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Effect of Political Transformation on Economic Growth and Development of Nigeria

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Abstract

The aim of this paper is to investigate the "Effect of Political Transformation on Economic Growth and Development of Nigeria". Guided by Historical Theories of Political Transformation, the research sought to: (i) determine the extent to which there was a positive relationship between political instability and low investment in Nigeria, (ii) ascertain the extent to which there was a positive relationship between lack of good governance and low per capita income. Two hypotheses were formulated to guide the study. Through proportionate stratified random sampling, 250 individuals were selected from the organizations of study. Responses from the questionnaire were complemented with personal interview of some selected management staff. The data obtained were analyzed using frequency tables and the values expressed in percentages. Pearson Product Moment Correlation was used for testing the hypotheses and t-test was used for testing the level of significance of correlation coefficient at 5% error and 3-degrees of freedom. The findings of this study are: there is a positive relationship between political instability and low investment in Nigeria; and there is a positive relationship between lack of good governance and low per capita income.

Keywords: Economic growth, Economic development, Political Transformation and Economic transformation.

1.1 Introduction

The economic predicament of Nigeria can be attributed to the nature and practice of politics and government, and the collapse of the economy which is an upshot of bad governance and its consequences.

Apart from the high profile political murders, the intensity with which acquisition of political power in Nigeria is being pursued in terms of guns and cash, intimidation and manipulation, threats and blackmails have all raised the question as to whether the Nigerian political system is not costing Nigerians too much compared to what it is offering and hence the necessity for transformation. The last election was simply a war. It was waged with all the logistics of war and sometimes with the crudity and the barbarity of ancient traditional power mongers (Kaufmann, 2011).

Those who were in the tick of the primaries of the party as actors were witnesses to an admixture of the ridiculous, the absurd and the un-imaginable. In the party primaries, candidates emerged under arrangement other than party constitution and guidelines, some emerged as governorship candidate after they have taken oath surrounded by dead bodies in evil ancestral shrines. In general election, stolen money either from public coffer or from the vaults of Banks by those who were licensed as bankers and were deployed together with guns and bullets to 'take over power'. You either had command of the army or police to displace an incumbent or you were an incumbent ready to turn your state into a killing field with your own private army to survive the hurricane (Roderick, 2011).

Those who had no private armies were forced to either align with those who had or were simply politically irrelevant. They were losers vilified by a new tribe of power sycophants who had emerged as columnist in a section of Nigeria press devoting most of space to tutoring politician in the writings of Nicolo Machieveli and Robert Green. They were the promoters of Mafioso politics today's acolytes of Nigeria's Pablo Escobar's (Roderick, 2011).

With a population of 150 million people, Nigeria is the most populous country in Africa, with a GDP second only to South Africa's yet following several years of military rule and poor economic management, Nigeria has experienced a prolonged period of economic stagnation, rising poverty levels, and the decline of its public institutions. By most measures, human development indicators in Nigeria were comparable to that of other least developed countries while widespread corruption undermined the effectiveness of various public expenditure programs. The lack of public investments in previous decades meant that there were severe infrastructural bottlenecks that hindered private sector activities. In particular, the poor condition of the power sector prior to economic transformation illustrated the severity of Nigeria's infrastructure deficit. Per capita power consumption in Nigeria was estimated at 82 kilowatts (kW) compared with an average of 456kW in other sub-Saharan African countries and 3,793kW in South Africa (Adam, 2006).

Following the election in 1999, the first administration of President Olusegun Obasanjo (1999-2003) focused on ensuring political stability, strengthening democratic practices, and tackling corruption. The second administration of

Obasanjo (2003 – 2007) embarked on a comprehensive economic reform program based on a homegrown strategy, the National Economic Empowerment and Development Strategy (NEEDS).The development of NEEDS at the federal level was complemented by individual State Economic Empowerment and Development Strategies (SEEDS), which were prepared by all 36 Nigerian states and the Federal Capital Territory (FCT). The NEEDS program emphasized the importance of private sector development to support wealth creation and poverty reduction in the country. The objectives of NEEDS were addressed in four main areas: macroeconomic reform, structural reform, public sector reform, and institutional and governance reform (Ikhede, 2010).

1.2 Statement of the Problem

Nigeria's economic performance in the two decades prior to economic reforms was generally poor. Over the period 2001 to 2010, annual GDP growth had averaged about 2.25 percent. With an estimated population growth of 2.80 percent per annum, this implied a reduction in per capita GDP over the years that had resulted in a deterioration of living standards for most citizens. Inflation levels were high, averaging about 28.94 percent per annum over the same period. By 2008, most of Nigeria's human development indicators were worse than, or comparable to, that of any other least developed country.

A major challenge for the Nigerian economy was its macroeconomic volatility driven largely by external terms of trade shocks and the country's large reliance on oil export earnings. By some measures, Nigeria's economy ranked among the most volatile in the world for the period 1960 to 2000. Public expenditures also closely followed current revenues, implying that fluctuations in oil earnings were transferred directly into the domestic economy. Fluctuations in public expenditure reflected both the over-reliance on oil earnings and weak fiscal discipline by previous governments. Volatile fiscal spending also tended to cause real exchange rate volatility, low investment, high rate of unemployment, low per capita income, low standard of living as well as high rate of crime. Based on the above scenario, it becomes pertinent to determine the effect of political transformation on economic growth and development of Nigeria.

1.3 Objectives of the Study

The broad objective of this study is to determine the effect of political transformation on economic growth and development of Nigeria. However, the sub-objectives are:

1. To determine the extent to which there is a positive relationship between political instability and low investment in Nigeria.
2. To ascertain the extent to which there is a positive relationship between lack of good governance and low per capita income in Nigeria.

1.4 Research Hypotheses

In this study, the following hypotheses were formulated to serve as guide:

H_A: 1 There is a positive relationship between political insecurity and low investment in Nigeria.

H_A: 2 There is a positive relationship between lack of good governance and low per capita income in Nigeria.

2. Review of Related Literature

2.1 Theoretical Framework

This study is guided by Historical Theories of Political Transformation which we discussed as below:

By "historical" theories, I mean those which account for the characteristics of any particular government through its individual relationship to some historical transformation affecting the world as a whole. Perhaps, the simplest theory of this type proposes a long-term trend toward wider political participation, equality and responsive government, in which different countries and different social classes join at different points in time (Tilly, 2012).

Conceptual Clarification

In this study, an attempt was made to define some basic concepts operationally as they were used. These concepts are as follows: Economic growth and Economic development.

Economic Growth

This is the term economists use to describe the rate of increase in an economy's potential real output (the volume of output) in the economy over time (Nellis and Parker, 2004). It represents the expansion of a country's potential GDP or national output (Samuelson, 2005).

Economic Development

Economic development occurs where there is sustainable quantitative and qualitative improvement in all or almost all the sectors of an economy. An economy is said to be developed if it is dependable, mature and well diversified (Chukwu, 2009).

It means developing the real income potentials by using investment to effect these changes and to augment those productive resources which promise to raise per capita income.

2.3 Politics in Nigeria

Recent political developments in Nigeria have unearthed the true depth of the underlying spirit of her nationhood. It has also put to a simple test, the character of our political leaders; who are supposed to be advocates of sound democratic political culture. But as it is now, the parochial interests of the nation's political, tribal, and religious leaders have made nonsense of the character of sound political leadership as prescribed in every healthy presidential democracy. It is most absurd to note that the political class has shamelessly turned Nigeria's democracy on its head. This sad development is a clear demonstration that the noble democratic culture of good governance has been deliberately drowned in the pool of negative political scheming.

Nigeria has been turned into a country where one must also have his or her tribesperson in position of authority in order to be employed, given a key appointment, or awarded a big contract. This anomaly is hugely responsible for why the issue of tribal lineage is regarded far above every other factor in the Nigerian society. In a nutshell; tribalism can only become rife in a country where there is no transparency, accountability, justice, and fair play (Gabriel, 2011). Furthermore, tribalism promotes national poverty. It compels citizens to be lazy. In a tribal-induced bureaucracy, even people that sow nothing can reap bountifully simply because their tribesperson is in power.

2.4 Economy of Nigeria

The economy of Nigeria is a middle income, mixed economy emerging market with well-developed financial, legal, communications, and entertainment sectors. It is ranked 31st in the world in terms of GDP (PPP) as of 2009, and its emergent, though currently underperforming manufacturing sector is the third-largest on the continent, producing a large proportion of goods and services for the West African region.

Previously hindered by years of mismanagement, economic reforms of the past decade have put Nigeria back on track towards achieving its full economic potential. Nigerian GDP at purchasing power parity more than doubled from \$170.7 billion in 2005 to \$374.3 billion in 2010, although estimates of the size of the informal sector (which is not included in official figures) put the actual numbers closer to \$520 billion. Correspondingly, the GDP per capita doubled from \$1200 per person in 2005 to an estimated \$2,500 per person in 2009 (again, with the inclusion of the informal sector, it is estimated that GDP per capita hovers around \$3,500 per person). It is the largest economy in the West Africa Region, 3rd largest economy in Africa (behind South Africa and Egypt), and on track to becoming one of the top 30 economies in the world in the early part of 2011 (Rogers, 2011).

Although much has been made of its status as a major exporter of oil, Nigeria produces only about 3.3% of the world's supply, and though it is ranked as 6th in production at 2.2 million barrels per day (350,000 m^3/d) (mbpd), the top 3 producers Saudi Arabia, Russia, and the United States produce 10.7 Mbbl/d (1,700,000 m^3/d) (17%), 9.8 Mbbl/d (1,560,000 m^3/d) (15%), and 8.5 Mbbl/d (1,350,000 m^3/d) (13%) respectively, collectively accounting for 63.6 Mbbl/d (10,110,000 m^3/d) (45%) of the world's total production. To put oil revenues in perspective: at an estimated export rate of 1.9 Mbbl/d (300,000 m^3/d), with a projected sales price of \$65 per barrel in 2011, Nigeria's anticipated revenue from petroleum is about \$52.2 billion. This accounts for less than 14% of official GDP figures (and drops to 10% when the informal economy is included in these calculations). Therefore, though the petroleum sector is important, it remains in fact a small part of the country's overall vibrant and diversified economy (CGD, 2009).

The largely subsistence agricultural sector has not kept up with rapid population growth, and Nigeria, once a large net exporter of food, now imports a large quantity of its food products. In 2006, Nigeria successfully convinced the Paris Club to let it buy back the bulk of its debts owed to the Paris Club for a cash payment of roughly \$12 billion (USD) (World Bank, 2011).

3. Research Design

The method of research design used for this study is the survey research method. The method appeared best suited for this study because it is not possible to interview the entire population. In addition, there are fixed sets of questions, and responses are systematically classified, such that quantitative comparisons of the outcome can be made. The sources of primary data were through questionnaires that were administered to non-management and management staff of various government ministries and parastatals, non-management and management staff of private business organisations; as well as oral interview held with some selected management staff. Secondary data were gathered from journals, annual report from National Bureau of Statistics, textbooks, internet as well as research work and studies that have been done.

4. Method of Data Analysis

In order to ascertain whether the objectives of the study are achieved or not, relevant questions were asked to address the issue. The data obtained were presented in frequency distribution tables and the corresponding values expressed in percentages. (See tables 1, 2, 3 and 4. Also, see Annexure A_1 and A_2 for relevant questions).

Table 1: The Relationship between Political Instability and Low Investment in Nigeria

Responses	Q_1	Q_2	Frequency	Percentage (%)
Strongly Agree (SA)	116	108	224	44.8
Agree (A)	99	111	210	42.0
Indifference (I)	16	13	29	5.8
Disagree (D)	11	11	22	4.4
Strongly Disagree (SD)	8	7	15	3.0
Total	**250**	**250**	**500**	**100**

Source: Field survey, 2013

Table 2: The Relationship between lack of good governance and low per capita income in Nigeria

Responses	Q_5	Q_6	Frequency	Percentage (%)
Strongly Agree (SA)	108	118	226	45.2
Agree (A)	117	105	222	44.4
Indifference (I)	11	10	21	4.2
Disagree (D)	10	11	21	4.2
Strongly Disagree (SD)	4	6	10	2.0
Total	**250**	**250**	**500**	**100**

Source: Field survey, 2013

Furthermore, the two hypotheses were tested using Pearson Product Moment Correlation Coefficient and the associated test of significance and results are as follows:

Restatement of Hypothesis One

Ho:1 There is no positive relationship between political instability and low investment in Nigeria.

Ha:1 There is a positive relationship between political instability and low investment in Nigeria (See Annexure A_1 for relevant questions i.e questions 3 and 4).

TABLE 3: Contingency table on the correlation between political instability and low investment in Nigeria.

Paired observation of x and y n = 5	Political Instability = x	Low investment = y	X^2	y^2	xy
Strongly agree	90	86	8100	7396	7740
Agree	80	88	6400	7744	7040
Indifference	44	40	1936	1600	1760
Disagree	22	20	484	40	440
Strongly disagree	10	26	196	256	224
Total	**250**	**250**	**17116**	**17396**	**17204**

Source: Field survey, 2013.

Referring to the computation in annexure A_3 we have the following:
The sampled correlation coefficient r = 0.99
Coefficient of determination r^2 = 0.9801
Number of paired observations, n = 5
Calculated value of t = 12.16
Critical value of t = 3.182

The computation of r using the data in table 3 gave a value of 0.99 indicating the existence of strong positive relationship between the political instability and low investment in Nigeria.

From the above, it becomes imperative to make inferences about the population as to whether the correlation coefficient obtained is indicative of the actual relationship between political instability and low investment or whether it could be attributed to chance. The test to achieve this purpose is referred to as test of significance of correlation coefficient.

Recall that the population correlation coefficient is given by ρ (Greek letter) and pronounced as rho. Making reference to annexure A_3, we proceed to conduct the test as below:

Ho: ρ = O, the correlation coefficient in the population is zero.
H_A: ρ ≠ O, the correlation coefficient in the population is different from zero.
Critical value of t = 3.182
Calculated value of t = 12.16

Decision Rule

Reject Ho if the calculated t is greater than 3.182 or less than -3.182
Do not reject Ho if the calculated t lies between -3.182 and 3.182

Decision:

Since calculated t is greater than 3.182 (i.e 12.16 > 3.182), we reject Ho.
Accordingly, we accept H_A; and then conclude that there is a positive relationship between political instability and low investment in Nigeria.

Restatement of Hypothesis 2

$Ho:_2$ There is no positive relationship between lack of good governance and low capita income in Nigeria.
$Ha:_2$ There is a positive relationship between lack of good governance and low capita income in Nigeria.

TABLE 4: Contingency table on the correlation between lack of good governance and low per capita income in Nigeria

Paired observation of x and y n = 5	Lack of good government = x	Per capita income = y	X^2	y^2	xy
Strongly agree	102	88	10404	7744	8976
Agree	74	92	5476	8464	6808
Indifference	40	36	1600	1296	1440
Disagree	20	18	400	324	360
Strongly disagree	14	16	196	256	224
Total	**250**	**250**	**18076**	**18084**	**17808**

Source: Field survey, 2013.

Referring to the computation in annexure A_4 we have the following:

The sampled correlation coefficient r = 0.95
Coefficient of determination r^2 = 0.9025
Number of paired observations, n = 5
Calculated value of t = 3.182
Critical value of t = 5.7

The computation of r using the data in table 4 gave a value of 0.95 indicating the existence of strong positive relationship between lack of good governance and low per capita income in Nigeria.
From the above, it becomes imperative to make inference about the population as to whether the correlation coefficient obtained is indicative of the actual relationship between political instability and low investment or whether it could be attributed to chance. The test to achieve this purpose is referred to as test of significance of correlation coefficient.
Still making reference to Annexure $A_{4,}$ we test for level of significance
Ho: ρ = O, the correlation coefficient in the population is zero.
H_A: ρ ≠ O, the correlation coefficient in the population is different from zero.
Critical value of t = 3.182
Calculated value of t = 5.27

Decision Rule

Reject Ho if the calculated t is greater than 3.182 or less than -3.182
Do not reject Ho if the calculated t lies between -3.182 and 3.182

Decision:

Since calculated t is greater than 3.182 we reject Ho, and then conclude that there is a positive relationship between lack of good governance and low per capita income in Nigeria.

5. Finding

The summary of the findings are discussed as follows:
The finding of hypothesis one reveals that there is a positive relationship between political instability and low investment. This is because the result of correlation coefficient shows that r = 0.99 indicating a positive correlation between political instability and low investment in Nigeria. Besides, the coefficient of determination r^2 = 0.9801 and this value can be expressed in percentage as 98.01%. And, it can be interpreted to mean that 98.01% of variation in low investment is explained, or accounted for, by the variation in political instability. Furthermore, test of significance of coefficient of correlation shows the calculated t = 12.16 is greater than critical value of t = 3.182 (i.e 12.16 > 3.182) at 5% error.
By implication, the first objective of the study which is to determine the extent to which there is a positive relationship between political instability and low investment was accomplished.

The relationship between lack of Good Government and low per Capita Income:

The finding of hypothesis 2 reveals that there is a positive relationship between lack of good governance and low per capita income in Nigeria. This is because the result of correlation coefficient shows that r = 0.95 indicating a positive correlation between the two variables. Besides, the coefficient of determination r^2 = 0.9025, and this value can be expressed in percentage as 90.25%. And, it can be interpreted to mean that 90.25% of negative variation in per capita income is explained, or accounted for, by the variation in bad governance. Also, the test of significance of coefficient of correlation shows the calculated t = 5.27 is greater than critical value of t = 3.182 (i.e 5.27 > 3.182) at 5% error.
Based on this result, the null hypothesis was rejected, and we conclude that there is a positive relationship between lack of good governance and low per capita income in Nigeria.

Conclusion

This study is basically exploratory as well as descriptive in nature. With reference to the data analysis, we conclude that there is a positive relationship between political insecurity and low investment in Nigeria. Also, there is a positive relationship between lack of good governance and low per capita income.
The above is in line with some of the literature reviewed. For it has been observed that economic transformation has important political dimensions. In developing countries, the political situation in a country has major effects on the economic transformation. In the initial stages of transformation, political factors were not as important and transformations were mostly political. However the scenario is quite different in case of second generation

transformation programs. Certain issues related to the political aspects of a country like governance, transparency, accountability and participation are of strategic importance to the success of economic transformations. On the other hand, political institutions like the Constitution, the political parties, the bureaucracy, electoral process, etc. all have their bearing on the process of economic policy transformations (Collier, 2007).

In addition, Easterly (2002), posits that another important determinant of the willingness of the political system to embrace economic transformations is the nature of political set-up that exists in the country. The relative efficiencies of democracy and dictatorship in implementing economic reforms have been major considerations. While it was initially felt that authoritarian political systems would be better disposed to implement economic reforms, their willingness to do so is low. However, adopting economic reforms would lead to reducing state intervention in economic activities. An authoritarian government, on the other hand would not be willing to let go of the economic power that it wields.

Success of economic transformation lies not merely in its acceptance and implementation by the political system, but the ability to sustain the transformation. Implementation of transformations, will no doubt, give rise to complicated issues. The political system must have the capacity to face such crisis and deliver measures for correction. The ability of the political system to timely evaluate and properly upgrade the reforms measures also plays an important role in the success of economic transformations (Karl, 2002).

Recommendations

Based on the result of the findings the following recommendations are made:

1. The conduct of election should be free and fair so as to elect people who have the skill for good governance.
2. Government should embark on serious political reform that will encourage investment and by extension economic growth and development.
3. The security challenges facing the country should be seriously addressed and any culprit found should be treated accordingly. If this is done it will facilitate political transformation.
4. There should be a new fiscal federalism with derivation principle accounting for at least 33 percent.
5. There should be two party systems to ensure serious electoral competition.

REFERENCES

Adam Smith International (2006), “Analyzing Financial Flows between FGN and Public Enterprises,” Economic Policy Position Paper No. 4, published as part of the Support to the Bureau of Public Enterprises

Center for Global Development (CGD, 2009): Publications: Resolving Nigeria's Debt Through a Discounted Buyback

Chukwu B.I. (2009). Principles of Macroeconomic Theory. Enugu: Horsethrone Concepts; 256P.

Collier, P. (2007) The Bottom Billion: Why the Poorest Countries Are Failing and What Can Be Done About It. Oxford: Oxford University Press.

Easterly, W. (2002) ‘The Elusive Quest for Growth: Economists’ Adventures and Misadventures in the Tropics. Cambridge, Massachusetts: The MIT Press.

Gabriel, P. (2011), “*Shifting Fortunes: The Political Economy of Financial Liberalization in Nigeri*a,” World Development, 25(1):5-22

Ikhide S. I., and A. A. Alawode, (2010), “*On the Sequencing of Financial Liberalization in Nigeria,*” in South African Journal of Economics, 70(1): 95-127

Karl M (2002) This House Has Fallen: Nigeria in Crisis; Boulder, Colo; Westview Press.

Kaufmann, D. and Colleagues (2011), ‘Nigeria in Numbers – the Governance Dimension: A preliminary and brief review of recent trends on governance and corruption. Presentation for the President of Nigeria and his Economic Management Team’, mimeo

Nellis, J.G. & Parker, D. (2004). Principles of Macroeconomics. England: Person Educational Ltd, 466P.

Roderick, D. (2011), "Introduction: What Do We Learn from Country Narratives," In Search of Prosperity, edited by Dani Rodrik, Princeton: Princeton University Press

Rogers, S.; Sedghi, A. (2011). "How Fitch, Moody's and S&P rate each country's credit rating". *The Guardian*. http://www.guardian.co.uk/news/datablog/2010/apr/30/credit-ratings-country-fitch-moodys-standard. Retrieved 31 May 2011

World Bank (2011) "Doing Business in Nigeria 2012". World Bank. http://www.doingbusiness.org/data/exploreeconomies/nigeria/. Retrieved 2011-11-21.

Tilly, C. (2012) "Theories of Political Transformation", http://www.bresserpereira.org.br/ Retrieved 22/01/13.

Annexure A_1

Political Instability and Low Investment in Nigeria

Key: (5) Strong Agree (4) Agree (3) Indifference (2) Disagree

(1) Strongly Disagree

S/N		Likert Scale				
		5	4	3	2	1
1.	Security challenges contribute to political instability?					
2.	Political instability can be said to be resulted from security challenges?					
3.	Political instability is a critical factor responsible for low investment in Nigeria?					
4.	Low investment in Nigeria can be attributed to political instability					

Annexure A_2

The relationship between lack of Good Governance and Low Per Capita Income

Key: (5) Strong Agree (4) Agree (3) Indifference (2) Disagree
(1) Strongly Disagree

S/N		Likert Scale				
		5	4	3	2	1
5.	Improper methods of conducting election result in electing people who lack the skill for good governance?					
6.	People who lack the skill for good governance may come into power as a result of improper methods used in conducting election?					
7	Lack of good governance contributes to low per capita income in Nigeria?					
8	Low per capita income in Nigeria can be attributed to lack of good governance					

Annexure A_3

Computation of Hypothesis 1 Result based on the Data Collected various organizations and test of level of significance for the coefficient of correlation

Recall that Pearson Product Moment Correlation Coefficient for a sample is given by:

$$r = \frac{n\,\Sigma xy - \Sigma x\,\Sigma y}{\sqrt{[n(\Sigma x^2) - (\Sigma x)^2]\,[n\Sigma y^2) - (\Sigma y)^2]}}$$

where:

$n = 5,\quad \Sigma x = 250,\ \Sigma y = 250,\quad \Sigma x^2 = 17116,\ \Sigma y^2 = 17396,\ \Sigma xy = 17204$

substitute to obtain

$r = 5(17204) - (250)(250)$

$$\sqrt{[5(17116) - (250)^2][5(17396) - (250)^2]} \qquad = 0.99$$

Coefficient of determination $r^2 = (0.99)^2 \quad = \quad 0.9801$

Recall that the formula for the t test for the correlation coefficient is given by

$$t = r\sqrt{\frac{n-2}{1-r^2}} \quad ; \text{with } n - 2 \text{ degrees of freedom}$$

Substitute r = 0.99, n = 5, we obtain

$$t = 0.99\sqrt{\frac{5-2}{1-(0.99)^2}} = 12.16$$

Note: The nature of alternate hypothesis indicates that the test is two-tailed, therefore, the level of significance α will be splitted into 2. The critical value is given by $t_{0.025,3} = 3.182$

Annexure A_4

Computation of Hypothesis 2 Result based on the Data Collected various organizations and test of level of significance for the coefficient of correlation

Recall that Pearson Product Moment Correlation Coefficient for a sample is given by:

$$r = \frac{n\,\Sigma xy - \Sigma x\,\Sigma y}{\sqrt{[n(\Sigma x^2) - (\Sigma x)^2]\,[n\Sigma y^2) - (\Sigma y)^2]}}$$

where:

$n = 5$, $\Sigma x = 250$, $\Sigma y = 250$, $\Sigma x^2 = 18076$, $\Sigma y^2 = 18084$, $\Sigma xy = 17808$

substitute to obtain

$$r = \frac{5(17808) - (250)(250)}{\sqrt{[5(18076) - (250)^2][5(18084) - (250)^2]}} = 0.95$$

Coefficient of determination $r^2 = (0.95)^2 = 0.0925$

Recall that the formula for the t test for the correlation coefficient is given by

$$t = r\sqrt{\frac{n-2}{1-r^2}}$$; with $n - 2$ degrees of freedom

Substitute $r = 0.95$, $n = 5$, we obtain

$$t = 0.95\sqrt{\frac{5-2}{1-(0.95)^2}} = 5.55$$

Annexure A_5

REAL GROWTH RATE OF EMPLOYMENT IN INDUSTRIES & BUSINESSES AT CONSTANT 1999 LEVEL, 2001-2005

Economic Activity	2001	2002	2003	2004	2005
Agriculture	0.97	0.68	8.78	23.9	13.01
Manufacturing & Processing	3.81	-2.93	5.13	2.24	-3.75
Building & Construction	54.75	-13.96	-2.72	8.26	6.32
Hotel, Restaurant & Tourism	12.24	-2.77	-2.14	-1.12	-3.28
Transport	13.28	7.64	5.39	-6.95	27.6
Communications	583.38	2.69	58.39	3.18	43.75
Education Services	40.5	47.88	10.82	7.32	17.79
Minning & Quarrying	-	6.39	60.23	5.5	6.44
Utilities	0.38	1.89	2.23	1.82	-3.57
Banking	41.86	2.56	-1.78	3.51	18.06
Distributive Trade	11.67	9	3.64	4.03	2.91
Private Professional Services	-9.58	2.07	12.91	8.97	6.38
Real Estate & Business Services	9.95	8.69	1.31	-0.22	9.95
Health	5.55	8.71	0.35	2.43	-7.22
Finance	0.09	1.98	-11.82	5.9	95.18
Total	15.24	-1.48	5.62	2.58	3.88

Source: National Bureau of Statistics

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