

Governance, Institutions and Manufacturing Sector Performance in Nigeria

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Abstract

This study focused on the effects of governance and institutions on manufacturing firm performance in Nigeria, using World Bank's Nigeria investment survey data. The lack of progress on the manufacturing front despite decades of oft-renewed efforts of government to reduce hurdles posed by governance and institutions-related factors to 'ease of doing business', indicates that such challenges are far from settled. A vector of indicators to measure governance and institutions was developed and employed in the study as instrumental variable. The indicator was composed of procurement process, access to land, policy uncertainty, political instability, corruption and security. From the analysis, it was found that the governance and institutions indicator had a positive and significant effect on firm performance, confirming that those variables still constitute a significant shackle on the performance of manufacturing firms in Nigeria, and accordingly provide a window of opportunities, when addressed. Now that the prospects of export of industrial products have improved with the floating exchange rate, the weakening of the Naira and the consequent cheapening of exports emanating from the nation, the industrial export front should be vigorously pursued. To this end we recommend the revitalization of the clusters and export free zone concepts for industries. Specifically, we recommend the creation of clusters and export free zones out of existing industrial facilities rather than along new or geographic lines.

Keywords: Governance, Institutions, Firm performance, Manufacturing sector

JEL Classification: L60, L78, N47, N67, O14, O17

1. Introduction

Recent trends in the fortunes of crude oil have reawakened once again Nigeria's endeavour to diversify her economy away from oil. In considering which sectors to emphasize, the lot had always fallen on two front runners, namely agriculture and manufacturing. The first on account of natural endowment, and manufacturing for a variety of reasons including the needs of the modernizing economy, the teeming population, the promise of job creation as well as the possibility of developing deep-rooted, domestic value chain, and of course, foreign exchange savings. As in the past, encouraging outcomes are yet to be seen, notwithstanding the evidence found by Udejaja and Nwokoye (2015) 'that government, through its financial regulators has been active in the quest to provide adequate policy incentives for the growth of SMEs' (SMEs are known to be drivers of economic prosperity). What is most discouraging now is that the environment of performance appears to be on a steady and inexplicable decline, inexplicable because until very recently, oil held out quite strongly in the world market, earning bountifully and bringing home very high streams of income for the nation. Despite such 'gift of nature', which went so far as to allow the conception of 'excess crude fund', the business atmosphere has continued to slide. For example, in the provision of energy (the resource with which other resources are harnessed) Nigeria was ranked the third worst country in the world (World Bank 2016). Happily, President Muhamadu Buhari has set himself the goal of tackling corruption, which is just as well because corruption is generally regarded, not merely as hampering daily business activities in Nigeria but as endemic in the system. In the perception of corruption worldwide, Nigeria took the 136th position (out of 167 nations) according to Transparency International (2015). All these paint a negative and discouraging picture for intending investors. More importantly, in the light of past failures and the force of future expectation, they constitute a challenge confronting government's efforts at revamping and diversifying the economy, and in particular, the manufacturing sector. For this sector, some of the most persistent and encompassing bottlenecks thus remain rooted in, or at least exhibit strong association with governance and institutions. This therefore forms the problem which this study aims to investigate, using World Bank's Nigeria investment survey to analyze the impact of governance and institutions on manufacturing firms' performance in Nigeria. The rest of the paper is organized as follows: section two reviews literature while in section three we outline the research method. Section four presents and discusses results and section five concludes.

2. Review of Related Literature

Investment climate encompasses several issues and is affected by many macro/micro risks, and has as yet no clear-cut definition. However, it refers to the institutional, policy and regulatory environment in which firms operate. Notable determinants of investment climate include stability, rule of law, infrastructure, approaches to regulations and taxes, functioning of labor and finance markets, and broader features of governance. A good investment climate fosters productive private investment and growth by creating opportunities for the private sector to invest,

create jobs, and lay the foundations for long-term business success (World Bank, 2005). Thus, though it depends greatly on the current and anticipated economic situation, it is nevertheless shaped by political and social factors including poverty, crime, infrastructure, workforce, national security, regime uncertainty, taxes, property rights, government regulations, government transparency and accountability. If the outlook is positive, the investment climate is regarded as bullish, and bearish if it is negative.

From another perspective, investment climate is composed of location-specific factors (incentives and opportunities) that determine if investors will risk their capital in financing a particular project. The South Africa Investment Climate Assessment (2005) shows that the investment climate is made up of many location-specific factors that shape the opportunities and incentives for firms to invest productively, create jobs, and expand. In this study, these indicators of investment climate are grouped into three broad sets: Macroeconomic policies, Governance/institutions; and Infrastructure. This is in line with the views of OSCE (2006) which defined investment climate by the three broad sets of variables already mentioned. However, given the nature of the study – cross sectional micro analysis - it concentrates on Governance and institutions; and Infrastructure, while macroeconomic policies are left out. Nevertheless, these two broad sets are composed of most of the indicators that adequately portray the general investment climate

2.1 The role of governance.

Conceptually, governance is like an umbrella beneath which an activity takes place, which shields the activity from the elements. A part of governance can also be seen as the platform beneath the umbrella, which anchors the umbrella, on which platform the activity is conducted. In this way it is readily understandable that a country's economic performance to a large degree depends on, or is determined by its governance performance via the performance of its supporting or anchoring institutions. These are meant to facilitate, indeed promote but not hamper economic activities.

The stability of a country's socio-economic and political systems reflects its quality of governance and this is seen by Akanbi (2010) as a major factor in decision-making by investors. Poor investment performance is therefore a consequence of low level of governance, itself clearly indicated, indeed demonstrated by instability, both of the political and socio-economic strands. Globerman & Shapiro (2002) specifically attribute the highly unstable pattern of growth in domestic investment in Nigeria to the volatile economic and political environment in the country.

2.2 Empirical Literature

Kinda et al. (2008) discussed the role of business environment on productivity and technical efficiency in MENA manufacturing industry. Also, they investigated the relationship which exists between business environment and firm-level productivity for about 23 countries and 8 manufacturing industries. With the collection of World Bank Investment Climate (IC) surveys, and the use of production frontier method, three measures of firms' productive performances were initially put forward: Labor Productivity (LP), Total Factor Productivity (TFP), and Technical Efficiency (TE). These indicators were compared with each other, and across countries to show the disparity which exists between MENA manufacturing firms and a wide range of firms from other regions. In their empirical analysis, they first examined Labor Productivity (LP). Although simple, LP gives a basic idea of the productive efficiency of the firms. They found it difficult to appraise capital contribution. However, in terms of Total Factor Productivity (TFP), their analysis focused on the two main factors of production: Capital (K) and Labor (L). Total Factor Productivity (TFP) was calculated as the ratio of the Total Sales of the Firm (Y), to a weighted average of Capital (K), Labor (L) and Intermediate Consumptions (IC). Based on the hypothesis of constant returns to scale, (i.e., perfect competition for goods but also for factors that are remunerated at their marginal productivity) weights of Intermediate Consumptions (IC) and of Labor (or Wages, W) were calculated as the ratio of the cost of these factors to the Total Cost of Production including profit (Y). The contribution of Capital (K) was then calculated as the complement to one. The advantage of this method based on the Solow residuals is that it does not require the inputs to be exogenous or the inputs elasticity to be constant, while the disadvantage is that it necessitates having constant returns to scale and competitive input markets. It was discovered that enterprises in MENA performed below average when compared with other countries in the study areas. More so, the result showed that business environment was positively correlated to productive performance.

Akanbi (2010), following the ideas of Globerman and Shapiro (2002) investigated the role of governance in determining domestic investment in Nigeria over the period 1970 to 2006. In his study, he found that 'poor governance as reflected in the unstable political environment in most African countries, Nigeria inclusive, has been a major hindrance to increasing domestic investment over the years'. The index for governance-measures covers a broad range of policy and institutional outcomes which include the rule of law, corruption, government effectiveness, regulatory quality and political instability. The author in his study and in order to capture governance in a broader context employed the average value of the five elements in the governance indicators as a measure of governance.

Augier et al. (2010) reported the impact of the business environment in understanding differences in the performance of Moroccan firms. The researcher made use of both the Moroccan Annual Census (1997-2004) and detailed surveys conducted by the World Bank (FACS and ICA). The business environment was measured using variables which included the investment climate in which firms operate, i.e. access to credit, regulatory and institutional environment and infrastructure. Firm-level performance was adopted to measure total factor productivity (TFP), and this was estimated by using both the classic technique of Olley & Pakes (1996), and a more recent method suggested by Akerberg et al. (2007). In this study they tried to address the problem of potential endogeneity between business indicators and firm performance through the use of different strategies. In their result, it was discovered that the relationship between credit and productivity was strongly indicative of credit resources misallocation in Morocco. They also found that the lack of fiscal homogeneity across firms by sector was positively linked to lower firm-level TFP. Thirdly, they found that heavier bureaucracy and differences in regulations appeared to have a negative effect on firm TFP. However, the last two results were peculiar to small firms, and/or those that did not export and/or those with no access to foreign capital.

Liu and Nishijima (2012) examined the productivity of Brazilian manufacturing industries, with reference to liberalization on productivity. Data used were collected from investment climate survey by World Bank. In order to measure TFP, stochastic frontier production function and the inefficiency model were estimated simultaneously. With this, the TFP growth rates were regressed on openness related variables and other firm characteristics. However, the investment climate survey uses standardized survey instruments and uniform sampling techniques to measure the performance and business environment of most developing countries. Data were collected from 9 industries in 13 states of Brazil in 1640 observations in the manufacturing sector between 2000 and 2002. The results obtained tell that firm openness to the world was a crucial determinant of their productivity.

Abiodun (2014) examined the problems and prospects of small and medium scale enterprises in Nigeria in relation to those challenges which affect SMEs from developing the capacity to realize their full potentials as well the prospect for improvement and development for employment generation, economic growth and national development. The study used qualitative tools to show that invigorating SMEs with strengthened commitment to economic reform would offer a turning point in facilitating the recovery of the Nigerian economy.

Gado (2015) investigated the impact of the Nigerian business environment on company performance of 20 most capitalized companies in Nigeria. This research used the Ordinary Least Square and simple multiple correlation methods to show the impact of the Nigerian business environment on the performance of these companies. Collectively, the variables of the environment had significant and positive impact on the companies' performance. Government expenditure and inflation had positive impact while that of exchange rate and interest rate were negative. On the whole there was a positive and significant impact of the business environment on the performance of the companies.

Meseko (2015) examined the investment climate of Nigeria and the effect it could have on economic development. Primary data were gathered randomly from investors and quantitatively analyzed using Likert scale and t-test to determine the authenticity of the hypothesis proposed in the questionnaire. The result showed that Nigeria's culture and value system have positive impact on its investment climate, the financial institutions in Nigeria are efficient and able to drive a positive investment climate, the Nigerian stock exchange is efficient, and it is not difficult to acquire real estate for business purpose in Nigeria at affordable prices. Furthermore, communication channels like email, telecommunications etc. are efficient, the probability of natural disaster is very low, and it is not difficult to get credit facilities. On the negative front, security threats is an impediment to free movement, infrastructures like roads, railways, airports, sea-ports and electricity are inadequate, corruption is prevalent and a lot is still expected as regards rule of law. Virtually all on the negative front are governance issues.

3. Research Method

The sample data used for this study is the World Bank Investment Climate Survey in Nigeria. The survey consists of a series of structured, face to face interviews with key senior managers/owners of a sample of 3,157 establishments across 26 states of the federation. To investigate the impact of governance and institutions on manufacturing firms' performance in Nigeria using such data, the study develops a vector to measure governance and institutional indicators (giiv). This vector will be made up of procurement process, access to land, policy uncertainty, political instability, corruption and security (specifically: crime, theft and disorder).

It will be formulated with the aid of the principal component analysis. The principal component analysis, as specified by Ifelunini et al. (2013) may be presented as follows:

Let X_s (X_1, \dots, X_p measured in n firms) represent the various factors used to develop each of the three composite indices, while Z_1, \dots, Z_p are the principal components which are uncorrelated linear combinations of the original variable, X_1, \dots, X_p . These principal components are given as:

$$Z_1 = \alpha_{11}X_1 + \alpha_{12}X_2 + \dots + \alpha_{1p}X_p \dots\dots\dots (1)$$

$$Z_2 = \alpha_{21}X_1 + \alpha_{22}X_2 + \dots + \alpha_{2p}X_p \dots\dots\dots (2)$$

$$Z_p = \alpha_{p1}X_1 + \alpha_{p2}X_2 + \dots + \alpha_{pp}X_{pp} \dots\dots\dots(3)$$

This matrix of equations can be expressed as $z = Ax$, where $z = (Z_1, \dots, Z_p)$, $x = (X_1, \dots, X_p)$ and A is the matrix of coefficients. The coefficients of the first principal component, $\alpha_{11} \dots \alpha_{1p}$, are chosen in such a way that the variance of Z_1 is maximized subject to the constraint

$$\alpha_{21} \dots \alpha_{2p} = 1.$$

The variance of this component is equal to the largest eigen value of A . The second principal component is completely uncorrelated with the first component. This component explains additional but less variation in the original variable than the first component subject to the same constraint. Each principal component is uncorrelated with all the others and the squares of its coefficients sum to one. The principal component analysis involves finding the eigen values and eigen vectors of the correlation matrix. The basic relationship could be developed with the investment indicators as:

$$Q = A + \beta_1K + \beta_2L + \beta_3giiiv + \mu \dots\dots\dots(4)$$

Where β_3 is the coefficients of the governance and institutional indicator vector, and Q is the output of the firm that is used to proxy manufacturing firm performance given that it represents the general sales and productivity of the firm. K and L are Capital and Labour respectively whose parameters are the β s while μ is the stochastic error term and A is TFP

Due to the endogenous nature of capital as an explanatory variable, capacity utilization as found in the data was stated to be the instrument of capital. This is in order to facilitate the use of the instrumental variable approach which according to McFadden (1999) is required where explanatory variables happen to be correlated with the dependent variable and the error term. In such a case the Ordinary Least square (OLS) approach is no longer suitable as its basic assumptions are violated. The study therefore employed the instrumental variable approach that permits the suitable substitution of variables that do not necessarily correlate with the error term. Equation four will therefore be estimated with the instrumental variable estimation technique to ascertain the impact of governance and institutions on manufacturing firms' performance in Nigeria, using STATA statistical software

4. Data Analysis and Discussion

To achieve the objective of this study, the study employs an instrumental variable estimation technique as explained earlier. However, principal components were made for two of the key variables: governance and institutions indicator. The component with eigen value above 1 was retained according to the rule of thumb; both components showed that only one component had an eigen value above one. Nonetheless, the components explained more than 40% of the variation in both cases; moreover there exists a significant break between the first component that is greater than one and the second component. The nature and description of the variables used for the components are shown in Table 1 below:

Table 1: Principal Components and its Make-up

Composite Variables for principal components	Variables used for PCA	Nature of variable	Definition
Governance and institutions indicator	Access to Land	Ordinal (5 point likert scale)	As constraint in decreasing order of severity
	Policy Uncertainty	Ordinal (5 point likert scale)	As constraint in decreasing order of severity
	Political Instability	Ordinal (5 point likert scale)	As constraint in decreasing order of severity
	Corruption	Ordinal (5 point likert scale)	As constraint in decreasing order of severity
	Crime Theft and Disorder	Ordinal (5 point likert scale)	As constraint in decreasing order of severity

The variables are all ordinal in nature representing a 5-point scale, connoted as 0 for very severe constraint and 4 for no constraint. According to Cornish (2007), "Principal components analysis, like factor analysis is designed for interval data, although it can also be used for ordinal data (e.g. scores assigned to Likert Scales)". It is based on this that the study employed the PCA analysis which is meant to reduce a set of components into principal components.

The study further estimated the variables with the aid of instrumental variables with alternating set of variables, as well as the OLS estimation technique to compare with the results of the instrumental variable regression. The key regression to be considered is however the third instrumental regression (Instrumental Regressions III). The results are shown below:

Table 2: Governance and institutions on Manufacturing Output

Variables	Instrumental Variable (I)	Instrumental Variable (II)	Instrumental Variable (III)	OLS Regression (I)	OLS Regression (II)
Capital	0.7314843** (5.23)	0.6360439** (3.83)	0.6396039** (4.04)	0.8558513** (57.88)	0.8589258** (57.67)
Labour	0.0096723** (2.32)	0.0124879** (2.54)	0.0123998** (2.74)	0.0059907** (9.73)	0.006159** (9.87)
Govt/Institution Indicator		0.039832** (2.17)	0.0396512** (2.35)	0.0208744* (1.94)	0.0225951** (2.09)
Experience of the firm head			0.0001023 (0.05)		-0.0015388 (-1.00)

** Significant at 5% significant level, * Significant at 10% significant level (t-values in parentheses)

Table 2 shows three instrumental variable regressions and two multiple regressions (using OLS technique) for varying set of variables but the same set of variables for the last regression in each group (Regression III for the instrumental variable approach and Regression II using OLS). All models show statistically significant F statistics at 5% significance level implying that the overall model is significant for all the alternating set of variables, given the F statistical probability value of 0.000.

Capital and labour are significant for all the instrumental variable regressions as well as the OLS multiple regressions. This is evident as t-values are higher than 1.96 in all cases hence significant at 5% significant level. This is expected theoretically and according to several empirical evidence; the Cobb Douglass theory particularly states capital and labour as the key determinants of the output of a firm. It is worth noting that capital which is instrumented in the instrumental variable regression has very high t-values in the multiple regressions, which outcome appears to indicate the appropriateness of the instrumental variable approach.

The objective of this study is to establish the extent to which governance and institutions affect manufacturing firm performance in Nigeria. Governance and institutions were incorporated as a vector of variables that include access to land, policy uncertainty, political instability, corruption and security (crime, theft and disorder). From the results in Table 2 the governance and institutions indicator is positive and significant in all the regressions in which it is included. The t-values are greater than 1.96 for all the instrumental regressions and the second OLS regression hence significant at 5% significance level. However, in the OLS regression without the 'experience of firm head' explanatory variable, it is significant at 10%. From the Instrumental Variables Regression III, the indicator is considered a significant determinant of firm performance, showing that as the governance/institutional constraints diminish, firm performance increases significantly. Bakare (2013) in a similar study, found corruption and political instability to be constraints to the performance of industrial sector in Nigeria, while poor infrastructure and macroeconomic instability played significant roles. This study therefore agrees with Bakare's findings which suggest that constraints arising from infrastructure, governance and institutions all hinder performance of the industrial sector.

5. Conclusions and Policy Recommendations

The aim of this study is to examine the extent to which Governance/institutions have affected manufacturing firms and thus contribute to their performance in Nigeria. To measure governance and institutions the study developed an indicator out of a vector of variables. The indicator was made up of procurement process, access to land, policy uncertainty, political instability, corruption and security (crime, theft and disorder). From the analysis, it was discovered that the governance and institutional indicator had a positive and significant effect on firm performance. The t-values were greater than 1.96 for all the instrumental regressions and the OLS regression, hence significant at 5% level. In the OLS regression in which the explanatory variable: 'experience of firm head' was excluded, governance and institutions indicator was also significant but only at the 10% level. The results therefore show that as the governance/institutional constraints diminish, firm performance is expected to increase significantly. This finding that the governance and institutions indicator had a positive and significant effect on firm performance, confirms that its constituents still form a significant shackle on the performance of manufacturing firms in Nigeria. Now that, with the floating exchange rate, the weakening of the Naira and the consequent cheapening of exports emanating from the nation, the export-prospects of industrial products have suddenly improved, the industrial-export front should be vigorously pursued. To this end we recommend the revitalization of the clusters and export free zone concepts for industries. Specifically, we recommend the creation of clusters and export free zones out of existing industrial facilities rather than through newly built facilities (which have been truly hard to bring to functional fruition in Nigeria) or along geographic or contiguous lines. The internal revenue-generation model which relies heavily on agency, is considered to be practically applicable in this regard; specifically the VAT and PAYE implementation models in which qualified organizations can and have successfully served as revenue collection agents. Every export oriented industrial outfit should automatically qualify as a part of an export free zone, which zone will belong to a cluster defined along sub-sectoral lines. Since export free zones are kinds of

cocoons shielded from institution and governance related hurdles, such outfits should immediately stand free of such constraints. The same should also apply to benefits accruing to clusters in so far as these are not linked to production scale. Even more urgently, we recommend the establishment of a high level executive unit charged with protecting industries against constraints posed by governance and institutions, somewhat akin to an elite special squad in security matters, committed to bursting the lethargy of existing commands. These have become necessary because the gap was always with governance and the rules of the game, that is, institutions.

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APPENDIX

```
. des govins_accland govins_plcuncity govins_polinst govins_corruptn govins_security
      storage display value
variable name type format label variable label
```

```
-----
govins_accland float %9.0g access to land
govins_plcuncity float %9.0g policy uncertainty
govins_polinst float %9.0g political instability
govins_corruptn float %9.0g corruption constraint
govins_security float %9.0g security: crime theft and disorder
```

```
. sum govins_accland govins_plcuncity govins_polinst govins_corruptn govins_security
```

Variable	Obs	Mean	Std. Dev.	Min	Max
govins_acc~d	2993	1.546943	1.309883	0	4
govins_plc~y	2990	1.516388	1.213383	0	4
govins_pol~t	2994	1.518704	1.226919	0	4
govins_cor~n	2994	1.981296	1.372606	0	4
govins_sec~y	2994	1.604208	1.196384	0	4

```
. pca govins_accland govins_plcuncity govins_polinst govins_corruptn govins_security
```

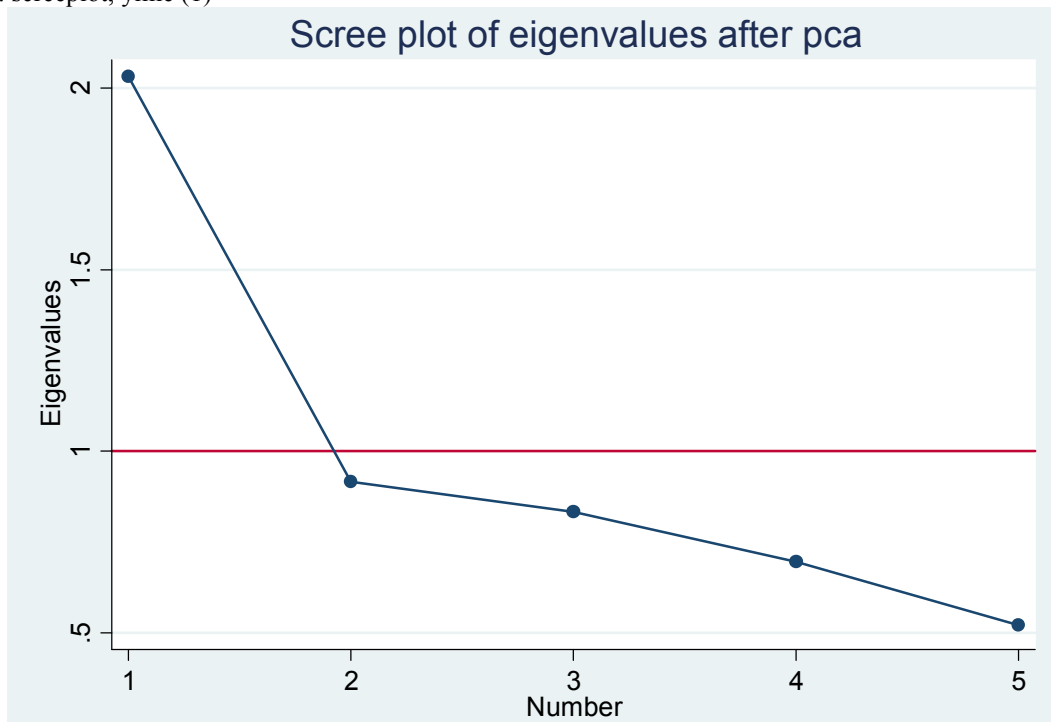
```
Principal components/correlation      Number of obs = 2989
                                Number of comp. = 5
                                Trace = 5
Rotation: (unrotated = principal)    Rho = 1.0000
```

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	2.03143	1.11473	0.4063	0.4063
Comp2	.916703	.082921	0.1833	0.5896
Comp3	.833782	.137487	0.1668	0.7564
Comp4	.696295	.174508	0.1393	0.8956
Comp5	.521787	.	0.1044	1.0000

Principal components (eigenvectors)

Variable	Comp1	Comp2	Comp3	Comp4	Comp5	Unexplained
govins_acc~d	0.2988	0.8960	-0.2440	0.2124	0.0579	0
govins_plc~y	0.4110	0.0079	0.7989	0.3706	-0.2352	0
govins_pol~t	0.4847	0.0618	0.2071	-0.7890	0.3094	0
govins_cor~n	0.5149	-0.2217	-0.4283	-0.0893	-0.7031	0
govins_sec~y	0.4917	-0.3797	-0.2754	0.4324	0.5926	0

```
. screeplot, yline(1)
```



```
. pca govins_accland govins_plcyunctity govins_polinst govins_corruptn govins_security, mineigen(1)
```

```
Principal components/correlation      Number of obs = 2989
                                   Number of comp. = 1
                                   Trace = 5
Rotation: (unrotated = principal)    Rho = 0.4063
```

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	2.03143	1.11473	0.4063	0.4063
Comp2	.916703	.082921	0.1833	0.5896
Comp3	.833782	.137487	0.1668	0.7564
Comp4	.696295	.174508	0.1393	0.8956
Comp5	.521787	.	0.1044	1.0000

```
Principal components (eigenvectors)
```

Variable	Comp1	Unexplained
govins_acc~d	0.2988	.8187
govins_plc~y	0.4110	.6568
govins_pol~t	0.4847	.5227
govins_cor~n	0.5149	.4615
govins_sec~y	0.4917	.5089

```
. loadingplot
```

```
only one component retained
```

```
r(321);
```

```
. scoreplot
```

```
only one component retained
```

```
r(321);
```

```
. estat loadings
```

```
Principal component loadings (unrotated)
```

```
component normalization: sum of squares(column) = 1
```



```
-----  
      |  Comp1  
-----+-----  
govins_acc~d | .2988  
govins_plc~y | .411  
govins_pol~t | .4847  
govins_cor~n | .5149  
govins_sec~y | .4917  
-----  
. . predict factorinstitution, score  
Scoring coefficients  
sum of squares(column-loading) = 1  
-----
```

```
      Variable |  Comp1  
-----+-----  
govins_acc~d | 0.2988  
govins_plc~y | 0.4110  
govins_pol~t | 0.4847  
govins_cor~n | 0.5149  
govins_sec~y | 0.4917  
-----
```