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# ALBANIAN BANKING SYSTEM: RISK BEHAVIOR AND CAPITAL REQUIREMENTS

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#### Abstract

With almost 20 years history, the Albanian banking system struggles from one side to ensure the economy safety and soundness and from the other side to comply with international requirements such as Basel II. In this crossroad, we attempt to investigate the regulator's effect on the monitoring and supervising the banking system and the banks behavior towards these requirements. This article finds a significant positive and simultaneous relationship between risk and capital for the Albanian banking sector which relies on previous theoretical and empirical approaches.

#### Key words:

Risk behavior; Capital requirements; Banking system; Albania.

### INTRODUCTION

Albanian banking system roots date just 20 years before in 1998, when the first private banks started their activity in the local market economy, which had some years changed from communism into the capitalistic system. The private banks started their activity in a primitive market place, where the concepts of financial intermediation and banking were almost unknown. Mostly foreign bank groups from Greece and Italy started to open their branches in order to fulfill the foreign business's needs, until the privatization of the savings banks and commercial banks (two of the most powerful state banks) from the well-known Austrian and Turkish groups created leaders in the banking market place. Local banks started as well to perform activities and here we are in 2015 with 16 banks working in Albania, under the regulation of the central Bank of Albania.

It is understandable that such a flourish in the banking system would require at least regulation and monitoring from the authorities, in order to keep the system and the

economy safe. Bank of Albania had to deal with a lot of circumstances where fast and relevant regulation had to be prepared and rule the banks so as to keep control and ensure soundness. One of the oldest regulations of the Bank of Albania was that referring to the capital requirement in 1999. Even though the urge to comply with international requirements of Basel, not until the end of 2014, this regulation has been reviewed and adopted some of the standards of Basel II. The challenge of the local banking system in adopting these requirements is part of another research paper. This paper will mainly concentrate on the banks behavior towards risk trying to identify the relationship between risk and capital.

Using a data set of six years from the last quarter of 2008 until the last quarter of 2014, this research proves the positive relationship between risk and capital, as defined also in previous literature from a theoretical and practical prospective. The two stages least square model adopted from Shrives and Dahl (1992) was used in this data to prove that the behavior of Albanian banking sector towards risk is affected positively from the requirements of capital that the authorities apply and on the other hand also the capital changes are affected from the risk behavior that banks decide to follow. This gives a strong ally on the authorities, which are actually doing a good job in the monitoring and supervision of the banking system. It also supports the fact that the regulator reacts promptly and seriously on the crisis matters, as well as on the international developments of not being exposed to external crisis factors.

The paper follows with a review on different models that have tried to present the relationship between risk and capital. It follows with the explanation of data and methodology. Finally results and conclusions complete this attempt. It is of big interest to review the behavior of banks in the following years, since more requirements with the international standards will affect their capital requirements and their activity.

## LITERATURE REVIEW

As stated in earlier and recent literature the regulation of capital in banks is very important. The reasons behind this importance rely upon certain arguments: the systemic risk argument and the depositors' representative argument. The capital requirements are proved to be necessary in terms of controlling the risk appetite of the banks, the banks solvency and the amount of deposits. The regulators have to find the proper optimal solution between the risk of default and the deposits and they have to represent the depositors' inability to monitor the banks.

The literature has presented many theories regarding the way that capital and risk are affecting each other, using different financial models. These financial models should be discussed regarding the economic rationale of the relationship capital –risk,





whether this relationship has a positive or a negative sign and how this relationship is influenced from the changes in regulatory framework.

The option pricing model adopted by earlier literature (Merton, 1977; Black et al, 1978; Kareken & Wallace, 1978; Dothan & Williams, 1980; Marcus & Shaked, 1984; Diamond & Dybvig, 1986; Benston et al, 1986) introduces the idea that the maximization of the stockholders' equity value implies maximization of the option value of the deposit insurance increasing leverage and asset risk. This means that banks can increase their deposit liability without paying for a default risk premium and the marginal effect from this action increases as asset risk increases. At the same time, the marginal benefit of the increasing asset risk increases as leverage increases (equity capital decreases). Although the increases in leverage and risk are proved to be profitable, they imply certain costs that do not permit an infinite increase. According to the banks' behavior dominance towards increasing insurance deposits or increasing risk appetite then we would observe a negative relationship between capital and risk in the first case and a positive relationship capital and risk in the second case.

Theories that imply a positive relationship between capital and risk due to a margin in the combination of leverage and risk rely on the regulatory costs (Buser at al, 1981), effects of minimum capital requirements (Merton, 1972; Kahane, 1977; Koehn & Santomero, 1980; Kim & Santomero, 1988), bankruptcy cost avoidance (Orgler & Taggart, 1983) and managerial risk aversion (Saunders at al, 1990).

Shrieves and Dahl (1991) have explained and reviewed the theory and through their research they developed a model trying to explain and estimate the changes in the relationship between capital and risk. Their results show that capital and risk are simultaneously related and a bank tends to increase its asset risk in case of an increase in capital imposed by regulators. This is more obvious in banks that have low level of capital. The results are consistent with the leverage and risk related cost avoidance and managerial risk aversion theories of capital structure and risk-taking behavior on commercial banks. So the effectiveness of the capital standards is subject to the reflection of true risk exposure of the banks.

Calem and Rob (1996) discuss the impact of the capital-based regulation on the bank risk-taking behavior through a dynamic portfolio model using empirical data from the US market from 1984-1993 with the aim of defining the capital regulations effects on the risk of the institutions. Their results suggest of a relationship between risk and capital, where increased capital requirements induce in greater risk-taking of wellcapitalized banks, whereas they also induce in increased risk of under-capitalized banks, if the regulations are not stringent enough, consisting in some unintended results. Ediz et al, (1998) have studied the implication of capital requirements in the UK banks' behavior and they prove that U.K. banks behavior is affected from capital requirement over and above their own capital targets. In case an increase in the capital is required, this is assured from the market other than from increasing assets.

Blum (1999) has introduced a new model for capital and risk taking into consideration the dynamic banking environment. The main point of his study evaluates that under binding regulatory requirements on capital an additional unit of equity tomorrow is more valuable to the bank, so the only possibility to increase the equity tomorrow, is to increase the risk today. This means that more stringent capital requirements today will increase the bank's risk.

In the research work of Rime (2000) through empirical evidence from Swiss banks regarding capital requirements and bank's behavior using a modified model from Shrieves and Dahl (1991) it is found that banks close to regulatory minimum tend to increase their ratio of capital to risk-weighted assets. Moreover the regulatory impact is evident to the ratio of capital to asset, but not to the bank's risk taking. Also he finds a significant relation between changes in risk and changes in the ratio of capital to total assets, but not a significant relation between changes in risk and changes in risk and changes in the ratio of capital to ratio of capital to total assets.

Lindquist (2003) uses an empirical model to measure the effect of the buffer capital in relation with credit risk in Norway bank. He divides the data into commercial and savings banks for a period from 1995 until 2001 and tests the issues of buffer capital being affected from credit risk, it acts as an insurance for not falling below minimum capital requirements, it is used as a signal i.e. competition parameter, it depends on economic growth and finally if as a measurement of supervision it really matters for banks. The results for capital and credit risk show a negative relationship for saving banks measured by the variance of profits of previous years considered as a "broad risk measure". This actually counter-argues previous results of literature, but it is explained by the author as an attempt from banks to act in various ways towards risk.

Cuoco and Liu (2005) come with a different fully dynamic optimal portfolio model to assess the relationship between capital requirements and VaR as determined by the Internal Model Approach introduced in Basel II. The value at risk measure VaR which defines the maximum losses of financial institutions varies according to the capital requirements that the regulator imposes to the banks and is adjusted by re-balancing the bank's portfolio. This specific "re-balancing trading strategy" followed by banks implies that VaR may be over or underreported according to the risk appetite banks select for the specific time period. In general self-reported VaR defined by IMA suggest that more stringent capital requirements induce a portfolio selection with higher return assets, which also have higher risks in relation to the regulation weights suggesting also a higher probability of default for those institutions.





Godlewksi (2006) investigated the effects of the regulatory framework in the banks behavior in emerging markets and proved a significant relationship between them that could even degenerate into excessive risk taking and increase in the banks' probability of default. He notes though that the results need further investigation that would include internal corporate governance factor and external ones concerning market discipline.

A positive relationship between risk and capital has been also found by Altunbas et al, (2007), when they examined the European banks on the behavior on the relationship between the capital, risk and efficiency. Through empirical evidence from 1992 until 2000 on a sample of European banks the authors have not found a positive relationship between risk and efficiency as proved empirical studies in the US, but they have introduced a positive relationship between risk and capital in commercial and savings banks and a negative one in co-operating banks.

A similar study on 263 Japanese co-operative banks regarding the relationship between risk, capital and efficiency for the period 2003-2006 was performed by Deelchand and Padgett (2009). Adopting the simultaneous equations of Shrieves and Dahl etc. regarding capital, risk and efficiency the empirical data show an important negative relationship between risk and capital as well as inefficient banks maintaining more capital, which actually support the moral-hazard theory. The authors suggest that more it is needed a closer monitoring from the supervisory authorities regarding loan expansions, bank efficiency and capital adequacy requirements for Japanese banks.

All the above literature represents the relationship between capital and risk under different conditions, taking into account various factors and explaining based on theories the impact of changes in the capital adequacy requirements to the bank's behavior towards risk.

As per Albanian banking sector, it lacks such studies in terms of identifying the banks' behavior and the regulator's influence. This is what we try to perform in this study: discuss the relationship between capital requirements imposed by the Bank of Albania and the behavior of Albanian banking sector towards risk for a six-years period 2008:Q4-2014:Q4.

# HYPOTHESES, MODEL AND DATA

Based on the above empirical researches we state below the basic hypotheses tested in this research:

*Hypothesis* 0: In a regulated environment capital and risk of banks are not interrelated and affected by each other.

*Hypothesis 1:* In a regulated environment, where capital requirements increase, the risk of the bank decreases due to the dominance of the deposit insurance subsidy, which defines the marginal benefits and costs of asset risk and leverage. This means that the capital will have a negative relationship with the risk.

*Hypothesis 2:* In a regulated environment where capital requirements increase, compensation on the risk weighted assets of the bank will take place so as to increase the ratio of capital to total assets in order to maintain their default probability at an accepted level. This means that the capital will have a positive relationship with the risk.

*Hypothesis 4:* In a regulated environment capital and risk are simultaneously related with each other.

### Model specifications

We are based on the simultaneous model initially described by Shrives and Dahl (1991) and consequently by Rime (2001), as well as other authors described above. In this equation the capital and risk are simultaneously affecting each other, which may include as we mentioned above a negative or appositive relationship according to different approaches.

The basic equations are presented below and carried out by two stage least squares model (TSLS):

$$\label{eq:alpha} \begin{split} \Delta CAP \ j,t &= a0 + a1REG j,t-1 + a2ROA j,t + a3SIZE + a4 \ \Delta RISK \ j,t - a5 \ CAP j,t-1 + \epsilon j,t \ ; \\ \Delta RISK \ j,t &= a0 + a1REG j,t-1 + a2LLoss j,t + a3SIZE + a4 \ \Delta CAP \ j,t - a5 \ RISK j,t-1 + \nu j,t \ ; \end{split}$$

Due to the fact that  $\Delta$ CAP j,t and  $\Delta$ RISK j,t are simultaneously affecting each other, we had to run the two stages least square model, where instrumental variables for a regression at step one are defined and the predicted values saved from first step are then used for the second regression at step two. Specifically, at the first step, we regressed the independent variables needing instrumental variables on the instrumental variables and other independent variables not needing instrumental variables. At the second step, we regressed the dependent variable on these new variables and other independent variables. Then, we saved the dependent variable on these new variables and other independent variables on these new variables and other independent variables. The whole process was performed in SPSS, where for each equation we selected the dependent variable then selected the instrumental variables and the other independent variables not needing instrumental variables and finally defined all independent variables (not instrumental) as explanatory to the model.

The variables include the following:

 $\Delta$ CAP j,t represents the change in capital. Considering the fact that banks may not be able to adjust their desired capital ratio instantly, the variable is defined as the difference between the capital of two consecutive quarters:





# $\Delta CAP j,t = a(CAP j,t - CAP j,t-1) + E j,t$

This is defined as a ratio of equity over total assets, where equity includes common stocks, preferred stocks, capital surplus, undivided profits, capital reserves and foreign currency translation adjustments. It is the dependent variable of the first equation. We actually expect that capital will be positively affected by the risk banks undertake.

 $\Delta$ RISK j,t represents the change in risk level of the bank. Again considering the fact that banks may not be able to adjust their desired risk ratio instantly, the variable is defined as the difference between the risk of two consecutive quarters:

 $\Delta$ RISK j,t = b (RISK j,t - RISK j,t-1) + Sj,t

Risk is defined as the ratio of risk –weighted assets over total assets. Risk-weighted assets are defined according to the Bank of Albania regulation by imposing different weights to certain categories. Risk is the dependent variable of the second equation and we expect a positive relationship between risk and capital.

REGj,t-1 represents the binary variable for regulation changes affecting the bank's capital and risk. This is a dummy variable, which actually takes the value 0 to display no changes in the regulatory framework and 1 otherwise. Even though the Bank of Albania has not made any changes in the regulatory framework, it has imposed different capital requirements for Greek banks operating in Albania in the last quarter of 2011. This due to the increased risk of the Greek banks actually involved. So instead of a capital requirement of 12% for the whole sector, Bank of Albania imposed a 15% capital requirement for these banks. This actually leaded into an increased necessity for capital from the Greek banks. We expect to have a positive relation between capital and regulation and a negative relationship between risk and regulation.

ROAj,t represents the return on assets as a measure of profitability of the bank. It is included in the capital equation and it is expected to have a positive relationship with capital. Well-capitalized banks may use their profits to increase capital, rather than requiring additional capital from their mother companies (this because issuing capital in Albanian market is not applicable).

LLossj,t represents the current loan losses and is included in the risk equation. It is measured as a ratio of the difference in the provisions over two consecutive periods over total assets. New provisions are actually considered to represent the current loan losses of the bank, which decrease the risk-weighted assets and as such affect the ratio of risk-weighted assets to total assets. Consequently we expect a positive relation between the loan losses and the risk of the bank.

SIZE is calculated as the natural logarithm of total assets as a measure to be included in both capital and risk equation. This is based on the assumption that size may affect target risk and capital because of its relation with diversification, investment opportunities and access to equity capital.

Under the models represented above the bank independently chooses capital and risk, as such both variables are included as independent variables to each of the equations.

### Data

The sample used in this research includes the 16 banks of the local banking sector, for a period of 2008Q4 until 2014Q4. The collection includes the basic reporting of banks to the Bank of Albania according to local regulation on a quarterly basis. During this period there were in total 352 observations for the first equation and 287 observations for the second equation.

# **RESULTS AND DISCUSSION**

From the results of the simultaneous equations run in the two stages least square regression model, seem important; in the first equation the independent variable is explained at a level of 50% by the dependent variables, while in the first equation the independent variable is explained at a level of 30% as detected from the multiple R. The R-square for the first equation makes the model more explanatory at a level of 25%. The reliability of the models though is significant according to the F-statistics and its level of confidence 0.00 presented in the appendix, showing a linear relationship between capital and risk simultaneously.

The first equation's results show that the capital is dependent on the risk level that banks undertake, having a positive relationship and t-value at a significance level of less than 0.05, accepting our third and fourth hypothesis at the same level of confidence. Capital and risk are positively related to each other for the Albanian banking sector based on the theory of keeping its default probability at the same level.

As per other explanatory variables, regulation and return on assets have a positive relationship in explaining capital changes, though not proved as significant from the model. On the other hand size is negatively affecting capital, though without a significant affection. None of the variables is highly correlated on a positive or negative way with the other.

The second equation shows that risk is dependent on the capital level that a bank retains. Their relationship once again is positive and the t-value at a significance level of less than 0.05, accepting our third and fourth hypothesis at the same level of confidence. Risk and capital are positively related to each other for the Albanian banking based on the theory of keeping its default probability at the same level.

Regulation and size are negatively affecting the risk, although their coefficients do not show any high significance. We have noted though that the explanatory variable of





losses has a significant positive relationship with the risk. We have defined this variable as the difference of provisions of two consecutive years over total assets of the bank. As we expected this relationship is actually proved significant through the equation. This variable is also highly correlated with the change in capital at a correlation coefficient level of 0.89, as well as with the risk at a correlation coefficient level of 0.63, identifying the high importance effect and direct relationship that the variable has with both capital and risk. This is also due to the method of defining the regulatory capital and risk weighted assets according to the current regulation of the Bank of Albania.

The actual model of this research proved the simultaneous relationship between risk and capital and justified the acceptance of hypothesis 4 and the rejection of hypothesis 0. The relationship between risk and capital is simultaneously proved as significant and positive, as such accepting hypothesis 3 and rejecting hypothesis 2.

The size effects even though negatively related with both risk and capital are proven not to be significant in the bank's behavior towards risk; this means that in the current market banks are well-capitalized and just by being a larger bank does not justify excessive risk. Bank's efficiency in terms of profitability (ROA) does not affect the capital that it retains. This is due initially to the fact that the regulatory capital is defined according to specific weights and not using other methods implied in Basel II.

The provisions as a measure of banks' losses are actually positively and significantly related with the risk, showing once again how application of the provisions regulation affects the regulatory capital and the risk simultaneously. The results of this specific measurement though are controversial from the hypotheses we made for it.

Regulation on the other hand affects neither the capital nor the risk of the bank, although it has a positive relationship with them. Even though there has been only a change in the requirement of the regulatory capital in the last quarter of 2011 and only for Greek banks, this did not affect our model. That actually guides to the conclusion of having a well-capitalized banks, which can afford any regulatory pressure by not actually affecting their capital and their behavior towards risk.

In general we can refer that our results were in consistency with two of our main hypotheses at a confidence level higher than 99%. All results appear in the appendix.

# CONCLUSION

Risk and capital have a positive significant and simultaneous relationship between them for the Albanian banking system. Neither the profitability nor the size of a bank affects its' regulatory capital suggesting strong monitoring from the regulator. The system is well supervised in such way that no undercapitalized banks are present in the sector. The efficiency of the regulator is considered high, but also the compliance of the active in the marketplace banks is considered on a high level. It is of major interest to further research on the banks behavior towards risk in the following years, when banks will have to comply with the new regulation, closed to the Basel requirements.

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## APPENDIX

Two-stage Least Squares Analysis

Table 1. Model Description: MOD\_5

		-
	ΔCAPjt	Dependent
	a1REGjt1	predictor & instrumental
	a2ROAjt	predictor & instrumental
Equation 1	a3SIZE	predictor & instrumental
	a5CAPjt1	predictor & instrumental
	∆RISKjt	Predictor
	a2LLossjt	Instrumental
	a5RISKjt1	instrumental

Table 2.	Model	Summary
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		Multiple R	.500
	Equation 1	R Square	.250
		Adjusted R Square	.236
		Std. Error of the Estimate	.009

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		Table	3. AN	OVA		
Sum of SquaresMean dfFSig.						Sig.
	Regression	.007	5	.001	18.766	.000
on ]	Residual	.022	282	.000		
Equati	Total	.029	287			

	Table 4. Coefficients					
	Unstandardized Coefficients Beta t					Sig.
	(Constant)	.000 .007			029	.977
	a1REGjt1	.001	.002	.018	.619	.536
tion	a2ROAjt	.000	.000	.024	.713	.476
qua	a3SIZE	-3.591E-05	.001	003	065	.948
Щ	a5CAPjt1	006	.006	044	-1.030	.304
	∆RISKjt	.068	.008	.660	8.315	.000

#### Table 5. Coefficient Correlations

			a1REGjt1	a2ROAjt	a3SIZE	a5CAPjt1	∆RISKjt
Equation 1	Correlations	a1REGjt1	1.000	145	.134	041	.016
		a2ROAjt	145	1.000	184	.231	115
		a3SIZE	.134	184	1.000	.606	006
		a5CAPjt1	041	.231	.606	1.000	.181
		∆RISKjt	.016	115	006	.181	1.000

#### Table 6. Model Description: MOD\_6

		Type of Variable
Equation 1	∆RISKjt	dependent
	ΔCAPjt	predictor
	a1REGjt1	predictor & instrumental
	a3SIZE	predictor & instrumental
	a2LLossjt	predictor & instrumental
	a5RISKjt1	predictor & instrumental
	a2ROAjt	instrumental
	a5CAPjt1	instrumental

#### Table 7. Model Summary

Equation 1	Multiple R	.276
	R Square	.076
	Adjusted R Square	.060
	Std. Error of the Estimate	.223

Table 8. ANOVA						
Sum of Squares df Mean Square F Sig						
1	Regression	1.162	5	.232	4.657	.000
ion	Residual	14.070	282	.050		
Equat	Total	15.231	287			

#### Table 9. Coefficients Unstandardized Beta t Sig. Coefficients (Constant) .061 .713 .165 .369 ΔCAPjt 21.012 5.803 2.178 3.621 .000 Equation 1 a1REGjt1 -.021 -.037 -.482 .630 .044 a3SIZE -.007 .014 -.057 -.526 .599 a2LLossjt 7.279 3.418 .034 .366 2.130 a5RISKjt1 .022 .020 .150 1.098 .273

#### Table 10. Coefficient Correlations

			∆CAPjt	a1REGjt1	a3SIZE	a2LLossjt	a5RISKjt1
Equation 1	Correlations	ΔCAPjt	1.000	121	143	.896	.631
		a1REGjt1	121	1.000	.119	096	088
		a3SIZE	143	.119	1.000	159	.442
		a2LLossjt	.896	096	159	1.000	.566
		a5RISKjt1	.631	088	.442	.566	1.000





# TESTING THE RELATIONSHIP BETWEEN ECONOMIC FREEDOM AND INCOME INEQUALITY IN THE USA

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#### Abstract

The Gini coefficient is used to examine the impact of economic freedom on income inequality among the 50 US states. The degree of economic freedom is provided by the Fraser Institute in Vancouver, Canada. A fixed-effect model based on panel data from 2000-2013 is estimated to determine if differences exist among the four census regions identified by the US Census Bureau. The findings clearly suggest that those states characterized by higher levels of economic freedom exhibit greater income equality. A Dickey-Fuller test for stationary revealed the need for first-differencing and a Granger-causality test concluded that uni-directional causality existed between income distribution and economic liberty.

#### Key words

Gini Coefficient; Economic Freedom; Income Distribution; Fixed-Effects Models; Granger Causality.

### INTRODUCTION

Considerable attention has been devoted to the trend in income inequality in the United States over the past several years. This concern has become a particularly critical issue among economists, business leaders and even the concerned citizenry. Political figures attempting to draw attention to their social conscience have also attached themselves to this pressing socio-economic dilemma.

In his December 4, 2013 speech before the Center for American Progress, President Obama praised the New Deal and the War on Poverty for building "the largest middle class the world has ever known," but regretfully alluded to the "dangerous and growing inequality and lack of upward mobility that has jeopardized middle-class America's basic bargain – that if you work hard, you have a chance to get ahead".

Although somewhat positive in nature, his address carried the message that progress has stalled and income disparities have widened perceptively. Much of the available data seem to support the President's contention. It is generally agreed that income inequality has been on the rise in the United States since the late 1970s. Recent studies have shown that income disparities began to increase in the U.S. economy in the early 1970s and continue today (Webster, 2014; Apergis, et al, 2011; Ram, 2012). Sommeiller and Price (2014), for example, find that between 1979 and 2007, the top 1% income earners took home over one-half (53.9%) of the total increase in US income. Over that same period, the average income of the bottom 99% grew by only 18.9%.

This gap between the income classes has often been cited as a precursor for many socio-economic ills ranging from poverty, impediment to economic growth, elevated crime rates and general social disorder. Over the past several decades, after-tax incomes for the top 1% of households grew 275%. This compares to an 18% rise of the incomes of those in the bottom quintile. According to Piketty and Saez (2003), the top "1%ers" took home a 95% gain in the first three years of the recovery following the Great Recession. Furthermore, Piketty (2014) argues that the central contradiction of capitalism is that it leads to the concentration of wealth in the hands of those who are already rich. He denounces the evils of free markets and the inequities they produce. Piketty (2014) is particularly loathsome of inherited wealth. He contends that it generates slower economic growth and increases the ratio of capital to income which further exacerbates the disparities in incomes.

A common measure of income inequality is the Gini coefficient developed by the Italian economist and statistician Corrado Gini (1997). As an index of inequality, the coefficient (or ratio) ranges between zero and 1.00. The lower the coefficient is, the more equally incomes are dispersed throughout the economy. From all accounts, the US does not compare favorably to many other nations. Figure 1 provides Gini coefficients for some of the 34 nations that constitute the Organization for Economic Cooperation and Development (OECD) (Webster, 2014). Russia, which is not a member nation, is also included for comparison. The upper values represent the coefficients before taxes and transfers while the lower values are the ratios after taxes and transfers have reduced the degree of inequality. It can be seen that only Chile, Turkey and Mexico report after-tax Ginis greater than the US. The after- tax Gini for Russia is unavailable. The OECD averages of 0.316 and 0.463 are also included.

It is interesting to note the net changes in the degree of inequality after taxes and transfers. For example, Canada's Gini coefficient was reduced by over 0.10 through public efforts to combat income inequality.

Clearly, France, Germany and Italy reduced their coefficients the most while Chile, Ireland, Korea and Mexico had very little effect on the coefficients as a result of transfers from the wealthy to the poor. The mean reduction was 0.1106 and the median was 0.117. The less well of in Germany benefited the most as that nation's Gini coefficient dropped by 0.209 while that of Mexico fell the least by 0.018. The US reduction was 0.108. The mean OECD decrease was 0.147.



FIG 1. GINI COEFFICIENTS FOR OECD NATIONS, 2011 Source: Webster (2014)

The remainder of the paper is organized as follows: the next section briefly examines commonly cited causes for increases in income inequality in the USA. A definition of economic freedom and the manner in which it is measured is then provided. The research methodology and results of OLS models designed to examine the relationship between economic freedom and income distribution are presented. A fixed-effects model is used to identify any differences in the patterns between economic freedom and income distribution across the four census regions identified by the US Bureau of Census. Granger causality tests are performed to detect any feedback between income distribution and economic freedom.

## **CAUSES OF INEQUALITY IN THE USA**

Many factors are thought to contribute to this growing wage gap. Perhaps foremost is the exportation of manufacturing jobs to foreign sources in poorer nations. This trend in "globalization" has actually created a greater disparity in incomes in both the US as well as those nations to which the jobs are sent. The jobs that are exported are those held by lower-income workers. Upper managerial positions held by higher-paid executives are retained in the US. This has the effect of creating a larger gap between the socio-economic classes here in the US. The jobs sent over-seas are given the more skilled and highly trained workers who are already enjoying incomes in excess of those earned by the lower classes. This results in a larger differential in those nations.

The "diploma gap" has also registered an effect. In 1980 an American with a college degree earned about 30% more than someone who had terminated their education at the high school level. In more recent years, someone with a college education earns roughly 70% more than a high school graduate. The premium for a graduate degree

has increased from roughly 50% in 1982 to well over 100% today in some instances (Webster, 2014). Given the explosive rise in the cost of a college education, only those in the more affluent classes can afford more extensive schooling. This has the effect of widening still further any prevailing income differences.

The decline in the level of unionization across the United States has further magnified the separation of the income classes. Evidence has shown (Western & Rosenfeld, 2011; Card & Lemieux, 2004) that incomes are more evenly distributed in areas with higher rates of unionization. In 1983, 20.1% of the labor force or 17.7 million workers were union members. Today those figures stand at 11.3% and 14.5 million members. The impact of such dynamics on the wage gap is evident when it is considered that in 2013 the median weekly earnings for union members was \$950, while those who were not union members had median weekly earnings of only \$750 (US Department of Labor, January 24, 2014). Further, as fewer union members occupy the work force the gap must widen since the incomes of high-earning management do not depend on union membership.

It is generally recognized that tax laws tend to favor the wealthy. Provisions that affect stock options and capital gains permit the wealthy to shelter their incomes from the tax man. Many argue this lessens the tax burden on the wealthy and has accelerated the separation between the rich and the poor.

# ECONOMIC FREEDOM

Although several other forces can be identified that affect income deviation, strong indication persists that income dispersion is also influenced by the degree of economic freedom prevailing in a political or geographical unit. Although no universally accepted definition of economic freedom has been established, it generally refers to the ability of economic participants to make decisions and take actions without restraint from central forces. It is philosophically based on principles ranging from pure laissez-faireism to that advocated by the classical libertarian. Emphasis is placed on reliance on free markets, private property and individual choice.

Most studies rely on the index of economic freedom (EFI) developed by the Fraser Institute in Vancouver, Canada. The Institute provides an annual cardinal measure of the extent of economic freedom prevailing in all 50 U.S. states as well as all Canadian providences. These data are provided in annual reports entitled the *Economic Freedom of North America*. The Institute defines economic freedom as a condition in which

Individuals have economic freedom when (a) property they acquire... is protected from physical invasion by others and (b) they are free to use, exchange or give their property as long as their actions do not violate the identical rights of others. Thus, an index of economic freedom should measure the extent to





which rightly acquired property is protected and individuals are engaged in voluntary transactions.

The indices of economic freedom used by the *Fraser* Institute focus on six areas of concern. Each area contains subcategories as shown in Table 1.

TABLE 1.THE AREAS AND COMPONENTS OF ECONOMIC FREEDOM OF NORTH AMERICA INDEX

Area 1-Size of Government
1A-General Consumption Expenditures by Government as a Percentage of GDP
1B -Transfers and Subsidies as a Percentage of GDP <sup>1</sup>
1C-Social Security Payments as a Percentage of GDP
Area 2-Takings and Discriminatory Taxation
2A-Total Tax Revenue as a Percentage of GDP
2B-Top Marginal Income Tax Rate and the Income Threshold at Which It Applies
2C-Indirect Tax Revenues as a Percentage of GDP
2D-Sales Taxes Collected as a Percentage of GDP
Area 3-Regulation
3A-Labor Market Freedom
3B-Credit Market Regulation
3C-Business Regulations
Area 4-Legal System and Property rights
4A-Judicial Independence
4B-Impartial Courts
4C-Protection of Property Rights
4D-Military Interference in Rule of Law and Politics
Area 5-Sound Money
5A-Money Growth
5B-Standard Deviation of Inflation
5C-Inflation: Most Recent Year
5D-Freedom to Own Foreign-Currency Bank Accounts
Area 6-Freedom to Trade Internationally

Note: 1Gross state product (GSP) is used in each of these cases when comparing the 50 US states

Each of the areas and their subcategories are largely self-explanatory. However, certain select entries may require further explanation. For example, "Takings and Discretionary Taxation" simply refers to the revenue governments acquire through direct taxation. Discretionary taxation applies only to those individuals engaging in a particular activity. Sales taxes indicated in subcategory 2D refer only to transactions involving taxable retail purchases.

The Institute notes that Areas Four, Five and Six pertain primarily to international comparisons. Since this paper is designed to compare states within the US, only Areas One, Two and Three are used in the analysis.

The index for each component and sub-component is based on a scale from 0 to 10, with 10 indicating the highest degree of economic liberty. The overall index is then compiled as an unweighted average of the three primary areas. A more complete description of the items used to generate the indices can be obtained from any of the annual reports provided by the Fraser Institute.

The indices published by the Institute measure economic freedom at two levels: the sub-national and the all-government. The sub-national level refers to the provincial and municipal governments in Canada and the state and local governments in the United States. At the all-government level the impact of federal governments is measured. All 50 states in the US and the 10 provinces in Canada are included in the Institute's reports. This paper relies only on data from the 50 US states.

A simple mathematical formula is used to mitigate subjective judgments and ordinal rankings that do not permit mathematical manipulation or calculation. Instead, the EFI is a relative valuation in which a cardinal measure comparing each individual geographical region to a set standard is computed. It was constructed by the Institute to represent the underlying distribution of all 10 of the sub-components in Areas 1, 2 and 3. Thus, this index is a relative ranking.

The index assigns a higher score when, for example, component 1A, General Consumption Expenditures by Government as a Percentage of GDP, is smaller in one state or province relative to another. The rating formula is consistent across time to allow an examination of the evolution of economic freedom. In order to construct the overall index without imposing subjective judgments about the relative importance of the components, each area is equally weighted and each component within each area is equally weighted. Thus, Areas 1, 2, and 3 are equally weighted, and each of the components within each area is equally weighted. For example, the weight for Area 1 is 33.3%. Area 1 has three components, each of which received equal weight, or 11.1%, in calculating the overall index.

Objective methods are used to calculate and weigh the components. For all components, each observation is transformed into a number from zero to 10 using the formula

$$\left[\frac{V_{max} - V_i}{V_{max} - V_{min}}\right] * 10 \tag{1}$$

where  $V_{max}$  is the largest value found within a component,  $V_{min}$  is the smallest, and  $V_i$  is the observation to be transformed. For each component, the calculation includes all data for all years to allow comparisons over time.

Over time, the US has displayed distinct trends in its measures of economic freedom. As Figure 2 displays, near the turn of the century the US reached an index of 8.65 out of 10. This represents the vertex of economic freedom in America. Since then the extent of the nation's commitment to free enterprise has been decreasing steadily.





The data also show that in all three areas seen in Table 1, the US has recorded pronounced declines relative to other nations. This too is reflected in Figure 3. A higher ranking indicates a lower degree of economic freedom relative to other nations. The value for the year 2013 indicates that the U.S. ranked 19<sup>th</sup> in the world in terms of the measure of economic freedom enjoyed by its residents. Inarguably, the US position relative to other nations has shown a steady decline over the past 30 years. Much of this decline is due not only to deterioration in US policies and practices, but stems also from a relaxation in constraints placed on economic participants in other nations.



FIG 2. TREND IN ECONOMIC FREEDOM IN THE USA Source: Fraser Institute (http://www.freetheworld.com/release.html, extracted August 10, 2014)

Traditionally, Hong Kong and Singapore have dominated the top two world-wide positions in terms of promoting free enterprise. Australia, Switzerland, New Zealand and Canada have gained significant prominence across the globe. Sweden and Denmark have also reported impressive gains in economic freedom. Countries experimenting with milder forms of socialism than they did in the past have also gained ground relative to other nations. Estonia, Lithuania and the Czech Republic are notable in that regard. These dynamics have relegated the US to a lesser position world-wide in terms of its index vis-à-vis other nations.



FIG 3. US EFI RANKINGS COMPARED TO OTHER NATIONS Source: Fraser Institute (http://www.freetheworld.com/release.html, extracted August 10, 2014)

Considerable work has been done in the past that compares nations around the globe in regard to their relationships between income distribution and economic freedom (Gwartney et al, 1996; Carter, 2006; Berggren, 1999; Scully, 2002; Cebula et al, 2013). Similar work comparing U.S. states, however, is much less prevalent. Ashby and Sobel (2008) offer an insightful discourse regarding the impact of economic freedom among the 50 US states. They conclude that "…*changes* (emphasis added) in economic freedom are associated with higher income and higher rates of income growth … and with reductions in relative income inequality". They further contend, however, that the relationship between the prevailing level of economic freedom and income inequality is statistically insignificant.

For the purpose of this paper, panel data were collected for all 50 states for the 14 years from 2000 through 2013. They included the Gini coefficients maintained by the US Bureau of Census and the EFI provided by the Fraser Institute. The control variables included population figures, median income levels, gross state products measured in millions of dollars, percentages of high school graduates and percentage of minorities in each state. These factors were considered here because in many of the studies noted above, they were shown to be statistically significant as explanatory variables of income distribution. With the exception of measures for economic freedom, all were taken from US Census Bureau data and were extracted in the summer of 2014.

Some of the relevant descriptive statistics are displayed in Table 2. The maximum Gini coefficient of 0.499 in both 2000 and 2013 was held by the state of New York thereby indicating the greatest degree of income inequality in both years. New York's Gini coefficient changed over the course of those 14 years, but in 2013 settled at the same ranking it was in the year 2000.

Variable	Mean	Median	Standard Deviation	Minimum	Maximum
Gini 2013	0.452	0.453	0.0178	0.419	0.499
Gini 2000	0.446	0.445	0.0213	0.402	0.499
EFI 2013	6.560	6.600	0.547	5.400	7.800
EFI 2000	8.236	8.300	0.230	7.600	8.800
Change in Gini	0.006	0.008	0.008	-0.017	0.021
Change in EFI	-1.670	-1.700	0.365	-2.500	-0.900

TABLE 2. BASIC DESCRIPTIVE STATISTICS

The minimum Gini coefficients in the years 2000 and 2013 of 0.402 and 0.419 occurred in Alaska and Utah, respectively. Alaska had the greatest degree of income equality in 2000. By 2013, Utah claimed that spot.

Delaware reported the highest degree of economic freedom in the year 2000 with an EFI of 8.8 while West Virginia recorded the minimum Index of 7.6. West Virginia retained that position in 2013 with the lowest measure of economic freedom at 5.4. In 2013 the highest degree of economic freedom prevailed in Mississippi with an index of 7.8.





Changes in both the Gini ratio and the Economic Freedom Index over the 14 year period are also recorded. The maximum change in economic freedom occurred in New Mexico with a reduction of -2.5 while Wyoming reported the smallest change of -0.90. All 50 states, without exception, recorded a reduction in the EFI. Recall, as the index decreases, the measured degree of economic freedom decreases. Thus, in an absolute sense, the extent of economic freedom as define and calculated by the Fraser Institute has fallen.

The minimum and maximum changes in the Gini ratio were -0.017 reported by West Virginia and a 0.021 attributed to Vermont. Keeping in mind that an increase in the ratio indicates greater income inequality, Vermont is guilty of the largest rise in income differences between the haves and the have-nots during that period.

Various studies (Gwartney, et al, 1996; Barro, 2000; Spindler, et al, 2008; Scully 2002) based on a comparison of national economies around the globe have clearly concluded that a positive relationship exists between economic freedom and income equality. As the economic freedom index (EFI) as defined above increases, so does income equality as measured by the Gini coefficient. Thus, the testable hypothesis that increases in equality (decreases in the Gini) are associated with increases in economic freedom is stated as

$$\frac{\partial Gini}{\partial EFI} < 0 \tag{2}$$

While the studies just cited above affirms this assertion within entire nations, the question remains as to whether that relationship holds internally among the 50 US states. Ashby and Sobel (2008) concluded that the relationship between the prevailing level of economic freedom and income inequality is statistically insignificant. However, Bennett and Vedder (2013) content that an inverted U-shape can best be used to describe the relationship between economic freedom and income inequality. Increases in economic freedom initially result in a rising Gini coefficient. But once some "tipping point" in the level if economic freedom is reached, the level of income inequality begins to wane.

The remainder of the paper examines this relationship between economic freedom and income distribution, both at specific points in time as well as the dynamics of the relationship over time. Equation (2) serves as the testable hypothesis.

# **MODEL SPECIFICATIONS AND REGRESSION RESULTS**

Initial model specifications regressed the Gini ratios from the year 2000 on potential explanatory variables for the same year. In addition to the Economic Freedom Index, control variables for states' population, gross state product measured in millions of

dollars, median income and the percentage of the population with a high school degree were included. Only gross state product, median income and the percentage of high school graduates proved statistically significant. The adjusted coefficient of determination reported in at 57%.

In the interest of parsimony, the model was re-specified to include those three variables along with the EFI. The results are displayed in Table 3. All four explanatory variables proved statistically significant at acceptable alpha-values. The coefficients are, of course, quite small since the response variable never exceeds 1.00. Of considerable interest is the fact that the coefficient for the EFI reported to be negative. This reveals that an increase in economic freedom is associated with a reduction in the Gini ratio indicating a movement toward more income equality. Although EFI<sub>2000</sub> was only marginally significant at the 8.1% level, greater income equality is associated with an elevated degree of economic freedom. These findings are in contrast to those reported by Ashby and Sobel (2008).

Subsequently, a similar model was estimated using the more recent data from 2013 (Table 3). As in Ashby and Sobel (2008), the EFI reported as statistically insignificant. These models offer 'spot checks' on the relationship between economic freedom and income distribution at a specific point in time. A truer measure of the manner in which changes in economic freedom might affect income distribution requires an analysis over some time span. An accurate measure how the levels of economic autonomy might restructure income dispersion is best reflected by an examination of the movements in each factor over time.

In this effort, a model was specified in which the changes in the Gini coefficients over the time period 2000 to 2013 are set as the response variable. The primary explanatory variables include the initial Gini ratio in 2000, the initial EFI in 2000 and the change in the Index over the time period in question. The control variables used in the models above are retained and changes in those variables are added.

Table 3 reveals that the change in the EFI as well as its initial measure at the outset of the time period in 2000 both proved highly significant. Moreover, both carry a negative sign. This suggests that higher levels in the initial measure of economic freedom as defined by the Fraser Institute and increases in that measure over time are associated with a lower Gini coefficient. This reduction in the ratio evidences greater income equality.

The negative correlation between the change in the Gini ratio and the initial EFI<sub>2000</sub> indicates that states with greater degrees of economic freedom experienced less change in the distribution of income. Higher levels of economic freedom tend to stabilize the current distributional pattern of income. This is perhaps because states that already enjoy a high degree of economic freedom find it more difficult to raise the level of freedom even further.





The change in the Gini ratio was also negatively related to the change in the measure of economic freedom. This is not to say that that an increase in the Index is associated with decrease in the Gini ratio, but is instead related in a negative fashion to changes in that measure. This might suggest that there prevails an inelastic association between these two socio-economic measures. As the change in the Index becomes greater, changes in the Gini ratio diminish.

OLS Results With Gini2000 as Response Variable							
Variable	Coefficient	Standard Error	t-value	p-value			
Constant	0.70819	0.08426	8.40	0.000			
EFI2000	-0.01832	0.01027	-1.78	0.081			
GSP2000	0.5E-7	0.000	5.24	0.000			
Median Income2000	-0.121E-5	0.000	-3.41	0.001			
%HSED	-0.00096	0.0002	3.89	0.000			
Adjusted R <sup>2</sup>	56.7%						
Standard Error	0.014						
	OLS Results With Gi	ni2013 as Response V	ariable				
Variable	Coefficient	Standard Error	t-value	p-value			
Constant	0.55075	0.03322	16.58	0.000			
EFI2013	-0.0048	0.00387	-1.25	0.217			
GSP2013	0.000002	0.0000004	4.83	0.000			
Median Income2013	-0.0000004	0.0000003	-1.33	0.189			
%HSED2013	-0.00071	0.000323	-2.18	0.034			
Adjusted R <sup>2</sup>	39.0%						
Standard Error	0.0139						
OLS R	esults With Change	in Gini2013-00 as Respo	onse Variable				
Variable	Coefficient	Standard Error	t-value	p-value			
Constant	-0.063	0.0627	-1.00	0.3233			
EFI2000	-0.0140	0.0058	-2.41	0.0206			
ΔEFI2013-00	-0.0034	0.0010	-2.97	0.0050			
GSP2000	0.0000	0.01E-7	0.720	0.0476			
ΔGSP2013-00	-0.0000	0.02E-7	-1.130	0.2670			
Median Income2000	0.028E-6	0.015E-5	1.860	0.0710			
ΔMedian Income2013-00	0.04E-6	0.02E-5	0.210	0.8333			
%HSED	0.07E-5	0.014E-2	0.470	0.6410			
Δ%HSED2013-00	0.03E-4	0.018E-2	1.48	0.1470			
Adjusted R <sup>2</sup>	55.6%						
Standard Error	0.005						

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Perhaps prevailing institutional, political, economic and other social structures that are already in place within a state promote income redistribution. These established qualities already present merely continue the trend toward a redistribution that favors the less fortunate but do so with a diminishing effect. Regardless of any cause-andeffect, the empirical results clearly endorse the contention that elevated levels of economic freedom are associated with greater income equality and that changes in economic freedom correspond positively with changes in income equality.

# MEASUREMENTS OF REGIONAL DIFFERENCES: A FIXED EFFECTS MODEL

In a nation with over 317 million residents that covers nearly four million square miles it would surprise no one to learn that different regions will vary noticeably in terms of their socio-economic order. Median incomes, education levels, the industrial mix, reliance on agriculture and a host of other idiosyncratic attributes all vary greatly between and among geographical regions of the nation. It is therefore reasonable to hypothesize that forces will interact differently across the nation producing alternative results in social and economic outcomes. For that reason, it seems prudent to test for regional differences in terms of the relationship between economic freedom and its impact on income distribution.

In that effort, a fixed-effects model is estimated across the four geographical regions identified by the US Census Bureau. These regions are the Northeast, Midwest, South and West. The states that are included in each region are shown in Table 4. The fixed-effects model allows for distinctions among different cross-sectional categorical units such as, in our present case, geographical regions.

Fixed-effects models are well adapted to control for omitted variables that might be correlated with regressors that are categorically-specific and time invariant. It is therefore possible to capture the unadulterated impact of the EFI on income inequality by incorporating as regressors only those variables that measure economic freedom. The model used here identifies the Gini ratio of 2013 as the regressand and includes only the Gini<sup>2000</sup>, the EFI from both 2000 and 2013, the change in the EFI over the time period in question and, of course, the dummy variables for all four regions.

Fixed-effects models rely on within-categorical variation across time. Therefore, they require measurable within-categorical variation of the explanatory variables. In addition, accurate estimation also demands less within-categorical variations in the measurement error of the regressand.

These conditions should cause no problems in the current analysis. Variations in the levels of economic freedom have already been noted in that all 50 states reported drops in their EFIs over the time span under survey. Furthermore, since the same reliable source for the Gini ratio is used throughout the study, measurement error among the states is likely held to a minimum.

The methodology used in fixed-effects models will detect and quantify regional differences in terms of the interplay between economic freedom and income





inequality. This is done by allowing the intercept to differ among the cross-sectional categories, but each intercept for each category remains constant over time. The difference between cross-sectional categories is assigned to the intercept and results in constant slope coefficients.

Region 1: Northeast					
Connecticut	New York				
Maine	Pennsylvania				
Massachusetts	Rhode Island				
New Hampshire	Vermont				
New Jersey					
Region 2	Midwest				
Indiana	Missouri				
Illinois	Nebraska				
Iowa	North Dakota				
Kansas	Ohio				
Michigan	South Dakota				
Minnesota	Wisconsin				
Region	3: South				
Alabama	Mississippi				
Arkansas	North Carolina				
Delaware	Oklahoma				
Florida	South Carolina				
Georgia	Tennessee				
Kentucky	Texas				
Louisiana	Virginia				
Maryland	West Virginia				
Region 4: West					
Alaska	Montana				
Arizona	Nevada				
California	New Mexico				
Colorado	Oregon				
Hawaii	Utah				
Idaho	Washington				
Wyoming					

#### TABLE 4. US CENSUS BUREAU REGIONS

Dummy variables are established for each cross-sectional category. The model is estimated by including data for all four categories but omitting the intercept commonly cited as  $\beta_0$  in most models. This avoids the "dummy trap" which leads to perfect multicollinearity. The model is specified as

$$y_{it} = \Sigma \beta_{it} X_{it} + \Sigma \beta_i + \varepsilon_{it} \tag{3}$$

where  $X_{it}$  are the explanatory variables and  $\beta_i$  refers to the cross-sectional category under examination. As Equation (3) shows, in the absence of  $\beta_0$ , the estimated coefficient for each dummy variable provides a different intercept for each category. The resulting intercepts allow the model to reflect differences among the different categories.

The fixed-effects model permits the distinct advantage of allowing all data to be used in the regression rather than just those just pertaining to a specific category as is the case with seemingly unrelated regression models (SUR). This permits a larger number of degrees of freedom and is thus likely to be more accurate.

Further, the dummy coefficients for the SUR models can avoid multicollinearity by excluding one of the dummy variables. The ensuing coefficients for the remaining dummy variables represent the change in the intercept when the category is compared to the omitted dummy variable. Since the purpose of this experiment is to capture differences among four census bureau regions, it seems a fixed-effects model is more appropriate. The intent of the fixed effects model is to determine if the intercepts are the same for all four regions. If they are, a fixed-effects model is unnecessary. The determination is based on a hypothesis test framed as

Ho: 
$$\beta_{\text{North}} = \beta_{\text{Midwest}} = \beta_{\text{South}} = \beta_{\text{West}}$$
  
Ha: Not all  $\beta_i$  are Equal

The appropriate methodology requires an F-test containing values derived from the results of two regression models: a restricted model and unrestricted model. The restricted model does not include a dummy variable for region and contains the constant term,  $\beta_0$ . It is expressed as

$$Y = \beta_0 + \Sigma \beta_{it} X_{it} + \varepsilon_{it} \tag{4}$$

By excluding any reference to the different regions and including a single value for  $\beta_0$ , it restricts the four intercepts to equality. The unrestricted model is the fixed-effects model seen as Equation (3). The F-test is calculated as

$$F = \frac{\frac{RSS_R - RSS_U}{q}}{\frac{RSS_U}{n - k - 1}}$$
(5)

where RSS<sub>R</sub> is the residual sum of squares for the restricted model and RSS<sub>U</sub> is the residual sum of squares for the unrestricted model. q is the number of restrictions contained in the null hypothesis and equals the number of parametric coefficients set equal to each other. n is the number of observations and k is the number of right-hand side variables in the unrestricted model. Expressed in this manner, the F-statistic measures any improvement in the fit offered by the unrestricted model over that reported by the restricted form.

RSS<sub>R</sub> will always be more than RSS<sub>U</sub> because some of the variables in the restricted model are constrained and cannot fit the data as well as the unconstrained model. Furthermore, the unrestrained model contains more explanatory variables and will offer a better fit. Consequently, the F-statistic is always positive.





In this present case, q is 4, n is 50 and k = 7. Computations produce an F-value of 3.41 and a p-value of 0.0167. The null hypothesis that the intercepts for all four regions are equal is rejected at the 1.67% level of significance. Clearly, the nature of the relationship between economic freedom and income distribution varies across state boundaries in the US.

Given the cross-sectional nature of the data set, White's test for heteroscedasticity (1980) as modified in Webster (2013) was conducted. Unlike other tests for heteroscedasticity, White's test as modified does not require that the variables proportionally associated with the heteroscedastic variances be identified. Instead, all right-hand side variables used in the fixed-effects specification, and several in their modified forms, are used in the detection method. For example, if the initial regression model carried k regressors, White's test requires the application of Equation (6). The squared residuals from the restricted model are used as the regressand. They are regressed on a battery of potential explanatory variables.

$$e^{2} = \beta_{o} + \beta_{i}X_{it} + \beta_{i}Y_{it} + \dots + \beta_{i}k_{it} + \beta_{i}X_{it}^{2} + \beta_{i}Y_{it}^{2}$$
$$+ \dots + \beta_{i}k_{it}^{2} + \beta_{i}X_{it}Y_{it} + \beta_{i}X_{it}k_{it} + \beta_{i}Y_{it}k_{it} + \omega$$
(6)

Four explanatory variables are used in the restricted model: Gini<sub>2000</sub>, EFI<sub>2000</sub>, EFI<sub>2013</sub> and the change in the Gini ratio from 2000 to 2013. There are therefore 14 regressors in Equation (6). Testing for heteroscedasticity via this method requires the computation of nR<sup>2</sup> where R<sup>2</sup> is taken from Equation (6). This statistic fits a  $\chi^2$  distribution that is used to test the hypothesis that all  $\beta_i$  in Equation (6) are zero. If the null hypothesis is not rejected, it may be concluded that constant error variance prevails and the model is not plagued by heteroscadasticity. The R<sup>2</sup> from Equation (6) is 0.206. With n = 50, nR<sup>2</sup> = 10.32. Testing the hypothesis at the 5% level of significance, the critical  $\chi_{.05,14}$  = 23.68. Since 10.32 < 23.68, the hypothesis of constant error variance is not rejected. It would appear that the model does not suffer from heteroscadasticity. The Durbin-Watson reported as 1.89 indicating no obstruction due to autocorrelation.

TABLE 5	FIXED	-EFFECTS	REGRESSI	ON RESUI	LTS; CHA	NGE IN	GINI AS	5 REGRESSAN	١D

Results of the Fixed-Effects Model With Gini2013 as Response Variable						
Variable	Coefficient	Standard Error	t-value	p-value		
Gini2000	0.2079	0.0407	5.11	0.000		
EFI2013	-0.0048	0.0026	-1.78	0.082		
EFI2000	-0.0230	0.0062	-3.73	0.001		
Change in EFI	-0.0058	0.0012	-4.83	0.000		
NORTHEAST	-0.0557					
MIDWEST	-0.5599					
SOUTH	-0.6190					
WEST	-0.06190					

The results shown in Table 5 are clear and unequivocal. The coefficient for EFI for 2013 is negative and significant. This reveals that states with greater economic freedom in 2013 are going to exhibit greater income equality. This negative correlation attests to the impact economic freedom has on the distribution of income in any geographical unit.

The same interpretation can be applied to the EFI for the year 2000. Here again we find a significant, negative relationship. States displaying pronounced economic freedom at the outset of the time period under examination will report less income inequality later on. It may be concluded that economic freedom as provided by the Fraser Institute promotes greater income equality as measured by the Gini coefficient. The initial Gini ratio is highly significant and carries a positive sign. This indicates that states exhibiting a high degree of income inequality in the year 2000 will continue to experience this condition over time.

# **TESTS FOR CAUSALITY**

A reasonable question focuses on any causal relationship that might exist between income distribution and economic freedom. Therefore, a Granger causality test is offered to test for directional causality between these two socio-economic variables. This test is performed to determine if any past values of one variable may affect present values of a second variable. That is, to address the question as to whether past values of X serve as explanatory variables of Y. Y is then regressed on past (lagged) values of itself as well as lagged values of X. The question as to how many lagged values of each variable should be included in the model is paramount.

It is imperative that the data used in the analysis prove to be stationary and do not exhibit a unit root. Initially, the test for a unit root is based on the Equation (7) such that

$$Y_t = \rho Y_{t-1} + \mu_t \tag{7}$$

where it is assumed  $-1 \le \varrho \le +1$  and  $\mu_t$  is merely white noise. If  $\varrho = 1$ , (7) is a nonstationary random walk or stochastic process without drift and cannot be effectively estimated.

It would seem reasonable to then simply test the null hypothesis that q = 1 against the alternative hypothesis that q < 1. This is written as a one-sided test because if q > 1, the series is said to be explosive and thus difficult to model. Besides, explosive series of this nature are quite uncommon using economic data due to the cyclical nature of economic activity. If the null is not rejected the series carries a unit root and is nonstationary. That is, if q = 1, it may be concluded that a unit root prevails and a random walk model without drift results thereby evidencing a nonstationary condition.





However, such a test is not possible since if a unit root exists the t-tests produce biased results. Specifically, the t-values for the coefficient of  $Y_{t-1}$  do not follow an asymptotic normal distribution even in the presence of large samples.

It is therefore necessary to find an alternative approach to test for unit root. Perhaps the most common approach is that provided by Dickey-Fuller (1979). The Dickey-Fuller test (DF) is applied by subtracting  $Y_{t-1}$  from both sides yielding Equation (8).

$$Y_t - Y_{t-1} = \rho Y_t - Y_{t-1} + \mu_t$$
  

$$Y_t - Y_{t-1} = (\rho - 1)Y_{t-1} + \mu_t$$
(8)

If  $Y_t - Y_{t-1}$  is shown as  $\Delta Y_t$  and  $\delta$  is set equal to ( $\varrho - 1$ ), we have

$$\Delta Y_{t-1} = \delta Y_{t-1} + \mu_t \tag{9}$$

The equivalent test then carries a null hypothesis of  $\delta = 0$  with the alternative stated as  $\delta < 0$ . Since  $\delta = (\varrho - 1)$ , for  $\varrho < 1$  and avoid the unit root,  $\delta$  must be less than zero. If the null that  $\delta = 0$  is not rejected,  $\varrho = 1$  and nonstationarity in the series exists making it difficult to conduct any causality test. The t-value used in this hypothesis test is then compared not to the standard t-distribution, but that provided by Fuller (1976) used exclusively for this particular test. Appling Equation (9) to both income inequality and EFI failed to lead to a rejection of the null hypotheses. Thus, it is concluded both suffer unit roots requiring corrective action.

The most common practice is to first-difference the series. Generally, the first differences of time-series are stationary. To determine this, the first differences are taken for both variables and then Equation (9) is applied to those first differences. Both tests for income inequality and economic freedom suggest stationarity.

The Granger causality test can then be applied to these first differences. The complete Granger test for Y and X, for example, involves the comparison of two regressions models, the restricted model and the unrestricted model. To test whether X Granger-causes Y, the restricted model is expressed as

$$\Delta Y_t = \alpha_t + \sum_{i=1}^p \alpha_i Y_{t-i} + \mu_t \tag{10}$$

This is referred to as the restricted model because it contains no reference to the X variable. The coefficients for X are assumed restricted to zero and are therefore held out of the model.

In the absence of more sophisticated computer software that will identify the optimum number of lags, it is advisable to begin with a large number of lags and test for significance in succession starting with the oldest values (largest lags).

The unrestricted model is

$$\Delta Y = \phi_t + \sum_{i=1}^p \phi_i Y_{t-1} + \sum_{i=0}^q \beta_i X_{t-i} + \nu_t$$
(11)

Here the coefficients for X are not assumed to be zero. If that is so, then past values of X Granger-cause changes in Y.

The null hypothesis is that past values of X do not Granger-cause changes in Y. The null is expressed as Ho:  $\beta_i = 0$ . If the null is not rejected, it may be concluded that X does not Granger-cause changes in Y.

To test for causality from Y to X, Equations (10) and (11) are reversed setting X as the dependent variable. The same hypothesis test is then performed on this second set of equations.

Final determination is based on the standard Wald F-test that offers a comparison between the restricted and unrestricted estimates as shown by Equation (12).

$$F = \frac{\frac{SSE_R - SSE_U}{q}}{\frac{SSE_U}{n - p - q}}$$
(12)

where SSE<sub>R</sub> and SSE<sub>U</sub> are the sums of the squared residuals for the restricted and the unrestricted model, n is the number of observations, p and q are in the number of lags in the dependent and independent variables, respectively. The result is compared to a critical F-value with q and n-p-q degrees of freedom.

Four possible outcomes may result. It may be determined that Y Granger-causes X, X Granger-causes Y, there is bilateral causation in that each Granger-causes the other or the two variables may be independent in which neither Granger-causes the other.

After considerable tests to detect significance in lagged values based on the current data set, it was determined that a lag order of three was appropriate for both variables in both tests. A test was first conducted to determine if income inequality might Granger-cause measured levels of economic liberty to vary. That is, the EFI was used as the regressand for both the restricted and unrestricted models. An F-value of 1.14 was reported. This value is below any acceptable critical F-value for this test and carried a p-value of 0.389. It may be concluded that the null hypothesis that income distribution does not Granger-cause economic freedom cannot be rejected. It would appear that there is no directional causality running from income inequality to the freedom index. Past measures of income distribution do not offer any explanatory value for changes in the levels of economic freedom.

Treating income inequality as the dependent variable and using the EFI as the regressor yielded an F-value of 7.25. The associated p-value is 0.0114 allowing a rejection of the null hypothesis that economic freedom does not Granger-cause changes in income distribution. It may be concluded that past levels of economic



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freedom Granger-cause changes in the degree of income distribution as measured by the Gini coefficient. The significant coefficients for lagged values of the EFI all report negative signs and thereby contend that prevailing measures of economic freedom will in the near future lead to greater economic liberty within the populace.

# CONCLUSION

The results presented here suggest that elevated measures of economic freedom are associated with more equal distributions of income. This pattern holds true at specific points in time as well as dynamics measured over the past decade. After controlling for other factors, the Gini ratio for the year 2000 exhibits a negative relationship with the EFI for the same year. Given that increases in the Gini coefficient evidence lower levels of income equality, it may be concluded that in regions with greater measures of economic freedom, a drop in the Gini suggests greater income equality. Incomes become more evenly distributed in areas where economic participants are given greater discretion in their activities in the prevailing economic markets.

These findings seem to run contrary to those reported by Ashby and Sobel (2008). Their paper did not find that measures of economic freedom were negatively related to increased levels of inequality. Perhaps this discord results from the different time periods used in the two studies.

Virtually identical results were found when more recent measures were used in the OLS models. Regressing the Gini coefficient from 2013 on the EFI for the same year suggested again that economic freedom was associated with a more equitable distribution of incomes across the states. These results also conflict with those presented by Ashby and Sobel (2008) but tend to support the findings based on studies comparing different nations around the globe as noted above.

With respect to an examination of the effect of changes in income dispersion over time, we find much a greater degree of accord. This paper demonstrates that changes in the levels of income equality are significantly associated with changes in the degree of economic freedom. Specifically, the change in the Gini over the time span of 2000 to 2013 reported a negative relationship with both the EFI in 2000 as well as EFI<sub>2013</sub>. Further, the change in that index over the same time period reported a negative relationship with the change in the EFI. This reveals that greater equality can be nurtured by efforts to foster enhanced economic freedom within the economic climate. This conclusion does tend to correspond with that provided by Ashby and Sobel (2008), as well as those presented by Berggren (1999) and Barro (2000).

The fixed-effects model clearly indicated the nature of the relationship between economic freedom and income distribution varies across state boundaries in the US.

Differences among the four US Census Bureau regions in terms of the industrial mix, general economic climate, public policies and the host of other socio-economic factors might explain these differences. Further research should be conducted to determine what attributes and qualities characteristic of the regions are most conducive to promoting this relationship between economic freedom and a more equitable distribution of income.

Certainly, before any firm theoretical foundations can be formulated, additional research into the pressing issue is necessary. Despite the recognized trend in income distribution in the US over the past several decades, it is only recently that concern has been raised as to the consequences such patterned changes might have on our social, economic and political fabric.

It seems self-evident that the current drift in the pattern of income distribution cannot and should not be sustained. The consequences could lead to a regrettable outcome. If effective public policy is to be enacted, a greater understanding of the interaction and dynamics among the forces discussed in this paper is essential.

After correction for non-stationarity using the Dickey-Fuller test and applying firstdifferencing, the Granger-causality procedure was applied to the data to detect the whether there was any feedback between income measures and the existing degrees of economic liberty as measured by the Economic Freedom Index. It was clearly determined that while earlier measures of income distribution could did not appear to Granger-cause and changes in economic freedom. However, such was not the case for the opposing test. Past measures of the Economic Freedom Index proved to be high significant as explanatory factors for changes in income distribution.

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# HUMAN RESOURCES IN THE INTERNATIONAL ORGANIZATION'S CONTEXT

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#### Abstract

Why do firms engage in international business? This happens for three main reasons: (i) To expand their sales; (ii) To identify new resources; and (iii) To diversify the sale and supply resources. Undoubtedly we are becoming further more convinced on the key role the human resources play in any organization, especially in the international organization. If human resources require a considerable attention in the firms operating within the country, it is rather easy to imagine the degree of indispensable attention they need in the firms operating in a global context. In this context, the company leaders are faced with the need to perform their work activity through the efforts of local employees, foreign employees, agents and suppliers. By creating strategic alliances or international joint ventures, the boundaries and organizational relationships (sub-contracted, part-time employments) are prone to change, thus these circumstanced call to attention the regulation of the workforce, aiming at achievement of the objectives in the global context. In order to obtain some valuable conclusions concerning the human resource management, waging research and engaging in the use of particular resources, becomes a necessary process to be undertaken. Moreover, as this topic has been a vital issue, it has gained the attention of numerous researchers who have made hypotheses or build models on human resources in the international organizations context. What has particularly attracted my attention is the individual in itself, the manager working in an international organization, the one transferred to work in a branch of an organization for a relatively long period. I was eager to know his perspective on the experiences, how has his/her way of thinking changed, his/ her lifestyle; would he/she be willing to go back to his workplace etc.? Another interesting issue is being able to comprehend the organization's perspective, the procedures applied to selects the appropriate employees performing a specific job, how does the organization implements the human resource planning, which is the recruitment strategy effectuated, who are the selected employees to be transferred, what is the applied model in making the due selection?

#### Key words

Global context; Regulation; Transference; Human resource management; Diversification.

#### INDIVIDUAL CAREER IN THE INTERNATIONAL CONTEXT

The management career, particularly in these modern times stretches outside the traditional environments. This has resulted due to the business globalization, which in turn has brought about the need to attract and retain the most suitable employee in relation to an organization's culture. The transfer of career managers has increased furthermore the analysis on this case. Various economists have spoken out different arguments. They have tried to start the analysis within family grounds: how many individuals have been transferred due to work-related reasons? What their reactions were, concerning the workplace adjustment? Which were the problems encountered and have they been of a transitory nature or not? The studies also bring help concerning the career management in the international context. In this regard, it is worth mentioning that all managers experience difficulties when transferred from one working place to another due to the cultural variations (Birdseye & Hill, 1995).

This can be a cause of many reasons, such as:

- 1. At the first moment, the manager himself may have asked the transfer due to qualification reasons, but the cultural differences have hindered him/her to proceed further; and
- 2. Another reason might be the fact that he/she fails to accept the firm's strategy in an international configuration. Probably the staff that he/she is supposed to work with brings about difficulties; it might happen that the staff might not fit in the international business policies presented by the newcomer.

Managers also need to adapt to the specific cultural requirements of the international environments where they are supposed to work. This can also result a damaging practice to them. Rationally, the human resource management is inevitably connected to the organization's development level. Therefore, for each and any single movement, we must always bear in mind the dual relationship manager –company, and when it comes to the manager, we shall consider his/her career. This is the only viable way to create valuable models based on the management concepts. We confer to this because the transfers from one country to another will instigate individual ideas to the manager, making him/her prone to be selective with regard to one country compared to another in order to increase his/her career chances. Thus he/she makes differences depending on the environment judged as culturally fit, given the fact that companies are always in search of the maximum adjustment basis, because they aspire their ongoing development. In fact, the internationally operating organizations have not granted the due significance to those managers intending to establish an international career in their management practices. Normally such initiatives must be included in an international career development program, at the moment when the appropriate staff will be recruited.





In addition, there are other attention-seeking issues related to the international career management, which could help in the strategic management of business enterprises, improve the HRM practices in general and address the needs of career personnel involved in the process. According to Sonnenfeld et al, (2006: 588) 'The practice has failed to correctly address the organization's requirements in the human resource management'.

# THE GLOBAL BUSINESS STRATEGIES LINKS TO THE RECRUITMENT MODEL

The global management strategies in multinational companies vary greatly. The processes, practices, systems and the developed structures to implement these strategies will also vary. Developing global strategies can prove difficult, given the conflicting or contradictory environments wherein the multinational company may operate (MNC). Requirements often arise due to MNC's efforts to maximize their capacity to respond to the needs in host countries (local reaction), trying to maintain or keep under control world widely their corporation structure in order to establish a global integration. In often-cases, branches may have more autonomy acting independently and in order to respond to local requirements, remain less integrated as an international organization (Prahalad & Doz, 1987 missing; Tung & Punnett, 1993). The above theory has not undergone much changes since 1970, however Adler and Ghadar (1990) performed their duty in classifying MNC strategies on management skills. Recently, these strategies are being reconceived in terms of MNC life cycle in accordance with the product's generation, sales and development stages, under the symbol of Adler and Ghadar (1990), and Milliman et al, (1991). By applying the life cycle model or the classification model, the strategies are certainly involved in the global management and interoperability.

In the MNC's management phases, of vital importance is the local responsibility. As a result of study integration and accountability there are mentioned four strategies:

- i. Ethnocentric
- ii. Polycentric
- iii. Local (region-centric)
- iv. Geocentric

In general terms, these four stages in the Human Resources Management literature correspond to internal, in terms related to the phase 1; the phase 2 and phase 3 relate to International and Multinational dimensions and phase 4 is the Global stage.

Generally speaking, the ethnocentric strategy suggests that companies should maximize control over branches, in order to have an integration of their own and manage to minimize costs. In the polycentric and region-centric cases, local reaction is far more present and sensitive and is noticeable even less integration within the corporate. Geocentric strategy is the ideal and it tends to balance and responsiveness of local and global integration simultaneously. If we will dare to trace the phenomenon in basic hierarchical grounds, the geocentric strategy would prove a good choice as it envelopes two theoretical ideals. The Polycentric and region-centric strategies would rank as the second-best strategies because they remain more concentrated in accomplishing the local perspectives. Meanwhile the ethnocentric strategies, bearing the main focus in controlling, are either globally or locally integrated. In general, as foreign branches mature, they become a more independent source, regarding the strategic resources such as technology, capital, management, or approaches to markets. If they seek dependence upon the mother-organization, on the purpose of performing controls, then it's indispensable for them to change the autonomy terms, or to utilize alternative methods in order to promote their activity, ranging from the interrelationship with the mother-company, to the world wide operation. The rate at which MNCs aspire that their employees world widely share their corporate culture and also socialize with the employees in the host country, transmitting them the mother-corporation culture, will be evidenced via the processes and the allocation of the socialization assigned resources. We may mention such methods as, sending migrants abroad to spread the corporate culture, selecting individuals that share the organization's values, bringing the host country citizens in the country of origin in order to gain know-how etc.

The ethnocentric practices on immigrants, as part of the mother branch personnel, will be centered on their management and will be more focused on the controls and decision making by the mother branch. This happens more when the branches are managed from the center. Such practices are more common when the management is waged by the center-organization. This ethnocentric approach is more usual at the start of an enterprise and in case when special technical capacities are necessary when they can be found in the local workforce. However, the international human resource management is the responsible mechanism finding the suitable immigrants who will prove successful abroad. Current literature suggests that there is an extremely high turnover rate among the immigrants and that success on the abroad transference requires a unique set of skills and capabilities above and beyond the usual technical skills needed for the analogous position in the home-organization. The transference costs are too high and moreover the respective laws applying are far astringent. Consequently in often cases, accommodating their families depend on the help of the mother-company. The ethnocentric multinational corporations expect their leaders sent to foreign countries to transfer their culture and to demonstrate the most efficient management practices of the multinational and/or international corporation. There





are other cases that the mother company sends individuals to foreign countries and these individuals socialize with the host country employees far than usual. Thus, a greater socialization is reached based on desire. The reason under this conclusion is that, the structure of the host national company is not directly affected by the mothercompany.

Some data show that even when the mother company has sent staff in order to transmit its culture to the branches, still the branch culture has prevailed over the mother company. The polycentric and region-centric practices regarding the international human resource management are based on the approach undertaken into how to manage and administer the branches' activity from the headquarters of the mother-company. For those companies having branches in various host countries, all the managerial phases are performed by the locals and rarely are noticed cases of transferred personnel from the mother-company. In this case, the company cuts on expenses, compared to the transference of staff from the mother-company. However, the mother-company is willing and open to gain valuable global perspectives form the abroad employees and it is also in the known that the employees not always can socialize to the mother company culture. This can be accomplished either through transference of this staff in the native country to gain experience, or via sending representatives from the mother company to the country wherein the branch will be settled. For this reason, being that the cultural alignment does not happen overnight, the very career of the managers and employees of the company in the host country cannot reach the highest level, therefore it's harder for them to take over management level posts in the mother-company. The polycentric companies experience a concern regarding the common culture of the company's management.

A similar management strategy to the polycentric approach is the geocentric one. From this perspective, the employees of the host countries and the third countries can be recruited and/or selected to work on a regional basis. The regions' selections should go in consistency to some indispensable elements as the natural border, such as the European Economic Community or the Middle East. In the region-centric MNCs, the communication systems and the very integration must be highly sophisticated on the part of the mother-company, in order to maintain control over the regions in which it operates. In the polycentric perspective, the career chances of the national staff of the host country are higher to progress within the region, but it occurs that success can be attained even with regard to the mother company. However, as happens in organizations having a multitude of polycentric perspective, the local citizens are given the opportunity to manage their own branches. The geocentric practices of HRM and MNCs aim at an all-comprehensive integration of all their branches and a merge of the world-wide cultures, thereof they need to adopt a geocentric strategy. MNCs effectuate the adoption of this strategy in a worldwide scenario, intending to attract the most qualified individuals working in various positions, irrespective of their nationality. When talking about MNC's geocentric creations, we view the situation as being the case of company's integration in global terms, experiencing a cultural unification of companies, but not necessarily dictated by the mother-company. There are other cases of a more complex organization of the geocentric companies. In this case the structure is substantially pivotal, as it requires an extensive communication and integration of workers even across borders. In the case of geocentric MNCs, the socialization of the organization's values is employed as a strategy ruled by flexibility, in order to accommodate as good as possible the needs of the daughter company, in order to feel as comfortable as possible working in a country with a different culture from their country of origin. Despite this fact there will always be cultural differences. However, they will always attempt to acquire the values, attitudes, cultural norms of the country where they are working. This is done through the contacts with the mother-company and other foreign branches, the transfers and various visits to other foreign countries in order to develop global links. Given that this strategy is carried out through trainings organized in the mother company or in branches, it allows the greatest amount of local trials and decentralization level, thus to maintain the overall integration.

A considerable part of literature treats the socializing approaches or the strategic socialization. To make employees feel good, transference bonuses are often provided, as show ticket, different invitations, in order for them to adapt as easily as possible to the new country. Frequently, decent living conditions are provided to their families. If the transference is scheduled for a long time and the assignment is at a managerial level, then better conditions are provided in order to facilitate transference adaptation process. The adaptation processes are intended so that the employees may acknowledge not only the culture of the MNC mother organization country, but also the culture of the countries where MNC operates. The main objective is to somehow neutralize national culture features and to attempt to comprise it in the MNC's culture. This is the basic theory applied in strategic human resource management of MNC's. Edstrom and Galbraith (1977), noted that the theoretical grounds of their studies provide a framework for examination; afterwards we can move on to evaluating the work validity of the international strategic management of human resources. In line with what was discussed above, we may have a dual representation regarding the decision to preserve culture. There may be cases of MNC who want to preserve the mother-company culture, but also there may be cases of MNCs which select the polycentric approach, that is to take into consideration the host countries' culture.

Also, the geocentric operating companies are less concerned with the mother company culture preservation, compared to the region-centric, the polycentric or the ethnocentric. The ethnocentric companies recruit globally less foreign workers compared to the region-centric and geocentric companies. Especially in geocentric





companies the global recruitment approaches are widely practiced. The ethnocentric companies will retain less their selection standards worldwide compared to the polycentric, region-centric and geocentric MNCs, due to the fact that they prefer to make selection within the mother country. In the case of ethnocentric companies most of the time they tend to contact with their employees, as they strive to settle closer relationships compared to the region-centric and geocentric companies. Nevertheless, these companies do have social policies used exclusively to improve the individual performance. In the firms organization there are delineated a multitude of international strategies, created to the sole aim of achieving the economic success. From the human resources perspective, the geocentric MNC 's target is to attract the most appropriate employees in order to choose among them the best and most talented. This is vital in those cases where the position is of key importance. In these cases not only the best applicant will be selected, but he/she will be gratified with all the required conditions in order to result in the most productive. The affinity the geocentric MNCs have to human resource structures is of more strategic nature, thus it gives them significant competitive advantages. In addition, these employees will gain global perspectives and international capacities, which will further strengthen MNCs in all their activities.

An important issue for discussion is the MNC's management of high level positions strategy and its efficiency in a single line. Despite the good initiatives the big companies may have in regulating their activities worldwide and the best recruitment they can select, they are still faced with hurdles. Starting from the legal practices in host countries, to the political and cultural differences, which in turn can cause adjustment problems. Finding the appropriate solution is the responsibility of the international human resources, which in an organized manner should develop practices in conformity with the legal, political and cultural grounds, thus it is better achieved the most appropriate adaptation. In this case even the employee is well aware of where he/she is going, the surrounding environment expected to be found, on the other hand the local employee is provided the due information on foreigners arriving. In the same way the host employee is prepared, similarly the foreign employee to be transferred gets prepared in order to acknowledge the culture, politics and the legal regulations of the country, where the mother company operates.

The involvement of human resources in both preparatory stages will create the opportunity that the international human resource management may function effectively in a global context. Regarding the ways through which the company recruits its employees, always in conformity with its strategies chosen to operate the below recruitment approaches are recognized:

i. Geographical recruitment; and

ii. Internal versus external recruitment.

The target of the geographical recruitment in searching for potential candidates might be extended in the global context if the company is following a geocentric strategy and is looking for the best talents in an international context. International firms, in cases of middle to low level management recruitment, decide to wage the recruitment selection in the bulk of the host country applications. However MNCs as Merck, 3M and IBM encourage the internal recruitment, following the Promotion Policy from within the company in the mother-country, as well as in the host country.

This is done because some conspicuous advantages are noticed:

i. When using an effective human resources information system, the most suitable candidates are more easily found saving time and cutting costs for research.

ii. Having such an efficient system, the possibility to increase the selection decisions validity is undoubtedly increased and made highly 'readable'.

iii. Promotion from within the company is an immediate indicator of the considerable level of retention and productivity and the promoted employees will view internal recruitment as a promise for career advancement within the organization.

iv. A major advantage is the fact that the existing employees do not need training because they know far better the operational policy and the company culture compared to a newcomer.

Harvey and Novicevik (2001) added these advantages to the list:

i. Internal candidates are easier to persuade in taking an assignment abroad.

ii. Since the internal candidates are far more familiar with the company culture, they know better the ways of internationalizing their careers.

iii. Internal candidates are more reliable in cases of expansion of control units, regarding the global operations.

On the other hand the external recruitment brings about several advantages, amongst which we can mention:

i. Brings in new ideas and new perspectives within the organization.

ii. Reduces the training costs when technically trained employees are recruited.

iii. Enables a greater, additional human resources work power, especially in expansion periods without being forced to tantalize the current internal staff.

iv. Facilitates objectivity and flexibility to make critical decisions without depending on previous experiences or past built relationships.





Despite the above mentioned advantages, there are considerable obstacles related to external recruitment, starting from the newcomer costs, to the organization culture adaptation.

## CONCLUSIONS

The human resource recruitment process is simultaneously a vitally professional depended process, and regionally bound. In order to wage the most appropriate recruitment strategies, especially the companies operating in an international context need to take care primarily of the mother-company needs and principles to be adhered to, and secondly for the daughter-company success. The process is greatly aided by the transference of the know-how from the mother-company to the respective branches, and on the other hand by building capacity in the host country.

Various strategies are employed in attaining the objective, starting from the ethnocentric to the polycentric, from the local (region-centric) to the geocentric, each and every single of them bearing their pros and cons when it comes to their application and a successful projection depends on the regional grounds, the professional needs, the technical requirements etc.

Nevertheless is up to the MNCs capacity to decide upon 'casting' the appropriate amount of responsibility to the daughter-company. As a result of study integration and accountability there are mentioned four strategies (Ethnocentric, Polycentric, Local (region-centric) and Geocentric).

In drawing comparisons the ethnocentric strategy suggests that maximum control over branches is indispensable in order to create integration and minimize costs. The polycentric and region-centric approaches admit that the local reaction is far more present and noticeable. Meanwhile the geocentric strategy is the ideal combination and it strives to simultaneously balance the local responsiveness to the global integration.

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# EFFECTIVENESS OF MOBILE BANKING SERVICES IN SELECTED COMMERCIAL BANKS IN RWANDA

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#### Abstract

This study established the effectiveness of mobile banking services in selected commercial banks in Rwanda. Descriptive design involving both qualitative and quantitative approaches was employed. Sample size of 227 was computed from a total population of 524 employees from the selected banks and the selection of respondents was done through systematic random sampling. The instruments of data collection used in this study included both structured questionnaires and interview. In data analysis, quantitative data was analyzed through frequencies and percentages for respondents', mean values were used to determine the effectiveness of mobile banking services in the selected commercial banks. Difference in effectiveness of mobile banking services was determined through One-Way-ANOVA. Research findings reveal that mobile banking services in the selected commercial banks were generally effective. The most effective item under mobile banking services was noted in security measures and privacy, followed by time management and convenience and the least effective was on the financial risk measures. This study also found out that there were significant difference in the effectiveness in mobile banking services among selected commercial banks. The bank with most effective mobile money services was Banque Populaire du Rwanda, followed by the Kenya Commercial Bank, next was Bank of Kigali, Equity Bank, and finally, ECOBANK. The study concluded that the mobile banking services in the selected commercial banks are effective. It recommended that the bank management should ensure that they continue strengthening issues concerning security and privacy in mobile banking; put in place promotion and sensitization programs for mobile banking services, as well as to adopt new and modern technology that meets the demands of ever changing trends of mobile banking services.

#### Key words

Security Risk; Financial Risk; Commercial banks; Rwanda.

#### INTRODUCTION

The concept of business performance can be traced right from USA before 20<sup>th</sup> century (Wright, 2002). However, during 20<sup>th</sup> Century, the scholar indicated that many firms in USA and Europe took collecting data, both internal and external; discerning patterns and meaning in the data (analyzing) and responding to the resultant information as significant steps towards improving business performance. Nevertheless, the challenge was that businesses sometimes took the trouble to laboriously collect data from non-automated sources. As they lacked computing resources to properly analyze the data, they often made commercial decisions primarily on the basis of intuition.

Later on, the idea of employing automation to improve business performance becomes the main focus throughout the world (Bodenhorn, 2000). According to him, as businesses started automating more and more systems, more and more data became available. However, collection often remained a challenge due to a lack of infrastructure for data exchange or due to incompatibilities between systems. Reports on the data gathered sometimes took months to generate. Such reports allowed informed long-term strategic decision-making. However, short-term tactical business decision-making often continued to rely on intuition.

In 1989, Howard Dresner, a research analyst at Gartner popularized "business intelligence" (BI) as an umbrella term to describe a set of concepts and methods to improve business decision-making by using fact-based support systems (Cowen, 2000). The author stated that performance management builds on a foundation of BI, but marries it to the planning-and-control cycle of the enterprise with enterprise planning, consolidation and modeling capabilities. Increasing standards, automation, and technologies to boost business performance have led to vast amounts of data becoming available and this later on led to the advent of mobile banking as a way of offering better choices to clients and improving performance.

The first mobile banking and payment initiative was announced during 1999 (Polasik & Wisniewski, 2009). According to the scholars, the first major deployment was made by a company called Paybox (largely supported financially by Deutsche Bank). The company was founded by two young German's (Mathias Entemann and Eckart Ortwein) and successfully deployed the solution in Germany, Austria, Sweden, Spain and the United Kingdom (UK). In 2003, more than a million people were registered on Paybox and the company was rated by Gartner as the leader in the field. Unfortunately Deutsche Bank withdraws their financial support and the company had to reorganise quickly (Polasik & Wisniewski, 2009).

Another early starter and also identified as a leader in the field of mobile banking was a Spanish initiative (backed by BBVA and Telephonica), called Mobi Pago (Laukkanen & Lauronen, 2005). The authors indicated that the name was later changed to Mobi Pay and all banks and mobile operators in Spain were invited to





join. The product was launched in 2003 and many retailers were acquired to accept the special USD payment confirmation. Because of the complex shareholding and the constant political challenges of the different owners, the product never fulfilled the promise that it had. With no marketing support and no compelling reason for adoption, this initiative is floundering at the moment.

Initiatives in Norway, Sweden and France never got traction. France Telecom launched an ambitious product based on a special mobile phone with an integrated card reader (Koenig-Lewis et al, 2010). According to the authors, the solution worked well, but never became popular because of the unattractive, special phone that participants needed in order to perform these payments. Since 2004, mobile banking and payment industry has come of age. Successful deployments with positive business cases and big strategic impact have been seen recently.

Mobile banking is being adopted all over the world in different ways (Eriksson & Nilsson, 2007). The writers also noted that in developing countries, mobile banking solutions have been deployed as a means of extending financial services to the community previously known as the "unbanked" or "underbanked," which is estimated to be as much as 50% of the world's adult population, according to Financial Access' 2009 Report "Half the World is Unbanked" (Addison-Wesley et al, 2008). According to the authors, since these payment networks are often used for micropayments, the use of mobile banking in developing countries has attracted public and private funding by organizations such as the Bill and Melinda Gates Foundation, USAID and MercyCorps.

In Africa, the history of mobile banking is of recent. In April 2007, following a student software development project from Kenya, Safaricom launched a new mobile phone based payment and money transfer service, known as M-Pesa (Mas & Morawczynski, 2009). The service allows users to deposit money into an account stored on their cell phones, to send balances using SMS technology to other users (including sellers of goods and services), and to redeem deposits for regular money. Users are charged a small fee for sending and withdrawing money using the service. M-Pesa has spread quickly, and has become the most successful mobile phone based financial service in the developing world (Githahu, 2012). The author noted that by 2012, a stock of about 17 million M-Pesa accounts had been registered in Kenya.

Later on, mobile banking was launched in Tanzania by Vodacom in 2008 but its initial ability to attract customers fell short of expectations (Staff Writer, 2013). According to the writer, in 2010, the International Finance Corporation released a report which explored many of these issues in greater depth and analyzed the strategic changes that Vodacom has implemented to improve their market position, as a result, M-Pesa in Tanzania had five million subscribers by May, 2013. As the

stock of mobile banking has greatly risen, there seems to some evidence that this type of banking has affected the performance of commercial banks and this is the major subject of this study.

Mobile Banking refers to provision and availment of banking and financial services with the help of mobile telecommunication devices (Lassar et al, 2005). The scope of offered services may include facilities to conduct bank and stock market transactions, to administer accounts and to access customized information. Similarly, Zhou et al, (2010) defines mobile banking as a system that allows customers of a financial institution to conduct a number of financial transactions through a mobile device such as a mobile phone or personal digital assistant. In this regard, mobile banking differs from mobile payments, which involve the use of a mobile device to pay for goods or services at the point of sale or remotely, analogously to the use of a debit or credit card to effect an EFTPOS payment.

The Theory of Perceived Risk (TPR) proposed by Raymond A. Bauer in 1960 is the guiding principle guide for this study. This theory suggests that in the context of consumer behavior, benefits are often accompanied by risks (Bauer, 1960). Perceived risk (PR) in this theory is regarded as a barrier to the dissemination of new innovations (Ostlund, 1974). Lee's (2009) results confirmed that PR had a stronger affect on an individuals' decision to use Individual Behavior (IB) in comparison to the benefit factor. Six types of PR have been researched in the context of IB: security, privacy, financial, social, time/convenience, and performance risk.

Since mobile banking is as an element of innovation and the six characteristics of TPR such as security, privacy, financial, social, time/convenience, and performance risk are both directly and indirectly related to business of performance, this theory became relevant to this study.

In Rwanda, mobile banking was launched in 2010 by MTN Rwanda (Kantengwa, 2011). Two years after launch, the author stated that mobile banking had boasted 415,000 registered customers, and over 170,000 active customers. According to her, as per now, many banks such as Banque Populaire du Rwanda, Bank of Kigali, Equity Bank, Kenya Commercial Bank, ECOBANK, Fina Bank, Cogebanque and URWEGO Opportunity Bank have all established mobile banking services for their clients.

While the initial mobile banking offering focused on domestic money transfers, Murgatroyd et al, 2012) indicated that mobile banking is now expanding and it is imperative for stakeholders to understand the financial needs to its users. The authors also pointed out that mobile banking services in Rwanda continue to rollout cost-friendly products to provide better options for all. They further noted that the users of mobile money in Rwanda are assured of security for their money on their mobile phones even when they lose their phones, another move that is likely to help market Mobile banking products in the country. The system ensures that only the





owner of the account has access to the wallet by ensuring that the correct PIN (a 4 digit secret code known only by the account holder) is put into the menu.

Recent studies by National Institute of Statistics of Rwanda (2013) on the use of mobile banking in Rwanda showed that the country is still an early market for mobile banking. Although mobile banking services in Rwanda seem to attract mostly banked customers, its impact on the performance of many of the commercial banks in the country has not recently been subjected to investigation. It is within this background that this study examined the impact of mobile banking in selected commercial banks in Rwanda. These selected commercial banks included Banque Populaire du Rwanda, Bank of Kigali, Equity Bank, Kenya Commercial Bank and ECOBANK. These banks were selected for this study because they are among the first ones to that adopted mobile banking in Rwanda.

## METHODOLOGY

In order to determine the effectiveness of mobile banking this study employed descriptive survey design. According to the pilot study carried out, the five commercial banks in Kigali City had a population of 524 and these were spread out in their various branches in the City. This target population comprised of the staff or employees and the managers of the banks. Bank employees and managers were targeted in this study because they are knowledgeable about issues regarding mobile banking in the last few years since mobile banking was introduced. The research sample size was 227 respondents and this was determined from the total population of 524 using the Slovene's formula. Both questionnaires and interviews guides were used in this study. The research used Statistical Package for Social Sciences (SPSS) software package version 16 to analyze data. Effectiveness of mobile banking services among the selected commercial banks was determined and interpreted as shown below.

Mean Range	Response Mode	Interpretation
3.26-4.00	Strongly Agree	Very effective
2.51-3.25	Agree	Effective
1.76-2.50	Disagree	Ineffective
1.00-1.75	Strongly disagree	Very Ineffective

As for the difference between effectiveness in mobile banking services among the selected commercial banks in Kigali City, mean differences, F-ratios and significant values at 0.05 were used. Qualitative analysis was based on the evidential reports obtained from the top managers of the selected commercial banks in Kigali City.

Qualitative data analysis began with data organization. After data organization, data was grouped in categories and this gave rise to creation of themes and patterns. Lastly, data was described, explained more deeply and exhaustively using logical process and conclusions as well as recommendations were also drawn.

## **RESULTS AND DISCUSSION**

Effectiveness of mobile banking in the selected commercial banks in Kigali City was determined using mean ranges.

TABLE 1. EFFECTIVENESS OF MOBILE BANKING SERVICES IN SELECTED COMMERCIAL BANKS IN RWANDA

	Mean	Rank	Interpretation
MOBILE BANKING			
Security and Privacy Measures			
Proper ways of verification of account are made before withdrawal and deposits are made	2.98	1	Effective
The secret code or pin numbers are only known by the account holder	2.89	2	Effective
Client's money remains safe in case one loses his/her phone	2.80	3	Effective
Through mobile banking, cases of fraud and theft are reduced	2.77	4	Effective
Mean Average of Security and Privacy Measures	2.86		Effective
Financial Risk Measures			
With the help of mobile banking, customers do not need to carry huge sums of physical money	3.11	1	Effective
Cases of robbery have also been reduced through mobile banking services	2.80	2	Effective
Errors causing financial loses can be rectified through mobile banking services	2.64	3	Effective
Clients are also updated on financial risks involved in mobile banking	2.31	4	Ineffective
Mean Average of Financial Risk Measures	2.72		Effective
Time/Convenience			
Customers can also access banking services any where	2.91	1	Effective
Customers valuable time is save when accessing bank services through mobile banking	2.87	2	Effective
Customers can access banking services anytime	2.84	3	Effective
With mobile banking, there are no cases of customers queuing at bank	2.79	4	Effective
Clients can also access loan services if they have mobile money accounts	2.77	5	Effective
Mean Average of Time/Convenience	2.84		Effective
Overall Mean Average	2.81		Effective





Mean ranges from 1.00-1.75 indicate that the mobile banking services in the selected commercial banks in Kigali was generally very ineffective; mean ranges from 1.76-2.50 show that the mobile banking services in the selected commercial banks in Kigali City was generally ineffective, mean ranges from 2.51-3.25 indicate that the mobile banking services in selected commercial banks in Kigali City was generally effective, and lastly mean ranges from 3.26-4.00 portray that the mobile banking services in selected commercial banks in Kigali were generally very effective. The summary on this is established in Table 1.

Basing on the overall mean average of 2.81, it can be noted that the mobile banking services in selected commercial banks in Kigali City are relatively effective.

Mobile banking services were most effectively rated in security and privacy measures as its mean average values were the highest at 2.86 as compared to the rest of the items. Security and privacy measures were generally high in the selected commercial banks because proper ways of verification of account are made before withdrawal and deposits are made (rated t the mean of 2.98), the secret code or pin numbers are only known by the account holder (rated at the mean of 2.89); clients money remains safe in case one loses his/her phone (rated at the mean of 2.80), and lastly through mobile banking, cases of fraud and theft are reduced (rated at the mean of 2.77).

After security and privacy measures, mobile banking services were noted to be more effective in time management and convenience and this was evident in its mean average of 2.84. Time management and convenience were noted to be more effective in mobile banking services in the selected commercial banks in Kigali City because customers can access banking services anywhere (rated at the mean of 2.91), customers valuable time is saved when accessing bank services through mobile banking (rated at the mean of 2.87), customers can access banking services anytime (rated at the mean of 2.84), there are no cases of customers queuing at bank (rated at the mean of 2.79), and lastly, clients can access loan services if they have mobile money accounts (rated at the mean of 2.77).

Mobile banking services less effectively rated in financial risk measures as its' mean average stands 2.72 and one of its items was lowly rated. Respondents agreed that with the help of mobile banking, customers do not need to carry huge sums of physical money (rated at the mean of 3.11), they also agreed that cases of robbery have also been reduced through mobile banking services (rated at the mean of 2.80), they continued to agree that errors causing financial loses can be rectified through mobile banking services (rated at the mean of 2.64). However, respondents disagreed that clients are updated on financial risks involved in mobile banking (rated at the mean of 2.31).

Before interviewing key informants about the effectiveness of mobile banking in their banks, they were asked about when they established mobile banking services. According to the information obtained the first two commercial banks that established mobile banking were Banque Populaire du Rwanda (BPR) and Kenya Commercial Bank (KCB) in 2010. These were followed by the Bank of Kigali (BK) and Equity Bank in 2011, and the last bank to establish mobile banking was ECOBANK as it started such services in 2012.

On why the banks started such services, informants mentioned the following reasons and they arranged in their frequencies beginning with the most mentioned reason to the least.

- (i) To cope up with the current trends with banking business being influenced by modern technology;
- (ii) To tap clients who were who want to access banking services anywhere and anytime;
- (iii) To reduce cases of related to theft and fraud;
- (iv) To reduce over queuing at the banks;
- (v) To be competitive in banking sectors; and
- (vi) To respondent to clients demand to mobile banking.

Some of the common services mentioned by those interviewed include alerts for account balances, sent payments, direct deposits, and a myriad of account activity. In some of the banks such as Banque Populaire du Rwanda (BPR) and Kenya Commercial Bank, users are allowed to sign up for these alerts through their online banking service for free. In most of the banks, text messaging may be used to communicate with bank personnel in lieu of e-mail or sending a message through an online web site's contact center. Further still, by texting certain codes or instructions, bank customers may be able to send donations from their deposit accounts. These donations are sent to charitable organizations or causes with which the bank has an established partnership. Additionally, full account access is given from the site, allowing users to monitor activity, request account transfers and make payments. More typical services include account transfers, bill payments and activity monitoring.

As one of the informants was quoted saying, "I use my phone for everything, including banking. My phone is my lifeline for my business and family communications as well. I have a business and have an application on my phone where I can receive credit card payments from customers who have mobile banking accounts. This is much cheaper than the traditional way of receiving credit card payments."

On the benefits of mobile banking, respondents said; mobile banking utilizes the mobile connectivity of telecom operators and therefore does not require an internet connection; with mobile banking, users of mobile phones can perform several





financial functions conveniently and securely from their mobile; you can check your account balance, review recent transaction, transfer funds, pay bills, locate ATMs, deposit cheques, manage investments, etc.; mobile banking is available round the clock 24/7/365, it is easy and convenient and an ideal choice for accessing financial services for most mobile phone owners in the rural areas; mobile banking is said to be even more secure than online/internet banking.

Relating these findings with the ones with those of questionnaires, it can be seen that the research findings through interview are somewhat consistent with the ones indicated by those administered through questionnaires, thus mobile banking services in the selected commercial banks are relative effective.

## Difference in the Level of Effectiveness Mobile Banking in Selected Commercial Banks in Kigali City

To establish whether there is significant difference in the effectiveness of mobile banking among selected commercial banks in Kigali. Significant differences in these items were determined by the use of both mean differences and F-test using One Way-ANOVA. This finding was also used to test the research hypothesis on the no significant difference in the effectiveness of mobile banking among selected commercial banks in Kigali;

Variable	Category of banks	Mean	F	Sig.	Interpretation	Decision on HO
Effectiveness of Mobile Banking	Banque Populaire du Rwanda (BPR)	2.9641	1.762E	0.000	Significant difference	Rejected
	Kenya Commercial Bank (KCB)	2.5561				
	Bank of Kigali (BK)	2.2456				
	EQUITY BANK	1.1838				
	ECOBANK	1.0521				
	Average Mean	2.06985				

TABLE 2. DIFFERENCE IN THE EFFECTIVENESS OF MOBILE BANKING IN THE SELECTED COMMERCIAL BANKS IN KIGALI

Table 2 indicates that there is significant difference in the effectiveness of mobile banking services among the selected commercial banks in Kigali City. This significant difference is indicated in the differences of mean values computed of 2.9641 for Bank Populaire Du Rwanda (BPR); 2.5561 for Kenya Commercial Bank (KCB); 2.2456 for Bank of Kigali; 1.1838 for Equity Bank; and finally, 1.0521 for ECOBANK and at the F ratio of 1.762E and significant value of 0.00. Thus, the commercial bank with the most effective mobile banking services in Kigali is Bank Populaire Du Rwanda (BPR) with the mean value of 2.9641 and the one with the

least effective mobile banking services is the ECOBANK with lowest mean value of 1.0521.

In this regarding, the findings therefore led to the rejection of null hypothesis 1(a) stating that there is no significant difference in the effectiveness of mobile banking services among the selected commercial banks in Kigali City.

According to majority of the key informants, there are indeed significant differences in the effectiveness of mobile banking services among different commercial banks. Number of mobile banking services offered by different banks explained the reason as to why there are differences in the effectiveness of mobile money services among banks. Though all the selected banks offer mobile banking services involving alerts for account balances, sent payments, direct deposits, and a myriad of account activity. Only users of Banque Populaire du Rwanda (BPR) and Kenya Commercial Bank could sign up for these alerts through their online banking service for free and four of that banks out of five could use text messaging to communicate with bank personnel in lieu of e-mail or sending a message through an online web site's contact center. Further still, only Bank of Kigali and Equity bank could use enable its clients to send donations from their deposit accounts through certain codes. Only Banque Populaire du Rwanda (BPR) allows users to monitor activity, request account transfers and make payments. However, all the banks were able to offer typical services including account transfers, bill payments and activity monitoring. These services offered by the banks suggest there are differences in effectiveness of services delivery.

# CONCLUSIONS

Basing on the research findings established that the mobile banking services in selected commercial banks in Kigali are effective though some improvements are still needed in the service in some banks. The banks were generally most effective in ensuring security measures and privacy in the services; ensuring time management and convenience for their clients and putting in place financial risk measures. On the difference in the level of effectiveness in mobile banking services and business performance among the five selected commercial banks in Kigali, this study concludes that there are significant differences in the effectiveness in mobile banking services among selected commercial banks.

## RECOMMENDATIONS

As this study proposes the following recommendations;

(i) The management of the banks should ensure that they continue strengthening issues security and privacy of clients with mobile banking accounts such that the number of clients accessing such services can increase and cases of frauds and theft of clients' money are minimized. This can be done through developing a private code or software that cannot easily be hijacked easily. If





this can be done, more clients will shift to mobile banking services and the banks will increase its profitability ratio, thus improving the business performance of clients.

(ii) The management of the selected commercial banks should also try to adapt to new and modern technology that meets the demands of ever changing trends of mobile banking services. This can be done by consultation and engaging in research. If this is done and customers are told about, the number of clients using mobile banking services is likely to increase and the banks will also be able to get more money for financial their investment programs or activities.

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# LOCAL GOVERNMENT EXPENDITURE, ECONOMIC GROWTH AND INCOME INEQUALITY IN SOUTH SULAWESI PROVINCE

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#### Abstract

This paper investigates the effect of local government expenditure on economic growth and the effects of local government expenditure and economic growth on income inequality over the period (2008-2013). We used cross-section and time series data (pooled data) in 24 regencies/ cities in South Sulawesi. To achieve this, were used Simultaneous equations with recursive model. The results suggest that the local government expenditure has a positive and significant effect on economic growth and income inequality. While, economic growth has a negative and significant effect on income inequality. Therefore, its recommended government should direct its expenditure toward the productive sectors such as agricultural sector because this sector more absorbed than other sectors.

#### Key words

Local Government Expenditure; Economic Growth; Income Inequality; Recursive Model.

## INTRODUCTION

Government expenditure is an important instrument for a government to control the economy. Economists argued that increases in government expenditure be effective instrument for increasing the economic growth. Therefore, government expenditure in the form of capital expenditure can give positive contribution to economic growth. Endogenous growth model (Barro, 1990), a productive Government expenditure will affect the rate of long-term growth. Government expenditure in the form of capital expenditures included the provision of infrastructure such as electricity, transportation, education and health. For example, the government expenditure on health and education raises the productivity of labor and increase the growth of national output. However, some scholars did not support the statement that the increase of government expenditure will create economic growth. They stated that the

increase on government expenditure will reduce the economic performance overall. For instance, in the attempt to finance rising expenditure, government may increase taxes. Higher income tax discourages individual from working for long hours or even searching for jobs. This will then reduce income and aggregate demand. Thus the government actions sometimes resulted in misallocation of resources and hinder the growth of national output. In fact, studies by Barro (1991), and Engen and Skinner (1992), suggested that large government expenditure have negative impact on economic growth.

The relationship between government expenditure and economic growth continues to results in the series of controversy among economic. Some authors argue that the impact of government expenditure on economic growth is negative or no significant (Loto, 2011; Ndjokou, 2013; Taban, 2010; Vu Le & Suruga, 2005). Others believe that impact is positive and significant (Alexiou, 2009; Chude & Chude, 2013; Nasiru, 2012; Okoro, 2013; Olulu et al, 2014).

Government expenditure is the means of government intervention in the economy who are considered most effective. During this time, the effectiveness of government expenditure was be measured by how much economic growth. Successfully advisability of economic development of a region, can be seen from the level of the community welfare marked by increasing consumption due to increased income. Results of research and statistical data, shows that despite the economic growth increased rapidly, but it still happens that high disparities.

In other cases, the discussion of inequality and economic growth issue continues and the main consensus comes from the idea that the income distribution in a country is traditionally assumed to shift from relative equality to inequality and back to greater equality as the develop country. Therefore, inequality will rise as some people move away from prevailing traditional activities, which yield a low marginal product, into more productive venture, i.e. as well known Kuznets hypothesis (Kuznets, 1955).

Based on the problems above, the focus of this study is the effect of local government expenditure in the form of capital expenditure to economic growth and income inequality regency/city in South Sulawesi Province.

# THEORETICAL AND EMPIRICAL REVIEW

## Linkage between Government expenditure and Economic Growth

Economic theory has shown how government expenditure may either be beneficial or detrimental for economic growth. In traditional Keynesian macroeconomics, many kinds of public expenditure, can contribute positively to economic growth through multiplier effects on aggregate demand. From the Keynesian thought, public expenditure can contribute positively to economic growth. Hence, the increasing the





government consumption was likely leading to an increase in employment, profitability and investment through multiplier effects on aggregate demand. As a result, government expenditure augments the aggregate demand, which provokes an increased output depending on expenditure multipliers (Chude & Chude, 2013).

From an empirical perspective of the evidence generated becomes more confusing as a number of studies favor one or the other approach. The mains focus of this paper will be briefly reviewed the existing empirical literature rather than explicate the intricacies of theoretical issues. A number of studies have been focused on the relation between government expenditure and economic growth in developed and developing countries like Indonesia. The results varied from one study to another. Barro (1991) in the cross section study of 98 countries for a period spanning from 1960 to 1985, used average annual growth rates in real per capita GDP and the ratio of real government consumption to concluded real GDP that the relation between economic growth and government consumption was negative and significant. Additional evidence suggested that growth rates were positively related to measures of political stability and inversely related to a proxy for market distortions. Further estimates provided by Engen and Skinner (1992) for 107 countries over the period 1970-1985, suggested that the increasing a balanced-budget in government expenditure and taxation is predicted to reduce output growth. The same thing, Taban (2010) examined government expenditure and economic growth for the period 1987:Q1 to 2006:Q4 and applied bounds testing approach and MWALD Granger causality test. The author found that the share of government expenditure and share of investment to GDP are negative impacts on economic growth in the long term.

Moreover, Ndjokou (2013) evaluated the link between fiscal policy and growth. For this purpose, he evaluated the influence of the level of public expenditures and revenues as well as the composition of the budget on economic growth. Relying on data provided by African Development Indicators, our sample is taken of 9 countries of the CFA Franc Zone over the period 1990-2010. By using focus on panel data analysis use general least square (GLS) technique, his analysis leads to the following the public expenditures significantly reduced growth.

The findings above, however, have been challenged by numerous other works. Alexiou (2009), investigated the relationship between economic growth and government expenditure in the South Eastern Europe. For the first time two different panel data methodologies has been applied to seven transition economies in the South Eastern Europe (SEE), generating significant results, which, if considered, may enhance the economic performance of the countries in the region. More specifically, the evidence generated indicate that four out of the five variables used in the estimation i.e. government expenditure on capital formation, development assistance, private investment and trade-openness all have positive and significant effect on economic growth.

Vu Le and Suruga (2005) investigated the simultaneous impact of public expenditure and foreign direct investment (FDI) on economic growth from a panel of 105 developing and developed countries for the period 1970 to 2001 and applied fixed effects model and threshold regression techniques. Their main findings were categorized into three: FDI, public capital and private investment play roles in promoting economic growth. Secondly, public non-capital expenditure has a negative impact on economic growth and finally, excessive spending in public capital expenditure can hinder the beneficial effects of FDI.

The study by Loto (2011), investigate the growth effect of government expenditure on economic growth in Nigeria over the period of 1980 to 2008, with a particular focus on sectorial of expenditure. He investigates the growth effects of government expenditure in Nigeria over the period of 1980 to 2008, with a particular focus on sectorial expenditures. Five key sectors chosen were (security, health, education, transportation, and communication and agriculture). The variables be tested for Stationary-ties and Co-Integration analysis also the carried out using with the Johansen Co-Integration technique, Error-Correction test also performed. The results showed that in the short-run, expenditure on agriculture found negatively related to economic growth. The impact of education though also negative was not significant. The impact of expenditure on health also found positively related to economic growth. Though expenditures on national security transportation and communication were positive related to economic growth, the impacts were not statistically significant.

Moreover, Chude and Chude (2013), investigates the effects of public expenditure in education on economic growth in Nigeria over a period from 1977 to 2012, with particular focus on disaggregated and sectorial expenditures analysis. Government expenditures are very crucial instruments for economic growth at the disposal of policy makers in developing countries like Nigeria. The objective of this study is to determine the effect of public expenditure on economic growth in Nigeria using Error Correction Model (ECM). The study used Ex-post facto research design and applied time series econometric technique to examine the long and short run effects of public expenditure on economic growth in Nigeria. The results indicate that Total Expenditure Education is highly and statistically significant and have positive relationship on economic growth in Nigeria in the long run. The result has an important implication in terms of policy and budget implementation in Nigerian.

Okoro (2013), using time series data of 32 years period (1980-2011), investigated the impact of government expenditure on the Nigerian economic growth. Employing the ordinary least square of multiple regression analysis to estimate the model specified. Real Gross Domestic Product (RGDP) was adopted the dependent variable while government capital expenditure (GCEXP) and government recurrent expenditure (GREXP) represents the independent variables. With the application of Granger





Causality test, Johansen Co-integration Test and Error Correction Mechanism, the result shows that there exists a long-run equilibrium relationship between government expenditure and economic growth in Nigeria. The short-run dynamics adjust to the long-run equilibrium at the rate of 60% per annum.

Nasiru (2012) investigates the relationship between government expenditure (disaggregated into capital and recurrent) and economic growth in Nigeria over the period (1961-2010). It employs the Bounds Test approach to co-integration based on unrestricted Error Correction Model and Pair Wise Granger Causality tests. The results from the Bounds Test indicate that there exists no long-run relationship between government expenditure and economic growth in Nigeria only when real GDP as dependent variable. In addition, the causality results reveal that government capital expenditure granger causes economic growth. While, no causals relationship was be observed between government recurrent expenditure and economic growth.

Another study by Olulu et al, (2014) investigates the empirical relationship between government expenditure and economic growth in Nigeria. The ordinary least square (OLS) was be applied to ascertain the short-run relationship between variables, however, the Augmented Dickey Fuller (ADF) test, was used to examine long-run relationship between variables in the equation. Government expenditures disaggregated unto total expenditures, public debt expenditure, expenditure on health and government expenditure on education. Results of the test show that there is an inverse relationship between government expenditures on health and economic growth; while government expenditure on education sector, is seen to be insufficient to cater for the expending sector in Nigeria. It also discovered that government expenditure in Nigeria could increase foreign and local investments.

## Linkage between Economic Growth and Inequality

In recent decades, economists are very interested to see the relationship between growth and inequality. However, there are different views on these linkages. Most economists, views that the relationship between the two is a causal relationship reciprocal: inequality affects o the growth and reversed the growth was also affects inequality (Jha, 1999; Barro, 2000). Starting with the Galor and Zeira (1993), followed by Alesina and Rodrik (1994), Perotti (1994), Persson and Tabellini (1994), Li and Zou (1998), Forbes (2000), Arjona et al, (2001), Lundberg and Squire (2003), Helpman (2004), Tachibanaki (2005), Sukiassyan (2007), Aghion and Howitt (1998), Huang et al, (2009), further supports the view that inequality affects growth. The theoretical basis is the income inequality will affect the amount of investment, both physical and human, which will influence the rate of growth.

Despite the extensive existing literature in income inequality and economic growth, there remains considerable disagreement on the effect of inequality on economic

growth. Existing literatures find either a positive or a negative relationship. There is a voluminous theoretical literature on the impact of inequality on economic growth. In according with the theoretical literature, the empirical literature also produces ambiguous findings. For instance, Alesina and Rodrik (1994), Perotti (1994), Persson and Tabellini (1994), Lundberg and Squire (2003); Helpman (2004), Tachibanaki (2005), and Sukiassyan (2007) that is, the relationship between inequality and growth results to be negative. However, the above findings have consensus opposite (Li & Zou, 1998; Aghion & Howitt, 1998; Forbes, 2000; Arjona et al, 2001; Huang et al, 2009), inequality stimulates economic growth.

Barro (2000) concludes that the effect of income inequality on economic growth is different contingent on the state of economic development. Income inequality in poor countries retards economic growth, but income inequality in rich countries encourages economic growth. Using the panel data, Barro (2000), shows that the effect of income inequality on economic growth was negative in countries with GDP per capita below 2070, and is conversely positive in countries with GDP per capita over 2070. Examining the two pairs of samples mentioned above, if we regard South American countries and Asian countries as examples of developing countries and the France and United State as examples of developed countries, the case of these samples is consistent with Barro (2000)'s conclusion. Moreover, Chan et al (2014) examines the simultaneous evolution of income inequality and economic growth using the provincial data from China. The VAR and system-GMM (ala Arellano-Bond) statistical methods are employed. They find that inequality reduction from faster provincial growth is statistically insignificant. But, high income inequality within the province raises the provincial growth rate.

Another study by Risso and Carrera (2012), study the long-run relationship between economic growth and income inequality in China during the pre-reform (1952-1978) and post-reform (1979-2007) periods, it will be done via cointegration analysis. The result show that significant and positive long-run relationship between inequality and economic growth in both periods was found. Holzner (2011), analyses the joint determinants of inequality and growth with a special emphasis on public spending structures in transition. He find especially government expenditures on subsidies to be negatively correlated with both inequality and growth, as more generally government expenditures seem to act counter-cyclically and inequality reducing.

However, on the other hand economists most argued precisely the opposite. They further believe that growth that creates inequality (Kuznets, 1955; Ravallion, 1995; Deininger & Squire, 1998; Dollar & Kraay, 2002; Adams, 2003). Their theoretical argument is the growth would lead to any community groups have benefited, but the group that controls the factors of production and capital usually benefit relatively larger than the other groups (workers).

Peters (2010) examined how sectoral growth in India affects inequality with an extended analysis of the Social Accounting Matrix (SAM). The results show that only





agricultural growth reduces inequality, while growth in heavy manufacturing and services sectors raises inequality. His study supports Ravallion and Datt (1996) show that growth in the primary and tertiary sector reduced poverty, while growth in the secondary sector did not. They relate this to growth of the capital-intensive production in manufacturing, which was not beneficial to the poor. Similar conclusions was drawn in Khan and Thorbecke (1989) and James and Khan (1997). Their study confirmed that traditional labor-intensive technologies are more egalitarian than modern capital-intensive technologies. The reason is the production under traditional technology creates more employment, directly and indirectly, and more income for rural households.

Acemoglu and Robinson (2002) found that growth may results in an "East Asian Miracle" with high output and low inequality or with low output and high inequality. Different findings Huang et al, (2009), investigated the long-run effect of growth volatility on income inequality using a comprehensive panel of annual US state-level data during 1945-2004. Using the pooled mean group (PMG) estimator, they find evidence supporting the hypothesis that larger growth volatility positively and significantly associated with higher income inequality.

Burtless (2003) compared economic growth and inequality between the US and other G7 countries and found that the US has more economic growth and more inequality than these countries. He attributed the US situation to less regulation in the market place and less assistance to the needy.

# **METHODOLOGY AND DATA**

This study was conducted to determine the relationship of local government expenditure, economic growth and inequality by using panel data in 24 regencies / cities in South Sulawesi Province during 2008-2013. To investigate that, the study uses Simultaneous equations with recursive model (Gujarati, 2003). The general specifications equation models used in this study are:

$$Y_1 = \beta_1 + \beta_2 X + \mu_1 \tag{1}$$

$$Y_2 = \beta_3 + \beta_4 X + \beta_5 Y_1 + \mu_2$$
 (2)

Where, X is the government expenditure (GS),  $Y_1$  is the economic growth (EG) and  $Y_2$  is the income inequality (INEQUALITY). With, cov ( $\mu_1$ ,  $\mu_2$ ) = 0, that error to the same period in different equations are uncorrelated (zero contemporaneous correlation).

To avoid differences in understanding the variables studied, the operational definition of each variable in this study is as follows:

1. Local Government expenditure referred to in this research is the realization of capital expenditure regencies and cities in South Sulawesi province. Capital

expenditure measured from ratio of capital expenditure to local government expenditure.

- 2. Economic growth is the relative change in the real value of gross domestic product by counties and cities within a given period. The magnitude of the economic growth be expressed in terms of percent.
- 3. Income inequality is the gap of income per capita between regencies / cities were be measured using Entropy Theil Index (Ying, 2000) as follows:

$$I(y) = \sum {\binom{y_j}{Y}} x \, Log \left(\frac{\frac{y_j}{Y}}{\frac{X_j}{X}}\right)$$
(3)

Where:

- I(y) = Entropy Theil Index
- Yj = Income per capita of the regency/city j
- Y = Income per capita Province
- Xj = Total population of the regency/city j
- X = Total Population Province

## **EMPICAL RESULT AND DISCUSSION**

Refers to a system of equations and econometric estimation results in the Table 1. The discussion in this study is divided into two parts: the effect of local government expenditure on economic growth and the effect of local government expenditure and economic growth on income inequality.

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	6.699909	0.359805	18.62093	0.0000*
C(2)	0.024248	0.014236	1.703319	0.0496**
C(3)	17.10242	3.969957	4.307960	0.0000*
C(4)	0.468801	0.085527	5.481344	0.0000*
C(5)	-1.867106	0.499091	-3.741014	0.0002*
Determinant residual covariance 142.1621				
Equation: EG=C(1)+C(2				
Equation: INEQUALIT				

TABLE 1. RESULT OF RECURSIVE MODEL

Note: (\*) are indicates 1% level of significant (0.001) (\*\*) are indicates 5% level of significant (0.005)

## The Effect of Local Government Expenditure on Economic Growth

The estimation results influence of local government expenditure on economic growth as shown in Table 1, shows that local government expenditure has a positive and significant effect on economic growth regencies / cities in South Sulawesi province. This is shown by the local government expenditure estimated coefficient is 0.0242 and statistically significant at the 5% level (probability 0.0496). This value indicated that





each increase in local government expenditure by 10% would increase economic growth regencies / cities with 0.242% in South Sulawesi Province.

The estimation results of the influence of local government expenditure on economic growth was shown in Table 1, show that local government expenditure has a positive and significant effect on economic growth in the regencies / cities in the province of South Sulawesi. This is shown by the coefficient estimates of local government expenditure is 0.024 and significantly statistically significant at 5% level (probability 0.0496). This value implied that any increase in local government expenditure by 10% would increase economic growth regencies/city by 0.24% in South Sulawesi Province.

These findings support the results of a study conducted by Vu Le and Suruga (2005), Alexiou (2009), Chude and Chude (2013) who found that the increase in government expenditure will boost economic growth. The findings fit the theory Keynesian, public expenditure can contribute positively to economic growth. Hence, the increasing the government consumption is likely to lead to an increase in employment, profitability and investment through multiplier effects on aggregate demand. As a result, government expenditure augments the aggregate demand, which provokes an increased output depending on expenditure multipliers.

However, these results differ from the findings of Barro (1991), Engen and Skinner (1992), Taban (2010) and Ndjokou (2013) which states that the government expenditure has a negative impact on economic growth. While the results study by Nasiru (2012) do not support them since he did not found correlation between government expenditure and economic growth.

# The Effect of Local Government Expenditure and Economic Growth of Income Inequality

The estimation results of the influence of local government expenditure and economic growth on income inequality was shown in Table 1. The estimation in Table 1 show that local government expenditure has a positively and significant effect on inequality. This was indicated by the regression coefficient of local government expenditure amounting to 0.4688 with statistical significance at 1% level (probability 0.0000). This value indicates that each 10% increase in local government expenditure will increase 4,688 % of income inequality. It was indicates that the regional development financed from local government expenditure cannot be enjoyed by all segments of society. One reason is the local governments tend to pursue economic growth without regard to inequality, as an example of local government expenditure to support development in the agricultural sector was still be relatively small compared to other sectors. While the agricultural sector to absorb more labor compared to other sectors. Resulting in income inequality occurred in people who live in towns and villages as well as those working in the agricultural sector with other sectors.

While the estimation results influence of economic growth on income inequality (Table 1), it shows that economic has negative and significant effect on income inequality regencies / cities in South Sulawesi province. This is shown by the economic growth estimated coefficient (-1.867) which is statistically significant at 1% level (probability 0.0002). This value indicates that each increase in economic growth by 1% would reduce income inequality regencies / cities with 1.867% in South Sulawesi Province. This study supports the results of Peters (2010) who examined how the growth affects income inequality and showed that only agricultural sector growth reduces inequality. So did Ravallion and Datt (1996) showing that the growth in the primary and tertiary sector reduced poverty. Given the economic structure of South Sulawesi province is dominated by the agricultural sector with a 35.84% contribution to Gross domestic regional product. So did the labor force in the province of South Sulawesi more absorbed in the agricultural sector than in other sectors. Activities in the agricultural sector more use of labor- intensive than capital intensive. Thus, the results of this study are also in accordance with Khan and Thorbecke (1989) and James and Khan (1997), confirms that traditional labor-intensive technologies are more egalitarian than modern capital-intensive technologies. The reason is the production under traditional technology creates more employment, directly and indirectly, and more income for rural households. With increasing of production in the agricultural sector will lead to increase of people's income, so the inequality will reduce.

# CONCLUSION

In this paper, we examined the relationship between local government expenditure, economic growth and income inequality. Existing literature results, both positive and negative, are reported. There remains a disagreement on effect of local government expenditure on economic growth and inequality and effect of the economic growth on in economic growth.

The main results of this paper are the following:

- The local government expenditure has positive and significant effect on economic growth regency/city in South Sulawesi Province. The findings fit the theory Keynesian that public expenditure can contribute positively to economic growth;
- (ii) The local government expenditure effect on income inequality was positive and significant; and
- (iii) There is negative and significant effect of economic growth on income inequality.

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