EFFECT OF FISCAL DEFICIT ON HUMAN DEVELOPMENT IN PAKISTAN

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CERTIFICATE

This is to certify that this thesis entitled: **"Effect of Fiscal Deficit on Human Development in Pakistan"** submitted by Ms. Nausheen Saba Nizami is accepted in its present form by the Department of Economics & Econometrics, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree of **Master of Philosophy in Economics.**

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

This study analyzes how human development is shaped in the presence of fiscal deficit. Thus there is a link between fiscal deficit and human development. It may be positive, negative or neutral. Various theories like Neoclassical, Keynesian and Ricardian Equivalence describe the kind of relationship that occurs between fiscal deficit and human development.

Human development is defined as "Multidimensional achievement and an aggregate of attainment level of some basic human functionings" (Suescan, 2007). It is multi dimensional because it encompasses not just income but other achievements like education and quality of life.

One of the proxies to gauge human development is the Human Development Index (HDI). It was developed by UNDP in 1990.HDI is a quantitative approach and is able to differentiate between standard of living and income which is not possible in case of GDP per capita.

The Human Development index is based on: Standard of Living (Natural logarithm of GDP PPP per capita)Access to knowledge (Adult literacy rate, Expected and Mean Year of Schooling with two third weighting and remaining is the gross enrollment ratio) Healthy life (life expectancy at birth)

The values of the index range from 0 to 1.Lower HDI means lower human development in the country. Above 0.800 is considered very high, between 0.700-0.800 is high, medium between 0.500-0.700 and low is less than 0.50 (IOSR Journal of Economics & Finance)

Financial planning is termed as budget (Fatima et al. 2012) fiscal deficit arises in a country when expenditures are in excess of revenues. Fiscal deficit equals the difference of savings and investment minus the difference of imports and exports. The difference of government expenditure and taxes represents the balance of budget which is in deficit when negative and in surplus when positive. Budget deficit is used to deplete excess savings over investment and

budget surplus is used to counter greater investment over savings. When there is no shortfall; budget deficit is not present. Fiscal policy is used when there is absence of equality between savings and investment at full employment income. (Gaber, 2010)

Fiscal deficit and human development have a strong relationship whether we observe it by Neoclassical perspective or the Keynesian one.

According to Neoclassicals, it is the public expenditure that provides for goods and services that facilitate welfare, equality and consequently reduction in obstacles to development (Ali, 2012) When fiscal deficit occurs development expenditure is reduced so human development may be affected.

According to Keynesians fiscal policy is used in the administration of entire economic activities so that growth occurs, price stability is maintained, equilibrium in balance of payments is achieved and employment generation is promoted. As a tool of fiscal policy, fiscal deficit is used aiming to ensure all of the above. If this happens human development is certain to take place. Thus we aim at human development when we pursue fiscal policy and its tool i.e fiscal deficit

To summarize the linkage between fiscal deficit and Human development, our argument is that, deficit budgeting inevitably affects the economy which in turn affects human development. Whether it is positive, negative or neutral is to be ascertained when we conclude.

One of the goals of public policy is the close examination of fiscal deficit and its affect on human development. This research aims to mitigate the policy gaps that exist in this area. Most of the work previously done is to observe fiscal deficit's effect on economic growth and a lacuna is left for work to be done on its effect on human development. This study captures the trickle down effects of economic growth to the common man gauged by human development not just economic growth. Our argument is that, deficit budgeting inevitably affects the economy which in turn affects human development. Different theories were formulated namely Keynesian, Neoclassical and Ricardian Equivalence Hypothesis which elaborate the rationale of

implications of fiscal deficit on the economy. According to different schools of thoughts, the effect of fiscal deficit on human development can be positive, negative or neutral; Keynesians say that if deficit spending occurs in depression it will boost aggregate demand. Neoclassical views on deficit spending are that it acts negatively on human development. It increases debt and thus interest rates causing crowding out. According to Ricardian Equivalence theory "Budget deficit is simply deferred tax" (Ussher 1998) so budget deficit and taxation will have equivalent effect on the economy.

We have analyzed the variables of "Fiscal Deficit as a percentage of GDP" and "Human Development Index" (HDI).

To find policy for the future we need to learn from the past. Pakistan's economic history is marred with fiscal deficit. If fiscal deficit hampers human capital accumulation then this may affect human development negatively. This fact has a direct bearing on the efforts meant for human development. Historical background of fiscal deficit gives an indication that it was accompanied with low human development in Pakistan. Chronic fiscal deficit since the 70s caused macroeconomic disturbances. It is the cause of non-sustainability of debt, balance of payment crises, adverse effect on savings, investment and consequently growth. Momentum of growth was disturbed and loss of fiscal space effected human development negatively (Haque and Montiel, 1991). On the other hand, another view is that deficit can be a problem only due to management of public expenditure and its distribution (Zaidi 1999).

This study has been carried out to determine the effect fiscal deficit on the pursuit of human development in the economic situation of Pakistan so that suitable policy options may be explored.

HYPOTHESIS

Null Hypothesis: Testing of the three theories doesn't show adverse effects of fiscal deficit on human development in Pakistan in the period under study

Alternative Hypothesis: Testing of the three theories shows adverse effects of fiscal deficit on human development in Pakistan in the period under study

1.1 MOTIVATION

The motivation in choosing this topic was the huge reduction in development expenditures due to fiscal deficit in Pakistan. The curiosity was that how much this affects the common man and his livelihood. According to Amartya Sen, human development is the freedom to choose. It is the ultimate goal of human development. Thus I want to seek the ways in which fiscal deficit effects human life. Due to the presence of fiscal deficit a lot could change in terms of human development. Policy can be geared towards protection of people from undue harm and to create greater human development. Fiscal deficit has been a regular feature in Pakistan and the challenges to human development are persistent as well. This inquisitiveness lead to the proposed analysis.

1.2 RESEARCH PROBLEM

"Fiscal policy effects economic growth but the sign and magnitude of growth are ambiguous" (Ali & Ahmad, 2010). This quote summarizes the problem statement very clearly. The problem is that we are not certain if the fiscal deficit is the reason of low levels of human development in Pakistan or whether it augments human development as purported by Keynesians. In light of the above, human development will be effected as a consequence of fiscal deficit so the research problem is mounting fiscal deficit and its consequent affect on the effort for human development in Pakistan.

1.3 SIGNIFICANCE OF THE STUDY

A trend is seen in the analysis of economic growth after fiscal deficit is experienced. Not enough concern has been shown towards determining the effects of fiscal deficit on human development lately. This study is significant because we are not determining the effect of fiscal deficit on economic growth alone. So the means to get to a point rather than reach the end has been dealt with. We would like to alter the course. There was a lack of observation on the recipients of economic growth i.e. “the people” whose development we are concerned with. Human development and consequently Human Development Index (HDI) does not replace GDP but adds to it. If the impact of fiscal deficit is seen on certain variables not including human development, partial results ensue. Hence, Human development is the most precise measure of welfare. We are interested in the welfare of people and not just their income. Thus this captures the pulse of the problem and not only its symptoms. In this study, a model based on the three theories regarding the effect of fiscal deficit on human development is being tested for its applicability in Pakistan. Therefore it is different. Since each country is different, so it is for us to explore how well a theory fits in our country’s special set of circumstances. The open mindedness with which each theory is seen makes all the difference. Any theory can fit the circumstances. The special circumstances facing Pakistan would add a unique perspective as well as applicability for policy formulation. Once we pinpoint the effect of fiscal deficit on human development, we can then determine what kinds of policies are suitable to us as a country.

1.4 RESEARCH QUESTION

What is the role of fiscal deficit in the effort for human development in Pakistan? In this light what can we do about our fiscal planning strategy?

1.5 RESEARCH OBJECTIVE

The relation between fiscal deficit and human development is ambiguous; thus the aim is to see which of the three theories namely Neoclassical, Keynesian and Ricardian Equivalence holds in case of Pakistan in the period under study. Only by exploring this we can clarify whether our policies are going in the correct path or not. This revelation will pave the way for effective policies in the years to come, thus defining our objective.

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CHAPTER 2. LITERATURE REVIEW

THEORATICAL REVIEW OF LITERATURE

(Bernheim,D. 1989) explains that Neoclassicals have vision of the future because they consider life time consumption. Fiscal deficits cause life time consumption to increase as taxes are considered deferred. Increased consumption translates into lower savings when resources are fully employed. Interest rates rise to balance capital markets so private capital accumulation is crowded out by deficits. According to Keynesians economic effects of fiscal deficits are positive when the economy is in recession. As there is a high propensity to consume from disposable income, a temporary tax reduction causes consumption to rise. If the capacity is not fully utilized, income increases again and again called the Keynesian multiplier. When income and consumption both rise at the same time then savings and capital accumulation do not reduce. So the timing of the deficit produces beneficial results. According to proponents of Ricardian Equivalence, there is indifference due to the policy of fiscal deficits. Many generations are affected by transfer of resources. Consumption occurs and is related to past resources. Past resources are entire resources of the taxpayer and his generations. As deficits are shifted by the payment of taxes from future generations, the present discounted value of the taxes and expenditures should match, the past resources remain unchanged. Fiscal deficits do not matter according to this theory. It is further argued that the effect of deficits on aggregate demand is not as great as proposed by Keynesians and that fine tuning of fiscal policy casts doubts. Thus the wrong handling of aggregate demand is more damaging to human development. The link between national income and deficits theoretically is weak and not useful to gauge the economy. The Keynesian view is relevant in times of unemployment and has rightly proven so. But policymakers must look out for permanent deficits and use of policy

should be aimed at stimulating savings. It is thus concluded by (Bernheim,D. 1989) that the neoclassical viewpoint is most relevant for human development. Deficits are decomposed into permanent and transitory components. The Neoclassical theory explains the permanent one while Keynesian the transitory component. It is seen that temporary deficit is an inadequate tool for macroeconomic stabilization and is thus concluded that neoclassical theory would work best. Governments must stimulate savings and capital accumulation while formulating policies to reduce permanent deficits. To see which theory holds empirically, one finds that assumptions play an important part, e.g. in the Keynesian view, crowding out is not much if the wealth elasticity of demand for money is high as compared to the size of the open economy relative to the rest of the world. Thus according to Keynesian theory if a short run relationship between deficits and interest rates is not established, it does not mean that the theory is wrong. Also apart from assumptions problem arises when we cannot account for expectations about deficits. For example expectations are linked with policy so that variables do not contain spurious information. Future cuts in spending are preceded by current deficit on human development and there's no way to remedy this.

(Buiter, 1983) concluded that fiscal deficit is not a good indicator of long run crowding out and a better measure is the current account deficit which must be adjusted cyclically, corrected for inflation, and also for real growth. Deficits are financed in two ways: By printing money which leads to inflation and borrowing leading to crowding out by raising interest rates. This crowding out also occurs by government bonds alternating with private capital. The argument is that the nexus between deficit, crowding out and inflation is not there. True relationship can be obtained by combining the literature of budget constraint keeping allowance of real growth, inflation, public sector capital formation and cyclical deviations of actual from trend output.

Effect of fiscal deficit from both the Keynesian as well as neoclassical viewpoint treats Crowding out in all its forms (Gaber, 2010). The effect of crowding out on growth is gauged through declining interest rate sensitive investment demand. Further exchange rate crowding out occurs in a small open economy as interest rate pressures lead to higher international capital flows. The domestic currency will appreciate and hence will have an impact on demand for goods and services by trade. Another form of crowding out is portfolio crowding out. Change in composition of portfolio may be positive or negative depending upon the channel from which it occurs. If government bonds form a large part of private portfolio then private assets reduce and put pressure on interest rates. On the other hand if savings rise, private assets demand (capital) and money balances increase causing crowding in. One of the two channels will prevail. According to (Friedman, 1978) Government bonds are closer substitutes for private assets and thus reduce their demand but on the other hand securities have money characteristics accordingly portfolio adjustments have beneficial impact for private investment. The Keynesian theory is composed of multiplier effect coupled with secondary crowding out effect. Multiplier effect is the interaction between higher aggregate demand and income thus leading again to higher aggregate demand and higher income. The end result is larger aggregate demand than the initial government expenditure. On the other hand, higher money demand is led by increased income and causes rise in interest rates. High interest rates lead to decline in investment demand as borrowing becomes expensive. So multiplier effect is accompanied by the crowding out effect. But overall effect is positive.

There is a distinction of the Neoclassical approach when dealt with an open economy. When the open economy is small it cannot impact the international interest rate when deficit is substituted for taxes (Barro, 1988). In this case the substitution would only result in more borrowing from

abroad thus current account deficits are led by fiscal deficit. Rise in expected real interest rates the home country is observed if it is large and can affect world markets. Thus there is a weak tendency for crowding out in the short and long run both. While in a closed economy crowding out is seen and stock of capital of the world is lower in the long run. Barro then turns towards Ricardian Equivalence approach and states that "There is no such thing as a free lunch". Taxes would pay the expenses made by the government. Budget deficits and taxation have equivalence in their effect. Ricardian Equivalence can be stated as the decrease in government savings (fiscal deficit) causing private savings to increase and desired national savings to remain the same. The real interest rate does not rise to match desired savings with investment demand.

The proponents of Keynesian theory on budget deficits reiterate the fact that for a desired level of economic activity we need a particular amount of aggregate demand and budget deficit can stimulate it (Arestis and Sawyer, 2004). A balanced budget may not augment aggregate demand. They discussed the adverse theory namely Pigou Effect (Real Balance Effect) which states that when there is low demand it will lower prices, this will shoot up the wealth effect real value of money stock will be raised which in turn will stimulate demand. It is however contended that this theory relies on external money with net worth to the private sector and stock of money not changing when prices fall. In the real world external money is very small since there is largely bank credit money. The theoretical reason for the stock of money boosting aggregate demand is not suitable since money is endogenous according to this theory and demand for money determines the stock of money and money does not make up net worth (Arestis and Sawyer, 2004)

Apart from Pigou Effect another adjustment mechanism proposed by the Neoclassicals is the use of interest rate to boost aggregate demand. If a Taylors' Rule type scenario occurs where there is

a deviation of inflation target from equilibrium interest rate and that of output from trend level to reach a certain interest rate but it is doubtful that viable variations in interest rate are sufficient to make savings and investment equal at high economic activity levels (Arestis and Sawyer, 2004).

This shows that there are no automatic market mechanisms to make aggregate demand high. Moreover, macroeconomic policies are needed to boost aggregate demand. Since interest rate is not as powerful as fiscal policy. Fiscal deficits can be a viable option. Functional Finance comes in purview in this regard. Functional Finance says that goal of fiscal policy is to get at the level of economic activity desired and this should be considered and not the budget position. The need for fiscal policy arises when there is an excess of savings over investment and equality between the two cannot be made at full employment income or any target level of income. The argument against sustainability of fiscal deficit is dealt with functional finance. It has been observed that if the growth rate of income exceeds the interest rate the permanent primary deficit can sustain itself. Funding of a deficit occurs by bonds or money. Governments print money but they initially obtain money through taxation and borrowing to finance their spending. After this spending, the central banks put high powered money into the economic system. The argument given that governments will not be able to fund deficits is that if there is not an excess of savings over investment fiscal deficit won't be required. Fiscal deficits are required when there is an excess of savings over investment and it is required to absorb extra savings and in this way the deficit is funded.

When fiscal deficit is seen from supply side perspective it is observed that crowding out occurs only when there is supply side equilibrium to be maintained. Fiscal policy comes into play when there is no automatic adjustment and the monetary policy is not powerful in its response.

Deficit increase causes reduction in human capital while the quantity of deficit corresponds negatively towards growth rate. Debt is accumulated deficit. Deficit creation for endeavors that will be useful in the long run e.g. infrastructure is not bad for the economy. But if it is for something temporary and difficult to pay back it is harmful (Prunera, 2000)

It has been emphasized that fiscal wastefulness has compromised growth and hence physical and social infrastructure in Pakistan (Fatima et al.2011). Policymakers adopted various fiscal austerity measures since 1999.Throughout the 1990s Pakistan's emphasis has been on fiscal reform when different governments undertook reform programs. Over the years, one of the reasons for huge fiscal deficit in Pakistan is dependency on external resources e.g. loans, aid etc. To service the debt, loans are taken which enhance fiscal deficits. So the deficit balloons year by year (Arestis & Sawyer, 2004). In fiscal deficit financed with bonds, future taxes cause reduced consumption and increased savings. This offsets the boost to aggregate demand arising due to fiscal deficit. Thus the overall savings remain unchanged thus a rise in real interest rate is not needed to maintain a balance between savings and investment and overall output remains unchanged

The impact of crowding out effect on growth is dependent on the relative marginal productivities of public and private sectors. The public sector expenditure raises productivity of private sector as a by-product (Obi, 2007). Higher the expenditure more raised is the growth rate. The effects of expenditure in raising private sector productivity as well as the crowding out effect oppose each other but the important aspect is not the level but the structure of expenditure. It is argued that increased spending can first raise then reduce growth. The potency of fiscal policy is explored as considering it as a tool to reduce poverty. It can be established by targeting of government expenditures thus it should be properly focused and that goods needed by those in

poverty are provided through public means. The findings focusing on expenditure side of fiscal policy showed that there is impact on income distribution and poverty alleviation through forceful targeting of public expenditure .There are implications of such expenditure on poor where the consumption of their output is the highest. Targeted expenditure would have benefits in the form of expanding productive capacity for more employment. Targeting of sectors can cause more expenditure on infrastructure. Reduction in cost of production can be achieved by granting credit in the form of subsidies. For execution of this agenda the expenditures should be effective and this becomes the rationalization for privatization.

A model to detect the application of Rational Expectations Hypothesis in India resulted in its rejection for the period 1950-86 (Ghatak, 1996) For the proponents of Rational Expectations Theory, deficit financed by tax increase or bond issue is the same due to rational expectations as people consider deficit financing of today as tax liabilities of tomorrow. The Rational Expectations Hypothesis has been rejected in India for the period given. Crowding out effect is determined on private consumption but private investment's effects are insignificant because of being included in interest rates. There are certain factors which can be the reasons for validity of Rational Expectations Theory. They are:

1. Capital markets are perfect and limitations are not encountered by consumers for borrowing
2. Both private and public sectors have the same space of planning
3. Taxes are not distortionary

Evidence leads to the conclusion consumption is increased by tax cuts and thus reject Rational Expectations Theory. Credit markets are usually imperfect in India, liquidity constraints, diverse

borrowing rates and limited planning space (Ghatak, 1996).These factors cause rejection of Rational Expectations Theory in India for the period 1950-1986

A study to determine impact of composition of fiscal deficit on growth in India was carried out. (Ramu et al., 2016) explained that in India, two schools of thought are practiced by two institutions. One is the Monetary policy makers i.e. the reserve bank of India who think that high deficit will have adverse impact on growth while the fiscal policy makers i.e. the Ministry of Finance think that fiscal deficit will augment growth. Thus the study was carried out to prove the claims made by two differing ideologies. It was concluded that deficit effects growth adversely however, if government spending is done on capital formation then growth is promoted. The conclusion is reached by analyzing long term relationship between fiscal deficit and economic growth. So that money spent on capital formation has a positive effect on GDP. If investment is done on infrastructure it will have crowding in effect on private investment

EMPIRICAL REVIEW OF LITERATURE

Budget deficit's impact on economic growth was shown by using a model that included investment, inflation, exchange rate and real interest rate and budget deficit and observed the relationship of these variables with GDP growth rate. (Fatima et al.2012) concluded that budget deficit has negative impact on growth because savings and revenue are lesser than expenses in the long run. Inflation has a negative effect on GDP. Increase in inflation also affects interest rates. Thus deficits should be avoided because when we finance them it causes GDP to lower rather than rectify the problem.

The effect of fiscal policy on economic growth has been an area of interest for many scholars (Ali & Ahmad, 2010) found a long run relationship between fiscal policy and economic growth.

Negative sign of fiscal deficit in the estimated model shows that in Pakistan expansionary fiscal contraction occurs and that most expenditure is not for development and largely unproductive so it curtails growth. Fiscal deficit effects growth positively up to a threshold level beyond which the effect is negative. In the short run rising fiscal deficit has positive effect as it stimulates demand. It encourages firms to use excess capacity plus people spend more. So in the short run economic situation improves but in the long run fiscal deficit has consequences for macroeconomic variables. The study suggests that fiscal deficit should be kept from 3 to 4 percent of GDP after which it does not become sustainable. Also if budget deficit is reduced the problem of debt would be eased. If the fiscal deficit increases the debt to GDP ratio will increase as when fiscal deficit to GDP ratio exceeds real GDP growth rate then debt to GDP ratio increases. Development expenditure must not be curtailed to control the deficit as long term growth is affected by it.

The effect of fiscal deficit on economic growth for Bangladesh was observed (Hussain and Haque, 2017) took two data series from two different sources to reach at two different conclusions. The local data suggested that Keynesian theory works for Bangladesh when it comes to fiscal deficit while the conclusions from international data confirm the Neoclassical approach. The study supports the fact that prudence must be taken in the case of accumulating debt due to greater fiscal deficit. Fiscal deficit can promote growth if the money is used productively and expenditure done efficiently.

With the negative effect of fiscal deficit on economic conditions, it is commonly noted that governments in developing countries use the money for development expenditures and that expenditure has no effectiveness. Thus deficits should be used for those projects that increase productivity and thus increase income in the economy.

It was found after the study of 37 African countries that education and health require more than just high allocation in the budget (Gupta and Verhoeven, 1999). The efficiency of budget spent is of more concern for human development rather than its size or the role private sector plays in the economy. The study concludes that instead of increasing budget allocations for health and education focus should be on improving the efficacy of existing expenditure.

To increase the HDI, per capita income has to be increased. Current expenditure in the short run has negative effect on HDI .These expenditures are mainly, government administration, armed forces, law and order, social services, and economic services. These expenditures are also very important (Ali et al.2012) examined the affect of type of government (democratic/dictatorship) in determining human development It was thus concluded that efficiency of government institutions is vital for obtaining positive end result. Development expenditures showed positive effect. Education expenditures have a positive effect on HDI and lastly political regime which is democratic in nature has a negative effect on HDI.

A study indicates that fiscal policy effects the long run economic development in Pakistan and that fiscal policy is also integral for sustainability of economic development. The measures of fiscal policy are of long run nature rather than short run ones (Kakar & Khan, 2011)

Deficit financing through printing money and borrowing from SBP after inadequate tax collections resulted in inflation in Pakistan (Asghar et al, 2011) Money supply increases and so do prices and eventually human development suffers. A positive relationship exists between fiscal deficit and poverty. To reduce fiscal deficit; there should be revenue generation, reduction in subsidy burden and cut down in non-development expenditure

Pakistan's fiscal deficit when matched with the growth rate in the corresponding period reveals that economy performed well in moderate fiscal deficit and high deficits were accompanied with low economic growth (Iqbal et al, 2017) Historically, a negative impact of fiscal deficit is observed on growth in Pakistan as fiscal deficit remained above the threshold level. One can argue that fiscal deficit if kept below threshold level will cause economic growth due to fiscal expansion but such a scenario will yield results only if public spending targets long term investments with infrastructure, education, health and other development projects proving fruitful.

Equitable distribution is more effective than accumulation of wealth in influencing HDI. This is because HDI is closely linked to personal use of resources. The relation of this finding with fiscal deficits and public spending is that deficit is not detrimental as long as distribution is effective (Susnik and Van Der Zaag, 2017)

Link of social spending has been made with human capital and growth. Growth ensues when both health and education capital increases by public spending. An important finding is that higher spending alone cannot be sufficient for human development therefore improved governance and reduction in fiscal deficit is needed. (Balddacci, Gupta & Cui, 2004) fiscal deficits harm growth. Reduction in fiscal deficit by 1 percentage point of GDP increases growth by 0.5 percentage point. It has been established that low income countries which have achieved macroeconomic stability see no significant effect on human development and of increasing the fiscal balance. Governance has impact on growth when it is transmitted through indirect channels via social indicators and investment .Growth is lower in countries with poor governance to 1.6 percentage points ceteris Paribas.

Study shows that for any relationship with fiscal deficit we need to see what kind of deficit is sustainable because public spending depends greatly on the sustainability of deficit which will eventually result in human development (Pradhan, 1996). The factors responsible for sustainability of deficit are its size and the speed of economy's growth. If the projections of debt to GDP ratio keep rising it means that the deficit is unsustainable and fiscal policy needs change.

Bond financed fiscal deficit is sustainable when it is financed with additional issue of bonds until the real rate of government bonds is lesser than the growth rate of the economy (Friedman, 1978) Unsustainable fiscal deficit is one where the same situation is opposite. So the conclusion is drawn that in recession fiscal stimulus through fiscal deficit has an important role to play in reviving the economy. However, these same steps can result in more taxes and economic burden for the future generations if expenses are unproductive.

One can find long run causality between fiscal deficit and human development in Nigeria. The direction of causality is one way from fiscal deficit to human development index (Dang 2016). This corroborates with the Keynesian school of thought. In this study it has been found that if tools of fiscal policy are used in the shape of budgetary planning then the effect of fiscal deficit must be observed in the long run. This effect becomes permanent and augments human development.

The negative effect of fiscal deficit on economic growth has been found out. (Hassan & Akhtar, 2014) In the regional context findings were made from Malaysia, Pakistan and India. In Malaysia, a study found the results consistent with Ricardian Equivalence Theory and no long run relationship between fiscal deficit and economic growth. In Pakistan, a study found that large deficits adversely effected growth which impacted physical and social infrastructure in the

country. In a study in India, negative, Significant and long run relationship was found between fiscal deficit and economic growth. Another aspect of research on deficits is their size, volatility and source of its financing. High and volatile deficits are harmful to welfare. The effect of debt to GDP ratio is negative towards fiscal sustainability and eventually human development.

The most striking feature that comes up after review of literature is the fact that most of the studies have analyzed the effect of fiscal deficit on economic growth. This is to say that effect on income rather than welfare has been studied mostly. Also in most of the studies fiscal policy as a whole had been analyzed rather than picking fiscal deficit as a variable. Both of the trends in analysis lead to a void to be filled with this study. This study is people centric rather than being centered on GDP. We like to know how prosperity is affected due to fiscal deficit and not just earnings. This aspect has been omitted from almost all analyses. Due to our findings it will be clear which types of policies we need to devise for human development in the presence of fiscal deficit.

CHAPTER 3: RESEARCH METHADOLOGY

3.1 THEORATICAL FRAMEWORK

The effect of fiscal deficit on human development holds diverse possibilities. Based on the stances taken by Neoclassicals, Keynesians and proponents of Ricardian Equivalence theory the results can be negative or positive as well as neutral. We shall first give a brief overview of the theories then discuss our model to see how we shall test the validity of these three theories

Keynesians believe that fiscal deficit acts as a stimulus when recession ensues. Decline in consumer spending can be balanced by increase in deficit spending thus demand is maintained. To curtail unemployment during recessions; deficit spending is needed. Also by the multiplier effect output would be increased more than government spending. Keynesian theory recommends government borrowing only in recessions when there is a rise in private sector savings. In a boom surplus must be run and deficit must be reduced.

The Keynesian view was confronted in the 70s and replaced with crowding out effects of deficit-financed government spending. According to neoclassical loan able funds theory government deficits financed by bonds compete with private investment for savings thus interest rate rises and for private borrowers, cost of capital also rises.

The argument against crowding out is that it is thought that savings' flow remains fixed however when income increases due to increased aggregate demand savings will change and the end result would be that both the government and private sector will be able to borrow more. There is also a concept of "crowding in" according to which government spending will create an increase in aggregate demand due to which the economy grows (Hussain & Haque, 2017) Private sector increases production and businesses find profit in increasing capacity to meet

greater consumer demand thus more production means additional capital is invested. If public capital were to complement private capital then investing in public capital would “crowd in” private investment and growth would ensue (Iqbal et al, 2017)

Neoclassicals say that persistent deficits would result in debt and sale of government bonds which could crowd out private investment. Inflation would ensue and real output will not increase. Fiscal deficits are bad because a) They reduce the consumption of future generations b) They cause crowding out c) They increase external debt burden. There are apprehensions in having large sums of fiscal deficits due to sustainability of fiscal policy

Ricardian Equivalence theory is based on the idea of rational expectations. If consumers receive a tax cut financed with government borrowing it will be anticipated that taxes would rise in the future. Similarly if government raises spending by borrowing, it will spend lower in the future. This implies that there will be no change in aggregate demand due to a tax cut made possible by borrowing as people would save the amount to pay for future tax increases. According to this theory, bond financed fiscal deficit is paid through future prospects of taxation thus reduction in consumer spending occurs which translates into increased savings which offsets expenditure boost occurring through fiscal deficit. There are rebuttals of Ricardian Equivalence theory. It is contended that people don’t live forever thus don’t bother about the taxes levied after they are dead. Furthermore taxes and incomes are unpredictable at times. The nature of taxation is that it depends on income, wealth and spending etc. so it is not lump sum and Ricardian results depend on the condition of full employment. Other observations are of possible faulty foresight, a desire to pass fiscal burden to future generations. Certain empirical studies have also resulted in negation of Ricardian Equivalence theory.

All the three schools of thought have support in real life. So it is up to our choice if we think deficits are good, bad or neutral for the economy. Although no single position corroborates exactly to real life (Bernheim, 1989)

Without an active role of fiscal policy no government can achieve human development. As government expenditure on health, education improve human capital so do they cause accumulation of physical capital. Also infrastructural expenditures cause positive externalities. It is obligatory for governments to manipulate fiscal deficit in this direction (Onokwa& Ehikioya 2019) On the other hand fiscal deficit financed by external debt does not improve HDI. If budgetary allocation is increased while taxes also move upwards then standard of living will fall.

If total government expenditure does not improve welfare then the whole existence of fiscal deficit and its use casts concern.

Thus the true nature of the link between HDI and Fiscal Deficit is fully explored by our model because it is open different point of views by various schools of thought

Human development as gauged by Human Development Index (HDI) is used and variables that give coverage to other factors effecting human development in addition to fiscal deficit are included. The model has HDI as the dependant variable. HDI is a statistical tool used to measure overall achievement of a country in its social and economic fields which are based on people's health, their education level their standard of living attainments (Human Development Report, 1990)

The framework is built such that the evolution of human development over the years will be estimated by HDI being effected by savings, investment, fiscal deficit and its lag, net exports and past human development indexes.

In conceiving the model, savings and investment are chosen to accompany fiscal deficit as they are two of the most crucial variables that act as determinants of human development. Both are important to human development because the amount of investment that takes place depends upon the money available as funds .Higher national savings reduce consumption, increase capital and lead to higher growth rate and human development (Bacha, 1990; De Georgio, 1992; Gjergji, 2015). Investment effects human development as it is a component of aggregate demand; it will boost demand and short run economic growth moreover, the influence of investment is also on productive capacity of an economy. Also multiplier effect of investment causes firms to get more sales and profit which they will reinvest and households gain employment because of investment and thus have more money to spend. Investment in skills and education would increase labor productivity. To get an understanding of the role of crowding out effect we would use government and private investment separately. Government investment or public investment is the investment of public money in various endeavors. It is also to be used as an explanatory variable. Private investment is money invested by companies, financial organizations or other investors rather than by a Govt. and effects human development directly.

The independent variables of our model are: the lag of HDI, the lag of fiscal deficit, fiscal deficit itself, national savings, government investment, private investment and net exports. The variable of net exports introduces the factor of openness in the model and human development of any country is directly linked with its exports.

3.2 ECONOMIC MODEL

$$\boldsymbol{HDI} = \boldsymbol{f}(\mathbf{HDI}_{\mathbf{t-1}}, \mathbf{FD}_{\mathbf{t-1}}, \mathbf{FD}, \mathbf{NS}, \mathbf{GI}, \mathbf{PI}, \mathbf{NX})$$

$$HDI_t = \propto_0 + \propto_1 HDI_{t-1} + \propto_2 FD_{t-1} + \propto_3 FD_t + \propto_4 NS_t + \propto_5 GI_t + \propto_6 PI_t + \propto_7 NX_t + \mu_t$$

HDI= Human Development Index

HDI t-1= Lag of Human Development Index from period‘t’

FD t-1= Lag of Fiscal Deficit as a percentage of GDP from period‘t’

FD= Fiscal Deficit as a Percentage of GDP

NS= National Savings as a percentage of GDP

GI= Government Investment as a percentage of GDP

PI= Private Investment as a percentage of GDP

NX= Net Exports as a percentage of GDP

3.3 ESTIMATION TECHNIQUE

The study is an investigation into the effect of fiscal deficit on human development in Pakistan. Human development will be gauged by HDI and fiscal deficit by the ratio of fiscal deficit with respect to GDP.

Here a fiscal policy instrument i.e. fiscal deficit is being analyzed along with HDI. In econometrics most adequate tool for policy analysis is SVAR. It is not atheoratic like reduced form VAR and encompasses theoretical underpinnings of the model. SVAR opens avenues of determining how fiscal deficit would affect human development in the years to come. As a positive shock is given to fiscal deficit, from zero period the HDI will turn positive or negative till say period 10 so supporting either classical or Keynesian theory. We can also tell from our

estimations which of the independent variables are stronger in explaining the variability in the dependant variables over time. We can also show how much of the future uncertainty of one time series is due to future shocks into the other time series so the shocks may not be very important in the short run but important in the long run. For example, fiscal deficit shocks may account for 10% of the variations in HDI in the next 10 days but 50% for the next four months. So we do short run as well as long run analysis

1) Augmented-Dickey-Fuller (ADF) test for unit root in each individual data series.

Before estimation of the model, initially, stationarity of the variables is checked as an econometrics' assumption is that underlying variables have constant mean and variance. Therefore, properties of time series data need to be analyzed before commencing any estimation. Quite different conclusions are reached whether the levels or differences of a series are stationary. The test for non stationarity known as ADF unit root test is used to test the order of integration and to solve non-stationarity issues of the variables.

2) Johansen Co integration test for the integration of all data series

By Johansen co-integration we want to investigate long-run relationship among variables. Before this approach is applied, the ideal lag length based on AIC and SIC lag length criteria has to be determined by using VAR model. After the optimal lag is determined, the long run relationship among the variables is tested using Johansen co integration technique. This study uses method of trace statistic and the maximum Eigen value statistic to test for the co integration relationship between the variables

3) Structural Vector Auto Regressive Model (SVAR)

The Structural VAR technique is used in this study because it is one of the best techniques to analyze policy. In this case fiscal policy is to be examined. Moreover, SVAR is based on theory unlike VAR which is atheoratic. Fiscal deficit can be better handled by this approach. SVAR uses theory that guides the behavior of the economy and it can be used for applying restrictions on the parameters. Thus SVAR is the most suitable technique for the analysis of the problem at hand. We briefly discuss the SVAR theory so that we can understand our A-Model

The basic mathematical expression of VAR model is as follows:

$$x_{t=}\ A_1 x_{t-1} + \cdots . + A_p x_{t-p} + \mu_t$$

Where Ai are (k*k) coefficient matrices for i=1..p and μ is k dimensional process with E(μ)= 0
The structural form of the SVAR model can be defined as:

$$Ax_t = A^*{}_1 x_{t-1} + \cdots . + A^*{}_p x_{t-p} + B\varepsilon_t$$

It is assumed that structural errors are white noise and the coefficients of matrices Ai for i=1….p are structural coefficients.

SVAR models can be differentiated into three types depending on the imposed restrictions. A-Model where matrix B is set to Ik(identity matrix), B-Model where matrix A is set to Ik and AB-Model where restrictions are placed on both A and B matrices. We have used the A-model for identification of matrices. The Model states that

$$\mathbf{Ae_t = Bu_t}$$

A= Coefficient Matrix
B= Parameter Matrix
μ= Reduced Form Disturbances
ε= Structural shocks

In the A-Model matrix B is identity matrix thus when another matrix is multiplied with identity matrix it yields itself. The A-matrix is always taken with 1 in the diagonal which normalizes it. The variable attached to the normalized coefficient can be interpreted as the dependant variable for that equation. The estimated coefficients represent the unrestricted variables while any other numerical value expresses the restrictions placed on the variables.

We applied restrictions on the matrix A. B is identity matrix but it has restrictions on the diagonal as it equals 1 throughout. Any value besides 0 is taken to be a restriction. According to the rule both A and B matrices should have at least $2K^2$-K (K+1)/2 restrictions. K is the no. of variables in the model. We have 6 variables so the restrictions must be at least 15.

4) Impulse Response Function (IRF)

By this step in our estimation technique, we want to explore the effect of one time shock to one of the structural errors on both the current and future values of all the endogenous variables. . When the SVAR is used, Impulse Response Function can be employed to see the impact of policy intervention on variables further. Thus when we want to know how the policy will affect the future of the variable, we can turn to IRF.

5) Forecast Error Variance Decomposition

This step of Forecast Error Variance Decomposition in our estimation technique is to see which of the independent variables is stronger in explaining the variability in the dependant variable over time and how much of the variability in dependant variable is lagged by its own variance. It also shows how much of the future uncertainty of one time series is due to future shocks into the other time series. This evolves over time, so the shocks on the time series may not be very important in the short run but important in the long run. For example, oil price shocks may

account for 5% of the variance in electricity price in the next seven days but 40% for the next six months. That is why the short as well as long run analysis of the variance in forecast errors has been done.

CHAPTER 4: DATA

The study employs quantitative and empirical research design. Historical time series data obtained from secondary sources was used. The country of study is Pakistan. Data is from 1990-latest.

Fiscal deficit is linked with HDI in many ways either through accumulation of debt or through expenditure on investment. The consequences range a spectrum of possibilities. HDI is an index. According to (Onokwa& Ehikioya 2019) we can write HDI as:

$HDI = f(LON_t + LIT_t + PCI_t)$

LON_t = Longevity
LIT_t= Literacy
PCI_t = Per Capita Income
T=Time Period

We can link fiscal deficit with all the components of HDI through development expenditure. If due to fiscal deficit cuts in development expenditure affects funds set aside for education then literacy rate which comprises various aspects of schooling will get disturbed and that would reflect in HDI calculations. Similarly if fiscal deficit effects economic growth then per capita income will be affected. Standard of living depends on both economic growth and development expenditure thus if these factors are varied so will the HDI. Thus we have established the link of fiscal deficit with the components of HDI one by one therefore linking the entire HDI with fiscal deficit.

1) HDI

Human Development Index

Definition: The **Human Development Index** (**HDI**) is a statistical tool used in measurement of a country's overall achievement in its social and economic dimensions (Human Development Report).

It is our prime variable. HDI of Pakistan was taken for the purpose. HDI is used as opposed to other composite indices as it captures human development simply and coherently while others give a broader picture of key issues of human development, polarization, gender issues and poverty.

Source: Various issues of Human Development Reports (HDRs) of the UNDP

2) HDI t-1

Human Development Index of last time period

Growth in human development also depends on the development occurred in past period thus this variable is used.

Source: Various issues of Human Development Reports (HDRs) of the UNDP

3) FD

Fiscal Deficit as a Percentage of GDP

Definition: Difference of expenditures and revenues taken as a percentage of GDP in a fiscal year.

Source: Various issues of Economic Survey of Pakistan

4) **FD t-1**

Lag of Fiscal Deficit as a percentage of GDP

This variable is used to capture the impact of fiscal deficit in the long run. The effect of fiscal deficit on HDI is not immediate like its effect on economic growth so lagged variable is used

Source: Various issues of Economic Survey of Pakistan

5) NS

National Savings as a percentage of GDP

Definition: Sum of Government & private savings

HDI depends on savings in a country as capital accumulation means higher income resulting in economic growth. Since growth accounts for a part of human development; savings augment human development. In nearly all economic development theories savings has always had a major role. Moreover the difference of savings and investment determines fiscal balance

Source: Various issues of Economic Survey of Pakistan

6) GI

Government Investment as a percentage of GDP

Definition: Investment of public money in various endeavors taken as a percentage of GDP in a fiscal year

Human development depends on government investment. This occurs in the domain for human capital as well as infrastructure and physical capital

Source: Various issues of Economic Surveys of Pakistan

7) **PI**

Private Investment as a percentage of GDP

Definition: Money invested by companies, financial organizations or other investors rather than by a Govt.

Private Investment causes growth, provides jobs and the private sector is a vibrant source of taxes. Nowadays infrastructure and social services have been catered by private investment. Thus it is a major determinant of human development.

Source: Various issues of Pakistan Economic Survey of Pakistan

8) **NX**

Net Exports as a percentage of GDP

Definition: Exports minus Imports taken as a percentage of GDP in a fiscal year.

Net exports introduce the factor of openness in the model.

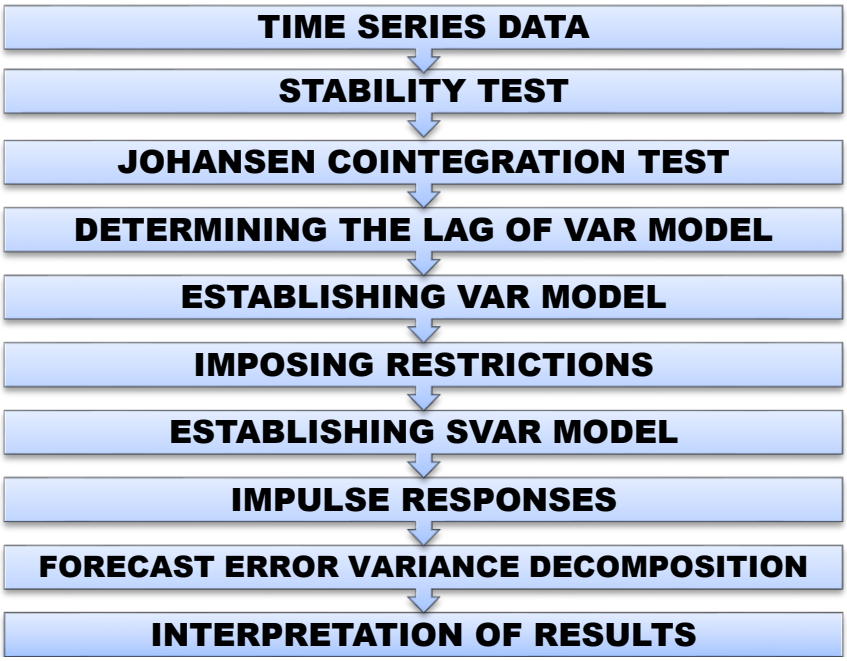
Source: Various issues of Pakistan Economic Survey of Pakistan

CHAPTER 5: ESTIMATIONS AND RESULTS

The aim of our estimations is analysis of the effect of fiscal deficit on human development. This effect can be adverse as well as beneficial. Through our results we try to reach at the conclusion of this hypothesis

We have taken annual secondary data for Pakistan, spanning the period 1990-till latest. The variables are Human Development Index (HDI), Fiscal Deficit (FD), Government Investment (GI) Private Investment (PI) National Savings (NS) and Net Exports (NX). All the variables except HDI are in percentages of GDP. We have used Eviews software for our analysis

In this analysis we have designed a custom identification strategy for SVAR model which helped us explore the short run dynamics between the variables under study. We dropped the lagged terms of HDI and Fiscal deficit from our original model due to problems encountered by multicollinearity. We proceeded according to the following plan:



5.1 AUGMENTED DICKEY FULLER TEST

We started by checking the stationarity of the variables in the model to rule out spurious regressions. The variables of Human Development Index (HDI), Fiscal Deficit (FD), Government Investment (GI) Private Investment (PI) National Savings (NS) and Net Exports (NX) were all tested for stationarity (Table 1)

For ADF test:

H0= There is unit root
H1=Time series is stationary

Table 1: ADF Test Results

Variables	Critical Value (5% CI)	ADF Test Statistic	P value
FD	**-2.97**	-2.51	0.12
HDI	**-3.59**	-2.32	0.41
GI	**-2.97**	-1.50	0.52
PI	**-2.97**	-1.69	0.42
NS	**-2.97**	-2.02	0.27
NX	**-2.97**	-1.77	0.39

We found that all the variables were I (1) because the critical values at 5% level were greater than the ADF test statistic in absolute values throughout the output of all variables in Table 1. The p-value is also greater than 0.05 in the output of all variables by which we can easily accept the null hypothesis of the presence of unit root.

5.2 JOHANSEN COINTEGRATION TEST

To proceed towards SVAR we need to see if the variables are co integrated. This process is to establish if a long run relationship exists between the variables. We estimated a basic VAR model with all the non stationary variables at level. We examined the rank of the matrix via eigen values. The rank of a matrix is the number of eigen values that are non- zero. For this we

selected the optimal lag length through our chosen information criteria i.e. Schwartz information criteria (SIC) was selected. Johansen test applies two different tests:

1) Trace Test
   H0= The number of co integrating vectors are less than or equal to r
   H1= There are more than r co integrating vectors

2) Max test

   Ho= The number of co integrating vectors is r
   H1= The number of co integrating vectors is (r+1)

Table 2: UNRESTRICTED COINTEGRATION RANK TEST (TRACE)

Hypothesized No. of CEs	Eigen value	Trace Statistic	0.05 Critical Value	Prob.
None*	0.92	171.05	103.85	0.00
At Most 1*	0.79	101.87	76.97	0.00
At Most 2*	0.70	60.12	54.08	0.01
At Most 3	**0.39**	**27.75**	**35.19**	**0.25**
At Most 4	0.30	14.50	20.26	0.25
At Most 5	0.17	5.03	9.16	0.28

Table 3: UNRESTRICTED COINTEGRATION RANK TEST (MAX)

Hypothesized No. of CEs	Eigen value	Max Eigen Statistic	0.05 Critical Value	Prob.
None*	0.92	69.18	40.96	0.00
At Most 1*	0.79	41.75	34.80	0.00
At Most 2*	0.70	32.37	28.59	0.01
At Most 3	**0.39**	**13.24**	**22.30**	**0.53**
At Most 4	0.30	9.48	15.89	0.38
At Most 5	0.17	5.03	9.16	0.28

*denotes rejection of the hypothesis at 0.05 level

The estimations of trace and max tests are given in Table 2& 3 respectively. The results of the trace test show that the null hypothesis of no co integration is not accepted. So we need to find

how many co integrating equations are there. The hypotheses given above show, in case of trace statistics:

H0= co integrating vectors are equal to 1

which is not accepted and there would be more than one co integrating equations but we see that 2 co integrating equations scenario is also not accepted thus there would be 3 co integrating equations because the H0 of 3 co integrating equations is accepted. This corroborates with the findings in Eviews output and given at the end of estimations in Table 2.

Similarly we find the number of co integrating equations in max test as the null hypothesis of no co integration is rejected. We see that the H0 of 1 and 2 co integrating equations is rejected while that of 3 co integrating equations is accepted. So we conclude that co integration exists between the variables in our model and that there exists a long run relationship between the variables. There is consistency between the results obtained from trace and max test as they both point out that there are three co integrating equations in total. The output of the Johansen Co integration test is given in Tables 2&3

5.3 STRUCTURAL VAR

We have applied restrictions based on theory to identify the matrices in SVAR. We first estimated VAR to proceed towards SVAR estimations. Before we proceeded to the VAR estimations we checked if the lag structure is suitable by first testing for autocorrelation; once autocorrelation is ruled out at lag length 2 in this case, we proceeded to check the stationarity of the system further and determine stability by applying AR roots test. We checked all the roots of the system in the roots table. They are all below the value 1.We observe the modulus which is

the absolute value of the roots. The roots are all inside the unit circle which establishes stationarity.

We specified the A matrix by applying restrictions: (When there is no effect of an independent variable on the dependant variable its value becomes zero in the Matrix A and NA shows those independent variables which have impact on the dependant variable and their values are to be estimated) .These are short run restrictions.

Matrix B was constructed with the diagonal normalized i.e. with the value of 1 in the diagonal while restricting the impact of other variables. As it is an identity matrix, multiplication of any matrix with the identity matrix yields the first matrix.

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 & NA \\ NA & 1 & NA & NA & NA & 0 \\ 0 & 0 & 1 & 0 & NA & 0 \\ 0 & 0 & 0 & 1 & NA & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & NA & NA & NA & 0 & 1 \end{bmatrix} \begin{bmatrix} \mu 1 \\ \mu 2 \\ \mu 3 \\ \mu 4 \\ \mu 5 \\ \mu 6 \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \varepsilon 1 \\ \varepsilon 2 \\ \varepsilon 3 \\ \varepsilon 4 \\ \varepsilon 5 \\ \varepsilon 6 \end{bmatrix}$$

μ1, μ2, μ3, μ4,μ5, μ6 are reduced form shocks of fiscal deficit, HDI, Government Investment, Private investment, National Savings and Net exports respectively while ε1, ε2, ε3, ε4, ε5,ε6 are structural shocks placed in the same order.

We used custom restrictions as delegated by the theoretical underpinnings of our model in estimating SVAR. In impulse response function (IRF) as well as forecast error variance decomposition (FEVD) we selected Cholesky decomposition which uses minimum number of restrictions to identify the structural model. This method puts variables in an ordering and assigns entire effect of shock to variable in the model placed first in order. We placed fiscal deficit first in the order because we want to see the effect of fiscal policy shock in the form of

fiscal deficit on other variables. Most importantly we need to observe its effect on HDI. Thus we have proceeded according to this plan.

Table 4: STRUCTURE OF A & B MATRICES

MATRIX A:

	FD	HDI	GI	PI	NS	NX
FD	1	**0**	**0**	**0**	**0**	**0.35**
HDI	**-1.66**	**1**	**-3.70**	**-3.32**	**3.66**	**0**
GI	**0**	**0**	**1**	**0**	**0.18**	**0**
PI	**0**	**0**	**0**	**1**	**-0.09**	**0**
NS	**0**	**0**	**0**	**0**	**1**	**0**
NX	**0**	**482.28**	**2.27**	**1.00**	**0**	**1**

MATRIX B:

	FD	HDI	GI	PI	NS	NX
FD	**1**	**0**	**0**	**0**	**0**	**0**
HDI	**0**	**1**	**0**	**0**	**0**	**0**
GI	**0**	**0**	**1**	**0**	**0**	**0**
PI	**0**	**0**	**0**	**1**	**0**	**0**
NS	**0**	**0**	**0**	**0**	**1**	**0**
NX	**0**	**0**	**0**	**0**	**0**	**1**

Model: Ae = Bu where E[uu']=I
Restriction Type: short-run pattern matrix

A =

1	0	0	0	0	C(10)
C(1)	1	C(3)	C(5)	C(7)	C(11)
0	0	1	0	C(8)	0
0	0	0	1	C(9)	0
0	0	0	0	1	0
0	C(2)	C(4)	C(6)	0	1

B =

1	0	0	0	0	0
0	1	0	0	0	0
0	0	1	0	0	0
0	0	0	1	0	0
0	0	0	0	1	0
0	0	0	0	0	1

We applied the restrictions as seen in matrix A and B above. Through the restrictions we determined which variables need to be estimated. After estimations we discuss the results in matrix A row by row.

Row 1: This row is the equation of fiscal deficit and describes the causes of its variations. Of all the variables under study none contributes to it except net exports. As we know net exports are the trade deficit and a component of current account deficit. Together fiscal deficit and current account deficit complement each other to form twin deficits. The value of net exports causing variations in fiscal deficit is positive and significant (Table 5)

Row 2: This row is the equation of HDI consisting of variables that cause an impact on it. Fiscal deficit is seen to have negative impact on HDI consistent with classical theory. Investment both government and private has also negative effect on HDI. The negative sign suggests that government investment crowds out private investment. Government investment does not affect steady state growth rate in neoclassical growth model. Government investment may have detrimental effect due to misallocation of resources towards unproductive capital expenditures. (Ghani & Muslehuddin 2006) National savings contribute towards HDI positively according to the results. (Table 5)

Row 3 & 4: These rows show the impact of other variables in the model on investment. Line 3 is for government investment and line 4 for private investment. The causality of investment runs from government and private investment to HDI and not from HDI to investment thus due to the non-bidirectional nature of the variables only the effect of savings on investment is observed and is seen to be insignificant in both government and private investment.(Table 5)

Row 5: This row is for national savings and according to the restrictions no variable in our model effects national savings

Row 6: This row is for the equation of net exports. HDI has a positive and significant impact on net exports. The effect of government investment and private investment on net exports is positive and significant because when savings translate into investment, capital is generated. This capital is of utmost importance as it promotes growth and development. If a country has enough investment then it can offset any imbalance in net exports using it.

After the SVAR estimations we carried out Autocorrelation, heteroskedasticity and normality tests which showed no abnormality.

Table 5: VALUES OF VARIABLES IN SVAR

	Coefficient	**Std. Error**	**z-Statistic**	**Prob.**
C(1)	-1.66	0.29	-5.56	0.00
C(2)	482.29	57.86	8.33	0.00
C(3)	-3.70	0.54	-6.86	0.00
C(4)	2.27	0.22	10.15	0.00
C(5)	-3.32	0.49	-6.76	0.00
C(6)	1.00	0.19	5.23	0.00
C(7)	1.33	0.27	4.99	0.00
C(8)	0.18	0.19	0.93	0.35
C(9)	-0.09	0.19	-0.51	0.61
C(10)	0.35	0.10	3.42	0.00
C(11)	-3.66	0.50	-7.27	0.00

5.4 IMPULSE RESPONSE FUNCTION

A positive shock of 1 S.D was given to fiscal deficit to observe the changes in the behavior of HDI for the next 10 periods. Here each period represents one year. The horizontal axis in figure below represents the number of periods set from 0 to 10 and the vertical axis represent the response variables and the impulse response function is the solid line in between the confidence intervals which are shown as dotted lines.

Starting from zero period we see that as a positive shock is given to fiscal deficit the HDI turns negative in between the 1st and 2nd period. It then picks up during period 3 and turns slightly positive in period 4 and remains zero from period 4 onwards to period 7.It gradually decreases from period 7 to period 10 turning negative.Thus we can interpret that in case of a shock to fiscal deficit the response of HDI will not be very great and is going to be negative in nature as it turned negative during more than one period intermittently. So this gives support to the Classical theory out of the three theories under consideration namely Keynesian and Ricardian Equivalence theories. Classical theory suggests that fiscal deficit has a detrimental effect on human development and thus fiscal deficit should be curtailed. In IRF we saw that in the future fiscal deficit effects HDI negatively and the graph dipped downwards in the negative region in the final period.

As for the effect of a shock to fiscal deficit on itself it can be seen that the IRF shows that initially fiscal deficit decreases then becomes stable and afterwards picks up again but with less intensity so we conclude that a shock to fiscal deficit creates an effect in positive direction on itself i.e. it would create more fiscal deficit

The IRF has shown effect of shock to fiscal deficit on other components of human development in our model. The effect on government expenditure is negative initially but it will become positive and stable till the end i.e. fiscal deficit would encourage government investment.

Similarly in case of Private investment a shock to fiscal deficit would help to curb private investment and affect it negatively while afterwards it remains stable in the negative region becoming more negative in the final period. Thus implying that fiscal deficit would discourage private investment. This is consistent with classical theory that fiscal deficit causes private investment to decline due to crowding out effect.

National Savings and Net exports follow almost the same pattern of asymmetric reaction to a shock on fiscal deficit alternating between positive and negative values showing that the fiscal deficit may or may not help augment these two variables.

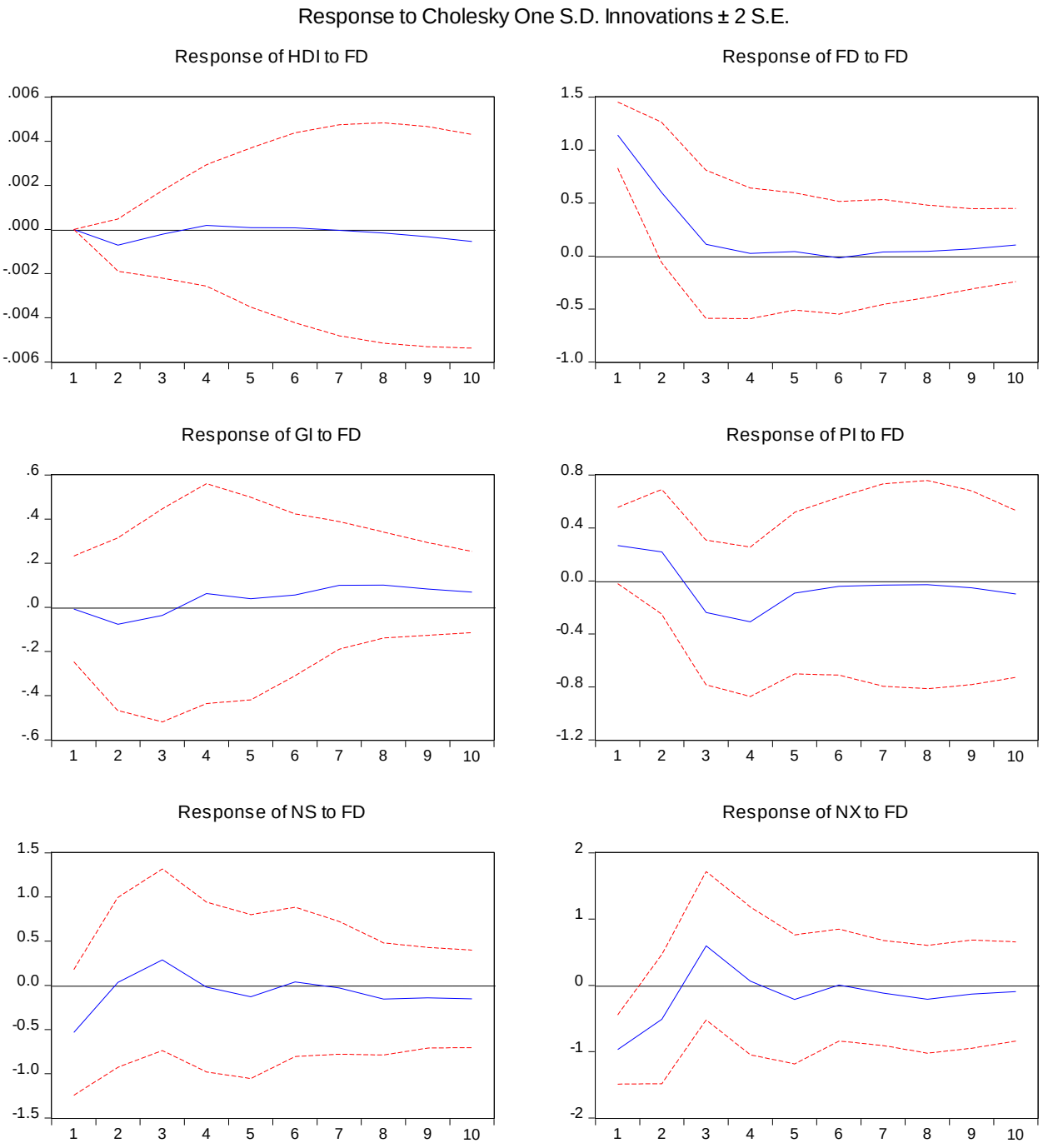


Figure 1: Impulse response function

5.5 FORECAST ERROR VARIANCE DECOMPOSITION (FEVD)

In this analysis we are mostly concerned in establishing that fiscal deficit accounts for variability in HDI and also that it may not be true vice versa. In the short run variations in HDI are explained by itself mostly. The fiscal deficit explains 22% of them initially but in the long run this pattern does not hold and government investment takes over as the prime variable to explain the variations in HDI. In the long run government investment explains more variations than HDI itself. Government investment explains 65% of the variations in HDI in the final period. Fiscal deficit which explained 22% of the variations in the short run accounts for 8% of the variations in long run.In the short run 100% of the variations in fiscal deficit are explained by fiscal deficit itself. The other variable that contributes heavily in the variations of fiscal deficit is government investment. In the short run fiscal deficit accounts for its own variations and these values go on decreasing while in the short run government investment accounts for lesser contribution in explaining the variations in fiscal deficit but as the time passes they becomes greater. So by summarizing the above we come to the conclusion that fiscal deficit effects HDI more in the short run and lesser in the long run.

Table 6: FORECAST ERROR VARIANCE DECOMPOSION RESULTS

VARIANCE DECOMPOSITION OF HDI

Period	S.E	HDI	FD	GI	PI	NS	NX
1	0.00	**78.01**	**21.99**	0.00	0.00	0.00	0.00
2	0.00	**44.77**	**28.59**	25.35	0.17	1.05	0.07
3	0.00	**30.31**	**17.16**	43.29	1.33	7.57	0.34
4	0.01	**29.55**	**11.81**	51.96	0.81	5.41	0.46
5	0.01	**26.76**	**9.32**	59.43	0.51	3.53	0.44
6	0.01	**25.16**	**8.09**	63.46	0.48	2.42	0.38
7	0.01	**24.15**	**7.64**	65.30	0.59	2.01	0.31
8	0.01	**23.35**	**7.55**	65.99	0.67	2.18	0.25
9	0.02	**22.78**	**7.75**	65.81	0.71	2.73	0.22
10	0.02	**22.22**	**8.17**	65.24	0.69	3.48	0.19

VARIANCE DECOMPOSITION OF FISCAL DEFICIT

Period	S.E	HDI	FD	GI	PI	NS	NX
1	1.29	0.00	**100.00**	**0.00**	0.00	0.00	0.00
2	1.50	2.43	**86.97**	**6.38**	1.74	1.17	1.31
3	1.55	2.28	**82.15**	**9.04**	2.34	2.80	1.40
4	1.68	4.49	**71.67**	**17.52**	2.21	2.90	1.20
5	1.79	4.28	**63.14**	**24.69**	3.26	3.55	1.08
6	1.87	4.53	**57.89**	**27.74**	4.29	4.53	1.02
7	1.92	4.32	**54.89**	**26.94**	5.36	7.49	1.00
8	1.96	4.22	**53.15**	**26.07**	5.47	9.98	1.10
9	1.99	4.27	**51.32**	**26.37**	5.31	11.55	1.17
10	2.02	4.48	**49.81**	**27.11**	5.20	12.16	1.24

VARIANCE DECOMPOSITION OF GOVT. INVESTMENT

Period	S.E	HDI	FD	GI	PI	NS	NX
1	0.68	**13.60**	3.39	**83.00**	0.00	0.00	0.00
2	0.92	**13.55**	2.00	**77.20**	3.57	3.04	0.63
3	1.11	**13.81**	1,95	**72.67**	5.77	5.24	0.54
4	1.20	**12.42**	2.68	**67.18**	7.66	9.56	0.49
5	1.25	**11.76**	2.89	**63.65**	7.45	13.58	0.66
6	1.28	**11.26**	3.12	**60.84**	7.18	16.85	0.75
7	1.30	**10.91**	3.79	**58.97**	7.03	18.41	0.90
8	1.31	**10.71**	4.44	**57.91**	7.13	18.87	0.93
9	1.32	**10.60**	5.07	**57.28**	7.25	18.85	0.94
10	1.34	**10.53**	5.58	**57.20**	7.15	18.61	0.93

VARIANCE DECOMPOSITION OF PRIVATE INVESTMENT

Period	S.E	HDI	FD	GI	PI	NS	NX
1	0.77	1.30	10.87	**0.03**	**87.80**	0.00	0.00
2	1.10	3.85	6.99	**20.92**	**66.19**	1.26	0.78
3	1.25	4.29	13.14	**17.16**	**63.48**	1.04	0.88
4	1.42	3.48	17.36	**23.27**	**52.74**	2.29	0.86
5	1.68	5.31	14.71	**39.13**	**38.27**	1.88	0.69
6	1.92	6.36	12.35	**49.00**	**29.89**	1.77	0.61
7	2.15	6.54	10.53	**54.19**	**25.37**	2.89	0.49
8	2.28	6.27	9.58	**53.59**	**24.24**	5.88	0.45
9	2.36	5.90	9.07	**50.97**	**23.61**	9.91	0.54
10	2.42	5.67	8.74	**48.59**	**22.79**	13.53	0.67

VARIANCE DECOMPOSITION OF NATIONAL SAVINGS

Period	S.E	HDI	FD	GI	PI	NS	NX
1	1.91	0.00	9.91	**23.5**	12.93	**53.65**	0.00
2	2.11	2.50	8.54	**27.18**	14.73	**44.95**	2.10
3	2,39	5.72	6.76	**38.69**	11.95	**35.13**	1.75
4	2.57	6.81	6.50	**43.41**	11.32	**30.36**	1.59
5	2.78	6.41	6.43	**48.30**	10.47	**27.02**	1.36
6	2.86	6.23	6.06	**48.20**	10.63	**27.60**	1.28
7	2.92	6.02	5.87	**46.42**	10.77	**29.58**	1.34
8	2.98	5.98	5.79	**44.96**	10.54	**31.33**	1.41
9	3.03	6.11	5.67	**44.55**	10.23	**31.96**	1.49
10	3.07	6.30	5.56	**44.80**	9.99	**31.83**	1.52

VARIANCE DECOMPOSITION OF NET EXPORTS

Period	S.E	HDI	FD	GI	PI	NS	NX
1	1.68	1.02	49.95	**32.07**	5.60	8.75	**2.61**
2	2.25	1.15	32.57	**54.61**	4.11	5.35	**2.21**
3	2.53	3.98	28.82	**55.37**	4.61	5.46	**1.76**
4	2.72	3.94	24.93	**48.24**	10.70	10.60	**1.59**
5	2.82	4.25	23.28	**44.84**	11.23	14.63	**1.76**
6	2.95	4.64	21.59	**45.23**	10.40	16.38	**1.75**
7	3.10	5.01	19.5	**47.58**	9.43	16.65	**1.82**
8	3.23	6.04	18.00	**49.46**	9.10	15.64	**1.76**
9	3.31	6.47	17.18	**50.35**	9.34	14.95	**1.71**
10	3.34	6.67	16.84	**50.50**	9.48	14.84	**1.67**

RESULTS IN LIGHT OF HYPOTHESES

Null Hypothesis: There are no adverse effects of fiscal deficit on human development in Pakistan in the period under study

Alternative Hypothesis: There are adverse effects of fiscal deficit on human development in Pakistan in the period under study

According to all of the results stated above the null hypothesis is not accepted and the alternative hypothesis holds. This result has been reinforced by findings from SVAR where the fiscal deficit is inversely proportional to HDI in the period under study. Fiscal deficit harms human development in this case. Similarly Impulse Response Function tells that in the years to come this situation would prevail. Forecast Error Variance Decomposition also shows that fiscal deficit plays a role in explaining the variations in HDI.

CHAPTER 6: CONCLUSION & POLICY RECOMMENDATIONS

The fact that there exists a negative relationship between fiscal deficit and HDI gives credibility to the classical theory of the impact of fiscal deficit. The classical theory postulates that fiscal deficit is harmful for human development as opposed to Keynesian and Ricardian Equivalence Theories. Keynesian theory purports that fiscal deficit is good as it acts as a stimulus while Ricardian Equivalence theory backs the claim that there is no effect of fiscal deficit on human development. Both of these theories were not found to be valid in the case of Pakistan in the period under study.

Fiscal deficit has an effect on the human development as has been confirmed by Forecast Error Variance Decomposition. It states that fiscal deficit explains more variations in HDI in the short run than in the long run and that in the long run government investment takes over fiscal deficit in explaining the variations in HDI. The inability of government investment to affect HDI strongly in the short run may be due to the fact that most investment materializes into human development after maturity of various projects like infrastructure etc. and that the effects are not immediate so not evident in the short run.

There are many reasons why fiscal deficit harm human development. The mismatch of internal and external debt leads to failure of deficit financing to stimulate economic development (Onourah & Ogbonna 2014) Pakistan has a long history of large external debts and the problem may have exacerbated the adverse effects of fiscal deficit on human development.

The use of fiscal deficit for the pursuit of fiscal policies often leads to increased dangers in the economy (Ndekwu 2003) These dangers are low per capita income which leads to low standard of living culminating into low life expectancy. Also education and health facilities which

demand adequate levels of development expenditures are discouraged and add to the problem of low standard of life. Fiscal deficit which could have the capacity to stimulate growth has turned into a cut back tool of development expenditure in Pakistan. As debt is accumulated fiscal deficit; its burden adds to the misery. It is the external debt which is so country specific in the case of Pakistan that we cannot think of fiscal deficit as a stimulus because as debt it affects our economy adversely.

When development expenditure is reduced finances are diverted towards more non-developmental activities. When development expenditure acted as long term investment, the non-development expenditure negates all its benefits towards greater human development. If the aim is to enhance human and physical capital, promote social uplift and enhance macroeconomic and social indicators then fiscal deficit harms them. It hampers economic growth which is a component of human development.

If we want to increase our development expenditure we need to increase our revenue base so that pool of resources is enhanced. Expenses are to be met since there are non-development expenses which are contingent and necessary that cannot be curtailed. Fiscal deficit adds a crunch to the resources and the only way out apart from external loans is to expand the revenue base.

POLICY RECOMMENDATIONS

1) Fiscal deficit is sometimes a policy choice. After we have established that classical theory is applicable in the case of Pakistan, we may choose to abstain from taking fiscal deficit as a policy initiative
2) Crowding out of private investment may be avoided as it is detrimental to human development

3) Revenue base must be enhanced to finance the chosen expenditure levels
4) Non-development expenditure consumes revenue thus fosters fiscal deficit without any positive effect on HDI. Thus effort is to be made to curtail non-development expenditure

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APPENDIX:

LITERATURE REVIEW SUMMARY

AUTHOR	OVERVIEW	KEY FINDINGS
Berheim (1989)	Decomposition of deficits into permanent (Neoclassical) and temporary (Keynesian) to see which valid	Cannot reject theory on econometric findings, assumptions play a vital role
Buiter (1983)	Relationship between fiscal deficit, crowding out & inflation to judge validity of Neoclassical theory	Fiscal deficit is not a good indicator of crowding out; current account deficit is better
Gaber (2010)	Examined both the Keynesian & Neoclassical crowding out	With crowding out effect there is also multiplier effect and the net effect of fiscal deficit on the economy is positive
Barro (1988)	Neoclassical Approach is seen in an open economy. Small as well as large.	Fiscal deficits and taxation are equivalent in their effect.
Arestis & Sawyer (2004)	Fiscal deficits are seen as a viable option through functional finance	Interest rate is not as powerful as fiscal policy.
Fatima et al.(2011)	Effect of loan & aid dependency is seen. Servicing of debt enhances fiscal deficit further	Fiscal wastefulness has stunted growth & physical infrastructure in Pakistan consequently effecting human development
Ghatak (1996)	Model to detect validity of Rational Expectations Theory in India	Rational Expectations Theory rejected in India for the period 1950-86

AUTHOR	OVERVIEW	KEY FINDINGS
Fatima et al.(2012)	Study of the effect of fiscal deficit on GDP growth rate	Fiscal deficits should be avoided because their financing causes lower GDP
Ali & Ahmad (2010)	Long run relationship of fiscal policy with economic growth was tested	Fiscal policy effects growth positively up to a threshold level beyond which the effect is negative
Hussain & Haque (2017)	Two data series were tested to see which theory of fiscal deficit holds in Bangladesh	Prudence must be taken in accumulating fiscal deficit & it can promote human development only if money is spent in productive manner
Hassan & Akhtar (2014)	Research on deficits on the aspect of size, volatility and source of financing	Negative effect of fiscal deficit on economic growth was found. Effect of debt to GDP ratio is negative for fiscal sustainability
Ramu et al (2016)	Impact of composition of fiscal deficit on growth & development in India.	Fiscal deficit effects growth & development adversely. If money is spent on capital formation then it promotes growth
Iqbal et al (2017)	Impact of fiscal dfeicit seen on growth for the purpose of finding a threshold level of fiscal deficit beyond which it hampers growth	Fiscal deficit below threshold level will yield results only if spending targets development
Susnik & Vander Zaag (2017)	Fiscal deficit and equitable distribution were examined in influencing HDI	Fiscal deficit will not matter as long as distribution is effective

AUTHOR	OVERVIEW	KEY FINDINGS
Baldacci et al (2004)	Link made between human capital , social spending and growth	Reducing fiscal deficit by 1 %age point of GDP increases growth by 0.5 %age point
Gupta & Verhoeveen (1999)	Study of 37 African countries to analyze that more is required than just high spending	Rather than size and role of private sector, efficiency of budget spent is more important.
Friedman (1978)	Does fiscal stimulus through budget deficit play an important role in reviving the economy?	Sustainable bond financed fiscal deficit is one which is financed until the real rate of govt. bonds is smaller than the economy's growth rate
Pradhan (1996)	Which kind of deficit is sustainable because public spending depends on sustainability of deficit which results in human development	If the projections of debt to GDP ratio keep rising it means that the deficit is unsustainable and fiscal policy needs change
Dang (2016)	Long run causality between fiscal deficit and human development in Nigeria	Effect of budget deficit must be observed in the long run. This effect becomes permanent and augments human development
Asghar et al(2011)	The relationship between fiscal deficit and poverty	Fiscal deficit has positive effect on poverty. For reduction in fiscal deficit there should be mobilization of revenue, reduction in subsidy burden and cut down in non-development expenditure

AUTHOR	OVERVIEW	KEY FINDINGS
Kakar & Khan (2011)	Study to find if fiscal policy is important for sustainable economic growth & human development	Fiscal policy measures are long run rather than short run ones.
Ali et al(2012)	Examined the role of type of govt. development expenditures and efficiency of institutions in determining human development.	Per capita income has to be increased to increase HDI. Current expenditure in the short run has negative effect on HDI.

COMPONENTS OF HUMAN DEVELOPMENT INDEX

YEAR	HDI VALUE	LIFE EXPECTANCY (Yrs)	EXPECTED YEARS OF SCHOOLING (Yrs)	MEAN YEARS OF SCHOOLING (Yrs)	GROSS NATIONAL INCOME (GNI) $
1990	0.404	60.1	4.6	2.3	3195
1995	0.428	61.5	5.0	2.8	3361
2000	0.449	62.8	5.4	3.3	3358
2005	0.499	64	6.5	4.5	3938
2010	0.524	65.3	7.5	4.7	4227
2015	0.550	66.6	8.2	5.1	4727
2016	0.556	66.8	8.6	5.1	4891
2017	0.558	66.9	8.5	5.2	5033
2018	0.560	67.1	8.5	5.2	5190
2019	0.560	67.1	8.5	5.2	5190

Source: Human Development Report 2020 (Briefing Note for Countries)