

TESTING ASSUMPTIONS OF THE “SLIPPERY SLOPE FRAMEWORK” USING CROSS-COUNTRY DATA: EVIDENCE FROM SUB-SAHARAN AFRICA

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ABSTRACT

The emergence of “Slippery Slope Framework” has attracted many researchers who examined the effect of trust in authorities and power of authorities on tax compliance using both the real taxpayer and student subjects. However, these researchers have neglected the use of cross-country data to examine these effects. In line with prior empirical evidences that confirm the effect of trust and power of authorities on tax compliance, this study hypothesizes that both trust and power have association with tax compliance across countries. It further hypothesizes that trust has more association with tax compliance than power. This study is based on 49 Sub-Saharan African countries as the population, out of which 37 countries were selected using multi-stage random sampling. The empirical results from these countries reveal that there is an association between both trust in authorities and power of authorities and tax compliance across the 37 Sub-Saharan African countries, but the association between power of authorities and tax compliance is stronger than that of trust in authorities and tax compliance. Further, the result does not find any causing effect of both trust and power on tax compliance in the countries that constituted the study sample.

Keywords: Authorities; Compliance; Power; Tax; Trust.

1. INTRODUCTION

Though “*deterrence models*” proposed by Allingham and Sandmo (1972) and Srinivasan (1973) have failed to fully explain why individuals pay taxes, they still remain significant in tax compliance research. The concept of “*psychological tax contract*” proposed by Feld and Frey (2007) and Torgler, Demir, Macintyre and Schaffner (2008) have also contributed to understanding why individuals pay taxes without enforcement. The combination of these efforts provides a robust framework known as the “*Slippery Slope Framework*” by Kirchler,

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Hoelzl and Wahl (2008) which to a certain extent, explains why people pay taxes with or without enforcement, i.e., either through trust in authorities leading to voluntary tax compliance or through power of authorities leading to enforced tax compliance. Since the emergence of the Slippery Slope Framework, studies have been conducted to test the effect of trust and power to explain compliance behavior using real taxpayers and students simulations. However, analyses have not yet been using cross-country data. Therefore, this study aims to examine the effect of trust and power using African cross-country data generated from difference sources.

The second part of the paper provides a conceptual framework and review of previous empirical analyses relating to the effect of trust and power on tax compliance. The third part deals with the methodology used to conduct the study. The fourth part presents the results and analysis. Finally, a conclusion is drawn.

2. CONCEPT OF TAX COMPLIANCE BEHAVIOR

Tax compliance has been divided into two perspectives: administrative compliance, i.e., adherence to applicable tax laws; and judicious compliance in terms of accurate completion of tax returns (Chow, 2004). Regardless of its type, tax compliance has been defined as reporting to the relevant tax authority all income and tax payments using the applicable tax laws and regulations as well as court orders (Jackson & Milliron, 1986). It can also be defined as an individual's act of filing tax returns, declaring all income accurately for tax purposes and paying tax liabilities on the due dates as stipulated by the authority or applicable tax laws (Palil & Mustapha, 2011). Similarly, voluntary tax compliance has been defined as “timely filing and reporting of required tax information, the correct self-assessment of taxes owed and the timely payment of those taxes without enforcement action” (Silvani & Baer, 1997, p. 11). Under voluntary tax compliance, taxpayers have to assess themselves using correct information in a timely manner, report the tax due, file the tax returns with the relevant tax authority and make timely payment of the tax payable, usually to designated banks. However, enforced compliance refers to a situation where taxpayers will only be willing to comply with their tax obligations either due to fear of being detected or audited.

The issue of tax and tax compliance behavior is as old as mankind (Ramona-Anca & Larissa-Margareta, 2012). People naturally do not want to pay taxes; however, in this world, two things are inevitable, i.e., death and taxes (Alm, 1999). This inherent hatred to pay taxes has therefore resulted in authorities being very concerned about tax compliance behavior. This has led to researchers widely studying the effect of tax evasion and noncompliance. Noncompliance comprises two categories: intentional and unintentional. Intentional noncompliance is caused by tax evasion; while unintentional non-compliance is caused by the taxpayers' lack of knowledge or ignorance of tax laws or financial condition (Loo, 2006).

The issue of tax noncompliance is a global phenomenon that governments in both developed and developing nations have to deal with. For instance, the amount of unpaid income taxes for individuals and corporations was about USD 127 billion for the 1992 tax year in the United States (US) (Alm, 1999). Recently, tax evasion in the US averages USD 285 billion annually (Cobham, 2005). More recently, in 2011, the unpaid taxes amounted to USD 373

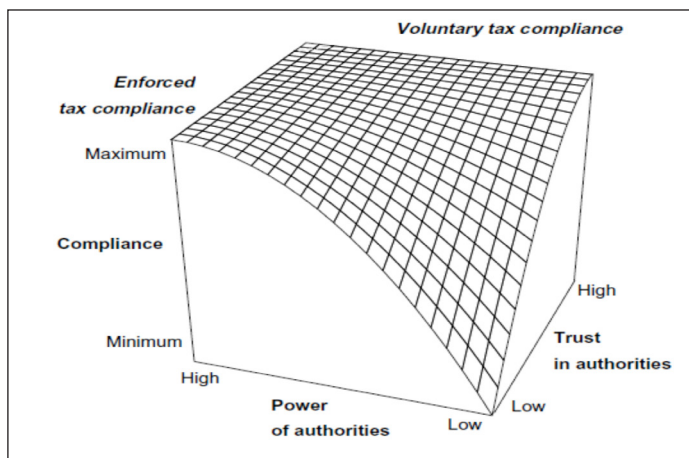
billion (Government Accountability Office, 2012). In developing countries, statistics estimate the average tax evasion in 2002 as being between 35 and 55% of the Gross Domestic Product (GDP), which is worse than that of developed nations, like the US (Terkper, 2003). In 2011, tax revenues accounted for more than 33% of the GDP in developed countries compared to less than 20% in African countries (Carter & Cebreiro, 2011).

In addition, about 95% of personal income taxes in developing countries come from the formal sector through withholding tax, particularly Pay As You Earn (PAYE), of which tax was deducted by the public sector and large firms from the salaries and wages of their employees, compared to 80% in developed nations (International Monetary Fund, 2011, p. 31). International Monetary Fund further states that less than 5% of the population in developing countries pays personal income tax compared to about 50% in developed nations. Further, only about 15% of taxpayers' incomes are reached for tax purposes compared to about 57% in developed countries. A comparison of personal income tax as a percentage of GDP reveals that for the period of 1980–2005, personal income tax was 9-11% of GDP in developed countries compared to less than 2% in developing countries (Sabirianova, Buttrick, & Duncan, 2009, pp. 24-25). Therefore, tax compliance behavior will continue to be an area of research in both developed and developing countries in years to come.

2.1. *The Slippery Slope Framework Concept*

The Slippery Slope Framework for tax compliance behavior was developed by Kirchler, et al. (2008) through conceptual analysis. The Framework shows the need to consider the power and trust in authorities and their forceful interaction for a better understanding of tax compliance behavior. The Framework highlights how power and trust play important roles in both enforced and voluntary tax compliance, respectively. Figure 1 below is the schematic representation of the Framework.

Figure 1: The Slippery Slope Framework



Source: Kirchler, Hoelzl and Wahl (2008: p 212)

Power of authorities means taxpayers’ perception of the ability of tax officers to detect illegal tax noncompliance. This can be through rigorous audit to detect the evasion and authorities’ power to fine the evaders. Trust in authorities means the general opinion of taxpayers and social groups that the tax authorities are compassionate, work beneficially for the common good of the citizens, ensure good governance and are not corrupt. Kirchler, et al. (2008) assert that both trust and power interact to explain tax compliance. Hence, if taxpayers perceive that tax authorities are powerful and trustworthy, the result would be high compliance, and vice versa.

2.2. Prior Empirical Analysis of the Slippery Slope Framework

To further prove the assumption of the Slippery Slope Framework, Wahl, Kastlunger and Kirchler (2010) provided the first empirical analysis of the main hypotheses of the “Slippery Slope Framework”. The Framework’s assumption is that both trust in authorities and power of authorities increase tax compliance. The study was conducted through two experiments. Experiment 1 (students) examined the effect of voluntary compliance and enforced compliance on the overall tax compliance with mediating effect of trust and power, respectively. The two independent variables of voluntary and enforced compliance were jointly moderated by age, gender and income (demographic variable). Experiment 2 (self-employed) examined the effect of intended tax payment, voluntary tax payment, enforced tax payment and strategic tax payment on overall tax payment through the moderating effect of age, gender and income. A quantitative research paradigm was employed with 124 students in Experiment 1 and 186 self-employed in Experiment 2. Computer aided programmed with z-tree was used in Experiment 1; whereas Experiment 2 used questionnaires sent to the email addresses of the subjects. Data of Experiment 1 was analyzed using descriptive statistics with 2-way MANCOVA and ANCOVA; while Experiment 2 used descriptive statistics with 2-way ANCOVA. The results showed that voluntary compliance is high when the authorities are trustworthy.

Researchers have continued to test the Slippery Slope Framework assumptions globally. Kastlunger, Lozza, Kirchler and Schabmann (2013) investigated the assumptions of the Slippery Slope Framework through model testing and enhanced the existing evidence on the framework by distinguishing coercive power from legitimate power. The study correlated tax evasion with enforced tax compliance, voluntary tax compliance, legitimate power, coercive power and trust. Quantitative research paradigm was employed with 389 Italian subjects as sample. Data was collected through online and mail surveys. Structural Equation Modeling was used to analyze the data. The result showed that trust enhanced voluntary tax compliance and voluntary tax compliance itself is negatively related to tax evasion. Accordingly, it confirms the assumption of the Slippery Slope Framework that coercive power affects enforced tax compliance. Further, the result showed that both voluntary and enforced compliance, as well as trust and coercive power, are negatively related.

Kogler et al. (2012) tested the main assumptions of the Slippery Slope Framework in four European countries. The research measured how the four variables of intended tax compliance, voluntary tax compliance, enforced tax compliance and strategic tax compliance mediate the relationship between tax compliance and the independent variables of trust, power and

country. Experimental quantitative research design was employed on 1,319 students from four universities in the four countries under the study. Data was collected through the survey method using questionnaires and analyzed using three way MANOVA descriptive statistics. Results showed strong effect of trust and power separately on compliance. A joint effect of trust and power on tax compliance was also found. There was also a weak effect of trust, power and country on tax compliance. A strong effect was found on trust and country as well as power and country.

In another research, Pellizzari and Rizzi (2014) presented a model with heterogeneous agents who maximize their individual utility based on income (after-tax) and the conjectured level of per capita public expenditure. This was an extension of the Slippery Slope Framework. They studied the relationship between tax compliance as a dependent variable with citizenship (perception of public expenditure, peer influence, risk aversion, morality) and power as independent variables. Experimental research design was employed based on 250 simulations. Data was analyzed using descriptive statistics. The results showed that both citizenship and power are required for tax compliance. But citizenship has more influence on compliance than power. The study extended one part of the slippery slope framework (trust) by adding more dimension to it, thereby changing the variable name citizenship.

From the foregoing, it is evident that several scholars have tested the assumptions of the Slippery Slope Framework in various countries using different subjects and simulations. The findings of these studies indicate that trust and power interact to explain the compliance behavior of taxpayers. However, none of the studies has examined the effect of trust and power on tax compliance using cross-country data. Therefore, this study intends to examine this assumption so as to provide more evidence using a different research dimension, based on the following hypotheses from a cross-country perspective:

- H1* Trust in Authorities has a significantly positive correlation with tax compliance
- H2* Power of Authorities has a significantly positive correlation with tax compliance
- H3* Trust has a more significantly positive correlation with tax compliance than power
- H4* Trust and Power explain tax compliance (causing effect)

3. METHODOLOGY

This section discusses the methodology and methods used in conducting the study, as well as the population, sample, variables, measurement, data and the research model.

3.1. Population and Sample

The population of the study is 49 Sub-Saharan African countries as contained in the World Bank Group-WBG (2012). A sample of 37 countries was selected using multi-stage sampling technique. In the first stage, countries were selected based on the availability of data on the three variables of the study; nine countries were dropped due to lack of complete data for all the three variables, leaving 40 countries. In the second stage, three countries were found to be outliers when power and trust were tested individually against tax compliance, leaving a final sample of 37 countries.

3.2. Variables and Variable Measurement

For tax compliance (TC), tax as a percentage of GDP for all the countries was used. We generated scores of 1-10 for this data by dividing tax as a percentage of GDP by 100 and multiplying by 10. This approach was similar to that reported by the IMD index and disclosed in Kim (2008, p. 407). For instance, tax as a percentage of GDP for Norway and Denmark is 57% and 55.9%, respectively; and their tax evasion scores as reported by IMD are 5.67 and 5.43, respectively. This depicts some level of consistencies between tax as a percentage of GDP and tax evasion scores of IMD. The interpretation of the IMD is that the higher the score, the lower the evasion (higher compliance). Similarly, in our tax compliance score, the higher the score, the higher the compliance (lower evasion).

For trust (TRUST), we used Transparency International’s (TI) Corruption Perception Index (CPI) as a proxy of trust. Similar studies on cross-country analysis (Kastlunger, et al., 2013; Torgler, Schaffner, & Macintyre, 2007; Torgler & Schneider, 2009) have used the same as proxy of trust. TI measured CPI on class intervals (high corruption 0-9; 10-19; 20-29; 30-39; 40-49; 50-59; 60-69; 70-79; 80-89; 90 -100 low corruption).

For power (POWER), we used the rule of law as a proxy based on the definition of the WBG in Worldwide Governance Indicators (WGI). The study used the same proxy to compare Austria with other European countries in terms of power of authorities. The rule of law, as defined in the WGI is based on Kaufmann, Kraay, and Mastruzzi’s (2010) methodology. It is based on percentile of power (low power 0-10th; 11-20th; 21-30th; 31- 40th; 41-50th; 51-60th; 61-70th; 71-80th; 81-90th; 91-100th high power).

3.3. Data and Data Analysis

The data was obtained from different sources. Data relating to tax as a percentage of GDP was sourced from the US Central Intelligence Agency (CIA) database for the year 2012 (Central Intelligence Agency, 2012). The rule of law was sourced from the WBG report for the year 2012 (World Bank Group, 2012). Lastly, CPI was sourced from the TI report for the year 2012 (Transparency International, 2012). Data was analyzed using SPSS version 19. The data is presented in Table 1 below:

3.4. Research Model

From these three variables we developed a model:

$$TC_i = \beta_0 + \beta_1 TRUST_i + \beta_2 POWER_i + \mu_i$$

where TC_i is tax compliance rating for a country; β_0 constant; $TRUST$ is the trust in authorities; $POWER$ is power of authorities; and μ the error term.

Table 1: Tax as Percentage of GDP and Tax Evasion Scores of African Countries

S/N	Country	Tax as % of GDP (CIA, 2012)	Tax Compliance Scores	Rule of Law (WBG, 2012)	Corruption Perception (TI, 2012)
1	Sao Tome and Prin.	39.9	3.99	28.2	42
2	Swaziland	38.7	3.87	42.3	37
3	Equatorial Guinea	37.4	3.74	11.3	20
4	Namibia	36.8	3.68	61.0	48
5	Botswana	31.3	3.13	69.5	65
6	Mozambique	29.6	2.96	33.8	32
7	Congo, Dem. Rep.,	28.3	2.83	1.9	21
8	Liberia	27.8	2.78	17.8	41
9	Mauritania	27.2	2.72	21.1	31
10	Gabon	27.1	2.71	38.0	35
11	Eritrea	26.1	2.61	7.5	26
12	South Africa	25.9	2.59	58.7	43
13	Niger	25.8	2.58	37.1	33
14	Chad	25.4	2.54	3.8	19
15	Senegal	24.2	2.42	40.4	36
16	Ghana	23.8	2.38	54.5	45
17	Guinea	23.6	2.36	3.3	24
18	Rwanda	23.1	2.31	46.9	53
19	Cape Verde	22.9	2.29	63.8	60
20	Burkina Faso	21.9	2.19	44.6	38
21	Togo	20.7	2.07	23.5	30
22	Zambia	20.7	2.07	39.4	37
23	Cote d'Ivoire	20.3	2.03	8.0	29
24	Tanzania	19.7	1.97	34.3	35
25	Gambia, The	19.7	1.97	54.5	34
26	Cameroon	19.0	1.90	16.0	26
27	Benin	18.9	1.89	27.2	36
28	Kenya	18.0	1.80	16.4	27
29	Mali	17.6	1.76	35.7	34
30	Madagascar	17.4	1.74	23.9	32
31	Central African Rep.	15.7	1.57	7.0	26
32	Ethiopia	15.2	1.52	29.1	33
33	Uganda	14.8	1.48	43.7	29
34	Guinea-Bissau	14.8	1.48	6.1	25
35	Sierra Leone	13.5	1.35	22.5	31
36	Nigeria	8.3	0.83	9.9	27
37	Sudan	6.6	0.66	2.8	13

Note: n=37

4. RESULT AND DISCUSSIONS

Table 2 depicts the descriptive statistics of the three variables of the study. Table 3 presents Pearson correlations among the variables. Table 4 presents the regression analysis on the effect of trust and power on tax compliance. The results are depicted below.

Table 2: Descriptive Statistics

Variables	N	Mean	Standard Deviation	Minimum	Maximum
TC	37	2.2911	.77187	.66	3.99
TRUST	37	29.3378	19.30408	1.90	69.50
POWER	37	33.8649	10.73458	13.00	65.00

Note: N=37 list-wise

The TC scores range from 0.66 to 3.99. TC mean score of 2.2911 is considered above average, since it is more than 50% of 3.99, meaning that TC among African countries is higher than average. The TRUST scores range from 1.9 to 69.50. Thus, TRUST mean score of 29.3378 is considered low, since it is less than 50% of 69.50. This implies that TRUST in authorities among African countries is less than average. The POWER scores range from 13 to 65. The mean score for POWER of 33.8649 is considered above average, since it is more than 50% of 65.00. This implies that POWER of authorities is above average for Sub-Saharan Africa.

Table 3: Pearson Correlation

Variables	TC	TRUST	POWER
TC	1.000	0.298; 0.037**	0.361; 0.014**
TRUST	-	1.000	0.849; 0.000*
POWER	-	-	1.000

Note: *significant at 0.001; ** significant at 0.05

Table 4: Regression Analysis

Independent Variable	Statistics
Constant	0.008 (2.829)*
Power	0.920 (-0.101)
Trust	0.210 (1.277)
R ²	13%
R ² Adjusted	7.9%
F	2.547**
F test significance	0.093**

Note: Dependent Variable: TC; *Significant at $\alpha = 0.01$; ** Significant at $\alpha = 0.10$

Pearson correlation analysis in Table 3 was used to test Hypotheses 1 to 3 above, whereas regression analysis in Table 4 served as a basis for testing Hypothesis 4.

In Table 3, the result of the Pearson correlation shows that the correlation between TRUST and TC is positive and significant ($Pearson = 0.298, p = 0.037$). This supports Hypothesis 1 which postulates that there is a significantly positive correlation between trust in authorities and tax compliance. This is consistent with previous studies (Kastlunger, et al., 2013; Kirchler, Hofmann, & Gangl, 2012; Kogler, et al., 2012; Muehlbacher, Kirchler, & Schwarzenberger, 2011; van Dijke & Verboon, 2010; Wahl, et al., 2010) which confirm the association of trust in authorities and tax compliance.

Likewise, Pearson correlation in Table 3 shows that there is a significantly positive correlation between POWER and TC ($Pearson = 0.361, p = 0.014$). This also confirms the Hypothesis that power of authorities has a significantly positive correlation with tax compliance, consistent with prior research on the association of power of authorities and tax compliance (Kastlunger, et al., 2013; Kirchler, et al., 2012; Kogler, et al., 2012; Muehlbacher, et al., 2011; van Dijke & Verboon, 2010; Wahl, et al., 2010).

Additionally, it can be deduced from the Pearson correlation analysis in Table 3 that the significantly positive correlation between POWER and TC is higher than that of TRUST and TC. This is contrary to our postulation that TRUST has a more significantly positive correlation with TC than POWER. The result shows that the correlation between POWER and TC is higher ($Pearson = 0.361, p = 0.014$) than that of TRUST and POWER ($Pearson = 0.298, p = 0.037$). This does not support Hypothesis that trust in authorities has a more significantly positive correlation with tax compliance than power of authorities. The essence of this hypothesis is to test which of the two elements of the Slippery Slope Framework is more correlated to tax compliance so as to highlight policy insights to African policymakers. By implication, power of authorities better explains compliance than trust in authorities in Sub-Saharan Africa. This finding is consistent with the assertion of Fjeldstad (2001) who posited that tax revenue performance in some African countries depends on the degree of coercive power associated with tax enforcement.

In Table 4, the regression analysis shows neither POWER ($t = -101, p = 0.92$) nor TRUST ($t = 1.277, p = 0.21$) has significant causing effect on TC in Sub-Saharan Africa using cross-country data. The regression analysis above analyses depicts significant level of reliability based on similar studies (Riahi-Belkaoui, 2004; Richardson, 2006).

5. CONCLUSION

The study examines the effect of trust in authorities and power of authorities on tax compliance using cross-country data for Sub-Saharan Africa. The result from statistical analysis implies the need for African countries to be committed to increasing the level of trust citizens have on the government; more specifically, tax authorities and officials. Central and state governments should ensure the provision of high quality of services and building qualitative infrastructures with taxpayers' money which in essence will increase the level of trust citizens have for the authorities. It is hoped that the result from this study can help increase tax compliance.

Corrupt practices among tax officials should also be curtailed in order to enhance taxpayers' compliance. Another implication of the study is the need for increased use of power by the government. Specifically, the use of power by tax authorities may be able to enhance tax compliance. Increasing power of detection and penalty could be among the measures Sub-Saharan Africa countries can employ to enhance tax compliance. Compared to the two measures of trust and power, increased power seems to be a greater requirement as highlighted by the statistical results.

We recommend future studies to use panel data in Sub-Saharan Africa, i.e., for a number of years across countries so as to ensure the findings can hold overtime. We also recommend using this approach for other countries so as to further test the assumptions of the “*Slippery Slope Framework*” using cross-country analysis. Using panel data in other continents in testing the Framework's assumptions is also recommended.

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APPENDIXES

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
TC	37	.66	3.99	2.2911	.77187
TRUST	37	1.90	69.50	29.3378	19.30408
POWER	37	13.00	65.00	33.8649	10.73458
Valid N (listwise)	37				

Correlations

		TC	TRUST
TC	Pearson Correlation	1	.298*
	Sig. (1-tailed)		.037
	N	37	37
TRUST	Pearson Correlation	.298*	1
	Sig. (1-tailed)	.037	
	N	37	37

Note: *. Correlation is significant at the 0.05 level (1-tailed).

Correlations

		TC	POWER
TC	Pearson Correlation	1	.361*
	Sig. (1-tailed)		.014
	N	37	37
POWER	Pearson Correlation	.361*	1
	Sig. (1-tailed)	.014	
	N	37	37

Note: *. *. Correlation is significant at the 0.05 level (1-tailed).

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	POWER, TRUST	.	Enter

Note: a. All requested variables entered.

b. Dependent Variable: TC

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.361a	.130	.079	.74069

Note: a. Predictors: (Constant), POWER, TRUST

b. Dependent Variable: TC

ANOVA^b

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2.795	2	1.397	2.547	.093a
	Residual	18.653	34	.549		
	Total	21.448	36			

Note: a. Predictors: (Constant), POWER, TRUST
b. Dependent Variable: TC

Coefficients^a

	Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.386	.490		2.829	.008
	POWER	-.001	.012	-.031	-.101	.920
	TRUST	.028	.022	.387	1.277	.210

Note: a. Dependent Variable: TC

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.7435	3.1075	2.2911	.27863	37
Std. Predicted Value	-1.965	2.930	.000	1.000	37
Standard Error of Predicted Value	.123	.389	.200	.068	37
Adjusted Predicted Value	1.7787	3.1464	2.2947	.29019	37
Residual	-1.29407	1.81228	.00000	.71983	37
Std. Residual	-1.747	2.447	.000	.972	37
Stud. Residual	-1.802	2.545	-.002	1.013	37
Deleted Residual	-1.37640	1.96132	-.00360	.78279	37
Stud. Deleted Residual	-1.866	2.787	.009	1.048	37
Mahal. Distance	.018	8.937	1.946	2.096	37
Cook's Distance	.000	.178	.029	.045	37
Centered Leverage Value	.000	.248	.054	.058	37

Note: a. Dependent Variable: TC

