

The Role of Fiscal Policy in Human Development: The Pakistan's Perspective

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INTRODUCTION

Human development considered as the engine of the economic growth as it improves the economy's strength and increases the standard of living of the people, increases the choices and maximises the welfare of the society that is the prime objective of any government. The development of the human capabilities is also necessary for the sustainable growth, as there are many channels through which human development foster the economic growth. It increases the labour productivity, labour demand, employment and output. On the other hand, human capital also attracts physical capital.¹ Empirically, it is very difficult to have an exact measure of human development and social welfare. Several proxies used to measure human development, e.g. GNI per capita as a measure of standard of living, Purchasing Power Parity (PPP) criterion to measure the cost of living and to measure the welfare, average year of schooling, school enrolment rate and health expenditures as a percentage of GDP to capture this composite welfare and development indicator. A fair index of Human Development Index (HDI) was developed by United Nations Development Programme in 1990. This index based on the standard of living (natural logarithm of GDP PPP per capita), access to knowledge (adult literacy rate with two-third weighting and the remaining is the gross enrolment ratio) and a healthy life (life expectancy at birth). The value of index varies from 0 to 1, lower the HDI, lesser would be the human development and welfare in the country or vice versa.

Fiscal management plays a vital role in attaining the objective of economic and human development, on the one hand, public expenditure should provide those goods and services, which increase the social welfare, reduces inequality and other obstacle of development. On the other hand, if the public revenue structure is compliance with distribution function it will reduce inequality. Many research studies have established a theoretical relationship between and economic growth and fiscal policy such as, Barro (1990) made an extension in endogenous growth model by including government expenditures and taxation with some empirical support. Other worked in the direction of Barro (1990) and different extension was made in endogenous model under the assumptions that public goods and government expenditures both are productive [Sala-i-Martin (1997); Ghosh-Roy (2004); Cashin (1995); Tsoukis-Miller (2003); Devarajan, *et*

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¹Several studies exist related to human capital and economic growth where different growth channels are defined [e.g. Mankiw, *et al.* (1992); Barro (2001); Bergheim (2005); Benhabib and Spiegel (1994); Bils and Klenow (2000); Temple (2001) and Abbas (2001)].

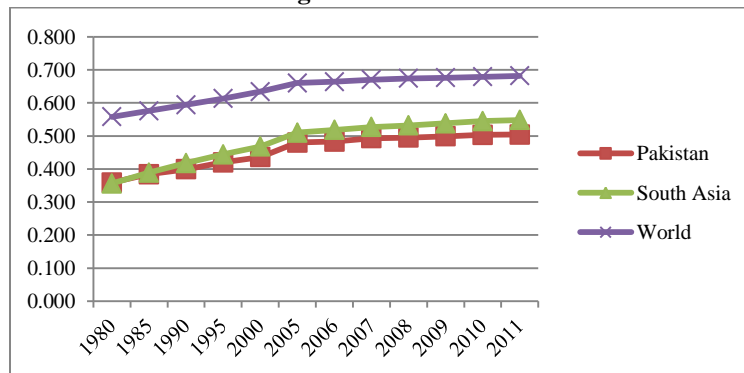
al. (1996)]. More specifically Suescun (2007) established a theoretical and empirical relationship between government expenditures and human development. The empirical evidence based on 15 Latin American countries where he estimated elasticities of Human development with respect to government expenditures.

The effectiveness of fiscal policy in Pakistan has been examined in many studies. Some studies discuss the relative importance of monetary and fiscal policy or crowding out effect while other examined the debt sustainability [Masood and Ahmad (1980); Saqib and Yasmin (1987); Mahmood, *et al.* (2009); Hassan (1999); Chaudhary and Anwar (2000); Siddiqui and Malik (2001); Jafri (2008) and Hyder (2001)]. In most of these studies, growth effects of fiscal policy was measured, while in some cases role of fiscal policy in poverty eradication and in some studies effects on education. The objective of this study is to analyse the role of fiscal policy in human development and social welfare, which is an ultimate goal of any public policy. This study also examined the effect of government type on human development in Pakistan. The study period consists of 1972 to 2010. Furthermore, the unit root test is applied to check the stationary of the data series. Finally, the autoregressive distributed lags (ARDL) bond testing approach of cointegration is applied to find the long run and short run relationship.

Some Stylised Fact

The value of HDI for Pakistan is 0.504, the country of the low human development category. Its ranking is 145 out of 187 countries [HDR (2011)]. The data analysis based on new variables shows an improving trend in all the variables of Pakistan's HDI which include GNI PPP per capita (from US\$ 1288 to US\$ 2550) to measure the standard of living, life expectancy at birth (from 57.9 years to 65.4 years) for a healthy life while expected years of schooling (from 5.7 to 6.9 years) and the mean years of schooling (1.8 to 4.9 years) are used to measure the access to knowledge. The improvement in all the components has improved the overall HDI from 0.359 to 0.504 in the period of 31 years. Table A1 in the Appendix shows the comparative static analysis of Pakistan relative to South Asia and World from 1980 to 2011. The overall improvement in HDI in all the countries and regions of the world is being experienced in this duration. Table A2 demonstrates the values and rank of HDI in Pakistan relative to selected countries (India and Bangladesh) and groups (South Asia and Low HDI) in the year 2011.

Fig.1.Trend of HDI



The remaining study is divided as Section 2 based on reviews of previous studies, Section 3 based on methodological framework and data sources, Section 4 illustrates empirical results, and finally Section 5 demonstrates conclusion and policy implication.

2. REVIEW OF LITERATURE

The increasing literature, theoretical as well as empirical, on the impact of the role of the public expenditure on the welfare and wellbeing of the people is not representing the comprehensible picture and the results are ambiguous. Some researchers found positive impact of public expenditure and role of the size of the government on the welfare but some show negative. Davies (2009) analysed the impact of government size on HDI and tried to find an optimal level of government size with respect to human development instead of GDP growth, as usually does, by using a panel data set of 154 countries from 1975 to 2002 through a GMM technique and found that the welfare maximising size of government (government consumption to GDP ratio) is 17 percent. Iganiga (2012) empirically investigated the impact of different government expenditure on welfare of the Nigerian economy, the government expenditures consist on total federal government revenue, recurrent administrative expenditure, capital administrative expenditure, and federal education expenditure, dummy for political regime and Human Development Index for welfare measure. Using a quarterly data from 1990 to 2009 and concluded that the government having the minimum administrative cost conditional with the reliable people and self-motivated policies can be helpful to reduce poverty on one side and might improve health and productivity that would directly or indirectly improve the living standard of the Nigerian people.

Devereux, *et al.* (2000) searched the channel of government spending on the consumption and welfare. The effect on the total productivity of the economy showed that private consumption and welfare was inversely related with government spending in the case of constant returns while positively related in the case of increasing returns to specialisation. Armev (1995) portrays the relationship between the government size (federal spending as percentage of GDP) and the economic growth (the real GDP) of the economy as the inverted U-shaped Armev curve. Smith and Wahba (1995) analysed the role of public revenue and expenditure of the government on the economic development of 56 developing countries. Among different model, they also examined the effect of fiscal policy on human development by using human development index as dependent variable and social and community expenditures, expenditures on economic services, infrastructure, defense, foreign aid, direct and indirect taxes, labour growth, export growth and gross domestic investment as explanatory variables. The result shows that investment; infrastructure, direct taxes and social expenses have a positive effect on HDI.

Public expenditures on basic public goods, like law and order and other social aspects, have positive impact on the economic growth until a certain limit, that varies from country to country depending upon the political and structural organisation, while additional and non-productive increase in the public expenditures have a negative effect on the economic growth and other social indicators. Vedder and Gallaway (1998) analysed the optimal size of the government for the US economy from 1947 to 1997. Kefela and Rena (2007) examined human capital as the engine of economic growth in North East African States because of investment in human capital, which was the result

of increase in the GDP per capita. Yavas (1998) analysed the link between the government size per capita output and the growth rate for LDCs and the developed countries. The increase in the government size for the developing countries would boost the steady state output level when there is low steady state of the economy, but for the developed countries, it would decrease the steady state output level at a high steady state.

Some other studies show inverse relationship between the federal expenditure and the welfare of the people. The foundation of the economic growth is human development but it is not necessary for all the countries to get benefits of this economic growth in the form of the human development because the accumulation of the productive knowledge and expertise is the real development for the country. The educated and productive public is the goal of development, which will also result in the eradication of poverty. Heitger (2001) examined 21 OECD countries and found negative link between the government expenditure and the economic growth from 1960 to 2000.

Amakom (2010) suggested that expenditure in the improvement of literacy rate and providing better health facilities could help to eradicate poverty in the economy by using the welfare dominance test. He concluded that primary education was progressive for male and female in Nigeria. By employing quintile regressions, Gomanee, *et al.* (2003) studied the effect of the aid on the welfare in terms of HDI. The negative link between poverty alleviation and aid, depend upon the higher HDI. Suescún (2007) investigated the case for 15 Latin American economies. In his dynamic general equilibrium model, different public expenditures were used. The investment in the infrastructure took over education, health, government consumption and transfers, which are the other sources of public spending to have positive impact on the human development and welfare of the people. Machicado, *et al.* (2008) employed Dynamic Stochastic General Equilibrium Model to analyse the link between investment in infrastructure, health and education with respect to the welfare of the Bolivian economy. Forte and Magazzino (2010) examined the shape of the BARS curve to find out the relationship between the size of the government and the economic growth. The panel data set used for the 27 EU countries ranging from 1970 to 2009 showed that for EU-27, the crest of the BARS curve is at 37 percent but its actual level is about 47 percent.

Abbas (2000) compared the role of human capital in economic growth and role of human capital in physical capital accumulation between India and Pakistan. The study period consists of 1970 to 1994 and the estimation technique based on an ordinary least square method. Human capital was measured through three different proxies; primary, secondary and high school enrolments are used. He also generated a variable of effective labour input by combining the different school enrolment and employment rate and measured the impact on economic growth of this variable. The results evident that in growth accounting with human capital as factor of production, primary school enrolment has positive impact on growth for India only, while secondary enrolment has positive effect for both countries and higher school enrolment has positive effect just only for Pakistan. The results of second part of the study, which are related to the impact of human capital and effective labour on physical capital accumulation, evident that school enrolments have no significant impact on physical capital accumulation for both countries but effective labour has a significant impact on physical capital accumulation for both countries.

Qadri and Waheed (2011) analysed the role of human capital in economic growth of Pakistan by using annual data from 1978 to 2007 through Johansen cointegration technique. A health adjusted education indicator is used, as a proxy for human development; they found a strong positive effect of human capital on economic growth. Mahmood and Sara (2010) Examined the impact of fiscal decentralisation on human development using human development index as dependent variable in case of Pakistan. The study period consist of 1976-2009 while two different models were used; in the first model, a cointegration is applied and established a long run relation and in second step, they measured the affect of decentralisation on human development at provincial level using panel GMM; the results show that decentralisation increases the human development. Asghar, *et al.* (2011) analysed the impact of public spending on poverty reduction in Pakistan by using a data set from 1972-2008 through a VECM model. The model based on head count index, used as a proxy of poverty, as a dependent variable, public health, education, law and order, economics and community services as a percentage of GDP and budget deficit used as explanatory variables. They found that government spending on education, law and order reduce the poverty level while spending on community services, and budget deficit have positive impact on poverty, but health expenditure have no significant effect on poverty.

3. METHODOLOGICAL FRAMEWORK AND DATA SOURCES

3.1. Data Sources

This study employs time series data of different macroeconomic variables for Pakistan having the span from 1972 to 2010 which are available from different secondary sources. The publications of the World Bank (World Development Indicators; WDI), United Nation Reports and several issues of the Economic Survey of Pakistan are employed for the quantitative data of Human Development Index (HDI), log of real per capita income (LRPCI), log of real current expenditure (LRCUREXP)², log of real development expenditures (LRDEVEXP)³, log of real tax revenue (LRTR), log of real expenditure on education (LREDU) and a dummy for political regime in Pakistan (PR): 1 for democracy and 0 for dictatorship.

3.2. Econometric Model and Technique

For measuring the role of fiscal policy in human development a linear regression model is formulated which has the following functional form:

$$HDI_t = \alpha_0 + \alpha_1 LRPCI_t + \alpha_2 LRCUREXP_t + \alpha_3 LRDEVEXP_t + \alpha_4 LRTR_t + \alpha_5 LREDU_t + \alpha_6 PR_t + \varepsilon_t \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (1)$$

Unit Root Analysis

Stationary is a vital issue in time series data and Augmented Dickey-Fuller (ADF)⁴ test is applied to find the order of integration among the variables under the null hypothesis of unit root.

²Current expenditure consists on federal government revenue, budget's non-development expenditure i.e. general administration, defense, law and order, community services, social services and economics services.

³Development expenditure is the capital and revenue budgets' development expenditures.

⁴For detail see Dickey and Fuller (1979).

Cointegration Analysis

There are many econometric approaches exist to find the long run relationship among the variables. The pioneer work of Engle-Granger (1987), some other famous studies are based on maximum likelihood procedure Johansen (1991, 1992), and Johansen and Juselius (1990). Another techniques introduced by Pesaran and Shin (1995, 1999), Pesaran, *et al.* (1996) and Pesaran (1997) which is autoregressive distributed lags (ARDL) Model. This procedure has many advantages over the old methods, such as, the order of integration does not matter here similarly old methods were better for large sample while it's also effective for small sample even different variables have different lags. Due to these superiorities, we applied an ARDL bond testing approach to cointegration which is better suited to small samples [Haug(2002)]. An ARDL representation of Equation (1) can be formulated as

$$\begin{aligned} \Delta HDI_t = & \kappa_0 + \pi PR_t + \sum_{i=0}^{K1} \delta_i \Delta LRPCI_{t-i} + \sum_{i=0}^{K2} \beta_i \Delta LRCUREXP_{t-i} + \sum_{i=0}^{K3} \omega_i \Delta LRDEVEXP_{t-i} \\ & + \sum_{i=0}^{K4} \eta_i \Delta LRTR_{t-i} + \sum_{i=0}^{K5} \theta_i \Delta LREDU_{t-i} + \sum_{i=1}^{K6} \phi_i \Delta HDI_{t-i} + \lambda_0 LRPCI_{t-1} + \lambda_1 LRCUREXP_{t-1} \\ & + \lambda_2 LRDEVEXP_{t-1} + \lambda_3 LRTR_{t-1} + \lambda_4 LREDU_{t-1} + \lambda_5 HDI_{t-1} + v_t \quad \dots \quad \dots \quad (2) \end{aligned}$$

The Equation (2) is used to find cointegration among the variables defined in Equation (1), here $K1, K2 \dots K6$ are the showing the optimal lag length determined by information criterion and Δ is the first-difference operator. A bond testing approach of Pesaran, *et al.* (2001) is applied to find the long run relationship. This methodology based on F or Wald-statistics, a joint significance test under the null hypothesis of no cointegration $H_0: \lambda_0 = \lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 = 0$ against the alternative hypothesis $H_1: \lambda_0 \neq \lambda_1 \neq \lambda_2 \neq \lambda_3 \neq \lambda_4 \neq \lambda_5 \neq 0$ is tested. This F-test has a non-standard distribution and two sets of critical values: one is lower bond for $I(0)$ and other is upper bond for $I(1)$. The decision of cointegration based on these values; if the calculated F-Test value exceeds the upper bond then H_0 is rejected. If the F-Test statistics are lower than the lower limit, H_0 cannot be rejected and if the F-Test statistics lie between the lower and upper bond limits, the test is inconclusive.

After the confirmation of cointegration among the variables an error correction model is formulated from the Equation (2)

$$\begin{aligned} \Delta HDI_t = & \kappa_0 + \pi PR_t + \sum_{i=0}^{K1} \delta_i \Delta LRPCI_{t-i} + \sum_{i=0}^{K2} \beta_i \Delta LRCUREXP_{t-i} + \sum_{i=0}^{K3} \omega_i \Delta LRDEVEXP_{t-i} \\ & + \sum_{i=0}^{K4} \eta_i \Delta LRTR_{t-i} + \sum_{i=0}^{K5} \theta_i \Delta LREDU_{t-i} + \sum_{i=1}^{K6} \phi_i \Delta HDI_{t-i} + \lambda_5 ECM_{t-1} + v_t \quad \dots \quad (3) \end{aligned}$$

Where ECM is the error correction term and λ is the speed of adjustment. All the equations are analysed through econometric analysis package Microfit.

4. EMPIRICAL RESULTS

In ARDL model, no pre-testing is required to determine the order of integration but any higher order of integration may cause unreliable results [Ouattara (2004)]. To make sure that the order of integration is lower than the I(2) ADF test is applied. The results of unit root test are shown in Table 2, where all the series are non-stationary at level but stationary at first-difference, that is, the series are I(1) stationary.

Table 2

<i>Unit Root Analysis</i>					
Variable		Augmented Dickey-Fuller Test		Phillips-Perron Test	
		p-value		p-value	
		Level	1st difference	Level	1st difference
LRPCI	CT	0.6962	0.0000	0.6962	0.0000
HDI	CT	0.2598	0.0056	0.4784	0.0057
LRCUREXP	CT	0.7643	0.0001	0.7779	0.0000
LRDEVEXP	CT	0.2061	0.0023	0.053	0.0025
LREDU	CT	0.3252	0.0000	0.3499	0.0000
LRTR	CT	0.646	0.0000	0.6776	0.0000

Equation (2) is used for cointegration by using initially 4 lags as suggested by AIC and BIC. The ARDL method run a total $(4+1)^6 = 15625$ regressions and finally on the basis of AIC criterion an ARDL(2,1,4,4,3,4) is selected. A variable deletion test is applied to calculate the F-statistics. Table 3 shows the calculated value with Narayan critical bond values; the calculated F-value exceeds the upper bond limit and indicates the existence of cointegration.

Table 3

<i>F-statistics for Co-integration Relationship</i>				
	Value	Bound Critical Values*		
		(Restricted Intercept and No Trend)		
			I (0)	I (1)
F-statistics		1%	3.796	5.299
	8.68	5%	2.757	3.927
		10%	2.316	3.371

Note: Based on Narayan (2004) Table Case. ii.

After the confirmation of cointegration, the long run impact of fiscal policy on human development is reported in Table 4. The results show that real per capita income has a significant positive effect on human development and it is the highest determinant of human development as the economic theory suggests; the coefficient of real per capital income shows that a one percent increase in per capita income will increase human development by 0.1 units.

Table 4

Estimated Long Run Coefficients

Repressors	Dependent Variable is HDI		
	Coefficient	Standard Error	T-Ratio[Prob]
LRPCI	0.10071	0.037679	2.6730[.025]
LRCUREXP	-0.0080325	0.019865	-.40436[.695]
LRDEVEXP	0.060067	0.028349	2.1188[.063]
LRTR	-0.029408	0.036764	-.79991[.444]
LREDU	0.064194	0.032724	1.9617[.081]
INPT	-1.4492	0.4063	-3.5667[.006]
PR	-0.0079539	0.003765	-2.1126[.064]
Diagnostic Test			
R-Squared	0.99992	R-Bar-Squared	0.99969
F-stat. F(25, 9)	4331.3[.000]		
A:Serial Correlation	F(1, 8)= 2.4712[.155]		
B:Functional Form	F(1, 8)= 1.6758[.232]		
C:Normality	CHSQ(2)= .97944[.613]		
D:Heteroscedasticity	F(1, 33)= .053433[.819]		

Note: A: Lagrange multiplier test of residual serial correlation.

B: Ramsey's RESET test using the square of the fitted values.

C: Based on a test of skewness and kurtosis of residuals.

D: Based on the regression of squared residuals on squared fitted values.

Government current expenditures are insignificant but have a negative effect on human development; government development expenditure have a significant positive effect on human development and the coefficient suggests that an increase of one percent in development expenditure will increase human development by 0.06 unit. Taxes have a negative though insignificant effect on human development, the plausible reason of this negativity is, in Pakistan the distribution of taxes are very uneven and tax policy has a heavy reliance on indirect taxes which usually create distortion and hit the consumer badly. Education expenditure has significantly positive effect on human development. The coefficient of education expenditures shows that a one percent increase in education expenditure will increase the human development by 0.06 units. More interestingly, the type of government based on a dummy variable, PR is significant and showing that democratic governments have a negative effect on human development while the dictatorship increases the human development.

The results of error correction model or short run behaviour of human development with respect to fiscal policy are generated from Equation (3) and presented in Table 5. The variable ECM is showing the short run adjustment in the human development due to change in exogenous variables, the coefficient of ECM (-1) is -0.2838 which is highly significant also confirming the existence of cointegration and it shows that a deviation from equilibrium during the current year will be corrected by 28.38 percent in the next period.

Table 5

Error Correction Representation of the Model

Regressor	Dependent Variable is dHDI		
	Coefficient	Standard Error	T-Ratio[Prob]
dHDI1	0.11611	0.11236	1.0333[.319]
dHDI2	-0.42336	0.13041	-3.2465[.006]
dLRPCI	0.014497	0.01313	1.1041[.288]
dLRCUREXP	-0.030104	0.0045111	-6.6733[.000]
dLRCUREXP1	0.0013295	0.0045795	.29032[.776]
dLRCUREXP2	-0.0053212	0.004101	-1.2976[.215]
dLRCUREXP3	-0.010087	0.0048508	-2.0794[.056]
dLRDEVEXP	0.015357	0.0053352	2.8784[.012]
dLRDEVEXP1	-0.010174	0.0031	-3.2820[.005]
dLRDEVEXP2	-3.18E-04	0.0047543	-.066963[.948]
dLRDEVEXP3	-0.01465	0.0041895	-3.4970[.004]
dLRTR	-0.030264	0.011034	-2.7429[.016]
dLRTR1	-0.026746	0.0064767	-4.1296[.001]
dLRTR2	-0.012739	0.0065213	-1.9535[.071]
dLREDU	0.020917	0.0075331	2.7767[.015]
dLREDU1	-1.84E-04	0.005419	-.033989[.973]
dLREDU2	-0.018212	0.0051583	-3.5307[.003]
dLREDU3	-0.012273	0.0045481	-2.6985[.017]
dINPT	-0.41128	0.063681	-6.4584[.000]
dPR	-0.0022573	0.001038	-2.1747[.047]
ecm(-1)	-0.2838	0.053121	-5.3426[.000]

Furthermore the lower part of Table 4 consists of diagnostic tests shows that model is well fitted a high R^2 , while the LM test for serial correlation indicate no serial correlation. Ramsey's RESET shows that functional form is correct. Normality test also confirms the normal distribution and the heteroscedasticity test also in the favour shows no heteroscedasticity. Finally for parameter's stability, a cumulative sum and cumulative sum square tests have been applied as recommended by Pesaran and Shin (1999). The graphs of both tests are presented in Appendix B; Figure 1 and Figure 2. Both graphs depict that CUSUM and CUSUMSQ lie within 5 percent significance boundaries, which indicate that both short-run and long-run parameters are stable as proposed by Brown, *et al.* (1975).

5. CONCLUSION AND POLICY IMPLICATIONS

Economic development is the ultimate goal of every government and a renowned criterion for measuring the development is HDI. Higher the value of HDI, higher is the human development level. In this study, we explore one of the major government policy i.e. fiscal policy role in human development, not only this, we also examined the role of government type (democratic/dictatorship) in human development.

The results show that per capita income level should be increased to increase the human development level as this is the major determinant of HDI. Current expenditure has insignificantly negative effect on human development in short run. This negative effect raises the questions related to current expenditures because these expenditures mainly consist on general administration, defence, law and order, community services, social services and economics services; which are also necessary for economic development. But this negative sign emphasises to increase the efficiency of government institutions, while development expenditures are showing a satisfactory situation empirically because they have significant positive effect. Tax revenue has a negative sign but statistically insignificant which is indicating that tax policy have no development effect, which is certainly not a good sign. Education expenditure has significantly positive effect on human development; as other studies also found and this finding also strongly recommends to the policy makers to increase the education expenditure share which is hardly 2 percent of GDP (including current education expenditures). Finally political regime concludes that democratic governments have a negative effect on human development.

APPENDIX – A

Table A1

Snapshot of HDI in Pakistan Relative to South Asia and World (1980-2011)

Year	Pakistan	South Asia	World
1980	0.359	0.356	0.558
1985	0.384	0.389	0.576
1990	0.399	0.418	0.594
1995	0.420	0.444	0.613
2000	0.436	0.468	0.634
2005	0.480	0.510	0.660
2010	0.503	0.545	0.679
2011	0.504	0.548	0.682

Source: HDR, 2011 (<http://hdrstats.undp.org/en/countries/profiles/PAK.html>).

Table A2

Value and Rank of HDI in Pakistan Relative to Selected Countries and Groups (2011)

Country/Region	GNI Per Capita (PPP US\$)	Life Expectancy at Birth	Expected Years of Schooling	Mean Years of Schooling	HDI Value	HDI Rank
India	3,468	65.4	10.3	4.4	0.547	134
Pakistan	2,550	65.4	6.9	4.9	0.504	145
Bangladesh	1,529	68.9	8.1	4.8	0.500	146
South Asia	3,435	65.9	9.8	4.6	0.548	--
Low HDI	1,585	58.7	8.3	4.2	0.456	--

Source: HDR (2011) <http://hdrstats.undp.org/images/explanations/PAK.pdf>.

APPENDIX B

Fig. 1. Plot of Cumulative Sum of Recursive Residuals

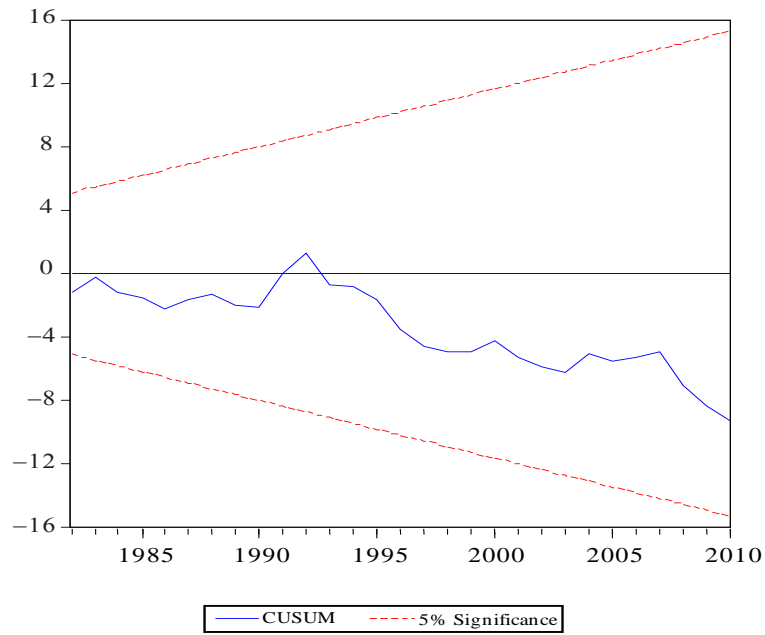
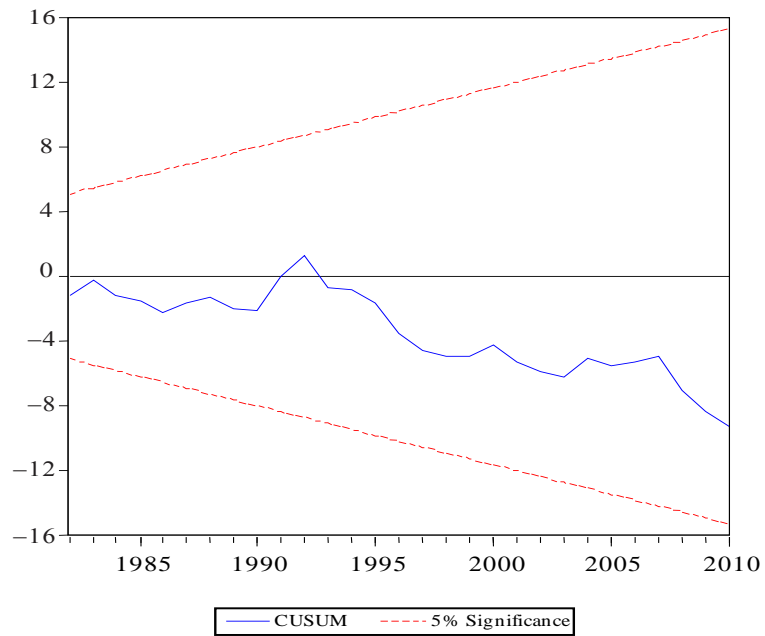


Fig. 2. Plot of Cumulative Sum of Squares of Recursive Residuals



REFERENCES

- Abbas, Q. (2000) The Role of Human capital in Economic Growth: A Comparative Study of Pakistan and India. *The Pakistan Development Review* 39:4,451–473.
- Abbas, Q. (2001) Endogenous Growth and Human Capital: A Comparative Study of Pakistan and Srilanka. *The Pakistan Development Review* 40:4,987–1007.
- Amakom, U. (2010) Distributional Impact of Public Expenditure on Education and Healthcare in Nigeria: A Gender Based Welfare Dominance Analysis. *International Journal of Business and Management* 5:12.
- Armey, D. (1995) *The Freedom Revolution*. Washington, DC: Regnery Publishing.
- Asghar, Nabeela, Zakir Hussain, and Hafeez Ur Rehman (2012) The Impact of Government Spending on Poverty Reduction: Evidence from Pakistan 1972 to 2008. *African Journal of Business Management* 6:3, 845–853.
- Barro, R. J.(1990) Government Spending in A Simple Model of Endogenous Growth. *The Journal of Political Economy* 98:5, 103–125.
- Barro, Robert J. (2001) Human Capital and Growth. *American Economic Review* 91:2.
- Benhabib, J. and M. M. Spiegel (1994) The Role of Human Capital in Economic Development: Evidence from Cross-Country Data. *Journal of Monetary Economics* 34, 143–173.
- Bergheim, S. (2005) Current Issues. Deutsche Bank Research, Frankfurt am Main, Germany.
- Bils, Mark and Peter J. Klenow (2000) Does Schooling Cause Growth? *American Economic Review* 90:5,1160–83.
- Brown, R. L., J. Durbin, and J. M. Ewans (1975) Techniques for Testing the Constance of Regression Relations Overtime. *Journal of Royal Statistical Society*, 149–72.
- Cashin, P. (1995) Government Spending, Taxes and Economic Growth. *IMF Staff Papers* 42:2, 237–269.
- Chaudhary, M. A. and S. Anwar (2000) Foreign Debt, Dependency and Economic Growth in South Asia. *The Pakistan Development Review* 39:4, 551–572.
- Chaudhary, M. A. and S. Anwar (2000) Foreign Debt, Dependency and Economic Growth in South Asia. *The Pakistan Development Review* 39:4, 551–572.
- Davies, A. (2009) Human Development and the Optimal Size of Government. *The Journal of Socio-Economics* 38,326–330.
- Desai, M. (1991) Human Development: Concepts and Measurement. *European Economic Review* 35:2–3, 350–357.
- Devarajan, S., V. Swaroop, and H. Zou (1996) The Composition of Public Expenditure and Economic Growth. *Journal of Monetary Economics* 37, 313–344.
- Devereux, M. B., A. C. Head, and B. C. Lapham (2000) Government Spending and Welfare with Returns to Specialisation. *Scandinavian Journal of Economics* 102:4, 547–561.
- Dickey, D.A. and W.A. Fuller (1979) Distribution of the Estimators for Autoregressive Time Series with a Unit Root. *Journal of the American Statistical Association* 74, 427–431.
- Engle, R. F., and C. W. J. Granger (1987) Cointegration and Error Correction Representation: Estimation and Testing. *Econometrica* 55, 251–276.
- Forte, F. and C. Magazzino (2010) Optimal Size of the Government and Economic Growth in EU-27, No 410. Working Papers from CREI Università degli Studi Roma Tre.

- Ghosh, S. and U. Roy (2004) Fiscal Policy, Long-Run Growth and Welfare in a Stock-Flow Model of Public Goods. *Canadian Journal of Economics* 37:3, 742–756.
- Gomanee, K., S. Girma, and O. Morrissey (2003) Aid, Public Spending and Human Welfare: Evidence from Quantile Regressions. DSA Annual Conference, Glasgow, 10-12 September 2003.
- Hassan, P. (1999) Pakistan's Debt Problem: Its Changing Nature and Growing Gravity. *The Pakistan Development Review* 38:4, 435–470.
- Haug, A. (2002) Temporal Aggregation and the Power of Cointegration Tests: A Monte Carlo Study. *Oxford Bulletin of Economics and Statistics* 64, 399–412.
- Heitger, B. (2001) The Scope of Government and its Impact on Economic Growth in OECD Countries. Kiel Institute of World Economics. (Kiel Working Paper No. 1034).
- Hyder, Kalim (2001) Crowding-out Hypothesis in a Vector Error Correction Framework: A Case Study of Pakistan. *The Pakistan Development Review* 40:4, 633–650.
- Iganiga, B.O. (2012) Cost of Governance and the Empirics of the Nigerian Welfare Question: An ADRL Option. *IJRMEC* 2:5.
- Jafri, S. (2008) External Debt Sustainability Analysis for Pakistan, Outlook for the Medium Term. (SBP Working Paper Series No. 27).
- Johansen, S. (1991) Estimation and Hypothesis Testing of Cointegrating Vectors in Gaussian Vector Autoregressive Models. *Econometrica* 59, 1551–1580.
- Johansen, S. (1992) Cointegration in Partial Systems and the Efficiency of Single-Equation Analysis. *Journal of Econometrics* 52, 389–402.
- Johansen, S. and K. Juselius (1990) Maximum Likelihood Estimation and Inference on Cointegration with Applications to the Demand for Money. *Oxford Bulletin of Economics and Statistics* 52, 169–210.
- Kefela, G. and R. Rena (2007) Human Capital Investment is a Continuous Proposition: A Study of North East African States. *Indus Journal of Management and Social Sciences* 2:1, 50–65.
- Machicado, C. G., P. Estrada, and X. Flores (2008) Public Expenditure Policy in Bolivia, Growth and Welfare. PEP Network.
- Mahmood, Rashid and Sara Sadiq (2010) Impact of Fiscal Decentralisation on Human development: A Case Study of Pakistan. *The Pakistan Development Review* 49:4, 513–530.
- Mahmood, T., S. A. Rauf, and H. K. Ahmad (2009) Public and External Debt Sustainability in Pakistan (1970s–2000s). *Pakistan Economic and Social Review* 47:2, 243–267.
- Mankiw, N. Gregory, David Romer, and David N. Weil (1992) A Contribution to the Empirics of Economic Growth. *Quarterly Journal of Economics* 107, 407–437.
- Masood, K. and E. Ahmed (1980) The Relative Importance of Autonomous Expenditures and Money Supply in Explaining the Variation in Induced Expenditures in the Context of Pakistan. *Pakistan Economic and Social Review* 18, 84–99.
- Saqib, Najam-Us, and Attiya Yasmin Javid (1987) Some Econometrics Evidence in the Relative Importance of the Monetary and Fiscal Policy. *The Pakistan Development Review* 26:4.
- Narayan, P. K. (2004) Reformulating Critical Values for the Bounds F-statistics Approach to Cointegration: An Application to the Tourism Demand Model for Fiji.

- Department of Economics, Monash University, Melbourne, Australia. (Discussion Papers N0.02/04).
- Ouattara, B. (2004) Foreign Aid and Fiscal Policy in Senegal. University of Manchester, Manchester, UK. (Mimeographed).
- Pesaran and Shin (1995) An Autoregressive Distributed Lag Modelling Approach to Cointegration Analysis. (DAE Working Papers, No. 9514).
- Pesaran, *et al.* (1996) Testing for the Existence of a Long Run Relationship. (DAE Working Papers No. 9622).
- Pesaran, M. H. and B. Pesaran (1997) *Working with Microfit 4.0: Interactive Econometric Analysis*. Oxford: Oxford University Press.
- Pesaran, M. H., Y. Shin, and R. Smith (2001) Bounds Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics* 16, 289–326.
- Pesaran, M. H. and Y. Shin (1999) An Autoregressive Distributed Lag Modelling Approach to Cointegration Analysis. In S. Strom (ed.) *Econometrics and Economic Theory in the 20th Century: The Ragnar Frisch Centennial Symposium*. Cambridge: Cambridge University Press.
- Qadri and Abdul Waheed (2011) Human Capital and Economic Growth: Time Series Evidence from Pakistan. *Pakistan Business Review*.
- Sala-I-Martin, X. (1997) Transfers, Social Safety Nets, and Economic Growth. *IMF Staff Papers* 44:1, 81–102.
- Siddiqui, R. and A. Malik (2001) Debt and Economic Growth in South Asia. *The Pakistan Development Review* 40:4, 677–688.
- Smith, P. and J. Wahba (1995) The Role of Public Finance in Economic Development: An Empirical Investigation, No. 9508. The Economic Research Forum. (Working Papers).
- Srinivasan, T. N. (1994) Human Development: A New Paradigm or Reinvention of the Wheel? *American Economic Review* 84:2, 238–243.
- Suescún, R. (2007) The Role of Fiscal Policy in Human Development and Growth. Latin America and the Caribbean Region, World Bank, March 2007. (LAC Regional Study).
- Tanzi, V. (2008) The Role of the State and Public Finance in the Next Generation. *OECD Journal on Budgeting* 8:2.
- Temple, Jonathan R. W. (2001) Generalisations That Aren't? Evidence on Education and Growth. *European Economic Review* 45:4-5, 905–18.
- Tsoukis, C. and N. J. Miller (2003) Public Services and Endogenous Growth. *Journal of Policy Modelling* 25, 297–307.
- UNDP (2011) *Human Development Report 2011*. Sustainability and Equity: A Better Future for All.
- Vedder, R. K. and L. Gallaway (1998) *Government Size and Economic Growth*. Washington, DC: Joint Economic Committee.
- Yavas, A. (1998) Does Too Much Government Investment Retard Economic Development of a Country? *Journal of Economic Studies* 25:4, 296–330.