# The toxic underground economy of pakistan



Paksitan experiences high budget deficits and a narrow tax base. It is often argued that all earnings in black market are spent in formal economy and thus contribute positively towards formal sector. In Pakistan's case, underground economy and tax evasion erode tax revenues which escalate the narrow tax base problem further causing deficiency of funds for government spending that has a multiplier effect. Lower revenue also leads to experience of higher budget deficits and thus results in unsustainable debt burden along with undermining of development priorities. This paper investigates whether underground economic activity can counter effect of tax evasion, lower tax revenues and lower government expenditure to make positive contribution to formal economy or not.

## Introduction

#### **Overview**

Underground Economy encompasses all illegal activities such as drug trafficking, smuggling, kidnapping, activities that are anti-social in nature and may also include legal activities where taxes are not paid. Tax evasion involves illegally and purposefully lowering ones tax liability. As compared with tax evasion, tax avoidance is legal and citizens are supposed to have a right to lower their payable taxes legally. Many economies are currently infected with the problems of underground economy and Tax Evasion. In fact, problem is more chronic in developing nations of the world.

Tax evasion is a concern as it leads to decline in welfare of society while also troubles macroeconomic management particularly in developing nations which experience low tax revenues and persistent deficits. When individuals, firms or corporations shift their income from a high tax country to a lower https://assignbuster.com/the-toxic-underground-economy-of-pakistan/

one, government experiences a revenue loss. This gives rise to concept of tax heavens where a low tax is incurred and there is lack of transparency.

Global financial integration has eased individual tax evasion as people tend to buy foreign assets directly from foreign country through internet and keep money in foreign accounts. This lets individuals to hide or not report income earned on foreign assets abroad. Sometimes, individuals use trusts and mail box companies or shell corporations to evade taxes. Corporations on other hand usually avoid taxes. Countries like U. S usually don't tax earnings of foreign subsidiaries till profit is dispersed to U. S parent company in form of dividends. Besides, some countries also permit tax credit on foreign income taxes paid. However, it is bit difficult for corporations to evade taxes.

Tax evasion and underground economy are not as simple as they look.

Rather problem is multilateral and channeled through various mechanisms and political as well as socio-economic factors discussed later in review of past work.

## Relevance

Pakistan is currently going through economic turmoil and size of underground economy relative to formal sector is shocking. Tax Evasion stands as an issue that is worsening social welfare and development of the country. Unfortunately, not much has been done to counter the problem. There are many notable cases of tax evasion in Pakistan but still one cannot find action against any in the history. As a matter of fact, corruption within tax authorities and FBR is massive and is estimated to be around 500-600 billion rupees every year. Thus, corruption can be idealized as a major

contributor to lower tax revenues. Despite massive tax evasion in the country, authorities have pursued policies with no or low audit and scrutiny of tax returns. Even if someone's returns are scrutinized and that person gets caught, a hand full of money lets that person to safely avoid legal proceedings. So, problem gets multiplied when lax administration and corruption of tax authority show a combined effect on tax revenues.

Persistent budget deficits due to lower tax revenues and fiscal indiscipline have contributed significantly to stagnation of the economy. Tax evasion is a major contributor to budget deficit problem in the case of Pakistan. Firstly, Pakistan has a narrow tax base where only around 2. 964 million people out of 160 million population are registered taxpayers. Secondly, people evade taxes which in turn cause potential revenues to decline further. Besides, all 2. 964 million people do not pay taxes. In fact returns filed are usually lower than number of registered tax payers.

This problem is not as simple as it seems, rather it's a multidimensional problem. Lax administration and inefficiency of FBR have swollen budget deficit problem by creating unsustainable debt burden and undermining development priorities of the country. Lower tax to GDP ratio has driven accruing public debt and geared cost push inflation with increased fiscal deficit.

Fiscal indiscipline even in presence of budget deficits is due to many factors. Current expenditure involves a major allocation to defense/military and for debt servicing. As a consequence, budget for development of country and welfare of people is insufficient. This leads to social and economic injustice

which demoralizes to pay tax as tax payers develop perception that government is not offering them return for paid taxes. Moreover, a lot of money is spent on perks provided to ministers and high government officials. Governments in past and present have failed to significantly cut this expenditure which combines with corruption to have devastating consequence. Such spending on perks further discourages people to pay taxes.

Tax culture is not prevalent in the country as most of the people are uneducated. They are unaware of fact that taxes will return to them in form of benefits. In addition to literacy, perception of corrupt governments makes people to ignore benefits of paying taxes. This is a closed-loop system more like a trap. Government is short of revenues and expects people to pay taxes for their development while people are unaware of fact that government needs their taxes to generate welfare and thus demand government to provide services first and then pay taxes. Neither does job responsibility thus leading to a dead weight loss to the society, mostly to poor. Increase in taxes like general sales tax on necessities hurt poor as necessities become expensive. Rich evade taxes and can manage to buy an expensive necessity without any problem but poor person who pays tax and lacks money to buy necessity is burdened by increased price of necessity due to taxes. So, tax morale of society lowers due to decreased welfare.

Shortfall of revenues, narrow tax base and debt burden have forced government to increase tax rates. Besides, some new taxes have also been introduced. But still authorities have failed to significantly increase tax revenues as number of tax payers stays more or less same. However, such https://assignbuster.com/the-toxic-underground-economy-of-pakistan/

measures have increased tax burden on tax compliers as same people have to now pay more taxes and hence created incentive to evade taxes like other free riders.

Wealthy and politically influential people evade taxes with help of corrupt authorities and personnel. In fact, money is concentrated in hands of few elites in Pakistan and political influence causes huge source of potential tax revenues to go untaxed. Agricultural income contributes around 23 per cent of GDP but only 1-2 per cent of tax is generated from this source. Besides, political influence of feudal lords and fear for political unpopularity has led to failure of appropriate agricultural tax. This failure of implementing agricultural income tax has multiplied tax evasion and hence underground economy. This is because owners of land who earn income from other sources like industry or business show their income as income from land. So, there income is under taxed and they legally evade tax which is known as tax avoidance.

As multidimensional problem exists to derail economy and create difficulties for effective policy making, it needs to be studied in depth. Analysis of black economy estimates is required to draw conclusions on multichannel dynamics that are interlinked with underground economic activity. This will help to analyze problem areas and construct policy guidelines for effective taxation strategies to control underground economy. Pakistan's deficit problem can be controlled and development can be geared up by controlling tax evasion and underground economy based on insights provided by this study.

# **Background Information and Evolution**

Underground economy has remained a focal point of researchers' attention over time. Legal and illegal activities which involve nonpayment of taxes are considered to be part of black economy and hence studies on underground economy have now extended focus on tax evasion. Developing countries like Pakistan have experienced issues of narrow tax base and budgetary deficits where high tax evasion adversely effects economic development of the country by fueling budget deficits. Tax evasion behavior of people was studied in past but more recently spectrum has moved to estimation techniques for the underground economy and mathematical probability models to describe behavior of tax evaders.

For behavioral aspects, most of researchers working on relationship between tax evasion and enforcement by tax authority have extended approach of (Allingham & Sandmo 1972). (Lee 2001) and (Borck 2004) are notable ones to further develop (Allingham & Sandmo 1972) approach. (Lee 2001) extended (Allingham & Sandmo 1972) approach to relate with individual's incentive to invest in concealment of underreporting while (Borck 2004) extended (Allingham & Sandmo 1972) approach to prove that stricter enforcement can lead to more evasion.

Estimation of underground economy along with tax evasion and macroeconomic implications are associated with work of (Tanzi 1980) who wrote premier on tax evasion. (Tanzi 1980) was one of initial developers of tax evasion theory and its estimation procedure. (Feige 1979) is also famous for his monetary approach and most of studies in past have modified approaches of either (Tanzi 1980) or (Feige 1979) or (Guttmanan 1977).

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Munir Qureshi was one of the pioneers of underground economy theory in Pakistan and wrote "Fiscal Imperatives in Pakistan's Economic Development" in 1989 which made a major contribution to literature. This area remained center of attention of various scholars and many studies were conducted in Pakistan during 90's. Fresh assessments of black economy were made in studies conducted in 2003 and 2007 on PIDE's behalf and most recent as well as notable one is (Kemal 2007) which comprehensively compares result of all past research on black economy in Pakistan and his work.

Studies in Pakistan highlighted fact that agriculture's share in GDP is high but share in tax collections from agricultural sector are as low as 1 or 2 per cent. Other studies in the country suggested that agricultural tax should be imposed to stop tax evasion of industrial income by showing it as from land. In addition, studies even discussed corruption and inefficiency of FBR and recommended restructuring of FBR. Musharraf tried to levy agricultural tax in his regime but failed to successfully implement it due to pressures.

Moreover, recent restructuring of FBR took place in 2007. Hence, we can observe an important role that studies have played in practice. We can observe a shift of policies towards conclusions of these studies.

## **Managerial Concerns**

Underground Economy and Tax Evasion create problems for management of the country as policy makers cannot forecast effects of policies based on unreliable indicators which are consequence of black economy. If we take a simple example, policy makers cannot even forecast revenues for the year easily as indicated by fact that estimates of collections are made every year https://assignbuster.com/the-toxic-underground-economy-of-pakistan/

and they are revised once or twice in a year. So, understanding of the underground economy dynamics can help policy makers to draft policies by making policy adjustments based on the appraised effects of the underground economy.

Secondly, this research highlights various methods of tax evasion, loopholes in the system, availability of opportunities to invest in concealing low income reporting, existence of tax heavens and reaction of people to tax policies along with feedback of tax authorities to society's behavior. Moreover, dynamics of black economy have been discussed comprehensively in this research to look at way underground economy operates and tax evaders react to given set of policies such as audits and tax rates. Hence, policy makers can have a clear concept about underground economy and they can think on these lines to counter problem of black sector and tax evasion. Besides, by evaluating factors involved in underground activities and tax evasion highlighted by this research, taxation authorities might also be able to draft such policies that can increase compliance rates.

This research intends to prove that increases in tax base and reduction in tax evasion can cause significant decline in budget deficit. Hence, policy makers can also evaluate results of this research for reforming tax policies and changing their focus to tax base broadening policies and other similar ones that can reduce budget deficits along with increased revenues without burdening tax compliers.

#### **Academic Concerns**

Insights about black economy from this research open up vast horizons for further research. The discussion in this paper points out many different dimensions of black sector and relationship between tax evasion and macroeconomic processes. This research has focused on proving that black economy and tax evasion and tax revenue cause revenue loss which in turn leads to budget deficit, unsustainable debt and undermining of development priorities. Based on this, a new research on measuring dead weight loss to society due to underground activities can be carried out in future. On grounds of this research, another idea for future research is to study relationship between tax evasion and debt accumulation incorporating comparison of narrow tax base countries with broad tax base countries. Lastly, this research has pointed out that tax culture is not prevalent in Pakistan. So, a research on development of tax culture and extent of its prevalence can also be conducted with goal to develop guidelines for creating tax culture in the country.

# **Related Keywords**

## **Keyword**

# **Definition**

# **Underground Economy**

The segment of a country's economic activity that is derived from sources that fall outside of the country's rules and regulations regarding commerce. The activities can be either legal or illegal depending on what goods and/or services are involved.

#### Tax Evasion

An illegal practice where a person, organization or corporation intentionally avoids paying his/her/its true tax liability. Those caught evading taxes are generally subject to criminal charges and substantial penalties.

## Tax Avoidance

Tax avoidance is the legal utilization of the tax regime to one's own advantage, to reduce the amount of tax that is payable by means that are within the law.

#### Tax Shelter

A legal method of minimizing or decreasing an investor's taxable income and, therefore, his or her tax liability. Tax shelters can range from investments or investment accounts that provide favorable tax treatment, to activities or transactions that lower taxable income. The most common type of tax shelter is an employer-sponsored 401(k) plan.

# **Tax Compliance**

The extent to which economic agents pay the taxes that their government has levied.

## Tax Heaven

A tax haven is a country or territory where certain taxes are levied at a low rate or not at all.

Individuals and/or corporate entities can find it attractive to move themselves to areas with reduced or nil taxation levels

# **Study Objectives**

The objective of study is to look at various factors such as burden of tax, concealment costs, regulations, tax morale, income inequality and efficiency of tax authority that contribute to tax evasion and underground economic activities. From this analysis, conclusions about significant factors will be drawn. Furthermore, study is aimed to look at the way black economy operates and its macroeconomic implications particularly on budget deficits and debt burden. Some people say that black economy is not bad as all black money is spent in formal economy and contributes to GDP. So, study will conclude towards end if this is the case and justify if tax evasion is chronic for Pakistan or not.

## Literature Review

- 2. 1: Overview of Black Economy estimations
- 2. 2: Costs faced by tax evaders and policy implications
- 2. 3: Culture, Society and psychological tax contract
- 2. 4: Tax evasion, fiscal operations and underdevelopment
- 2. 5: Theory of Budget Deficit

# Methodology

# Framework of Analysis

This paper analyzes two frameworks. First model assesses impact of some factors on tax evasion whereas, other model looks at manner in which tax evasion impacts budget deficit of our economy and thus concludes various

implications. A reduced form model between underground economy and formal sector will be used towards end to study linkage between two.

Model 1:

# **Independent Variable:**

Corruption (Corruption Perception Index)

Reference: Ahmed & Ahmed (1998)

# **Independent Variable:**

Income Inequality (Gini Index)

## **Reference:**

Bloomquist (2003)

## **Independent Variable:**

Burden of Tax (Highest Marginal Tax Rate, Individual)

#### **Reference:**

Qureshi (1985)

# **Dependent Variable:**

Tax Evasion

# **Independent Variable:**

Efficiency of FBR (Tax Collections/Budget Estimates)

# **Independent Variable:**

Regulatory Quality (Regulatory Quality Index)

Reference:	
Kemal (2007)	
Model 2:	
Independent Variable:	
GDP growth	
Reference:	
Independent Variable:	
Tax Evasion	
Independent Variable:	
Debt Servicing	
Reference:	
Independent Variable:	
Inflation	
Reference:	
Reference: Independent Variable: IMF Conditionality	
Independent Variable:	
Independent Variable:	
Independent Variable:  IMF Conditionality	
Independent Variable:  IMF Conditionality  Independent Variable:	

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Tax Evasion

Model 3:

# **Independent Variable:**

GDP (Underground Economy)

# **Dependent Variable:**

**GDP** 

#### Theoretical Justification

Model 1: As discussed earlier, this model regresses tax evasion against its causative factors and measures degree of sensitivity of each variable. For sake of studying black economy dynamics, it is appropriate to make a model of tax evasion incorporating causative factors and study direction of relationship along with sensitivity of each variable.

The first and most important variable is Burden of tax as indicated by review of literature. Many authors believe that higher tax rates increase burden of tax on people by lowering after tax income as less is now available for consumption. More or higher taxes mean that people now have to forgo more. For instance, an increase of 10 per cent tax on taxable income of 500, 000 means a straight forward cut of 50, 000. So, there is always an incentive for people to forgo less and thus tax evasion behavior is observed more in presence of higher taxes. Higher tax rates mean that people will try to work more and spend less (pay less tax). This in turn has implications for labor market where unregistered workers might work more and pay no taxes. (Kemal, 2007) has discussed these labor market dynamics implicated by Hofreither and Sechneider (1989). Hence, in most of cases, higher burden of tax means more tax evasion.

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Illegal social transfers such as bribe go unreported in most of cases and involve a great deal of underground economic activity in Pakistan. Thus, degree of corruption in a country has implications about illegal channels, activities and transfers. Higher corruption means lack of accountability in country while lack of accountability means that there is less probability of tax returns being scrutinized. Even if someone gets caught, still that person can escape legal procedure through illegal social transfers such as bribe in presence of corruption. Thus, individual feels less accountable and challenged by law and this results in greater incentive for tax evasion. Therefore, a positive expected relationship between corruption and tax evasion is justified.

If individuals of a society feel that they are being given unfair tax treatment then tax morale might fall and result in tax evasion. (Bloomquist, 2003) indicates possibility that economic disparity might lead to increased tax stress and thus more evasion. Similarly, in presence of income inequality, extremely poor or people falling in lower quintiles of income distribution might feel higher burden for same tax rate than rich people. This might result in creation of perception of unfair taxation system. Hence, presence of income inequality and its extent are expected to positively influence tax evasion.

(Kemal, 2007) discussed intensity of regulations as a driving force behind tax evasion in perspective of market restrictions. He views regulations as increased labor costs which are then shifted to employees. Regulations have been thus suggested to increase tax evasion. However, if better regulatory quality is achieved with lower intensity of regulations then a lower tax https://assignbuster.com/the-toxic-underground-economy-of-pakistan/

evasion can be achieved. Hence, a negative appraised relation of regulatory quality with tax evasion is acceptable.

(Qureshi, 2005) in "Fiscal Imperatives of Pakistan's Economic Development" points out a role of tax authority to counter tax evasion as important. If tax authorities are vigilant and aggressive enough then a low tax evasion can be achieved. If tax authority is aggressive to increase tax revenues, this might lead to more scrutiny along with efficient administration and lower tax evasion. If tax collection authority is efficient, it will generate more revenues at lower costs. Hence, more generation of revenue means that there will be more policies and effort to counter tax evasion problem. Therefore, increased efficiency of FBR in Pakistan's case is expected to lower tax evasion as increased collections or policies targeted to increase collection in turn lead to increased compliance by society. Higher collections due to more efficiency mean that FBR will try to spot each individual or subject from where it can get additional taxes. As a consequence, FBR may scrutinize tax returns and look for potential tax evasions or avoidances.

Model 2: This model demonstrates relationship between budget deficit and economic variables. Aim of this formulation was to establish a relationship between tax evasion and budget deficit in order to assess argument that black economy spending in formal economy contributes positively to formal sector. This model is supposed to observe relationship between tax evasion and budget deficit in Pakistan. However, other variables are being added to avoid potential biases.

Budget deficit means excess of expenditures over revenues and this leads to lower funds for development in many developing nations. If tax evasion increases, intuitively speaking, this means a lower tax revenue and increased budget deficit with lower development. If black economy contributes positively to formal economy than tax evasion should not be a concern. This variable is being tested for its significance and a positive relationship between tax evasion and budget deficit is expected. This is because government spending which has a multiplier effect lowers, while those who evade huge amounts of tax, spend illegal money on nonproductive luxuries.

(Roubini-Sachs, 1988) showed in their result that an increase in GDP growth lowers budget deficits. A higher GDP growth is required for development and results in increased income. Higher income per capita means more tax collections from each individual and thus more tax revenues for government. So, there is a tendency of lower budget deficits in presence of higher GDP growth and hence a negative association is quite reasonable to be anticipated.

Twin deficit hypothesis suggests a strong relationship between a country's current account balance and budget deficit. This gives rise to incorporation of trade balance in the model. A negative trade balance means more claims from the foreigners and hence a deficit in current account balance. National income accounts approach of estimating GDP also deducts imports from rest of factors like consumption, investment, government spending and exports. Here exports minus imports reflects trade balance. So, higher imports mean a lower or negative trade balance and thus a lower income or increased https://assignbuster.com/the-toxic-underground-economy-of-pakistan/

deficit. Therefore, it is safe to assume a negative relationship between trade balance and budget deficit.

Relationship between inflation and budget deficit is complicated in sense that direction of causality is not easy to determine. Some economists view that increased deficits lead to seigniorage and eventually inflation while others observe budget deficits as a consequence of inflation. Inflation can lead to increased interest rates and thus lower investments. Consequently there is decline in income and tax revenues which further causes budget deficits to increase. Regardless of direction of causality, a positive relationship is expected between these two variables.

Budget deficits also depend on amount of debt servicing especially external debt in case of developing nations. In Paksitan's case we can observe that current expenditure is high and share of debt servicing in current expenditure is sizable. A country like Pakistan which observes low tax revenues and a narrow tax base, debt servicing is one of the leading causes of budget deficits as a major chunk of budget goes in debt payments while revenues are insufficient to cater other budgetary allocations. Higher debt servicing means increased expenditure for a particular level of revenues and thus excess of expenditure above revenues by larger amount. Hence, an increase in debt servicing can be associated positively with budget deficits.

IMF conditionalities are important to study budgetary deficits. Conditions by
IMF can lead to decline in budget deficits because a country taking loan from
IMF has to perform in accordance with levied conditions. For instance, IMF
asked Pakstani policy makers to cut deficits and remove subsidies. Besides,

increase in price of utilities was also recommended by IMF recently and have

been observed recently. So, economic sanctions by IMF do matter and it is

fine to say that more conditions mean lower budget deficits and thus

indicate a negative expected correlation.

Model 3: Basically this is a reduced form model and has been formulated to

observe direct linkage or relationship between underground economy and

formal economy. This is also a part of analysis to look if benefits of black

economy spendings in formal sector outweigh the erosion of tax revenues

and fall in government spending that is said to have a multiplier effect. As

detailed analysis on tax evasion and budget deficits has been formulated,

there is now need to study correlation between formal economy of Pakistan

and black market that has evolved over time. So, results of this model are

expected to provide useful insights and a negative relationship between two

is expected in Pakistan's case on basis of argument that all black money is

usually kept in lockers or spent on non-productive luxury while government

spending that has multiplier effect lowers.

Statement of research hypotheses

Model 1:

H0A:  $\hat{I}^2$ Corruption = 0

HAA: Corruption > 0

 $H0B: \hat{I}^2Gini = 0$ 

HAB:  $\hat{I}^2$ Gini > 0

H0C:  $\hat{I}^2$ Regulatory Quality = 0

HAC: Î<sup>2</sup> Regulatory Quality <0

H0D:  $\hat{I}^2$ Highest Marginal Tax Rate = 0

HAD:  $\hat{I}^2$ Highest Marginal Tax Rate > 0

H0E:  $\hat{I}^2$ Efficiency of FBR = 0

HAE: Î<sup>2</sup>Efficiency of FBR < 0

Model 2:

H0A:  $\hat{I}^2$ Tax Evasion = 0

HAA:  $\hat{I}^2$ Tax Evasion > 0

H0B:  $\hat{I}^2$ GDP growth rate = 0

HAB:  $\hat{I}^2$ GDP growth rate < 0

H0C:  $\hat{I}^2T$ rade Balance = 0

HAC:  $\hat{I}^2$ Trade Balance < 0

H0D:  $\hat{I}^2$ Inflation = 0

HAD:  $\hat{I}^2$ Inflation > 0

H0E:  $\hat{I}^2$ IMF conditionality = 0

HAE:  $\hat{I}^2IMF$  conditionality < 0

Model 3:

H0E:  $\hat{I}^2$ Size of underground economy = 0

HAE:  $\hat{l}^2$  Size of underground economy < 0

## **Elements of Research Design**

This research is empirical in nature and proceeds with a specific aim to analyze how black economy operates and impacts our country along with tax evasion. So, this research is applied in nature. Besides, absence of experiments indicates that research is being conducted in natural setting with no artificially controlled variables.

Data under analysis is secondary and is time series in nature where reference period ranges from year 1980 to 2009. This means there will be 30 observations for each variable in all three models.

# **Data collection preferences**

Data has been taken from various sources for variables of all the models.

Data has been taken from publications of institutes such as World Bank, IMF,

Transparency International, Federal Board of Revenue and State Bank of

Pakistan. Besides, data from Federal Bureau of Statistics and Ministry of

Finance has also been retrieved online.

World Bank and IMF are world's reputed institutions and reliability of data is not much concern. However, there is always a chance of error in case of indexes because an index is made on basis of a certain definition. However, indexes of World Bank are highly reliable as they include data on as many components possible. For instance, regulatory quality index by World Bank https://assignbuster.com/the-toxic-underground-economy-of-pakistan/

incorporates around fifteen categories of different variables. Moreover, data by World Bank is mostly collected from private sector lawyers while government sources second lawyers and least contribution is made by accountants. So, reliability of data is not a concern in case of international institutions as they are global standards for research purposes. However, there are concerns which even World Bank itself finds vulnerable. Prime concern is provision of information by few informants as sometimes a single entity is used to collect data of 147 countries and thus there is need to increase informant base and reduce self-selection bias. Secondly, data from World Bank includes information about methodology but it lacks transparency as no information regarding informants and changes made to previous data are provided. World Bank itself realizes that indicators must suggest users about biases and errors in data but this is not the case due to lack of transparency. So, we can conclude that data from World Bank source is reliable but might undermine credibility and goodwill due to transparency issues.

IMF on other hand appraises performance of its borrowing countries in light of conditionalities. IMF requires governments to submit macroeconomic statistics and also monitors these economies. In case of falsified data, IMF charges fine to the country in case. In addition, IMF mostly provides data relevant to trade, government accounts and monetary system and such data is hard to manipulate as transactions are also recorded by trading partners. Hence, reliability of data is not much of concern in our case.

State Bank of Pakistan on other hand is Pakistan's most developed and reputed institution. Data is being gathered by Statistics and data warehouse department since 1949 and quality of data i