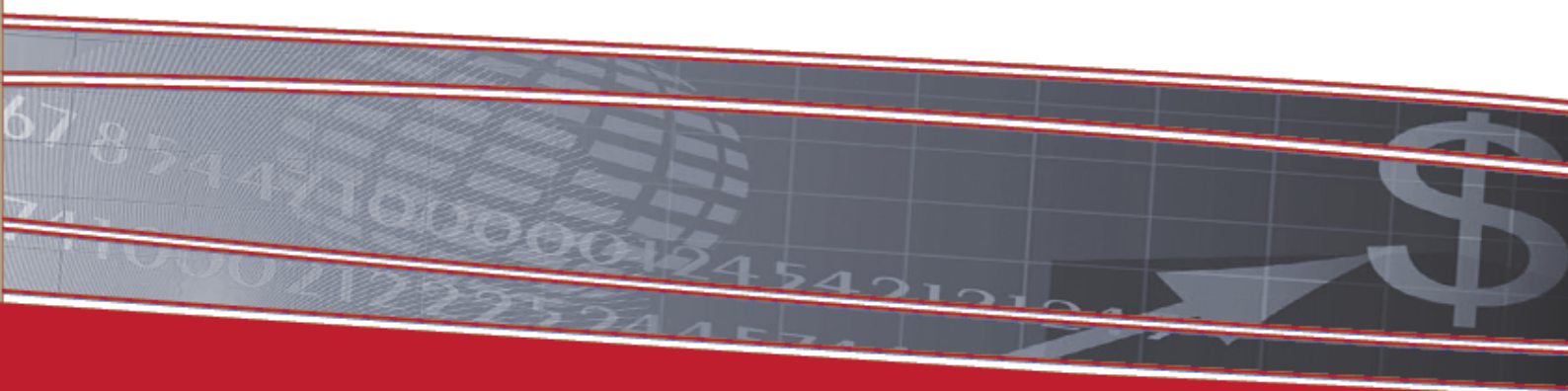


# **JOURNAL OF APPLIED ECONOMICS AND BUSINESS**



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# IS HUMAN DEVELOPMENT INDEX OR GDP MORE RELEVANT IN MEASURING WORLD INCOME INEQUALITIES?

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## **Abstract**

*The great majority of the studies in the field of international economic inequalities rely on “income data” where only few number of studies adopt conventional indicators of development (such as Human Development Index (HDI)). The aim of the current paper is to analyze the level and evolution of inequalities across 128 countries by using both GDP and HDI data and compare, in this way, the results from both variables. The period of analysis runs from 1990 to 2012. In terms of methodology, we employ Kernel Density estimations and cross sectional regressions to examine this issue. Our analyses indicate two important results. First, disparities in income and HDI have been shown to decline over the years. Second, there have been huge disparities in income but only moderate level of inequalities in development. In the light of our findings, we may consequently argue that either GDP data exacerbates the disparities or HDI underestimates it. Using only one type of measure may lead to distorted results.*

## **Key words:**

*World Economic Inequalities; Convergence; HDI; GDP; Kernel Density Estimation.*

## **INTRODUCTION**

In the literature on economic convergence and inequalities, much of the empirical studies rely on the Neo-Classical foundation of growth (Solow, 1956). Its main prediction implies a catch-up process during which low income countries tend to grow faster than the richer ones and, therefore, income convergence occurs as an outcome of capital accumulation process. (Solow 1956; Barro, 1991; Barro and Sala-i Martin 1991; 1992).

This proposition has been tested by a large number of empirical papers. Barro (1991) is one of the initial studies which have shown evidence on the income convergence

across 98 countries over a period 1960-1985. A typical methodology used to test the convergence is to examine the relationship between initial income of countries and their growth rate over a period.

Throughout the years, many other studies have investigated this issue as well. Some of the well-known examples are Firebaugh (1999) who has analysed the evolution of income disparities across 120 nations over a period 1960-1989 and found an evidence on rising tendency, Burguignon and Morrisson (2001) who have investigated the evolution of world income inequalities across citizens of a set of countries over the period 1820-1992 and reported that from the beginning of 19th Century, the distribution of income had worsened until the end of Second World War and stabilized afterwards, Sala-i Martin (2006) who has analysed the evolution of income inequality using several indices across 138 countries over a period 1970-2000 and reported evidence on declining disparities during 1980s and 1990s.

The great majority of the studies in this field have adopted "income data" in order to measure the inequalities. However, imbalances in development are not bound to income as the "development" term includes other dimensions as well (like education and health).

Despite this, only few number of studies use conventional indicators of development (like Human Development Index (HDI) calculated by United Nations Development Program (UNDP)) to analyse the evolution of inequalities in the world (see for some examples, Decancq et al. 2006; Pillarisetti, 1997)

The aim of the current paper is to investigate the inequalities across 128 countries by using both income (GDP) and conventional development variables (HDI) and compare, in this way, the results from both variables. The period of analysis runs from 1990 to 2012 (23 years). In terms of methodology, we employ Kernel Density estimations to depict the level and evolution of inequalities and run cross-sectional regressions to examine whether incomes or development levels tend to converge among countries.

Remaining parts of the paper is organized in a following way: Section 2 is devoted to explaining the data, methodologies and the results of empirical analyses, section 3 is devoted to concluding remarks.

## **DATA AND EMPIRICAL ANALYSES**

An initial step in our analyses is to define our variables and dataset. The set of countries covered in this study are documented below in Table 1. It includes 128 countries for which the data is available. Two types of variables are used in this study. The first one is income data provided by United Nations which has also used source data from World Bank. The income has been measured by per capita real GDP of countries calculated using 2011 year Purchasing Power Parity (PPP). The second variable is the HDI index data provided by the United Nations Development



Program. HDI is a standard and conventional measure of development and specified by taking into account various dimensions. It is basically the geometric average of income level of countries, level of education (most often measured by mean years of schooling and expected years of schooling) and the level of health services (measured by life expectancy index).

TABLE 1. SET OF COUNTRIES

Countries			
Albania	Egypt	Lithuania	Senegal
Algeria	El Salvador	Luxembourg	Serbia
Armenia	Fiji	Malawi	Sierra Leone
Australia	Finland	Malaysia	Singapore
Austria	France	Mali	Slovakia
Bahrain	Gabon	Malta	Slovenia
Bangladesh	Gambia	Mauritania	South Africa
Barbados	Germany	Mauritius	Spain
Belgium	Ghana	Mexico	Sri Lanka
Belize	Greece	Moldova	Sudan
Benin	Guatemala	Mongolia	Swaziland
Bolivia	Guyana	Morocco	Sweden
Botswana	Honduras	Mozambique	Switzerland
Brazil	Hong Kong, China	Namibia	Tajikistan
Brunei Darussalam	Hungary	Nepal	Tanzania
Bulgaria	Iceland	Netherlands	Thailand
Burundi	India	New Zealand	Togo
Cameroon	Indonesia	Nicaragua	Tonga
Canada	Iran	Niger	Trinidad and Tobago
Central African Republic	Ireland	Norway	Tunisia
Chile	Israel	Pakistan	Turkey
China	Italy	Panama	Uganda
Colombia	Jamaica	Papua New Guinea	Ukraine
Congo	Japan	Paraguay	United Arab Emirates
Congo	Jordan	Peru	United Kingdom
Costa Rica	Kazakhstan	Philippines	United States
Côte d'Ivoire	Kenya	Poland	Uruguay
Cyprus	Korea (Republic of)	Portugal	Venezuela
Czech Republic	Kyrgyzstan	Romania	Viet Nam

Denmark	Lao	Russian Federation	Yemen
Dominican Republic	Latvia	Rwanda	Zambia
Ecuador	Lesotho	Saudi Arabia	Zimbabwe

In the rest of the paper, the GDP and HDI denote the two variables respectively. The descriptive statistics on both variables, for 1990 and 2012, are presented below in Table 2.

TABLE 2. DESCRIPTIVE STATISTICS

Measure	HDI_1990	HDI_2012	GDP_1990	GDP_2012
Max	0,866	0,943	115748,0	86587,0
Min	0,216	0,333	435,0	451,0
Mean	0,597	0,700	13061,8	18006,5
SD	0,166	0,159	15802,3	17573,8
CoV (SD/Mean)	0,28	0,23	1,21	0,98

Data Source: UNDP, own calculations

HDI scores of countries range between 0.86 and 0.59 in 1990 and between 0.94 and 0.33 in 2012. Average HDI score is 0.59 in 1990 and 0.70 in 2012. The coefficient of variation (CoV) (Standard Deviation/Mean) in the last row indicates the level of cross-country inequality. It is 0.28 in 1990 and 0.23 in 2012. Hence, the HDI scores seem to have more equally distributed over the years.

The inequalities in per capita GDP are, in fact, much higher than the HDI as the CoV is 1.21 in 1990 and 0.98 in 2012. Although the inequality in GDP tends to decline over the years, its level is comparatively much higher than the disparities in HDI.

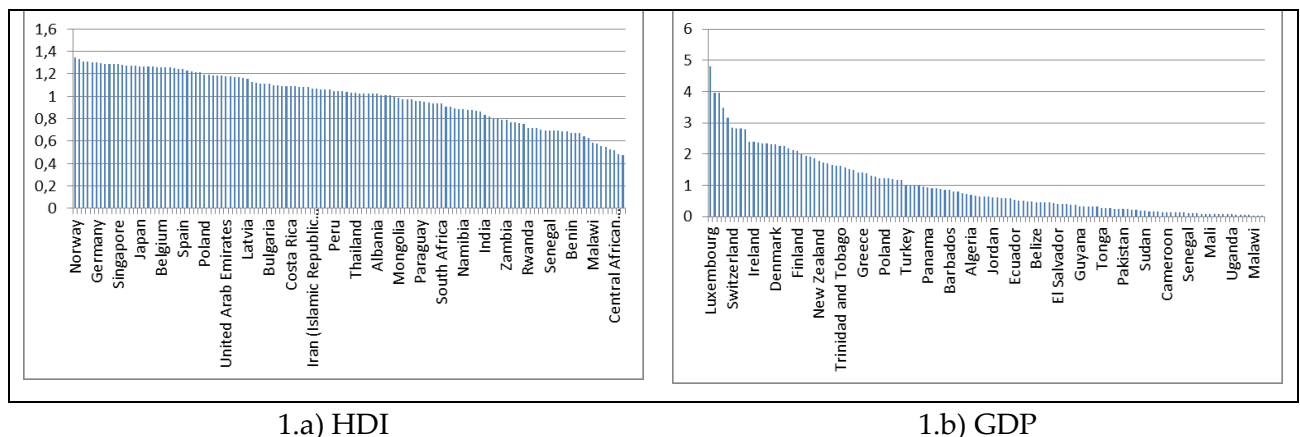


FIG 1. RELATIVE GDP and HDI SCORES OF COUNTRIES in 2012, AVERAGE=1,  
Data Source: UNDP, own calculations

In order to observe better cross-country disparities, we present in Figure 1 above the each variable in 2012 relative to their cross-sectional average. Hence, in the figures above, the value of 1 indicates an average country and deviations from 1 shows the disperison from the mean In terms of HDI, most developed country is Norway with a relative score about 1.4



and the least developed country has a score about 0.5. Hence, the most developed country has almost 3 times higher HDI score than the least developed one.

In terms of GDP, the richest country has per capita income about 5 times higher than an average country. The country which has lowest income has about 0.025 relative income. Hence, there are huge differences in terms of GDP per capita between countries. The richest one has almost 192 times more per capita income than the poorest one. The disparities in HDI and GDP can be due to many socio-economic reasons. They might be due to differences between countries in human and social capital, disparity in physical infrastructure, level and quality of investments, public goods and services, climate and geography etc.

To be able to understand better the evolution of cross-country disparities over time, we estimate the Kernel Density estimations of each variable relative to their cross-sectional average (Wand and Jones 1995; Silverman 1998). Hence, in the figures below, the value of 1 indicates an average country. The estimations are performed in Eviews 4 software program.

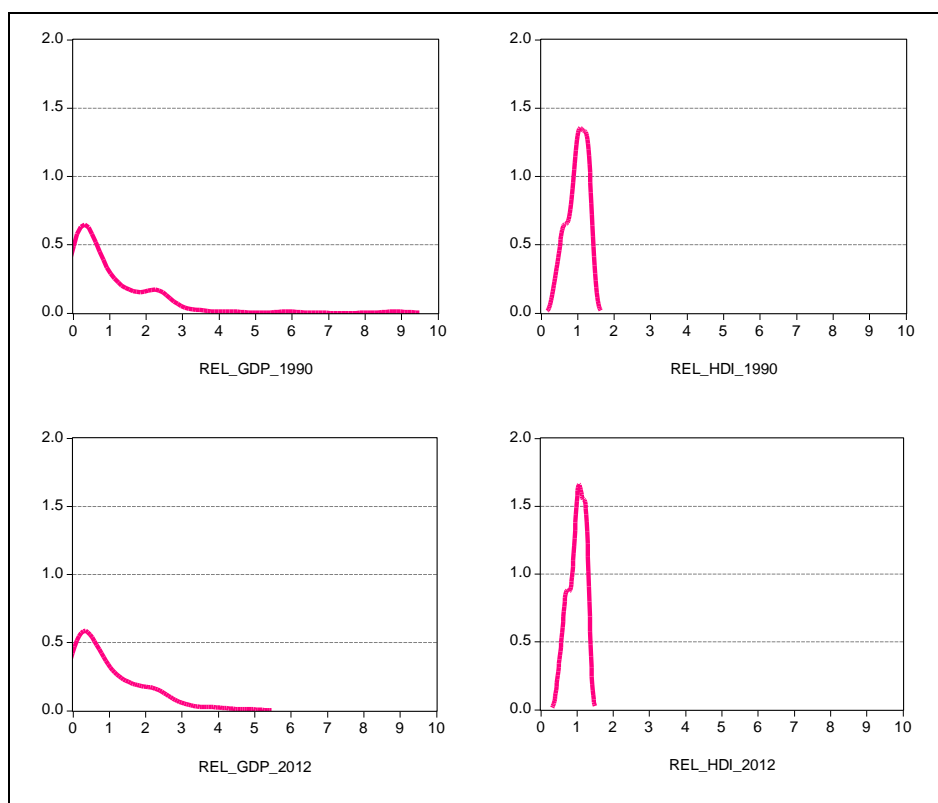


FIG 2. KERNEL DISTRIBUTION OF HDI vs. INCOME(1990), AVERAGE=1,  
Data Source: UNDP, own calculations

In 1990, HDI exhibit a very normal distribution shape while GDP shows a much dispersed distribution. In 2012, both variables seem to have more homogenous shape as the probability mass concentrates more around value 1. Hence, two important results can be learned from the analysis. First, inequalities have declined over 1990-2012 regardless of which variable has been analyzed. Second, perhaps more importantly, the inequalities observed in GDP are much more higher than the disparities observed in HDI variable.

In order to support this evolution inferentially, we run the following basic cross-sectional convergence regression:

$$\Delta \ln y_i = \beta_0 + \beta_1 \ln y_i + \beta_2 \text{pop}_i + \varepsilon_i \quad i=1, \dots, 128 \quad (1)$$

where  $y$  denotes the variable interest (GDP or HDI). Subscript  $i$  denotes the countries,  $\ln y_i$  is the initial level of variable in 1990 (in natural logarithms) and  $\Delta \ln y_i$  is the growth of the variable (logged and first differenced) over the 2012-1990 period.  $\text{pop}_i$  is the population share of countries in world population in year 2012. Population data has been obtained from UNDP database. Finally,  $\varepsilon_i$  represents the error term which assumed to follow a normal, identical and independent distribution.

We estimate 4 types of regression using OLS (Ordinary Least Squares) technique and the results are summarized in Table 3. In the first two columns (Model 1 and 2), GDP is used as a variable of interest whereas in the last two columns (Model 3 and 4) HDI is used. In the models 2 and 4, population shares have been added as an explanatory variable to capture the effect of different population sizes of countries. P-Values are presented in parenthesis.

We apply a White's Heteroskedasticity test for each regression. In case that the heteroskedasticity is evident, we use White's Heteroskedasticity Consistent Standard Error Estimators (White 1980; Kim et al. 2006).

TABLE 3. REGRESSION TABLE

Dependent Variable:	GDP	GDP	HDI	HDI
	(Model 1)	(Model 2)	(Model 3)	(Model 4)
<i>constant</i>	0.029654***	0.022701***	0.025599***	0.025174***
(P-Value)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
<i>ln_y</i>	-4.12E-07**	-3.09E-07***	-0.028144***	-0.027774***
(P-Value)	(0.0150)	(0.0005)	(0.0000)	(0.0000)
<i>pop</i>	-	0.717011**	-	0.026121***
(P-Value)	-	(0.0146)	-	(0.0059)
R_Squared	0.046055	0.429730	0.464988	0.474952
F_Statistics	6,083073**	47,09716***	109,5089***	56,5367***
White_Heterosk.	1,091	76,59***	15,55***	8,02***
Number of Observations	128	128	128	128

\*\*\* represents statistical significance at 1%, \*\* at 5%, \* at 10% level.

Data Source: UNDP, own calculations

As an outcome, in all regressions,  $\ln\_y$  has a negative and significant coefficient at 1 %. This indicates a strong and robust evidence of economic convergence and declining disparities among countries. In other words, initially poorer or relatively less developed countries tend to grow more in terms of both GDP and HDI over the period. Population variable has positive and significant coefficient in both regressions, indicating basically the fact that big



countries in population (like China, India, Brasil, etc.) tend to grow faster than the smaller countries.

## CONCLUSIONS

In this paper, we have investigated the recent trends in income and development inequality between 128 countries. Our empirical analyses indicate two major results.

- First, the disparities in income and HDI have been shown to decline from 1990 to 2012. This has been confirmed by several analyses, both via Kernel Density Estimations and regression analysis. Indeed, this result is robust even if the relative population sizes of countries are taken into account;
- Second, it has been shown that there are huge disparities in income between countries but only moderate disparity in development. Such that, in 2012, the most developed country has HDI score about 3 times more than the least developed country. And, this ratio is comparatively much higher in GDP since the richest country has about 192 times more income per capita than the poorest state. Why this difference occurs is really a complicated question. It might be due to the data problems related to reliability in measuring GDP, education and health services data or due to any other socio-economic phenomena. In the light of our findings, we may consequently argue that either GDP data exacerbates the disparities or HDI data underestimate it. Anyhow, the researchers should be cautious in that sense. Using only one type of measure may lead to distorted results. Hence, both measures should be employed.

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# PRO-POOR CORPORATE GOVERNANCE APPLICATION IN HYGIENE WATER PROVISION AT SOUTHEAST SULAWESI PROVINCE

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## Abstract

*Authority of hygiene water management and provision in Indonesia has been conducted by local government which managed generally through Local Company of Drinking Water (PDAM). Fulfilling the public need which involves the business entity have caused the practice of corporate governance become important to analyze for ensuring that the hygiene water service by PDAM can be accessed and reached by people especially for low income household group. This research analyzed an effect of corporate governance application within hygiene water management and provision toward pro-poor public service performance by using Partial Least Square (PLS) analysis. Analysis unit is the household of PDAM customer both located in urban or rural areas. This research found that corporate governance application on hygiene water management and provision has influenced public service performance, but it didn't give the pro-poor services. Therefore, application of corporate governance principle, especially accountability and transparency principles are important to defend consistently by PDAM (operator) to keep public service mission; while application of independence, responsibility and fairness principles are still important to increase for pro-poor public service. Controlling and assessment functions for application of those principles are absolutely important to conducted by local government (regulator) to prevent PDAM management hazard.*

## Key words:

*Pro-Poor Corporate Governance; Public Service; Hygiene Water*

## INTRODUCTION

Role of local government in public service provision can be done by two categories such as direct provision and indirect or delegated service management (Benyamin, 2009). The first category is basically positioning the local government as direct provision of public service which means under controlling and financed by

government, while the second category is basically positioning the local government as regulator, but the public service can be done by private company, community or volunteer institution.

Management and provision of hygiene water service by local government through Local Company of Drinking Water (PDAM) show that involving private side in implementing public service in hygiene water sector is as *service delivery*. Villaverde A. Ruiz *et al.* (2013) stated that combination of service pattern is an option to combine profit from public good and private management, although other opinion stated that combination of company management can raise an internal conflict significantly between public interest and personal interest of manager (Cruz and Marques, 2012).

Hygiene water service managed by company which tends to create "conflict of interest" need the management approach which should be controlled and supervised based on applied regulation and determination. This is aimed to make the company management can be done openly, accountable and to have monitoring process. The researcher assumes that it is important for company management in perspective of corporate governance to solve conflict of interest between regulator side and principle (owner) which has an important for public service and operator side or agent as business entity. Application of corporate governance is important to encourage the creating an efficient, transparent, and consistent market with applied regulation (Prayitno, 2014). Application of corporate governance on public governance within hygiene water service is likely to have synergy which makes the government and private sectors oriented to public interest and collaborated more effective in establishing the people welfare.

Various facts related with hygiene water provision which conducted by PDAM in many locals in Indonesia showed some problems, especially on service aspect and reliability of provision system. PDAM as operator is faced with piping networking which still limited, operational cost, and the high leakage water, so these had impacted to quality, quantity, and continuity (3K) of water distributed. On other sides, the local government as regulator has been faced with limited cost for infrastructure of PDAM and the weak of monitoring and evaluation. Some problems in management and hygiene water provision are suspected to have implication to meet hygiene water needs for poor people tend to be skipped.

This study is aimed to analyze application of corporate governance within management and provision of hygiene water in Southeast Sulawesi Province and their effect for pro-poor public service performance.

## **CHARACTERISTICS OF HYGIENE WATER**

Hygiene water is one of the most essential need, which should be available within enough quantity and quality that meets requirements and ensured of their



continuity. In addition to consume, the hygiene water can also become one of facilities to increase life welfare through an effort to increase healthy level (Hakim, 2010). Hygiene water provision with limited and bad quality will cause economic and non-economic impacts for people.

There are some views related with hygiene water characteristic which implicated to the raising debate on infrastructure provision of hygiene water. Hadipuro (2009), stated that water is *common pool resources*, the limited resources but can be substituted, because it has many characteristics related with right to belong, such as water can become an *open access* which characterized with not the right to belong, water is as community good, personal property right, and state property. Differences of ownership regime make the different outcomes, because an inherent institution on one regime of the ownership right would determine access, usage, exclusion, management, monitoring, giving sanction, and arbitration if there is problems.

Other opinion stated that water is public goods, it is the non-rival good; if the water were consumed by someone, then it will not reduce other opportunity to consume it also. Water is also inherently to have non-excludable properties, which means almost impossible to eliminate the people right to consume water. As the basic need, the demand of water is impossible to limit because the purchasing power only. In this context, understanding about water as public goods has emphasized on public ownership. (Munif, 2012).

But, there is also argument that water can be treated as public good purely. Water needs the cost for its procurement, so it should be also treated as an economic goods which must be managed accordance with an economic law, as stated by Budds and McGranahan (2003). Managing water as economic good will be allocated for user which competes each other, so it gives the maximum value for user. This statement will place the poor people become loses in competing, because they can't afford to reach the maximum value wanted (Gleick, 2002), and even this statement will enlarge the private involvement in provision of hygiene water service (Shiva, 2002) which certainly will threaten the right for water.

According to constitution of state of Indonesia, hygiene water is public good which recognized by the state as human right (Hanafi, 2011), so the government become the most responsible party to meet the right for water with justice and prevalent for all people (Setianto, 2009). Water management is not only considered on economic aspect, but also social aspect. Villaverde A. Ruiz *et al* (2013) stated that policy makers should consider an important of social aspect and people participation win water management services. Treating the water is only economic good to cause the lost of social function and can make the poor people to be neglected for need of water (non pro poor). Mirzakhanyan et al., (2005) on research result reporting of UNICEF (2012)

stated clearly that pro-poor policy is signed by policy which develops an *expanding opportunities* from poor people through basic infrastructure provision or supporting infrastructure.

## **CORPORATE GOVERNANCE**

Governance can be meant as the way to manage public business. *World Bank* emphasizes that *governance* is the way of government to manage social resources and economic for community development interest, while *United Nation Development Program (UNDP)* is more emphasizing on political, economic, and administrative aspects within state management. *Economic governance* refers to decision making process of economic field which implicated on prevalence problem, poverty reduction, and increasing of life quality. (Mardiasmo, 2002). If referring to concepts of World Bank and UNDP, then development orientation of public sector is to create good governance, i.e. the responsible development practices, lining with principles of democracy and supporting with the business activities growth.

Some thoughts on corporate governance have developed with starting point on agency theory, where there is separation practice of ownership and company management functions because limitation of principal capability in managing the company, and other side the professionals offers their capability to manage agents (Kaihatsu, 2006). *Corporate governance* is meant to minimize fraudulent potential as the consequences of the agency problem.

According to Syakroza (2000), there are two causes of the raising idea of *corporate governance*. First is very fast environment changing which have an impact for changing of global market competition map; and Second, more parties and complexes which have interest with company and global market competition are increasing continuously because triggered by sophisticated technology and economic regulations. Based on the view, application of good corporate governance is important supported by three interrelated pillars, such as state/government and the apparatus as user of product and services.

*Corporate governance* is paradigm of corporate governance which supports the efficient, transparent, and consistent market with the regulation applied. Their practices are an effective systems and structure which can create a valued added for overall stakeholder (Monks, 2003 *within* Kaihatu, 2006), this is also meant to accomodate the demand of many sides about corporate responsibility (Prayitno, 2014).

According to Ariyoto (2000), there are three *corporate governance models*, such as *Principal Agent Model*, called as *agency theory*, the corporation is managed to give win-win solution for shareholders as owner in one side, and manager as an agent in other sides; *The Myopic Market Model*, which focuses on interest of shareholders and manager; and *Stakeholder Model*, which emphasizes on interest of parties related with





corporation largely including ethical and moral problems, law of policy government, social environment, socio-economic and politic.

*Good corporate governance* needs application of the main principles of *corporate governance*. Those principles are *transparency*, *accountability*, *responsibility*, *independence*, and *fairness*. According to Ningsaptiti (2010), application of *corporate governance principles* within hygiene water provision management has given the usefulness, such as increasing corporate performance through the creation of better policy taking process, increasing service to people, making easy to get cheaper cost, so these usefulness can increase *corporate value* and *Shareholder's value* and also dividend.

## RESEARCH METHOD

This research is conducted in Southeast Sulawesi Province which focused on PDAM service user, specially the customer with household category which consumes water of PDAM on block 1 (0-10 M<sup>3</sup> consumption) and block 2 (11-20 M<sup>3</sup> consumption) by 100 people as the samples.

Partial Least Square (PLS) analysis is used to analyze relationship of corporate governance application toward pro-poor public service performance. Indicator of corporate governance variable consists of: application of transparency, accountability, responsibility, independence, and fairness principles; focus on board, law and regulation; and also organization, service quality, service coverage and satisfaction; and also pro-poor variable consist of affordability and access.

## RESULT

Discussion consisted of two sections, such as: (1) discussion for research *outer model*; and (2) discussion for research *inner model* which was formulated.

## RESULT OF RESEARCH OUTER MODEL TEST

Result of research outer model is described by comparing coefficient value of *outer loading* estimation and *mean* of respondent's assessment from each variable of this research.

### Corporate Governance Variable

Relationship between *loading factor* and mean of indicators on *corporate governance* variables are presented on Table 1. It showed that indicator of organization goals (X<sub>1.8</sub>) had higher outer loading value than other indicators, which showed that organization goals are the most able to describe corporate governance variable. Indicator of organization goals are stronger to become corporate governance measurement, because practice of public corporate management who has potential of conflict interest between principal and agent must be started by placing

foundation of clear and measurable organization goals. Consistency for implementation of governance is accordance with organization goals and the applied regulation will achieve the good corporate governance.

TABLE 1. RELATIONSHIP OF LOADING FACTOR AND MEAN OF INDICATORS ON CORPORATE GOVERNANCE VARIABLE

Indicators		<i>Outer Loading</i>	Mean
X <sub>1.1</sub>	Application of Transparency Principles	0,868	3,59
X <sub>1.2</sub>	Application of Accountability Principles	0,830	3,71*
X <sub>1.3</sub>	Application of Responsibility Principles	0,822	3,23
X <sub>1.4</sub>	Application of Independence Principle	0,814	3,29
X <sub>1.5</sub>	Application of Fairness Principle	0,835	3,23
X <sub>1.6</sub>	Focus on Board	0,835	3,37
X <sub>1.7</sub>	Law and regulation	0,878	3,56
X <sub>1.8</sub>	Organization Goals	0,904 *	3,44

Notes: \* = highest value

*Outer loading* value is different with mean value of respondent perception for this variable. In general, household of PDAM service user assessed that application of accountability principal (X<sub>1.2</sub>) is as the most proper indicator to describe corporate governance variable. This give a meaning that there is awareness of responsibility owned by PDAM in managing and providing the hygiene water to meet public need and there is awareness of corporate organ as part of local government to become achievement key to be good corporate governance.

### Public Service Performance Variable

Relationship between *loading factor* and mean of indicator on public service performance variable is presented on Table 2.

TABLE 2. RELATIONSHIP OF *LOADING FACTOR* AND MEAN OF INDICATOR ON PUBLIC SERVICE PERFORMANCE VARIABLE

Indicators		<i>Outer Loading</i>	Mean
Y <sub>1.1</sub>	<i>Utilization</i>	0,912	2,98
Y <sub>1.2</sub>	Service Quality	0,958*	3,54*
Y <sub>1.3</sub>	Service Coverage	0,875	3,23
Y <sub>1.4</sub>	Service Satisfaction	0,908	3,15

Notes: \* = highest value

Table 2 showed that service quality indicator has higher outer loading value than utilization, service coverage and satisfaction. The value showed that service quality is as the most proper indicator to describe public service performance variable. This



gives the meaning that the quality service for people, especially customer will encourage an increasing PDAM service performance as the public entity. If the service were not qualified, then the public service performance conducted by PDAM tends to be not good.

*Outer loading* value for service quality indicator is consistent with mean of respondent's perception value. Mean of value obtained for service quality indicator is 3,54. This gives the meaning that customer of PDAM have given an assessment that service quality given by PDAM specially related with water distributed is the main factor which determines the public service performance by PDAM. The service quality is more emphasized on aspects of water quality, quantity, and continuity. Therefore, outer loading value and mean of value are the signal that for increasing public service performance is important to increase by PDAM.

### Pro Poor Variable

Relationship between *loading factor* and mean of indicator on pro-poor variable are presented on Table 3.

TABLE 3. RELATIONSHIP OF LOADING FACTOR AND MEAN OF INDICATOR ON PRO POOR VARIABLE

Indicators		<i>Outer Loading</i>	Mean
Y <sub>2.1</sub>	Affordability	0,950*	3,30*
Y <sub>2.2</sub>	Access	0,938	2,89

Notes: \* = highest value

Table 3 showed that outer loading on affordability indicator have higher outer loading than access indicator on pro-poor variable. This means that affordability indicator is more proper to describe pro-poor variable. This gives the meaning that an effort for pro-poor public service through fulfilling the hygiene water needs which provided by PDAM is strongly influenced by cost earning for the hygiene water can be reached by people.

*Outer loading* value on affordability indicator is consistent with mean of respondent's perception value. Mean of value obtained for the indicator is 3,30. The indicator value gives the meaning that water consumption level from PDAM piping for household category customer has been influenced by proportion of their income in paying the cost of obtaining the hygiene water. Therefore, affordability aspect in piping water provision is one of important factor in providing pro-poor public service.

### RESULT OF RESEARCH INNER MODEL TEST

Result of structural model test (inner model) can be seen on Table 4.

TABLE 4. RESULT OF STRUCTURAL MODEL TEST

No.	Relationship between Variables		Path Coefficient	<i>p-value</i>
1.	<i>Corporate Governance</i> (X <sub>1</sub> )	Public Service Performance (Y <sub>1</sub> )	0,663	0,000
2.	<i>Corporate Governance</i> (X <sub>1</sub> )	<i>Pro poor</i> (Y <sub>2</sub> )	0,284	0,091

### Effect of Corporate Governance Application for Public Service Performance

Table 4 showed that coefficient correlation value as 0,663 and t-statistic value as 11,085 > 1,960 or p-value as 0,00 < 0,05 have indicated that analysis result between corporate governance application with public service performance to be evidenced that there is positive and significant correlation. The research result gives a meaning that application of corporate governance practice has been improved. Then it would increase public service performance by PDAM for the customers. In contrast, the application of corporate governance will cause the public service performance conducted by PDAM to be decreased also. It means that application of corporate governance principals with focus on board, compliance with law and regulation and also clearness of organization goals will be implicated on effectiveness, efficiency, and productivity of PDAM organ in giving public service.

Any separation of ownership and corporate management functions showed that hygiene water provision by the local government which managed by PDAM is the corporate governance practice which tends to implicate for the raising conflict interest between local government (principal) and PDAM as agent, the interests are fulfillment of public needs (public interest) and business interest (profit interest). These empirical facts has reinforced an agency theory by Jensen and Mekling (1976) which stated that principal agent practice will raise some implications for corporate performance and sustainability. Good application of corporate governance principles within management and hygiene water provision by PDAM (agent) can minimize the potential of fraudulent as result of agency problem, but if the principle is ignored by agent, then the public service performance as the local government interest (principal) will not be improved. This is lining with finding of Prayitno (2014) which stated that consistent application for corporate governance principle in hygiene water management by PDAM has become the main device to minimize the agency problems.

Application of accountability principles or seriousness of PDAM in achieving the corporate goals (public mission and business mission) within hygiene water management and provision are the most dominant factor to give impact for public service performance of PDAM, especially related with water utilization level, service quality, service coverage and customer household satisfaction in obtaining the hygiene water. Therefore, non-accountable PDAM will be faced on decrease public service performance, so this builds "unprofessional" public image, there is distrust



and even according to Sulistianing, A. Retno (2006) encourage the people intention to provide hygiene water individually.

Other empirical facts showed also that application of responsibility principles, fairness principle, and independence principle are still becoming the problems and exacerbate the practice of corporate governance of PDAM in management and provision of hygiene water for public. Some aspects which triggered problems on application of responsibility principles are channel/media submission of complaints which can't be provided easily and cheaply for customers, handling for complaint which tends to be not on time, customer's complaint for water consumed can't be handled well. This showed that the company in management and provision of hygiene water is not complying the regulation and law applied, for example consumer protection regulation and health regulation, so it causes the low utilization of hygiene water, the decreasing service quality and customer satisfaction. Application problems of fairness principle which become trigger of the decreasing for corporate governance application are caused by injustice treatments by corporate in giving service and corporate handling, there is still insider trading, self-dealing in services, discriminative service for customers, and amount of money for connectedness and improper payment rate with water quality obtained, so it makes the detrimental for customers and also the local government. Bad application of independence principles are also caused by dependent handling of customer's complaints, ignoring standard of service determined specially in handling customer's complaints and delivering the information related with inaccurate and late service operational.

Still weak in application of the principles above have caused the PDAM to be not able to protect balances of interest (business mission and public mission), the application of corporate governance is really needed in public sector to guarantee no "imbalance of power" for some parties related with the corporate, so it will make the following positive impact for corporate efficiency, the creating a better process of decision taking, increasing service for stakeholder (Ningsaptiti, 2010), for economy and the creating of community welfare (Syakhroza, 2005; Matei & Drumasu, 2014).

### **Effect of *Corporate Governance* Application for *Pro Poor***

Table 4 showed that correlation coefficient value as 0,284 indicating that good corporate governance application tends to be able increasing access and affordability (pro-poor service). But, empirical facts showed that *corporate governance* application didn't effect for pro-poor with  $1,691 < 1,960$  t-statistic value or  $0,091 > 0,05$  p-value. *Corporate governance* application within hygiene water provision by PDAM doesn't give useful directly for customer household in form of increasing access and affordability of hygiene water provision. In contrast, the bad *corporate governance* is

not also decreasing directly an access and affordability within hygiene water service provision conducted by PDAM.

Although the authority of hygiene water management and provision have been long time given to PDAM, but this study showed that corporate governance practice within hygiene water service provision can't increase an access and affordability of service to customer household. This showed that there is no guarantee for PDAM which has applied the corporate governance principle can create the pro-poor public service for household customer.

Application of responsibility principle, fairness and independence which are still creating problem to cause PDAM to be more emphasizing their interest as corporate, the corporate is not professional as public service provider entity, so this useful proportion obtained by user with household category is indirectly smaller than obtained by non-household user. This finding has stated the research result of Godrey et al. (1997) which expressed that in the agency theory of public sector, there is not guarantee for agent to act in fulfilling the principal interest or public welfare, but it tends to have opportunist behavior. Different with UNDP concept within Mardismo (2012), which describes that governance practice which conducted by government in managing social and economic resources are at least showed for community development interest, so it would be implicated to reduce poverty and to increase life quality (economic growth).

Empirical facts showed that affordability dimension is as the most important indicator assessed by customer as the dimension which can produce pro-poor public service. That assessment is consistent with outer loading value, so this assessment asserted that cost aspect of obtaining hygiene water, both cost for installation, water rate or price of PDAM water are very determining pro-poor public service. Any dimension access which becomes one of pro-poor service indicator, which also known as problems which is signed the time used to obtain PDAM water to be longer (distribution by turn/zone) and also media to deliver customer's complains are still limited. Thus, hygiene water service can be said pro-poor, if the time used by household in enjoying the hygiene water provided by PDAM to be smaller than the time to obtain hygiene water non PDAM.

## **CONCLUSION**

Corporate governance application within hygiene water management and provision conducted by PDAM had positively and significant effect for public service performance conducted by PDAM, but it has insignificant effect in increasing the service access and affordability) of hygiene water for low income people (non pro-poor). Application of independence, responsibility, and fairness principles should be increased, while application of accountability and transparency principles and reaching the organization goals of PDAM should be defended consistently to keep interest diversity (mission of public service is not ignored). The local government



(owner) is important also to increase controlling function to prevent hazard of PDAM manager. The tight controlling will not only produce pro-poor public service, but also asserted that the government is the most responsible party in fulfilling hygiene water provision for their citizens.

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# ORGANIZATIONAL JUSTICE, TRUST AND ORGANIZATIONAL COMMITMENT IN BANKING SECTOR OF PAKISTAN

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## Abstract

*Causal relationship between organizational justice and organizational commitment is investigated through this study. Organizational justice is assumed to be tripartite as distributive justice, interactional and procedural justice; however, here it has been measured on the basis of procedural and distributive justice. This research has also investigated the impact of organizational trust as mediator. The units of analysis are the employees of private commercial Banks operating in the jurisdiction of District Attock, Punjab, Pakistan. Survey method has been used to gather the viewpoints of employees through convenience sampling technique. Two hundred and fifty respondents shared their feelings with us through structured questionnaire. Regression analysis technique is used to analyze our hypotheses. Barron and Kenny (1986) approach has been used to explore the influence of mediator on predictor and outcome variables. Study was concluded with the result that there is Strong impact of organizational justice is observed over organizational commitment. Trust has significance role in development of organizational commitment in organizational perspective.*

## Key words:

*Organizational Justice; Organizational Trust; Organizational Commitment; Distributive Justice; Procedural Justice*

## BACKGROUND

Business organizations are considered as economic institutions. This logical perspective has established relationship between employers and employees. Organizations emphasize over the use of quid pro quo exchange between payments and performance of definite appraised tasks. Employee motivation is taken as journey for economic gains, thus merit payments are assumed to be more effective. On the basis of rational model, one can raise the case of downsizing for those employees who



are not contributing to the baseline of performance. This model is found to be in the hearts of those organizations which always take measures towards cost cutting. Merit pay is not always effective and downsizing has malicious effects in the long run and workers are strait jacketed by bureaucratic management that results in decreasing innovation in organization. One should take into consideration economic matters but to the extent of duty. Quid pro quo exchange also includes ethical compulsions that one party has to the other. Employees look towards benefits but employer looks to the output more. Organizational justice is about the perception of employee about organization that how they are being treated. It works like glue to keep people together and work effectively. On the other hand, there is injustice that works as harsh solvent and melts the bonds within organization and society. Injustice is not only injurious to individual but also to the organization. In organizational justice, procedural justice is considered to be central determinants of job satisfaction. Procedural justice plays its role in the overall evaluation of an organization such as trust in supervisor, organizational commitment and citizenship behavior. Procedural justice explains the means to determine the output/outcome. Procedural justice is about the perceived fairness of process used to make decision and distributive justice is concerned with the perceived fairness of outcome to be rewarded. Thus distributive justice is a motivating force for employee. Procedural justice is associated with the organizational system evaluation such as pay system, organizational commitment and process satisfaction, whereas distributive justice is pertinent to organizational outcome such as pay satisfaction, outcome (Folger & Konovsky, 1989; Greenberg, 1990).

Relationship between gender and organizational justice has been given a very small attention in research. Male and female weigh procedural justice and distributive justice differently. Women prefer procedural justice to be fair than men relevant to their organizational outcome but same is opposite for male as they want distributive justice to be fair than procedural most relevant to organizational outcomes. It has been found in research that when people receive unfavorable outcome, negative affect tend to be diminished if fairness procedural justice is perceived in organization (Brockner et al. 1997; Schaubroeck et al. 1994; Sweeney & McFarlin, 1997).

Team work reflects interdependency between team members to complete professional goals. Many theories had been established to reduce the risks involved in team work and minimize the magnitudes of smashed trust. Legalistic medications are assumed to be weak to build the broken trust and are taken to be ineffective for organizational development. Diversity in workforce composition of organization increases with the passage of time. In case of diverse workforce, employees are less dependent on the use of shared norms, values and interpersonal skills, so there is need to build mutual trust among them in order to work more effectively for organization.

This scenario has created a need to take into consideration the role of trust. Trust is defined as *"Readiness of a party to be open for actions of another party, keeping in mind that other party will take the actions, is important to one without analyzing monitoring ability to other party"*. Other spectrum of organizational trust is self-directed teams and empowerment of employees. In such conditions, control is lowered and interactions are increased. Nowadays, direct monitoring of employees is becoming obsolete, so trust building is important in self-directed team to achieve higher goals. Trust plays its role in the substitute of supervisor and employees are ready to take risk for the betterment of organization. Remember, trust is not about taking risk but it is about showing inclination towards taking risk. Trust and cooperation are used synonymously, when we trust someone then some favorable action is expected instead of harmful action and all this is enough to cooperate with each other. Trust always leads towards cooperation but trust is not mandatory for starting cooperation with others in cooperation, no party is at risk. Employees are often found to be cooperative with the trusted persons. There is not a big difference between trust and confidence. Confidence in abilities and determination leads to trust in any working relation. Trust is about good intentions and confidence is about words and activities to be performed. Trust is based on recognition of risk but confidence is risk free and in case of confidence, alternatives are not considered. Risk and trust are interdependent upon each other. The major distinction between trust and trusting attitude is the Will of accepting risk. Trust always directs towards risk in any relationship but the form and magnitude of risk is always dependent upon situation and circumstances. All risk-taking actions are not trust based as plantation in agriculture and fund investment in stock market (Cook & Wall, 1980; Deutsch, 1960; Luhmann, 2000).

## **BROAD PROBLEM AREA**

High concentration is being given over the parameters which are supposed to be the tools having strong hand in evaluation of diverse perception about organization. To get accurate idea about the organizational policies, procedures and legislatives, the relationship organizational trust from leaders and organizational perspectives and organizational justice has also been taken into account. It is of great importance to identify the workers' reaction to policies from management and organizational side and their final impact over the performance of institution in the long run.

If employees of an organization work beyond their approved list of roles and duties with positive approach this gives a competitive edge to organization. The basis of such an attitude are motivation, work attitudes and contribution (Podsakoff & MacKenzie, 1997). Employment relationship can be taken as social or economic exchange. It talks about the concept where one does favors to other just because he/she expects some return in future, but exact nature of return is dependent upon the one who makes it.



We can say social exchange is based on long-term exchange of favors that excludes accounting and is about wordy commitment to interchange (Blau, 1964).

On the other hand, Prototype Social Exchange is based on the formal contract that specifies the exact quantities to be exchanged and can be enforced through legal endorsements. Social Exchange has developed a base for researcher to understand the work attitudes and behaviors. Without exact nature of commodities to be exchanged, one comes to know the level of mutual co-operations through social exchange which are indicated by exchanged favors. Social exchange depends upon employer in the employment relationship based on fair treatments of employees. This action provokes the employees to work hard for the welfare of organization. Organizations which are perceived to care about the needs of their employees are considered to be supportive organization. These organizations give their employees rewards, recognition and value on the basis of their contribution. Supportive organizations have three basic elements; discretionary awards, employee commitment and trust. With discretionary award, employees feel appreciated. It helps to raise employees' commitment and leads to the level of reciprocity. Trust has a critical role in social exchange theory. Trust is broken when either employee or organization does not fulfill their responsibilities and commitments. Positively Outstanding Service (POS) is positively related with organizational commitment and negatively related with turnover rate (Shore & Shore, 1995; Shore & Wayne, 1993).

To get consistent and productive performance, it is necessary for employer to develop and maintain organizational trustworthiness. Employees quantify and measure the organizational trustworthiness on the basis of observation and analysis of following six elements:

- Their leaders and HR practices;
- Various organizational strategies for finance, marketing, HR;
- Organizational norms and values;
- Organizational structure;
- Common people views about organization; and
- External governance.

Trust has also been used as a factor, having impact on the relationship of organizational justice and work outcomes, but that was just from the perspectives of supervisor. However, there are multiple stakeholders who have impact on the perceived trust level of employees i.e. peers, supervisor and management. Organizational justice has been postulated as predictors of trust related to organization. Trust in organization is to be theorized as mediating their relationship.

## LITERATURE REVIEW

*Equity Sensitivity Model.* According to equity sensitivity model there are three types of people:

*Benevolent:* Benevolent are the individual who are known as “givers”. They are satisfied when they are given opportunities to use their skills and expertise. These people emphasize on the relationship with employer. Benevolent can never be disturbed by giving them less return as they do not work for the return they work for their pleasure.

*Equity Sensitive:* Equity sensitivity endeavors the balance between organizational demands and desired outcomes. Employee with equity sensitivity affect their successive attitudes and reactions (Huseman, Hatfield, & Miles, 1987).

*Entitled:* Entitles are known as “taker”. These people put their personal outcomes ahead than of organizational interests. They are always present to “Get Their Way” in the organization. They constantly seek the ways to increase their rewards by any mean.

### *Organizational Justice*

Justice theories are now being applied in various aspects of organizational development such as organizational trust and organizational commitment, commitment of senior management in international joint ventures, performance appraisals, and job satisfaction (Folger & Konovsky, 1989; Greenberg, 1986; Johnson, 1999; McFarlin & Sweeney, 1992). Literature shows the discussion of organizational justice into three parts i.e. distributive justice, procedural justice and interactional justice. Distributive justice is that each employee must get the reward proportionate to input. Well known theory concerned with distributive theory is equity theory. Procedural justice is concerned with the processes used to determine resources to be allotted (Adams, 1965; Thibaut & Walker, 1975). Interactional justice is related with treatment received from decision makers and the extent to which decision making procedures are being legislated. These tripartite of organizational justice are found to be related with job satisfaction (Bies & Moag, 1986; McFarlin & Sweeney, 1992; Moorman, 1991; Tyler & Bies, 1990).

### *Distributive Justice*

Resources to be allocated have a wide range and people are affected by allocation of these resources. This includes; authority, technology, responsibilities and monetary benefits. Distributive justice is that these resources are to be distributed based on the following three criteria:

*Equity:* Compensation given on the merit is equivalent to the concept of fairness. When organization's goals, objectives and the ways to achieve them are clear then equity principle plays an important role in the motivation of employees. Equity is known as



transactional criterion, where organization offers specific rewards for definite contributions.

*Equality:* In the times of organizational stability, rewards/outcomes are distributed on the basis of equality, which leads to the cooperation and cohesion in the employees. Loss in organization has also been distributed on the basis of equality. Unfair allocation of losses will lead to employees' dissatisfaction (Martin, 1981).

*Individual Need:* It is very important to allocate the resources on needs of individual for survival of organization but distribution of resources on individual need should not conflict with the need of organization. The distribution of available out-placed resources e.g. scheduling of downsizing based on individual needs may play an important role in the fairness perception about organization (Cobb et al. 1995; Deutsch, 1995).

### ***Procedural Justice***

Procedural Justice is about the perceived fairness about processes and procedures by which distribution of resources and outcomes is made. Reconstruction of ground rules, recourse and 'who is to have voice' are extremely important regarding procedural justice. Procedural justice is considered to be central determinants of job satisfaction. Procedural justice plays its role in the overall evaluation of an organization such as trust in supervisor, organizational commitment and citizenship behavior. Procedural justice explains the means to determine the output/outcome. Procedural justice is about the perceived fairness of process used to make decision, distributive justice is concerned with the perceived fairness of outcome to be rewarded. Procedural justice is associated with the organizational system evaluation such as pay system, organizational commitment and process satisfaction (Borg, 1991; Folger & Konovsky, 1989; Greenberg, 1990).

*Reconstruction of Ground Rules:* Organizational policies and procedures make the ground rules of an organization. According to organizational development perspective, participation of employees in development of rules makes it easier to understand and accept the rules and help the employees to better perceive organizational justice in a better way.

*Recourse:* Recourse is the only option available to employees if they are treated injustice regarding complain. During organizational change, complains can be lodged about existing procedures and processes. A request can be generated to review the existing policies and procedures as employees are facing new conditions. There may be a standing against new policies and procedures as employees are negatively affected by them or still think viable old policies and procedures. System of recourses

is the only alternate through which higher management comes to know how resource distribution is and what are its effects on human resources.

### *Who is to have voice?*

In decision making process, basic norms and values of an important subgroup should be taken into consideration to get fair perception. Different groups in an organization may have different opinions, leading towards conflict; here group differences affect perceptions about fairness. Voice in the construction of ground rules allow employees to create and develop new policies and procedures perceived as fair while working in diversity. Voice in the recourse allows establishing new channels of communication which addresses the objections forwarded. Voice is used to explain the opportunities to all groups in order to enhance the competition among intergroup (Cobb et al., 1995; Leventhal, 1980; Schopler, 1987). Prime objective of our research is to investigate the causal association between organizational justice, job satisfaction and role of organizational trust as mediator will be analyzed.

### *Organizational Trust*

Trust is defined as vulnerability of one party to the deed of other party dependent on the anticipation that other party will accomplish a significant action important to the trust or without seeing checking ability to the first person. This exposure comes from the uncertainty whether other party will perform up to the expectation or not. Degree of openness enhances in the conditions where parties are interdependent i.e. attentiveness of one party cannot be reached from former party (Becker, 1992). Trust has been categorized into two categories, cognitive-based trust and affect-based trust. Cognitive-based trust is defined as the logical evaluation of an individual ability to perform responsibilities; this characteristic reveals level of an individual dependency, competency and reliability. Affect-based trust is defined as emotive attachment that comes from the common care and thoughtful that is found amid individuals. Affect-based trust is the main influence of social-exchange relationship as observed in the previous research (Chen et al., 1998; McAllister, 1995). Care for other's interest, reliability, competence, and openness are main dimensions of trust (Butler, 1991; Mayer et al., 1995; Mishra, 1996). Social exchange relations require investment that leads to the commitment in other party. Focal exchange partner i.e. organization or supervisor is asked to treat their employee fairly which results to the trustworthiness in organization. Alternatively, employees start delivering in result to the organization back (Blau, 1964; Shore & Shore, 1995).

Significant relationship is observed between organizational trust, procedural and distributive justice, in order to keep exchange relations balanced, employee will be obligated to return the good deeds to organization by performing their obligations, workers will show their trustworthiness, thus expanding the arena of mutual trust. Return therefore increases trust. Responsibilities, employees perform in social exchange, are generally taken as broad support, mutual loyalty and good will.





Employees who are involved in delivery of reciprocation are seen to have positive attitude towards work. There are rational evidences for the relationship between organizational trust and organizational commitment and employee turnover (Liou, 1995; Pearce et al., 1994; Robinson, 1996; Robinson & Morrison, 1995). Trust is an insignia of social exchange, which is a large supporter of devotion, benevolence and livelihood. Thus we can presume that trust is a player of mediation for organizational justice and social exchange support the common loyalty, generosity and support, thus trust will absolutely have impact over the relationship amid organizational justice and on-the-job events and outlooks of employee. Research shows that stuff of employee is dependent upon the principal exchange companion. Trust mediates the relationship of organizational justice and numerous organizational outcomes like job satisfaction and organizational commitment (Konovsky & Pugh, 1994). A strong cause and effect relationship is also observed between trust and organizational citizenship behaviors (OCBs). Substantial relationships between trust in leadership and other parameters like job satisfaction, organizational commitment have strong impact over organizational effectiveness and efficiency. Trust also mediates the relation between job satisfaction and organizational effectiveness (Dirks & Ferrin, 2002).

### ***Organizational Commitment***

Organizational commitment is considered to be a psychological state of emotions which deals with the relationship of worker with its employer where the worker decides whether to work or not for company in future. Commitment is categorized into three parts: affective, normative and continuance. Affective is known to be most important as it has strong impact on turnover and performance of employees. The employees, who have high level of affective commitment, just only work for organization because of their commitment with the institute. Employees with strong normative commitment keep on working for their organization because of individual norms and values that does not allow them to leave organization for their material benefits. Those employees, who show continuance commitment on high side, just continue to work for it meanwhile searching for a better opportunity, as they get it they would leave the organization. On the basis of various constraints and limitations, organizational commitment has been categorized into three categories as explained below (Johnson, 1999; Meyer & Allen, 1991; Meyer et al., 2002).

### ***Structural Commitment***

Structural commitment is constituted by two types of external constraints. One is the impact over the selection between lines of action. Second is that restricts an individual to leave a course of action. Structural commitment depends upon situations, conditions, circumstances, which one cannot avoid to follow because of the following four reasons:

1. Analysis, on the basis of handiness and desirability, of alternate course of actions.
2. Irrecoverable investment made, so cannot go out of it.
3. It is difficult to process, to lay off a certain line of action.
4. One does not leave the certain line of action due to feedback of society.

Structural commitment is about creation, establishment of a specific shape within which employees are required to make decision, act and interact.

### ***Personal Commitment***

Personal commitment refers to the in-house aspiration, which makes the basis to carry existing course of action. We may say that personal commitment discusses the individuals who continue a certain action as they take it desirable and wants to do it. It is because of three reasons:

1. Inclination towards certain line of action.
2. Encouraging approaches towards a course of action because of one's special and individual involvement in working.
3. Self-created typology of identity comes from lines of actions.

### ***Moral Commitment***

Moral commitment is connected with internal constraint, which is directed by conditions and circumstances that force employees to stay with a specific organization willingly. Moral commitment is based on three parameters:

1. When there are moral obligations on behalf of employee's opposite partner.
2. People feel to be discouraged or ashamed after adopting one certain course of actions found to be involved in them for some time.
3. Culture of an area plays role in the presence of moral commitment as it also emphasizes for the consistency of a line of action.

Commitment processes are entrenched into two logically related groups; external group and internal group. Corporal communities speak of external, physical environment, for example workplace, network, organization, neighborhoods, power relations, dominance order and ethnic communities. Power relations and dominance order create situational context. Rational context helps in making decisions, taking actions and how to interact. Action and interaction shows reaction back to the communities (Athens, 2000; Giddens, 1984; Hall, 1997).

There is idea pertaining to the concept of perpetual monologue elaborating the background of phantom. This word can be taken in the sense of single or manifold entity because distinct phantom acquaintances but when taken in sense of multiple, presents phantom community. Through soliloquizing, actor interprets the situation with which they daily confront, and then put together their movements. Players

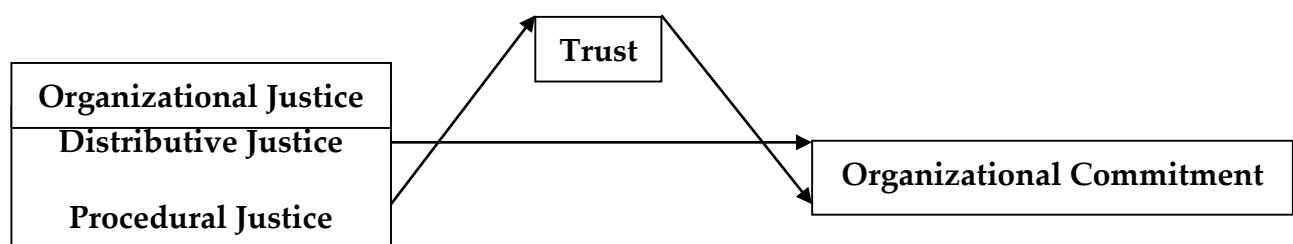


involved in the processing of engagement; meetings and participation are major cause of commitment in both physical and imaginary cases. Extant of literature suggests that affective commitment is what employees give to their organization. There are mixed results regarding what attribute pay more to the commitment of an organization. There is no personal profile which is effective to the commitment. Characteristics and experiences of an employee predict commitment to the organization. Positive impact of age, time which employee spends with organization has been observed upon commitment level. Leadership and communication style also predict the commitment level. Continuance commitment is based on investment and alternatives, where investment is taken in the perspective of money, time or effort. When an employee identifies the alternatives then there is sign of continuance commitment. Normative commitment is a recently identified type of commitment so research is lacking about its antecedents. In case of normative commitment there is a psychological contract between employee and employer. When employee and employer have belief of what will be exchanged between them, influences each other's commitment level because of psychological commitment. Attendance is central predictor of employee commitment. There is highly relationship between commitment and attendance of employee. Continuance commitment is related to the employee attendance. Employee attendance is the most positively related outcome to affective commitment. Antecedents of commitment are very inconsistent and mostly varied (DeCotiis & Summers, 1987; Gellatly, 1995; Meyer et al., 1993; Meyer et al., 1997; Reichers, 1985; Steers, 1977).

## GAP ANALYSIS

After extensive literature review, it is revealed that, no previous evidence regarding influence of organizational justice is found regarding distributive justice and procedural justice over organizational commitment. Mediating role of trust between organizational commitment and organizational justice is also perceived to be important.

## THEORETICAL FRAME WORK



### *Research Questions*

1. Whether organizational justice affects organizational commitment or not?
2. Does organizational trust play any mediating role to enhance this relationship?

### *Hypothesis Development*

- 1H1      Organizational Justice enhances Organizational Commitment
- 2H1      Organizational Justice enhances Organizational Trust.
- 3H1      Organizational Trust enhances Organizational Commitment.
- 4H1      Organizational Trust mediates the relationship between Organizational Justice and Organizational Commitment.

## **Research Methodology**

### *Research Design*

Mediation Analysis, proposed by Baron and Kenny (1986), is used to determine the relationship and strength of relationship between variables.

### *Instrument Development*

We adopted the instruments already used for measuring our variables published in international journal. References of these questionnaires have been provided along with operational definitions. A pilot survey was run to test the reliability of the instrument on the basis of the value of Chronbach Alpha. After some modifications, final questionnaire was sent to 250 employees for final survey and reliability analysis was run again before the analysis. Dimension wise reliability analysis results are discussed below:

- *Organizational Trust.* Organizational trust has been measured by questionnaire developed by Paliszkievicz (2010), it includes 15 items; which covers the organizational trust among all levels of management. Cronbach's Alpha for the 15 organizational trust items is 0.87.
- *Organizational Justice.* Organizational trust has been measured by the questionnaire proposed by Parker et al., (1997). Cronbach's Alpha for distributive justice is 0.88 and for the procedural justice is 0.74.
- *Organizational Commitment.* Organizational commitment has been measured by the questionnaire developed by Mowday et al., (1979), with 15 items. Cronbach's Alpha for organizational commitment is 0.82.

*Population and Sample*

Population consists of employees working in several private banks of Pakistan. Viewpoint of respondents has been collected regarding concerned variables through survey. Two hundred and fifty (250) respondents have been approached and the response rate is 90%.

*Sampling Technique*

Convenient Sampling technique was used to collect the information through structured questionnaire. Three leading commercial banks operating in Islamabad, MCB, HBL and JS Bank, were selected for survey purpose. Instrument was constructed keeping in the organizational trust regarding management perspective, organizational justice regarding the continuum of procedural and output distribution, organizational commitment as a whole and job satisfaction. Out of 250 questionnaires, 225 responses were received and used for data analysis.

**DATA ANALYSIS AND FINDINGS***Testing of Hypothesis:*

Hyp#	Relationship	R Square	B	Stand. Error	t	Sign.
1H1	Organizational Justice > Organizational Commitment	0.285	X0.501	.137	13.437	0.000
2H1	Organizational Justice > Organizational Trust	0.176	X0.438	0.182	5.796	0.017
3H1	Organizational Trust > Organizational Commitment	0.172	M0.117	0.055	4.534	0.035
4H1	Organizational Justice > Organizational Trust > Organizational Commitment	0.300	X0.551 M0.078	0.145 0.056	7.123	0.002 0.016

Hypotheses are tested in four steps suggested by Baron & Kenny (1986).

*Step 1:* Organizational Justice enhances Organizational Commitment with,  $\beta = 0.501$ ,  $R^2 = 0.285$ , and  $p - value = 0.000$ , which leads to the acceptance of first hypothesis 1H1.

*Step 2:* Organizational Justice enhances Organizational Trust with,  $\beta = 0.438$ ,  $R^2 = 0.176$ , and  $p - value = 0.017$ , which leads to the acceptance of second hypothesis 2H1.

*Step 3:* Organizational Trust enhances Organizational Commitment with,  $\beta = 0.117$ ,  $R^2 = 0.172$ , and  $p - value = 0.035$ , which leads to the acceptance of first hypothesis 3H1.

*Step 4:* Organizational commitment is regressed upon Organizational Justice and Organizational Trust to test the mediating behavior of Organizational Trust as zero order relations are evidenced significant in the above three steps. Partial mediation of Organizational Trust is observed as both the predictors, Organizational Justice ( $\beta = 0.551$  and  $p - value = 0.002$ ) and Organizational Trust ( $\beta = 0.078$  and  $p - value = 0.016$ ) are significantly predicting Organizational Commitment with  $R^2 = 0.300$ . Moreover, indirect effect is also calculated by difference and product approaches (Judd & Kenny, 1981; Sobel, 1982). The indirect effect by difference approach is 0.051 and product indirect effect by product approaches is 0.039.

## DISCUSSION

In the world of competition, when there are obstacles in the way of achieving financial and progress targets, leaders of the market should not forget to keep in mind the long term benefits by disseminating information clearly and honestly. This assures employees that organization takes care of its individual workers. Tremendous milestones can only be achieved by the hard work of employees. Many researchers have taken into account organizational justice, organizational trust and organizational commitment over few recent decades. Some researchers concluded with the idea that managers who want to get continuous productivity need to put emphasis over the implementation of these three factors. These factors are not only significant to the success of organization but also have great impact upon each other. Organizational leadership is required to encourage employee motivation and improve organizational trust by adopting various measures to increase spirits of employees for values and sense of belonging. Leaders need to investigate the areas and factors which are good to influence the perception of organizational justice and organizational trust such as improving working environment, job rotation, and effectiveness of supervisors, capacity buildings of employees and introduction of incentives programs. To establish or improve the level of organizational justice and organizational trust which lead towards better organizational commitment.

The following approaches are recommended to be observed:

- *Excellence Program.* Organization is required to enhance the capacity building of its employees by providing them training at specific schedule. It is required to update system, processes and procedures according to market trend to remain competitive and keep the employees motivated and determined.
- *Communication.* Organization must communicate information to its employees clearly, concisely and timely. Management must provide the reason why certain decision was taken and what will be its drawbacks and returns.



Employees should be involved in decision making; such involvement will increase the level of mutual trust.

- *One Goal, One Team.* Management should establish common goal, disseminate the same to lower level, indicating the commitment of leaders to achieve the milestone. Management should assure its commitment to employees, clarify the responsibility for common goal to make it happened easier, and clearly identify the sources to be used. Organizational justice and organizational trust can be enhanced by making the employees feel like partners.
- *Need of Employees.* Employee's commitment and trust level is directly proportional to the sensitivity shown by organization for their needs. It is important to realize employees need and prompt and positive response to enhance the organizational commitment.

## CONCLUSIONS, FUTURE DIRECTIONS, AND LIMITATIONS

Management and leadership of an organization should make regular assessment of organizational commitment, organizational trust and organizational justice of employees and should take appropriate actions to improve these areas, or endure to build upon already efficacious struggle. The leaders must develop enhanced and effective strategies to make the insights of organization better. Managers should concentrate on setting effective relations among departments of organization. Leadership has massive role in the development of trust and execution of any policy related recommendation. Ultimately it is very necessary to train the employees to understand the importance of trust, organizational citizenship behavior and its various dimensions. Management of organization is responsible to build trustworthy working conditions and make the decision making process to be participative. Giving more room in actions and empowerment, increases the number of devoted, satisfied and committed employees. Considering both management and policy matter related perspectives, this study is useful for policy makers and managers of organization. Leaders must involve the sub-ordinates into decision making process, should give them authority, and should build mutual friendly relationship. A proper feedback is necessary to be provided to improve their performance level. By observing such strategies, a strong push can be endorsed to organizational justice and organizational trust which will ultimately enhance the organizational commitment.

This topic of research may be extended to present viewpoint of employees of banking industry from Pakistani perspectives including both private and public sector banks. This study has been conducted form managers' perspective, but in future, both perspectives (supervisor and management) can be considered to display more authentic picture of trust in organizations. Comparative study of banking industry across Pakistan and India may be conducted having similarity in cultures to some

extent. Role of trust may investigate as moderator at the current perceived relationship.

The study cannot be generalized as it has been conducted in banks located in District Attock. So, there is generalization issue because of displaying viewpoints of employees of a specific area. As it was chosen to collect data through questionnaire, while gathering, employees may feel hesitation because of lack of trust in order to show their mind set or inner perceptions, finally giving biased result. Thus reliability of our result will certainly get down.

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# DOES TANZI MODEL FIT THE SUDAN ECONOMY?

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## **Abstract**

*This paper aims to provide an empirical evidence from the Sudan economy for estimating the size of the informal sector. Tanzi model has been replicated with some modifications by including real growth rate of the economy as exogenous variable, excluding interest rate because dealing with interest has been abolished since 1983, and replacing the ratio of personal income tax by total tax to GDP ratio. Error correction model was estimated via EViews 8. Results showed that the modified Tanzi model fits to Sudan economy, and found that the average size of the underground economy is 20.2% of GDP mainly derived from bank services of 16.5%.*

## **Key words:**

*Underground economy; Tanzi model; Fitness; Tax burden.*

## **INTRODUCTION**

The terminologies informal, unofficial, underground, shadow, black, and hidden, are used interchangeably to describe the state of activities and income that are partially or fully outside government regulation, taxation, and observation (Johnson et al., 1997; ILO, 2002; Hussmanns, 2005; Michael, 2007; La Porta & Shleifer, 2008; Bello et al., 2011; Vo & Pham, 2014). Many definitions has been put to this phenomenon, but this paper adopts the definition of the International Labor Organization as follows: the informal economy refers to “all economic activities by workers and economic units that are – in law or in practice – not covered or insufficiently covered by formal arrangements” (ILO, 2002). The size and factors affect this sector divers widely from an economy to another. The main characteristic of the informal sector are easy entry, family ownership, small size, labor intensive, skill are obtained through long experience out the official education (Hassan, 2007). The negative aspects of informal sector are non-payment of proper wages, compulsory overtime, layout without notice or compensation, unsafe working conditions, and absence of social benefits such pensions, sick pay, and health insurance.



Sudan is a developing country, has dual economy composed of the traditional and modern sector. The country depends mainly on the agricultural sector for the livelihood of 46% of its population, as inputs to the manufacturing sector, and 90% of its non-oil exports. Informal sector practices are apparent in the traditional sector i.e. the traditional rainfed and handicrafts subsectors for instance agricultural finance. According to World Bank's Sudan Private Investment Climate Survey PICS of 2008 (UNDP, 2014), the services sector is dominated by retail services (80%). The bulk of (96%) of service sector firms are of small size. Thus it contains some aspects of informalities in terms of mobility and unlicensed street trading, smuggling, used car dealing, and traditional transportation. In the manufacturing sector there are many unregistered firms or registered firms but hidden from taxation accounts for a good deal of production as well. The industrial survey by the Ministry of Industry in 2005 pointed out that about 93% of the entities of the manufacturing sectors are of small size hiring less than 10 workers. This small number of workers is one of the main features of the informal sector. There is no accurate statistics about the size and structure of the informal sector in Sudan. Suliman (2005) measured tax buoyancy and elasticity via Tanzi model over the period 1970-2002 estimating the informal sector to be about 30% of GDP.

The informal sector in Sudan has been studied by few scholars to my knowledge. Mohammad et al., (1991) surveyed 1750 enterprises estimated via multiple regression the effects of demographic variables on enterprises net income, finding that informal sector in Khartoum is predominantly a family based enterprise system. Nearly nine-tenths of the enterprises or shops were found to be operated and managed by owner himself or his relatives. More than half of the enterprises were relying exclusively on family labour. Those hiring labour employed roughly one-fourths of their work force from their relatives.

Brown (1992) based on survey data on Sudanese migrants abroad over the period 1978-1987 via a simple macroeconomic accounting framework found that the revised macroeconomic aggregates incorporating the unrecorded international financial flows and domestic transactions associated with "hidden" adjustment processes give a completely different picture of Sudan's economic imbalances and the nature of the microeconomic processes underlying these.

Cohen & House (1996) focused on intersectoral earnings differences in Khartoum pursued the hypothesis that the overlooked labor market network affect the relationship between the labor market segments and earnings. Badawi et al., (2002) focused on Sudanese women working in food and beverages business in urban markets of Khartoum State. They validated the hypotheses that business women are highly stimulated by their socio-economic conditions and that their work in the

market has positively affected their families' life and their ability to survive. Hassan (2007), and Abdelmageed (2009), analyzed primary data collected from River Nile State, and Karri locality using descriptive statistics respectively. ECA (2012) reported that since the 1990s there has been a boom in the informal sector and a proliferation of smaller employers; an estimated 60% of the workforce is directly engaged in the informal sector. As a result, labour codes are not consistently applied.

This paper differs from others in following: choice of the study period that covers the current (Ingaz) regime, model variables, data sources, estimation method, and the objective i.e. replication of a modified version of Tanzi model to measure the size of the informal economy in Sudan over the period 1990-2014. It organized as follows: Section II devoted to literature review, Section III contains theoretical background, Section IV introduces methodology and data collection, Section V presents empirical results and discussion, and finally the conclusion.

## **LITERATURE REVIEW**

The measurement of the underground economy has been carried out by different approaches. The currency demand approach CDA is the most popular one, suggested by Cagan (1958), applied by Tanzi (1980 and 1983) for the USA, and Iqbal et al., (1999) to estimate the size and trend in the growth of the underground economy and tax evasion in Pakistan over the period 1973-1996, Deleanu and Ferwerda (2009) to overcome the critique of the model of Tanzi (1983) by applying his model to the natural experiment of the introduction of the Euro, Faal (2003) to improve the validity and robustness of previous estimates of Tanzi for Guyana using error correction model, Suliman (2005) analyzed the tax system buoyancy over the period 1970-2002 via Tanzi model. He found that the tax system as a whole is not buoyant or elastic up to (Vuletin, 2008) to measure the Informal economy in Latin America and the Caribbean, Arby et al., (2012), Ferwerda et al., (2010) to determine the size of the informal economy in Pakistan, Ardizzi et al., (2011) to apply and reinterpret the traditional Currency Demand Approach (CDA) to a panel of 91 Italian provinces using random effects–Tobit approach. Haque (2013) to estimate the size of the underground economy of Bangladesh over the period 1973-2008 by a modified version to fit Bangladesh economy.

Another widely used is the multiple indicators multiple causes MIMIC approach. it has been used widely alone and in combination with other approaches to present the connection between formal and informal economy for one country and a group of countries as shown by Trebicka and Brunela (2014) in estimating Italian informal sector, Vo and Pham (2014) in studying informality in ASEAN, Arby et al., (2012) calculating informal Pakistani economy, Bello et al., (2011) for Albanian informal sector, Schneider et al., (2010) for 162 countries, developing, Eastern European, Central Asian, and high-income countries Vuletin and Guillermo (2008) for 32 mainly Latin American and Caribbean countries, Dell'Anno (2007) Portuguese



shadow economy, Dell'Anno and Schneider (2006) and Krakowski (2005) for Latin America.

Kemal and Qasim, (2010) introduced new approach to measure the size of the informal economy calling it "KQ" (Kemal and Qasim) approach or discrepancy approach, calculating total private consumption from the household survey for the total population and adjust it for trade misinvoicing and calculate the true estimates of the GDP which is then compared with the GDP estimates reported in the National Accounts (at current prices). The difference between the two is the size of the informal economy.

Electricity approach used by Kaufmann and Kaliberda (1996) to estimate the size of the informal sector in Mozambique proposing that the electricity consumption is the best indicator of economic activity.

Descriptive approach has been used by Kaufmann and Parlmeyer (2010) to present the situation of small business in Mozambique, Abdelmageed (2009) to show the effects of the informal sector on Sudan economy by examining its contribution to the gross domestic product and employment of Karari locality. She found that the informal sector has positive effect on the GDP, and the economic and social factors play important role in directing labour force towards the informal sector. Hassan (2007) identified the features, causes, and expansion of the informal sector in River Nile State of and economic effects of the informal sector on the national economy. He reached the conclusion that, although the informal sector provides employment for a large number of people, however, the considerable expansion of this sector to the harm the economy of the River Nile State. Three quarters of the respondents do not deal with the banks, in addition to, 44.7% of whom do not pay taxes.

Labor market indicators were a legitimate measure of the informal sector as seen in Kay David Duane (2011) who provided an empirical evidence about the heterogeneous sub-sectors within South Africa's informal sector, and that race is a significant identifier of informal sector, Luebker (2008) who analyzed the quality of employment, unemployment and informality in Zimbabwe on the basis of the 2004 Labour Force Survey finding that informal employment, in particular, made a substantial contribution to overall employment and accounted for just over 80% of all jobs in 2004. However, cash incomes of informal workers were generally extremely low and their poor working conditions.

## **THEORETICAL BACKGROUND**

There are six approaches for the estimation of shadow economy:

- (1) Currency demand;
- (2) Transaction approach;



- (3) Discrepancy between national expenditure and income statistics;
- (4) Discrepancy between official and actual labor force;
- (5) Electricity approach; and
- (6) Multiple indicators Multiple Causes.

The first approach assumes the prevalence of transaction motive to avoid tracing then paying tax. The dependent variable is taken to be ratio of currency in circulation, or sum of currency in circulation, to broad money. Exogenous variables are bank services either ratio of demand deposits to commercial banks accounts, or bank branches per person; real per capita income, growth of real per capita income; ratio of direct tax to GDP, local and foreign trade tax to GDP, total tax to GDP, and real interest rate.

The second approach assumes that the ratio of informal economy to formal is known for a base year, and constant product of velocity of circulation time money supply. It uses quantity theory of money to calculate the informal economy. This approach has been criticized on the basis of its assumption, and not paying attention to other factors.

The third approach assumes that the tax evasion makes a discrepancy between income and expenditure which indicates informality. The criticism to this approach is that the difference between income and expenditure does include other errors and omissions.

The forth approach assumes the constancy of the total labor force, any decrease in the official labor force is considered as an indicator of growing informal economy.

The fifth approach is the electricity consumption assumes that an increase in electricity consumption is an indicator of informal activities, the difference between growth of electricity consumption and growth of official GDP is taken as a proxy for the growth of the informal economy (Kaufmann & Kaliberda, 1996). Increased unemployment might lead to a crowding out of illegal low skilled workers by legal higher skilled workers, who – under the threat of being unemployed otherwise – might accept lower paid jobs. There might therefore be a negative relationship between unemployment and the shadow economy Ferwerda et al., (2010).

The last approach is Multiple indicator multiple cause (MIMIC) procedure assumes that the shadow economy remains an unobserved phenomenon (a latent variable) which can be estimated using quantitatively measurable causes of shadow economic activity as well as indicators of illicit activity. The causes will include variables such as the tax burden and the intensity of regulation and the indicators will include variables such as the demand for currency, official national income figures and official working hours data. The causal variables are the tax-to-GDP ratio, the Heritage Foundation index of economic freedom, the unemployment rate, GDP per capita, and lagged values of the latent variable.





## METHODOLOGY AND DATA

### *The Proposed Model*

To avoid criticisms that faced Tanzi model modification has been made to include government consumption to GDP ratio as exogenous variable. Total tax to GDP ratio, bank services, and per capita income has been retained and eliminating interest rate because dealing with interest has been abolished since 1983 after the introduction of Islamic Laws. To avoid the problem of unit root and spurious regression unit root and cointegration test has been carried out. Results suggest the following specification of the error correction model:

$$\Delta(SE)_t = \alpha_0 + \beta_1(SE)_{t-1} + \beta_2(TTAX1)_{t-1} + \beta_3\Delta(TTAX1)_{t-1} + \beta_4(BS)_{t-1} + \beta_5\Delta(BS)_{t-1} + \beta_6Q_{t-1} + \beta_7\Delta Q_{t-1} + \beta_{10}(GR)_t + \theta\varepsilon_{t-1}$$

It is expected that the sign of total tax to be positive since an increase in total tax leads to an increased demand of holding money to avoid paying taxation i.e. stimulating the expansion of informal economy, whereas the contrary happens if there is improvement in bank services, people are encouraged to deposit their money in banks, and a rising level of per capita income lower the demand for holding money.

### *Description of Variable and Data Sources*

The data set was collected mainly from two official sources i.e. Central Bureau of Statistics and Central Bank of Sudan for the period 1990-2014.

TABLE 1. DESCRIPTION OF VARIABLES

Variable	Symbol	Source
Ratio of Narrow Money to Broad Money	SE	Central Bank of Sudan
Demand Deposits	DD	Central Bank of Sudan
Currency in Circulation	PUB	Central Bank of Sudan
Bank Services	BS	Constructed Variable
Ratio of Total Tax Revenue to GDP	TAX1	Central Bureau of Statistics
Gross Domestic Product	GDP	Central Bureau of Statistics
Per capita Income	Q	Central Bureau of Statistics
Real GDP Growth rate	GR	Central Bureau of Statistics
Population	POP	Central Bureau of Statistics

### *The Size of Shadow Economy in Sudan*

Following Tanzi and Iqbal et al., (1999) the underground first illegal money (IM) is calculated as the difference between the predicted value of dependent variable (M1 ratio) with and with tax ratio is computed and multiplied by M2 that is (baseline scenario - scenario1)\*M2. Second legal money (LM) is estimated by subtracting illegal money from money supply (M2). Then the velocity of legal money (LV) is

obtained by dividing growth domestic income (GDP) by legal money. Assuming that the velocity of illegal money is same as that of legal money, an estimate of the underground economy (UE) can be obtained by multiplying illegal money (IM) by the income velocity of money (IV). Tax evasion is estimated by applying the actual tax revenue to the estimated informal GDP. The same is done for real per capita and bank services (Iqbal et al., 1999; Fall, 2003; Haque et al., 2013).

## EMPIRICAL RESULTS AND DISCUSSION

### Results

TABLE 2. UNIT ROOT TESTS

Variable	Prob. – Level	Prob. - Ist diff	Prob. -2 <sup>nd</sup>	Order of Integration
SE	0.2024	0.0026		I(1)
TAX1	0.6103	0.0003		I(1)
Q	0.979	0.0000		I(1)
BS	0.5104	0.0003		I(1)
GR	0.0007			I(0)

TABLE 3. COINTEGRATION TEST

Date: 01/07/16 Time: 16:10				
Sample: 1990 2014				
Included observations: 25				
Trend assumption: Linear deterministic trend				
Series: SE BS Q TAX1				
Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.737707	53.46817	47.85613	0.0136
At most 1	0.395031	20.01087	29.79707	0.4221
At most 2	0.213865	7.446424	15.49471	0.5263
At most 3	0.055624	1.430766	3.841466	0.2316
Trace test indicates 1 cointegrating eqn(s) at the 0.05 level4				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Since there is one cointegrating equation ant the 0.05 level, Vector Error Correction Model (VECM) would be the preferred choice. Endogenous variables are lagged and first difference underground, total tax, per capita GDP, and bank services, and the constant. The only exogenous variable is the real growth rate.

All estimated coefficients have the correct sings in both the short-run and the long-run and significantly different from zero in the long-run, whereas real per capita income got the correct sign in the short-run, and significantly different from zero, indicating low adjustment of insignificant variables. It is evident that tax burden has greatest effect on expansion of the informal sector followed by real per capita income. The empirical size of the informal economy is almost 10 per cent of GDP as a



result of an increase in total tax a results that is in line with the finding of Tanzi (1983) and Ferwerda et al, (2010). About 65% of disequilibrium is corrected annually. The average response of underground economy to a rise in total tax, decline in bank services, and decline in per capita income is 3.6%, 16.5% and 0.1% respectively. Thus the total size of the underground economy to GDP is 20.2%.

TABLE 4. SUMMARY OF VECM ESTIMATION RESULTS

Dependent Variable	Narrow Money to Broad Money ratio	
Explanatory Variables	Long-run	Short-run
SE(-1)	1.000	
TAX1(-1)	17.788***	
Q(-1)	-0.177***	
BS(-1)	-0.506**	
C	-0.405	
$\Delta$ SE(-1)		0.518
$\Delta$ TAX1(-1)		0.842
$\Delta$ Q(-1)		-0.576***
$\Delta$ BS(-1)		-0.084
GR		0.001***
C		-0.061**
Error Correction	-0.65***	
$R^2$	0.699	
$\bar{R}^2$	0.599	
Akaike AIC	-13.834	
Schwarz SC	-12.274	

\*, \*\*, \*\*\* denotes rejection of the hypothesis at 0.10; 0.05 and 0.01 level

TABLE 5. RATIO OF UNDERGROUND ECONOMY TO GDP

Year	Total/GDP <sup>4</sup>	UE/GDP <sup>1</sup>	UE1/GDP <sup>2</sup>	UE2/GDP <sup>3</sup>
1990	29	-0.7	27.9	-0.22
1991	25	-2.4	26.5	-0.10
1992	28	-4.2	32.3	-0.24
1993	23	-3.8	27.1	-0.22
1994	17	-3.3	20.3	-0.18
1995	10	-1.3	11.3	-0.04
1996	9	-0.3	8.9	0.00
1997	6	-2.0	7.6	-0.01
1998	7	-0.1	7.1	0.00
1999	9	0.0	8.7	0.00
2000	12	2.1	10.0	0.02
2001	12	2.3	9.9	0.03
2002	13	3.3	9.9	0.04

<sup>1</sup> Underground economy as a result of total tax

<sup>2</sup> Underground economy as result of bank services

<sup>3</sup> Underground economy as result of per capita GDP

2003	16	3.9	11.6	0.06
2004	16	4.1	12.3	0.06
2005	20	4.7	15.0	0.10
2006	24	6.3	17.2	0.19
2007	25	7.7	16.8	0.23
2008	26	8.3	17.4	0.25
2009	31	11.9	19.2	0.34
2010	35	14.0	20.2	0.40
2011	33	12.1	20.8	0.38
2012	33	11.5	21.5	0.35
2013	27	9.6	17.5	0.24
2014	20	5.0	14.5	0.14
Average	20.2	3.6	16.5	0.1

### *Discussion*

The start period of this study coincides with the advent of new political rule by a military coup that holds a firm grip of power, governing the Sudan by one political party (National Congress), imposing concepts of free market, privatization of public enterprises, including profitable corporations, such as telecommunication, Sudan shipping line, and Sudan airways. Contrary to its declared policies the regime resorted to political control of economic activity, and business, allowing the acquisition of schemes by national security apparatus, police and armed forces. Regulatory efficiency composed of business freedom, and labor freedom scores are below the average, while monetary free is slightly above the average (see Annex 6.). At the same time the regime paid little attention to the rehabilitation of agricultural schemes, and Sudan railways which were once the main source of non-tax revenue. Budgetary allocation to infrastructure, health and social services has dwindled. Development projects have been financed by external loans adding to the pile of external debt.

The regime lacks transparency, and accountability, 70 billion of oil proceeds has vanished, Sudan ranked by corruption perception index 112 position in 2003, descended 176 in 2009 (Annex 4.), and scored 11 points by economic freedom index 2015 ranked as the second least country free from corruption above Afghanistan. Adoption of free international trade opened the gate to violate the laws by exporting prohibited goods such female animal resources, and importing goods without paying attention to quality, safety and competition with local industries.

Formal recruitment of employees has been based on the notion of loyalty to the ruling party than to competence, hence increasing the level of unemployment especially among graduates, whereas disguised unemployment is an apparent feature of civil service. Large government size and the direction of large portion of the fiscal budget to security and military purposes leading to sustained fiscal deficit.



Public expenditures are equivalent to 13.6% of GDP, and public debt equals 91% of GDP (economic freedom index 2015).

However, the outcome of these practices have been civil war, secession of the South Sudan, rising inflation rates, continuous devaluation of the local currency, rising poverty rate, mounting external debt, fiscal, and international trade deficits, an increasing dependence on taxation as a main source of revenue whereas the total tax burden is 8% of GDP. This adverse situation has been conducive to the expansion of both legal and illegal informal sector "smuggling, drug trafficking, money laundering, and black market of foreign exchange transactions". Empirical results ascertained the role of taxation, bank services, and per capita income in explaining growth of informal sector. However the banking services and real growth of the economy have a positive sign contrary to expected a result can be interpreted as the ratio follow the same path of the dependent variable. The ratio of underground economy to GDP has been fluctuating over the period 1990-2004, then has upward trend up to 2009, then turned to downward trend.

It can be noticed that the ratio of the informal sector was low and declining during the period 1996-1999, due the new macroeconomic policies adopted by the minister of finance at that time Dr. Abdulwahab Sheikh Musa who succeeded in reducing the inflation rate from the highest ever rate of 129 to one digit, and stabilized the economy and foreign exchange market.

In 2000 the governor of the central bank of Sudan launched reform policy of the banking system targeting minimum capital adequacy, infrastructure, reducing non-performing loans broadening transparency and disclosure efficiency. Bank services are expected to improve if the reform policy succeeds, fighting corruption, and law enforcement become a top obligation to the president Sudan as he announced at his third term in office, imposing fare tax rates, strengthen the administration through information technology and training will reduce tax evasion. Reducing the fiscal deficit through redirecting the finance to the production sector plays important role in reducing the size of tax evasion and underground economy.

## CONCLUSION

The main purpose of this paper is to measure the size of the informal economy of Sudan over the period 1990-2014. The finding of error correction model revealed long-run relationship among currency demand, per capita income and the bank services. Tax burden is the main cause beside per capital income and bank service in expanding the informal sector.

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**ANNEX**

## 1. SUMMARY STATISTICS

	SE	BS	TTAX1	Q	GR
Mean	0.56	0.18	0.08	5.75	5.52
Median	0.58	0.21	0.06	5.34	6.00
Maximum	0.68	0.32	0.16	8.79	11.56
Minimum	0.40	0.02	0.04	3.42	-5.47
Std. Dev.	0.08	0.09	0.04	1.83	3.46
Skewness	-0.56	-0.55	0.46	4.96	-1.06
Kurtosis	2.20	2.01	1.57	18.74	5.48
Jarque-Bera	1.97	2.31	2.99	2.35	11.04
Probability	0.37	0.32	0.22	0.31	0.00
Sum	13.97	4.44	2.05	14.37	138.06
Sum Sq. Dev.	0.15	0.19	0.04	0.80	288.06
Observations	25	25	25	25	25

## 2. VECM ESTIMATES

Vector Error Correction Estimates				
Date: 01/08/16 Time: 22:57				
Sample: 1990 2014				
Included observations: 25				
Standard errors in ( ) & t-statistics in [ ]				
Cointegrating Eq:	CointEq1			
SE(-1)	1			
BS(-1)	-0.506			
	-0.21482			
	[-2.35547]			
Q(-1)	-0.38768			
	-0.14117			
	[-2.74617]			
TTAX1(-1)	1.787712			
	-0.5998			
	[ 2.98052]			
C	-0.40451			
Error Correction:	D(SE)	D(BS)	D(Q)	D(TTAX1)
CointEq1	-0.64629	-0.27331	0.069886	-0.00438
	-0.14381	-0.10825	-0.14812	-0.0706
	[-4.49392]	[-2.52473]	[ 0.47182]	[-0.06204]
D(SE(-1))	0.133482	0.171948	-0.17614	0.083113
	-0.22347	-0.16821	-0.23016	-0.10971
	[ 0.59731]	[ 1.02221]	[-0.76527]	[ 0.75760]
D(BS(-1))	-0.08418	-0.23918	0.394793	-0.0732
	-0.31786	-0.23926	-0.32737	-0.15604
	[-0.26484]	[-0.99966]	[ 1.20596]	[-0.46913]
D(Q(-1))	-0.57566	-0.61186	-0.40601	0.031426

	-0.21689	-0.16325	-0.22338	-0.10647
	[-2.65419]	[-3.74792]	[-1.81759]	[ 0.29516]
D(TTAX1(-1))	0.517544	-0.48854	-0.62478	0.141518
	-0.59394	-0.44707	-0.61171	-0.29157
	[ 0.87138]	[-1.09276]	[-1.02136]	[ 0.48536]
C	-0.06097	-0.02209	0.013289	0.014999
	-0.02141	-0.01612	-0.02205	-0.01051
	[-2.84766]	[-1.37075]	[ 0.60266]	[ 1.42707]
GR	0.01118	0.006748	0.002801	-0.00205
	-0.00348	-0.00262	-0.00358	-0.00171
	[ 3.21588]	[ 2.57851]	[ 0.78228]	[-1.20223]
R-squared	0.698972	0.577568	0.215167	0.117946
Adj. R-squared	0.59863	0.436757	-0.04644	-0.17607
Sum sq. resids	0.05112	0.028964	0.054225	0.01232
S.E. equation	0.053292	0.040114	0.054886	0.026161
F-statistic	6.965857	4.101731	0.822472	0.401154
Log likelihood	41.93228	49.03379	41.19513	59.7195
Akaike AIC	-2.79458	-3.3627	-2.73561	-4.21756
Schwarz SC	-2.4533	-3.02142	-2.39433	-3.87628
Mean dependent	-0.01112	-0.00021	0.01992	0.003948
S.D. dependent	0.084117	0.05345	0.053654	0.024124
Determinant resid covariance (dof adj.)		3.32E-12		
Determinant resid covariance		8.92E-13		
Log likelihood		204.9286		
Akaike information criterion		-13.8343		
Schwarz criterion		-12.2741		

### 3. CORRUPTION PERCEPTION INDEX OF SUDAN

Year	2003		2005		2007		2009	
CPI*	Score	Rank	Score	Rank	Score	Rank	Score	Rank
	2.3	112	2.1	149	1.8	172	1.5	176

Source: Transparency International

### 4. SUMMARY STATISTICS

	SE	BS	Q	TTAX1
Mean	0.560083	0.174576	519.2851	0.080369
Median	0.583548	0.21864	518.152	0.055
Maximum	0.676695	0.321854	863.6094	0.159403
Minimum	0.403672	0.020323	342.4966	0.036937
Std. Dev.	0.081687	0.092509	128.7321	0.044174
Skewness	-0.58395	-0.44579	0.715124	0.604185
Kurtosis	2.073812	1.830001	3.382338	1.62089
Jarque-Bera	2.129224	2.073655	2.100466	3.222018
Probability	0.344862	0.354578	0.349856	0.199686
Sum	12.88191	4.015241	11943.56	1.848479
Sum Sq. Dev.	0.146801	0.188273	364583.2	0.04293
Observations	23	23	23	23



## 5. ECONOMIC FREEDOM

Freedom	Business	Labor	Monetary	Investment	Trade
Index	49	43.8	52.8	15	55.6

Source: Index of Economic Freedom

## 6. TAX RATES 2015

Tariff Rate%	Income Tax Rate%	Corporate Tax Rate %	Tax Burden of GDP
14.7	10	35	5.7

Source: Index of Economic Freedom

## ANNEX 7. UNDERGROUND ECONOMY &amp; GDP

	UE	UE1	UE2	Total	GDP	Total/GDP
1990	-784	30684	-237	31653	110111	29
1991	-4532	50867	-186	48140	192060	25
1992	-17611	136192	-1008	119564	421818	28
1993	-35743	256566	-2075	220741	948466	23
1994	-61957	381079	-3476	317640	1881289	17
1995	-71699	623353	-2183	551466	5522838	10
1996	-34836	1000539	-173	967525	11194938	9
1997	-365608	1399388	-1562	1034215	18318179	6
1998	-19258	1785443	543	1768726	25080913	7
1999	8309	2281992	377	2292677	26301423	9
2000	644497	3114059	7515	3768071	31037068	12
2001	892707	3831963	10714	4737386	38763329	12
2002	1643070	4976703	17942	6639717	50204397	13
2003	2238691	6578963	31307	8850963	56720953	16
2004	2890086	8643125	44332	11579547	70383228	16
2005	4014749	12748147	85082	16849983	85105084	20
2006	5973644	16415760	180918	22572328	95396107	24
2007	8291161	18011849	248681	26553697	107204713	25
2008	10012151	21033611	299135	31346906	121166028	26
2009	16086052	26053944	459120	42601125	135659000	31
2010	22685845	32713520	648376	56049751	162203900	35
2011	22572954	38785770	700239	62060974	186689900	33
2012	28009377	52258052	859406	81128848	243412800	33
2013	32984812	60043054	814086	93843965	342803300	27
2014	23675649	69037964	642899	93358526	475827700	20