FACTORS AFFECTING INCLUSIVE INSURANCE MARKET DEVELOPMENT IN AFRICA

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ABBREVIATIONS

Gross National Income **(**GNI)

Gross Domestic Product (GDP)

Non-Governmental Organizations (NGO's)

American International Group (AIG)

National Association of Insurance Commissioners (NAIC)

United States of America (USA)

International Telecommunication Union (ITU)

Ordinary Least Squares (OLS)

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EXECUTIVE SUMMARY

Inclusive Insurance (aka as microinsurance) typically refers to insurance services offered primarily to clients with low income and limited access to mainstream insurance services and other means of effectively coping with risk. More precisely it is a means of protecting low-income people against specific risks in exchange for a regular payment of premiums whose amount is proportional to the likelihood and cost of the relevant risk .[2] This paper uses the terms inclusive insurance and microinsurance interchangeably. This study focuses on identifying the key factors affecting the inclusive insurance market development using data covering 22 African countries for the years 2014 – 2018. Insurance penetration and microinsurance density are used as proxies for market development of inclusive insurance. This paper can be viewed as a somewhat surprising refutation of conventional wisdom of what factors support microinsurance development. Not surprisingly, business freedom, and investment freedom are the institutional factors influencing microinsurance development in Africa. GNI per capita was the economic factor that positively affect to market development. Many institutional factors did not affect the inclusive insurance market development as one would expect. Individual internet usage had a remarkably strong positive influence. A surprising negative influence was found among factors such as inflation, mobile-phone subscriptions, and rural population, and the inclusive insurance market development. Some implications of these key finding are discussed. All of these somewhat confounding findings lead to a final conclusion that further research is required to better understand inclusive insurance and market development. Future research should consider adding Hofstede cultural dimensions, life expectancy at birth, microinsurance growth rate, and corruption perception index, to the model.

[2] https://microinsurancenetwork.org/microinsurance-and-risk

KEY WORDS

Microinsurance Density, Market Development, Insurance penetration, Inclusive Insurance

1.1 INTRODUCTION

Inclusive Insurance (aka as microinsurance) typically refers to insurance services offered primarily to clients with low income and limited access to mainstream insurance services and other means of effectively coping with risk. Microinsurance activities started in early 1990s primarily as a form of corporate social responsibility (CSR), as a charity, or a complement to existing microcredit loan operations and services were delivered through a variety of institutional channels including the Community Based Organizations, micro financial institutions, etc. (AIG, 2009).

Access to insurance products in developing countries remain low, between 3 and 7 percent of the low and middle income in developing countries (Microinsurance Network 2020). Considering the Africa continent in 2017, 15 million people were insured by microinsurance products with a gross premium of US$ 420 million (Microinsurance Network, 2019).

Microinsurance policies are often written in simple languages with little or no exclusions. Considering the weak insurance culture, microinsurance activities are subject to high risk and vulnerability. A growing number of insurers are tapping into markets in developing countries through microinsurance projects (Insurance Information Institute, 2020), making microinsurance activities essentially increasing and as such making diverse research interest by researcher in recent decades.

This study focuses on identifying the key factors that affect microinsurance market development using data for 22 countries in Africa at covers the period 2014-2018. The explanatory variable include demographic factors, economic factors, and institutional factors collected for the study.

1.2 Significance of the study.

The current study contributes to existing literature, and the development of microinsurance in Africa highlighting the implications for policymakers wishing to scale up inclusive insurance market development in Africa. This could help investors to ensure proper allocation of their resources to minimize investment losses.

The remaining parts of this paper include the theoretical background and the model in section 2, followed by data, model estimation results and discussion in section 3, and ends with the conclusion and references in session 4

2. THEORETICAL BACKGROUND AND THE MODEL

2.1 Theoretical Background

This work relates with a work done by Park, Borde & Choi (2002) who researched on determinants of insurance pervasiveness via a cross-national analysis. The multilinear regression model was used with the specifications of the model estimated using Ordinary Least Squares (OLS). The independent variables used in this research were demographic factors, economic factors, and institutional factors with insurance penetration and insurance density used as the dependent variables. The cultural and sociopolitical variables and their significant influence on insurance pervasiveness were further included in the analysis. Key findings from this work show

that, masculine-feminine dimensions of the national culture, aggregate income, government regulation, and the sociopolitical stability statistically significantly affect insurance penetration.

Another work that relates with the current study is that conducted by Elango & Jones (2011) which also focused on drivers of insurance demand in emerging markets. They used the panel regression model using demographic factors, economic factors, and institutional factors as dependent variables with insurance density, and insurance growth rate as the dependent variables. They found that demographic factors explained a greater variance relative to economic and institutional variables for insurance density, while economic factors explained the greatest variance in terms of insurance growth rates.

2.2 Hypothesis used for the study.

The hypothesis formulated for this study include:

- **Hypothesis 1**: Demographic factors positively influence microinsurance development.
- **Hypothesis 2**: Economic factors positively influence microinsurance development.
- **Hypothesis 3**: Institutional factors positively influence microinsurance development.

2.3. The Model

A multilinear regression model is adopted in determining the influence of key factors on microinsurance market development (e.g. Park, Borde & Choi, 2002; Elango & Jones, 2011). The proxies used for this study are insurance penetration, and microinsurance density[3], Figure 1. Shows the factor categories influencing microinsurance market development used in the model.

[3] Microinsurance density is used to represent the degree of microinsurance demand or consumption, and insurance penetration is used to represent the degree of insurance activities relative to the size of the economy of Africa.

$$Microinsurance\ Market\ Development_{it} = \alpha_t + \beta_j(\sum_{\tau} Factor\ Category_{\tau it}) + \gamma_{it}$$

Where $i = 1, 2, \ldots$ ...represent the countries considered; $t = 1, 2\ldots\ldots$ represents the time; β_j where $j = 1, 2\ldots\ldots$ represent coefficients of factors; $\tau = 1, 2, 3$ factor category considered; α_t represents the intercept; and γ_{it} represents the error term.

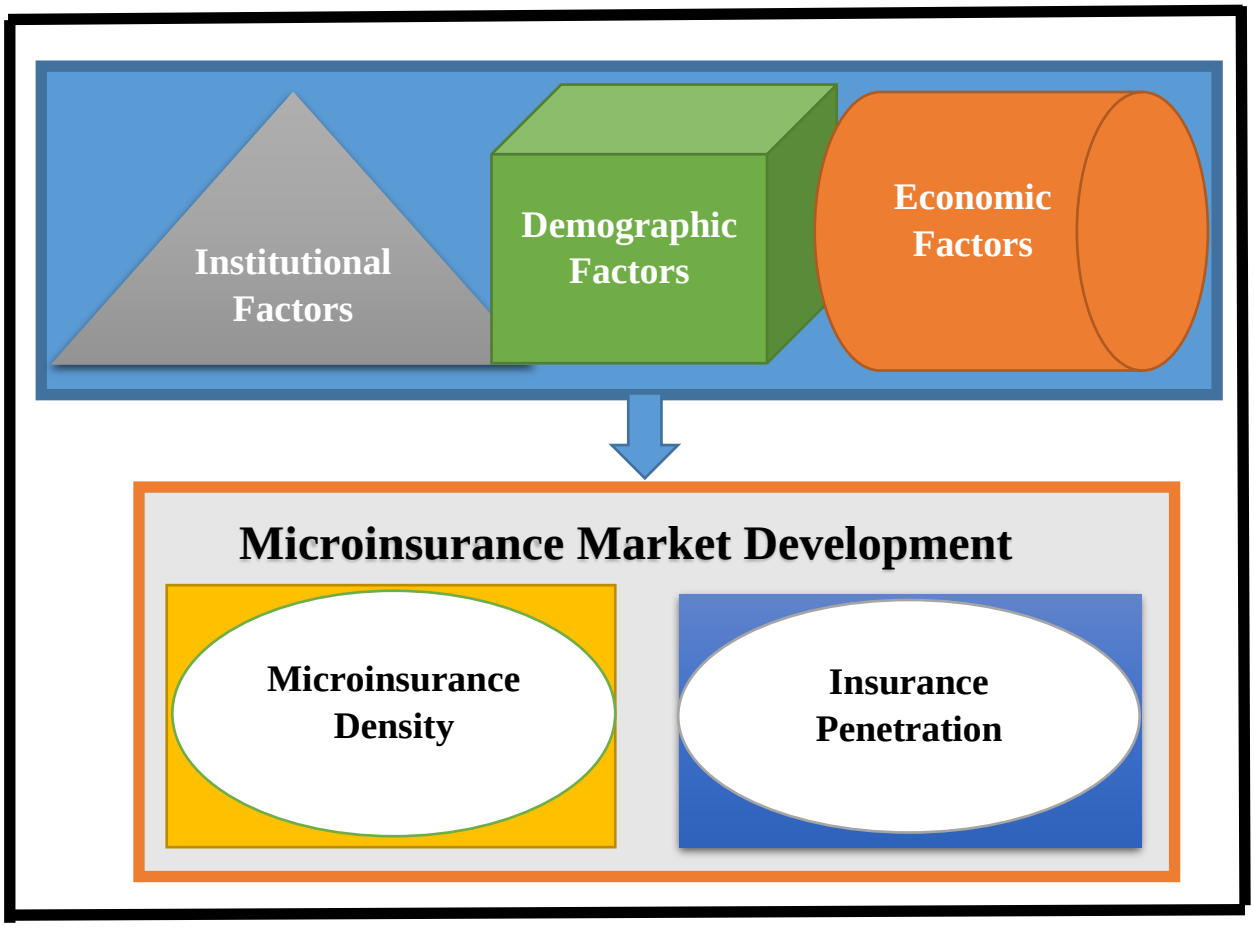

Figure 1. Factors Influencing Microinsurance Market Development in Africa with proxies used.

- Demographic Factors: These are distribution of individuals in a given society which are measured in terms of population, age, sex, education, etc., which affect the buying patterns within that society.

- Economic Factors: They cover the overall economic situation of a particular county. They determine whether underlying demand profile could be sustained by the options.
- Institutional Factors: According to (North, 1981), they are human device constraints that structure human behavior. Elango & Jones, 2011 explains institutional variables as a countries' institutional structures that are the formal or informal mechanisms that governs human behavior. They include the legal system in place to protect property rights of the people and companies in the country.

3 DATA, MODEL ESTIMATION RESULTS AND DISCUSSION

3.1 Data

The data used for this study consists of 50 observations collected from 22 African countries for the years 2014 to 2018. It was collected from the World map of Microinsurance data base, and a range of public sources based on extent literature and data availability for African countries. The countries from which the data were collected are shown in table 1 below.

Table 1: Countries included in the study.

Benin	Malawi	South Africa
Burkina Faso	Morocco	Tunisia
Botswana	Mozambique	Togo
Egypt	Namibia	Uganda
Ethiopia	Niger	Zambia
Ghana	Nigeria	Zimbabwe
Ivory Coast	Rwanda	
Kenya	Senegal	

Table 2 below shows the variables, python code for the variable, and data sources for each variable used for the study. All analysis were done using Python.

Table 2: Variables used for the study and their sources

VARIABLE CATEGORY	VARIABLES	PYTHON CODE	SOURCES
DEMOGRAPHIC	Population Total	PSIZE	**World Development Indicators**
	%Population Poor	PPOOR	
	% Population Living in Rural Areas	PPLRA	
	Mobile-cellular telephone subscriptions.	MTSUBS	
	% individual using internet	PIUI	**ITU**
ECONOMIC	GNI per Capita	GNIPC	**World Development Indicators**
	Inflation	INFLAT	
	Real Interest Rate	REALIR	
	Net Income Per Capita (Annual % Growth)	NETIPC	
	GDP of Merchandised Trade	GDPOMT	
	Microinsurance Penetration (Premium Volume / GDP)	MICINSPEN	**World Map of Microinsurance**
	Microinsurance Density (Total Premium/ Total Population)	MICROIDENSITY	**World Map of Microinsurance**
INSTITUTIONAL	Business Freedom	BUSFRD	**Heritage Foundation (various years)**
	Property Right	PROPR	
	Investment Freedom	INVESTFRE	
	Fragile State Index	FRAGSTAT	**Fund for peace**

Note: Number of observations = 50

Data sources links:

- World Development Indicators: ***https://databank.worldbank.org/source/world-development indicators***
- World map of Microinsurance**:** ***http://worldmapofmicroinsurance.org/***
- ITU: ***https://www.itu.int/en/ITUD/Statistics/Pages/stat/default.aspx***
- Heritage Foundation (various years): ***http://www.heritage.org/index/explore***
- Fund for peace: ***https://fundforpeace.org***

3.2 MODEL ESTIMATION RESULTS AND DISCUSSION.

Tables 3 and Table 4 show the summary results of the analysis. All model assumptions4 are checked and certified. These ensure that all estimated parameters and p-values are not misleading.

3.2.1 Microinsurance Density

Table 3 is the summary results of the OLS regression model for the microinsurance density used as a measure of microinsurance demand or consumption in Africa. The key findings from the analysis show that, population total, mobile-cellular telephone subscriptions, and percentage of population living in rural areas are the demographic factors that are statistically significant at 10%, 5% and 1% level respectively, and negatively influencing microinsurance consumption. This implies that a 1% increase in each of population total, mobile-cellular telephone subscriptions, and percentage of population living in rural areas result to a fall in microinsurance demand of respectively 1.0478%, 3.37%, 13.24%. These refute our first hypothesis posed earlier in this paper.

[4] The assumption of Linearity, autocorrelation, heteroscedasticity, mean of the residuals approximately equal to zero and normality.

Table 3: Summary results for microinsurance density used as the dependent variable

OLS Regression Results

Dep. Variable:	MICROIDENSITY	R-squared:	0.594
Model:	OLS	Adj. R-squared:	0.415
Method:	Least Squares	F-statistic:	3.313
Prob(F-statistic):	0.00186	Log-Likelihood:	-103.60
Observations:	50	AIC:	239.2
Df Residuals:	34	BIC:	269.8

	coef	std err	t	P>|t|	[0.025	0.975]
PSIZE	-0.0105	0.022	-1.750	0.089*	-0.023	0.006
PPOOR	0.0042	0.026	0.164	0.871	-0.048	0.056
MTSUBS	-0.0337	0.013	-2.563	0.015**	-0.060	-0.007
PPLRA	-0.1324	0.042	-3.168	0.003***	-0.217	-0.047
PIUI	-0.0762	0.050	-1.528	0.136	-0.178	0.025
NETIPC	0.0477	0.096	0.499	0.621	-0.147	0.242
INFLAT	-0.1303	0.062	-2.092	0.044**	-0.257	-0.004
REALIR	-0.0941	0.062	-1.525	0.136	-0.220	0.031
GDPOMT	0.0253	0.024	1.059	0.297	-0.023	0.074
BUSFRD	0.0192	0.048	0.401	0.691	-0.078	0.117
const	20.9333	12.804	1.635	0.111	-5.088	46.955

Omnibus:	0.081	Durbin-Watson:	1.944
Prob(Omnibus):	0.960	Jarque-Bera (JB):	0.277

Note: 1. PROPR, INVESTFRE, GNIPC, FRAGSTAT are included but not reported because they are statistically not significant.

2. * **$p \leq 0.01$, **$p \leq 0.05$, *$p \leq 0.10$

Further, inflation is the only economic factor that impacts microinsurance demand negatively and is statistically significant at 5% level. This implies that, a 1% increase in inflation will result to a fall in microinsurance demand by 13.03%, hence refuting our second hypotheses. This opposes the earlier findings of Beck & Webb, 2003. None of the institutional variables statistically significantly contribute to the model hence the third hypothesis is rejected. This model is statistically significant with a p-value of 0.00186, and a pseudo R-squared of 0.594. This implies that 59% of the microinsurance density is explained by the variability in the independent variables of the model. All other variables do not contribute statistically significant to the model.

3.2.2 Insurance Penetration

Table 4 shows the summary results of the OLS regression model for insurance penetration used as a gauge of measure of development of microinsurance in Africa relative to the size of the African economy. The results show that percentage of individual using internet is the only demographic factor statistically significant at 5% level, contributing positively to the development of the insurance sector in Africa.

Table 4: Summary Results for insurance penetration used as dependent variable

OLS Regression Results

Dep. Variable:	MICINSPEN	R-squared:	0.639
Model:	OLS	Adj. R-squared:	0.429
Method:	Least Squares	F-statistic:	3.048
Prob (F-statistic):	0.00313	Log-Likelihood:	-22.798
Observations:	50	AIC:	83.60
Df Residuals:	31	BIC:	119.9

	coef	std err	t	P>|t|	[0.025	0.975]
PSIZE	-0.0076	0.006	-1.398	0.172	-0.019	0.004
PPOOR	0.0066	0.005	1.243	0.223	-0.004	0.018
MTSUBS	0.0019	0.003	0.647	0.522	-0.004	0.008
PIUI	0.0229	0.011	2.105	0.044**	0.001	0.045
NETIPC	-0.0166	0.021	-0.807	0.426	-0.058	0.025
GNIPC	0.0548	0.017	3.295	0.002***	0.021	0.000
INFLAT	-0.0230	0.019	-1.238	0.225	-0.061	0.015
REALIR	0.0040	0.013	0.307	0.761	-0.022	0.030
GDPOMT	0.0075	0.006	1.198	0.240	-0.005	0.020
BUSFRD	-0.0324	0.013	-2.543	0.016**	-0.058	-0.006
INVESTFRE	0.0176	0.007	2.426	0.021**	0.003	0.032
const	0.1578	2.678	0.059	0.953	-5.304	5.619

Omnibus:	4.650	Durbin-Watson:	1.241
Prob(Omnibus):	0.098	Jarque-Bera (JB):	4.453

Note: 1. PPLRA, PROPR, GNIPC, FRAGSTAT are included but not reported because they are not statistically significant.

2. * **p≤0.01, **p≤0.05, *p≤0.10

A 1% increase in percentage of individual using internet in Africa leads to a 2.29% increase in microinsurance development, hence supporting our first hypothesis.

GNI per capita is the only economic variable that is statistically significant at 1% level, and positively influence the development of microinsurance in Africa. This implies that, a 1% increase in GNI per capita leads to a rise in microinsurance activities by 5.479%, hence supporting the second hypothesis. Further, business freedom, and investment freedom are the institutional factors that influence microinsurance development in Africa. At 5% level of significant, business freedom negatively influences microinsurance development implying that, a 1% increase in business freedom leads to a fall in microinsurance development by 3.24%. This refutes the third hypothesis. Investment freedom on the other hand positively influence microinsurance development at 5% level of significant. A 1% increase in investment freedom leads to a rise in microinsurance activities in Africa by 1.76% supporting the third hypothesis. All other variables included in the analysis but not presented are not significantly to the model. This model is statistically significant with the p-value 0.00313, and pseudo R-squared of 63.9% implying that 63.9% if the insurance penetration is explained by the variability of the independent variables of the model.

4. CONCLUSION

This paper examines the influence of demographic factors, economic factors, and institutional factors on microinsurance market development using the proxies microinsurance density, and insurance penetration. The key findings from this paper show that considering microinsurance density, population total, mobile-cellular telephone subscriptions, and percentage of population living in rural areas are the demographic factors that are statistically significant and negatively influencing microinsurance demand in Africa. These refute our first hypothesis.

Inflation is the economic factors that negatively impact microinsurance demand hence refuting the second hypothesis. No institutional factor is statistically significantly to the model, hence the third hypothesis is rejected.

Considering the insurance penetration, we find that percentage of individual using internet is the only demographic factor contributing positively to insurance penetration in Africa. This supported the first hypothesis. Also, GNI per capita is the economic factors contributing positively to insurance penetration hence supporting the second hypothesis. Business freedom is the institutional factors negatively influencing insurance penetration in Africa, hence refuting the third hypothesis. Investment freedom on the other hand is also the institutional factor that significantly influence positively on insurance penetration hence supporting the third hypothesis.

Future research should consider adding Hofstede cultural dimensions, life expectancy at birth, microinsurance growth rate, and corruption perception index, to the model. Mining data covering these variables and incorporating them into the model may lead to a more interesting results.

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