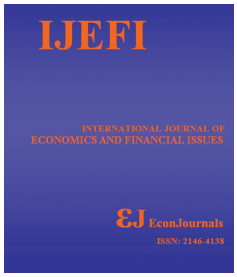

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Dynamic Relationship among Tax Evasion, Control over Corruption and Political Accountability: A Case Study of Pakistan

Asif Razzaq[1], Rabia Nazir[2]*, Fareeha Adil[3]

[1]PhD Scholar, School of Management and Economics, Dalian University of Technology, China, [2]Department of Economics, the Islamia University of Bahawalpur, Pakistan, [3]Consultant, Sustainable Development Policy Institute, Islamabad, Pakistan.
*Email: rabia.nazir@iub.edu.pk

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ABSTRACT

Public provisions and public resources are crucial for achieving the economic development of any economy. The government needs revenue in order to provide these public provisions. Pakistan faces grave challenges to enhance its revenue targets. Tax evasion is one of the factors for this shortage of tax revenues in Pakistan. Therefore, the study employs a co-integration approach to establish short term and long-term relationships between tax evasion, governance (measured as control over corruption), and political accountability. Engle-Granger approach is used to measure ECM while Johansen cointegration test is conducted for long-run relationships among the variables. The study explores that both the control over corruption and the political accountability reduce tax evasion, while the lag value of tax evasion and tax evasion to GDP determines the behavior of taxpayers. Error correction term shows that there is 22% speed of adjustment in the short run to restate the equilibrium while there is a weak long-run relationship among these variables.

Keywords: GDP, Tax Evasion, Corruption, Political Accountability, Co-integration
JEL Classifications: H2, H3, H8

1. INTRODUCTION

Government services and public infrastructure are prerequisites for economic growth and development. Most of the developing countries run short of theses public goods which ultimately hamper the growth of the economy and social sectors (Rajkumar and Swaroop, 2008). Pakistan is facing many economic and social evils which have led to the failure of the government institution, government writ, and control. Pakistan is facing terrorism as social unrest, poverty, and inequality as economic unrest and weak democracy as political unrest (Ahmed 2009; Arby et al., 2010). There is no government writ, poor administration of institutions, poor governance, and weaker law and order situations without accountability prevail which leads to the destruction of government institutions. Among all these social and economic evils, corruption is the core cause of all the problems (Ilyas and Siddiqi 2010; Eijaz et al., 2014). There is an emerging informal economy that leads to increased tax evasion and an underground economy and compels the government to arrange huge external debts and increased dependence on financial aid to fulfill the gap of budget deficit or revenue shortage (Ahmed and Ahmed, 1995; Ahmed 1994;Ahmed and Rider 2008; Kemal, 2007).

In recent years, the focus of the politicians and economists is diverted towards a growing informal economy that leads to massive tax avoidance and tax evasion. Tax evasion leads to a shortage of government revenue collection and creates a great hurdle in financing the public budget (Rasheed, 2006; Feige, 1979; Aslam, 1998). Thus governments finance the heavy budget deficit by printing money or by arranging loans (Schneider and Dominik 2000). Normally tax evasion and tax avoidance are used synonymously; however, they are different from each other (Anwar and Ahmad, 2012). Tax evasion refers to concealing income from the tax department or unwillingness to submit

tax returns while tax avoidance is a legitimate and tricky way to manipulate the figures of sales revenue to decrease taxable income. Tax avoidance is admissible by law but tax evasion is a crime, therefore, it is important to study the factors behind tax evasion (Alm, 1988).

Informal economy is expanded when there is no documentation of the economy and businesses are not registered. High tax rates, lack of trust between the tax collector and taxpayer, unemployment, low-profit margins, lesser government facilities, and recession may lead to higher tax evasion Gillman and Kejak, 2008. Moreover, high tax rates, inefficient and corrupt officials of tax department, unavailability of government infrastructure may also cause tax evasion. Control over corruption and accountability sets out the rule of the game and develop a decent culture in which people are confidents to submit their returns (Nerré, 2008). It is empirically found that penalties and strict rules of law lead to higher efficiency and it discourages crimes significantly. In Pakistan, the formal sector is only thirty percent of the total and most of the self-employed persons evade taxes by manipulation and corruption (Kemal, 2007).

According to Mughal (2012), there is massive corruption both on the part of taxpayers and tax collectors. From the taxpayer's point of view, the officials of the taxation department are corrupt. They enforce taxpayers to bribe by complicating policy and procedures, blackmailing, and harassment. They use heavy government funds but are unable to enhance the tax base and have no control over tax evasion. In Pakistan, FBR is considered a corrupt and politicized department. Tax to GDP ratio is increased by increasing tax rates which hamper tax base in reality. Chaudhry and Munir (2010) argued that all the structural reforms introduced by FBR failed just because of the inefficient management by the department. In order to provide better government services and infrastructure, the government needs more and more revenue to compensate for its expenditure. Hence, tax machinery and bureaucracy should be accountable for their work and the government should make strict rules to control the widespread corruption.

From the above debate, it is highlighted that tax evasion is a critical issue in Pakistan and there is also a lack of empirical evidence that addresses the issue. Therefore, the study intends to explore the determinants of tax evasion in Pakistan. We specifically target tax evasion, government accountability, corruption control, and tax base to verify the relationship among these variables.

The rest of the paper is organized as follows: part two of the paper covers relevant literature in this field. Section three of the paper explains the data and methodology used for the analysis. Results are reported in section four and the conclusion is drawn in section five of the study.

2. LITERATURE REVIEW

Tax evasion and avoidance may result from many domestics and international weaknesses of the system. The domestic institutions such as bureaucracy, overregulation, corruption, and weak legal and political and international factors such as trade price distortion and corporate profit shifting activities may lead to higher tax evasion and tax avoidance (Fuest and Riedel, 2009).

Kemal (2007) conducted a fresh assessment of the size of the underground economy and tax evasion and its effects on formal GDP. He used a monetary approach to best measure. He convoluted that the extension of informal economy and tax evasion was associated with a rise in taxes, social security burdens, the intensity of regulations in the official economy, early retirement, and non-economic factors that unwillingness to show exact income or profit. A co-integration analysis is conducted to find our short term and long term relationship among these variables It is assumed that revenue on tax evaded money is counted as for the formal taxed money.

Sam (2010) explored the relationship between tax evasion and the underground economy. In order to measure the relation, he adopted the approach, which is known as Internal Revenue Service's Taxpayers Compliance Measurement Programmed (TCMP). He classified and explored the underground economy into the underground taxpaying economy and underground nontaxpaying economy. It confined that the removal of tax evasion could not refer to the removal of the underground economy until measures are taken to curb corruption, reduce poverty, improve public administration, and others.

Franzoni (1999) explored the distinction between tax evasion and tax compliance through a descriptive study. In his study the taxpayers are guided by the amount that each taxpayer considers fair to pay with an assumption of tax evasion is generally lower than under selfish behavior. He followed alternative approaches to include the best measure Sociological and ethical factors. Problems of the study were the random and casual behaviors, avoid disclosing about its taxable income as well as the tax to be paid. The author argued that empirical research is far from conclusive. There is a need for future empirical and analytical work on the topic.

Farooq (2006) explored the different economic effects come into play for determining tax revenue patterns. He used econometric models consist of dummy variables to capture the change in tax rate and tax structure as a change in policies. He found that the buoyancy rate is only associated with GDP, the volume of trade, and high powered money only among different underlying factors. The study conducted with a constraint that there is no major change in the tax regime during the period under study.

Franzoni (1999) portrayed different factors affecting tax evasion and tax compliance. He showed that there is a significant relationship between tax rate and marginal contribution of tax rate Empirical evidence suggested that the key variable here is the probability of detection as auditing procedures and rules regarding tax evasion. Social and moral attitudes play a very important role but often these are beyond the reach of study. Kemal and Qasim (2012) ascertained the measure of UGE and factors affecting tax evasion. He followed Tanzi's methodology with certain modifications regarding the measurement of the benchmark period for comparison in which the money supply is reliable. He showed empirically tax evasion and UGE in various years using different benchmarks. He used a cointegration approach to do conduct time series analysis.

Ihendinihu (2010) ascertained the determinants of the underground economy and also explained the causal links between tax and non-tax factors and growth in the size of the underground economy in Nigeria. They explored that corruption, unemployment, illiteracy; low wage rate, inflation; credit access, and marginal rate of return are the core determinants of the size of the underground economy. A blend of a descriptive survey and causal-comparative research designs were adopted. The random sampling method was used in selecting two States from each of the six geo-political zones in Nigeria. Ahmed and Rider, (2013) calculated the tax gap as a direct gap and indirect gap by types and described methodologies and data used to produce these estimates. They used different approaches to estimate the tax gap as a top-down approach for aggregate data and bottom-up approaches for microeconomic data. They explored that tax evasion increases the tax burden that depends upon the country's tax policy choices as tax rates and enforcement strategies as audit and penalty rates.

Hibbs and Piculescu (2013) described the relationship among benefits of institutions, government rules, and regulation and taxation structure that affect the productive capacity of private enterprises. They try to explain the paradox of tax evasion and corruption on behalf of government officials and regulatory authorities. They used a different methodology to measure different factors that refer to tax evasion and derived that tax evasion is measured by the difference of tax tolerance level and profit tax rate of the firm. The model showed that tax tolerance is the core element, which determines the level of tax evasion.

3. DATA AND METHODOLOGY

This study used International Country Risk Guide (ICRG) Researcher's dataset to measure governance. ICRG uses three dimensions (political, economic and financial) to assess risk factors in a country, using twenty-two indicators, for the principal purpose of guiding the investors. It involves twelve weighted components i.e. government stability, socioeconomic conditions, investment profile, internal conflict and external conflict. Each factor is given a weight of 12 points; Corruption control, military in politics, religion in politics, law and order, ethnic tensions and democratic accountability –each weighted by 6 points; and bureaucracy quality – 4 points. The scores can simply be summed up to range between 0 (worst governance) to 100 (best governance). Data on governance indicators are available from 1984 till 2018. In our model, corruption and democracy-accountability are used from the ICRG data set. The data of the corporate tax rate is sourced from world development indicators (WDI) while the data of the underground economy and tax evasion are estimated by using Tanzi (1980,1983) and Clark (1984) Monitory approach, where tax evasion and underground economy is measured through first three equations as alternative measures Tanzi and Zee (2000). This method produces robust estimates which incorporate multiple dimensions of the underground economy. Equation 7-8 is finally used to estimate the overall underground economy and tax evasion.

$$(CC+FCA/M2)_t=\alpha+\beta(T/Y)t+\gamma BS_t+\varphi G_t+\lambda D+\delta(CC+FCA/M2)_{t-1}+\varepsilon_t \quad (1)$$

$$(CC+FCA/M2)_t=\alpha+\beta(T/Y)_t+\gamma BS_t+\varphi G_t+\lambda D+\varphi inf_t+\varepsilon_t \quad (2)$$

$$(CC+FCA/M2)_t=\alpha+\beta(T/Y)_t+\gamma BS_t+\varphi G_t+\lambda D+\varphi inf_{t-1}+\varepsilon_t \quad (3)$$

$$\text{Illegal Money }(\text{IM})=\left\{(CC+\frac{FCA}{M2})_t-(CC+\frac{FCA}{M2})_{wt}\right\}*M2 \quad (4)$$

$$\text{Legal Money} = \text{M1-IM} \quad (5)$$

$$\text{Velocity (V)} = \text{GNP/LM} \quad (6)$$

$$\text{Underground Economy (UE)} = \text{IM*V} \quad (7)$$

$$\text{Tax Evasion (TE)} = \text{UE*(Total Taxes/GNP)} \quad (8)$$

Here CC = Currency in Circulation, DD = Demand Deposits, FAC = Foreign Currency Accounts, M2 = Money Supply, T = Total Tax Revenues, Y = GDP at current market prices, BS = Banking Services, INF = Inflation Rate D = Dummy variable defines 1 for 1990 to 2005 and zero otherwise, e = error terms, Subscript t shows time period. All these constructs are also derived from WDI.

Normally time series data possess trend and is non-stationary by nature that may lead to incorrect and spurious results if we used standard OLS method. When variables become non-stationary it leads to non-stationary of the residuals as well. In such a condition standard OLS method go against the assumptions of the method. In the case of stationary data, there are temporary shocks and it will ultimately remove with the passage of time and the data series return to its equilibrium means value in the long run. We have used Angel Granger cointegration technique for short-run analysis and Johansons and Jaselus cointegration techniques for long-run analysis.

Since all the variables in our model are stationary at the first difference, we have used an error correction mechanism (ECM). ECM proposed by Engle and Granger is an appropriate method to find out the adjustment process of disequilibria. ECMs are originated at the integration of order one which removes the effects of the previous trend if we have cointegration. By the definition of cointegration disequilibrium residual term is a stationary variable. Therefore, it has significant inference: when two variables are co-integrated i.e. errors may not occur in the long run and short run errors are removed later. In order to find Error Correction Term, first, we generate residual from OLS regression if all the concerned variables are integrated of order one.

$$TE=\beta o+\beta_1 COR+\beta_2 ACT+\beta_3 UGE+\beta_4 TR+\beta 5\, TE\,(-1)+U \quad (1.1)$$

Where, TE, COR, ACT, UGE, TR and TE(-1) represent tax evasion % of GDP, control over corruption index, accountability index, underground economy % of GDP, corporate Tax rate, and lagged tax evasion, respectively.

After generating residual, we run a new regression with the difference operator and used lagged residual value as an independent variable. The coefficient of U (-1) is the error correction term which shows short-run adjustment towards equilibrium.

$$D(TE)= \beta o+\beta_1 D(COR)+\beta_2 D(ACT)+\beta_3 D(UGE) + \beta_4 D(TR)+ \beta_5 D(TE(-1)) + \beta_5 U(-1) + e \quad (1.2)$$

4. RESULTS AND INTERPRETATION

ADF test is used to check out the order of integration, which is a prerequisite for Angle Grangle ECM approach. Results of the ADF tests are reported in Tables 1 and 2 below.

Table 3 shows the results of PP unit root test. Derived outcomes demonstrate that tabulated values of CD, FD, GS, UGE and Corrp are greater than the calculated statistics which implied that these are non-stationary at level. After first differencing the data series convert into stationary as its tabulated values are less than calculated values at 5%.

The outcomes of both tests are almost the same and endorsed that the above variables are integrated of order one. Keeping in view the stationarity level, time series analysis suggested Johansen Cointegration technique for estimation of long-run results. So the next step is to apply cointegration. Once it is confirmed that all variables are integrated of order one that is I (1), which is pre-requisite for Johansen cointegration test, the next step is to regress the dependent variable on the set of independent variables after deriving the optimum lag length criteria which will be incorporated while running Johansen estimation. Thus the said model is estimated and long-run results derived. Lag length is selected based on AIC, FPE, and SC which suggest a minimum two lags for Cointegration analysis as is shown in Table 4.

There are five variables that need to be checked for the existence of long-run association or cointegration among them. Following are two hypotheses which are tested in Table 5 and 6 below.

First null hypothesis: H_0 : No. Cointegration among the variables

Second null hypothesis: H_0 : There is at least one co integrated equation

Firstly, Null hypothesis is rejected as the calculated value of Trace and Eigen Statistics is greater than its critical value at 5%. We cannot reject the null hypothesis while testing the second hypothesis as its calculated value is less than the critical value at 5% implies that there is at least one cointegrated equation or long association exists in the model. Finally, it is found that all the five variables have a long-run association or in the long run, they move together. The same results are endorsed by Max Trace Statistics in Table 6.

All the variables are stationary at 1st difference and at a 5% level of significance, which is the evidence to conduct Angel and Granger ECM approach and adopt the standard procedure to generate as a residual and error correction term.

Table 7 shows that all the independent variables are statistically significant at 5% level of significance. Democracy-accountability and control of over corruption show a negative relationship with tax evasion. As the coefficient values of these variables increase, the amount of tax evasion is decreased. The tax rate shows a positive relationship with the tax evasion, which shows that tax

Table 1: Results of ADF test with intercept

Variables	ADF test statistics at level	Critical value at 5%	ADF Difference
TE	−2.08	−2.97	−7.34**
COR	−2.13	−2.97	−5.31**
ACT.	−1.32	−2.98	−4.10**
UGE	−1.15	−2.97	−5.71**
TR	−2.33	−2.98	−5.392**

**Test statistics are higher than the critical value at 5%

Table 2: Results of ADF test with trend and intercept

Variables	ADF test statistics at level	Critical value at 5%	ADF difference
TE	−2.58	−3.58	−7.26**
COR	−3.80	−4.34	−5.30**
ACT.	−1.71	−3.60	−3.67**
UGE	−2.31	−3.58	−5.63**
TR	−2.24	−3.59	−5.12**

**Test statistics are higher than the critical value at 5%

Table 3: PP unit root test

Variables	PP test statistics at level	Critical value at 5%	PP difference
TE	−2.05	−2.97	−7.36**
COR	−2.11	−2.97	−5.37**
ACT	−1.39	−2.98	−6.94**
UGE	−1.15	−2.97	−5.71**
TR	−3.22	−3.58	−5.11**

**Test statistics are higher than the critical value at 5%

Table 4: Selections of optimum lag length criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	−92.06	NA	0.01	8.09	8.34	8.15
1	−28.69	95.06*	9.66	4.89	6.36	5.28
2	51.58	35.80	2.92*	2.37*	6.29*	3.41
3	−2.13	28.77	0.01	4.77	7.46	5.47*

*Indicates lag order selected by the criterion, LR: sequential modified LR test statistic (each test at 5% level), FPE: Final prediction error, AIC: Akaike information criterion, SC: Schwarz information criterion, HQ: Hannan-Quinn information criterion

Table 5: Max eign values and trace statistics values for cointegration

Hypothesized no. of CE (s)	Eigenvalue	Trace statistics	0.05 critical value	Prob.**
None*	0.81	82.61	69.82	0.003
At most 1	0.54	41.28	47.86	0.179
At most 2	0.46	21.72	29.80	0.314
At most 3	0.17	6.31	15.49	0.659
At most 4	0.06	1.64	3.84	0.200

Trace test indicates 1 cointegrating eqn (s) at the 0.05 level. *Denotes rejection of the hypothesis at the 0.05 level

Table 6: Unrestricted co-integration rank test (max eigen value)

Hypothesized no. of CE (s)	Eigen value	Trace statistics	0.05 critical value	Prob.**
None*	0.81	41.33	33.88	0.005
At most 1	0.54	19.57	27.58	0.371
At most 2	0.46	15.41	21.13	0.261
At most 3	0.17	4.67	14.26	0.782
At most 4	0.06	1.64	3.84	0.200

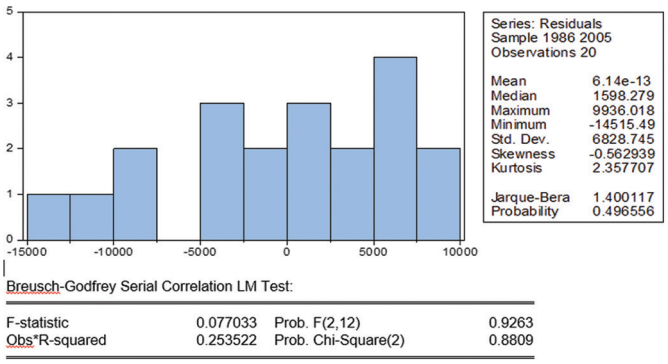
Max-eigenvalue test indicates 1 cointegrating eqn (s) at the 0.05 level, *denotes rejection of the hypothesis at the 0.05 level

Table 7: Long run results

Variables	Cointegration Results		
	Coefficient	SE	T Value
COR	−0.73	0.08	−9.10***
ACT.	−0.39	0.09	−4.30**
UGE	0.50	0.07	7.10***
TR	0.60	0.10	6.00***
ECM	−0.72	0.03	−2.4**
R2	0.65		
Adj. R2	0.52		
F Test	9.40		

*** and ** stands for significance at 1% and 5% level

evasion goes up if the tax rate is increased. There is a theoretical plausibility as the signs of all coefficients of independent variables are according to theory. The error correction term is also significant and negative which shows convergence towards equilibrium. ECM shows a slow speed of adjustment that is 22%.



For the robustness of the results, we apply some diagnostic tests as JB test for checking the distribution of error term and serial correlation test for autocorrelation. The diagnostics show that errors have a normal distribution and the Breusch-Godfrey Serial Correlation LM test shows no serial correlation in our model. For the long-run relationship, we conduct Johansen and Jaselus co-integration techniques. Based on trace statistics, there is only one co-integrated vector equation, which shows that there is a long term relationship between these variables.

5. CONCLUSION AND POLICY RECOMMENDATION

Tax evasion is a grave challenge faced by the tax authorities in Pakistan. Tax to GDP ratio is low due to tax evasion. Low tax revenue leads to a heavy budget deficit that ultimately compels the government to arrange loans from international institutions at the cost of the sovereignty of the country. This study shows that control over corruption and political accountability tends to reduced tax evasion while a high tax rate leads to high tax evasion. Using co-integration analysis, we have found a significant short-run relationship between the variables of interest with a 22% speed of adjustment towards long-run equilibrium. Johansen's cointegration test is used to find out a long-run relationship that shows a weak long-run relationship between these variables.

There is a need to improve the tax structure by reforming tax administration, political and intuitional accountability structures, and by greater control over corruption. The government should develop tax culture in which taxpayers, tax collectors, legislatures, and politicians are interconnected and an environment of trust in the government prevails. Enhanced accountability of the officials responsible for tax collection and usage is required to enhance tax revenues.

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