.948873*)
Exports	2.322325 (2.721485*)	-----
Government Expenditures	-6.051597 (-12.14958*)	-----
Exchange Rate	-----	82836.04 (10.27141*)
Foreign Direct Investment	-----	-3.439730 (-1.693374**)
M2	-----	1.434640 (3.876055*)
MA (1)	-0.409926 (-1.014755)	-----
AR (1)	-----	-0.079271 (-0.407274)
R ²	0.87	0.90
DW Statistic	2.01	1.99
Sample Size	37	36

Note: The t-statistics (in parenthesis) significant at 5% and 10% levels are indicated by * and ** respectively. All the estimations are carried out by Eviews

The value of regression coefficient of money supply is 1.43, which exhibits that an increase in one million worth of money supply would increase the GDP 1.43 million. This effect is strong and statistically significant. An increase in quantity of money in the economy increases the GDP growth due to fall in the rate of interest. With lower rate of interest, people plan to buy more durables and firms plan to increase their investment.

The change in the quantity of money is the vital determinant of economic growth. The countries that devote more time to studying the behavior of aggregate money supply seldom experience much change in their economic activities (Handler 1997). Studies that have found a strong positive relationship between money supply and growth include (Sims 1972; Wecllock 1995; Friedman and Meiselman 1963).

The value of regression coefficient of foreign direct investment is -3.43. This reveals that one million addition in FDI will decrease the GDP to 3.43 million. This effect is negative and statistically significant. FDI may have negative effect on the growth of the recipient economy if they give rise to a considerable reverse flows in the form of remittances of profits, mostly if resources are remitted through transfer pricing and dividends. Moreover FDI can also reduce competition and growth, particularly if the host country government affords extra protection to foreign investors to attract their capital. Dependency school theory claims that foreign investment from developed countries is injurious to the long-term economic growth of developing countries. It argues that developed countries became rich by extracting labor and other resources from the developing countries. This kind of act causes distortion, hinders growth, and increases income inequality in poor countries. Brecher and Diaz-Alejandro (1977) showed that foreign capital can decrease economic growth by earning more profits in a country with severe trade distortions. Singh (1988) found FDI have a little or no effect for economic growth in 73 developing countries. In the same way Hien (1992) explained an insignificant effect of FDI inflows on economic growth in 41 developing countries.

Now we come to the behavior of regression coefficient of our major variable domestic debt servicing. The value is -6.78, which suggests that an increase in one million worth of debt servicing lowers growth of GDP to 6.78 million. This value is statistically significant. The reason may be that increase in debt servicing increases burden on economy, public and private investment both decrease due to high cost of borrowing, so GDP, which shows economic growth, will decrease.

In the table, we have observed that our specified model of equation 4 performs quite well in terms of overall explanatory powers of the model. The value of R^2 is 0.90 in the growth function. Thus, our model explains about 90% of variation in growth. To remove the problem of autocorrelation we have used Markov first-order autoregressive scheme. The DW-statistic does not fall in the rejection range and lies within the acceptance range. Thus, we can accept the null hypothesis that autocorrelation is absent from the regression errors.

VII. Conclusion

The main objective of this paper was to study the of impact domestic debt on economic growth in Pakistan for the period 1972 to 2009. The study finds that domestic debt favorably affects economic growth in Pakistan. This obviously implies that the funds generated through domestic borrowing have been used partially to finance those expenditures of government, which contribute to growth rate of GDP. Principle is that domestic as well as external debt should spend for long-term development purposes. Another reason of this positive relationship of domestic debt and economic growth in Pakistan may be that domestic debt is marketable. Market-base domestic debt increases macroeconomic growth and reduces exposure to external real shocks.

Another thing that study finds is adverse impact of domestic debt servicing on economic growth. This has most probably occurred due to huge burden on non-development expenditures. The negative impact of domestic debt servicing on economic growth is more than positive impact of domestic debt on economic growth, this negative effect overweighs the positive effect.

Government should made efforts to settle the outstanding domestic debt. This will give room for proper conduct of monetary policy in the economy. It will be healthy if the government strives to finance budget deficit by improving on the present revenue base rather than resulting to domestic borrowing. This can be achieved by improving its revenue sources and efficient pursuit of tax reforms.

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