MICROINSURANCE MARKET DEVELOPMENT

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ABSTRACT

This study focuses on key factors influencing microinsurance market development and creating fertile environment measured as microinsurance density, GDP per Capita PPP (constant 2017 international $), and ease of doing business in Africa during the years 2014 – 2018. Findings indicate that demographic factors explain the greater variance relative to economic and institutional factors in terms of microinsurance density and GDP per Capita PPP while institutional factors explain the greater variance in terms of Ease of doing Business. We find that the key variables influencing microinsurance market development are Merchandised Trade (% of GDP), Business Freedom, Population Growth Rate, Percentage of Population Living in Rural Area, Mobile-Cellular telephone subscriptions, Inflation, Real Interest Rate, Population Total, Labor Freedom, Property Right, Percentage of individual using internet, GNI per Capita PPP (current international $), and Openness of Economy.

KEY WORDS

Microinsurance Density, Market Development, Fertile Environment, Inclusive Insurance

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1.1 INTRODUCTION

Microinsurance is an essential mechanism for the protection of health and livelihoods of under-served low-income populations of Asia, Africa, and the emerging markets. It is established with the soul aim of protecting the low-income earners against specific perils including fires, accidents, natural disasters, droughts, etc. The insured (policy holder) buys the policy and pays premium to the insurer (microinsurance company), for which the insured may be compensated upon the occurrence of a covered loss[2].

Microinsurance started in the 1990s as a form of charity and the services delivered through a variety of institutional channels which includes Community Based Organizations, Non-Governmental organizations (NGO's), Health Care Providers, micro financial institutions etc. where the insurer bears the risk and the products managed based on microinsurance principles and the insurer is profit-driven.

Access to microinsurance products remain low in most developing countries (NAIC, 2020). In Africa in 2017, 15 million people were insured by microinsurance products with a gross premium of US$ 420 million. This was approximately less than 1% of total insurance premiums collected during the period. Data from the 2018 landscape of microinsurance shows that it is almost 2% of the estimated 700 million people who were in the low-income bracket on the continent. Based on the 2014 data on insurers' activities, 61.2 million lives were covered and US$ 756 million were collected in premiums (Microinsurance Network, 2019).

Microinsurance products tend to be much less costly than traditional insurance products and the policies extend protection to a much wider market (Insurance Information Institute, July 23,

[2] It provides the means by which the poor can insure their crops, livestock, and other properties from risk associated with natural disasters, flood, fires, drought etc.

2019). Policies may be offered, along with a small loan, with premiums that are a small percentage of the loan amount. Credit life, life and funeral products continue to dominate the microinsurance landscape in Africa representing 63% of the lives covered and 59% of premiums (Chiew Hui Lin, 2019).

This study is one of the first to focus on microinsurance market development and it focuses on understanding what factors contribute to microinsurance market development in Africa using 5-year data. Weempirically examine the influence of key variables on microinsurance market development. Here, we focus on 22 African countries selected out of the total of the fifty-four African countries through purposive sampling, and whose microinsurance indicator variables, demographic variables, economic and other institutional variables' data collected for the study. The rate of uptake of microinsurance differs markedly from one country to another, even within a single region.

In creating fertile environment for the development of inclusive insurance markets in Africa, microinsurance regulators have a vital role to play and are not curbed to the regulations but also include the way in which they engage with market players and potential entrants and their approach to supervising innovative and inclusive products.

1.2 Research Questions

The study was guided by the following research questions:

- What are the key factors that are prerequisites for success in creating a fertile environment for the development of inclusive microinsurance market in Africa?
- Does an evidence-based approach support this?

- What are the implications for policymakers and the private sector wishing to scale up inclusive insurance market development?

1.3 Significance of the study.

This work contributes to the overall development of microinsurance market and creating a fertile environment in Africa. This is an area of research that has been of interest in recent years among academics but there are few related works done with analysis focused on non-life and life insurance usage at an aggregate-level in several developing countries (see, e.g: Park, et al, 2002; Beck & Webb, 2003; Chui & Kwok, 2008) and one work incorporating emerging markets (see Elango andJones, 2011). Further, not only does this work contribute to literature, it will serve as a guide and highlight the implications for policymakers and the private sector wishing to scale up inclusive insurance market development and will help inform their decision to minimize investment losses.

The remaining part of this paper includes the theoretical background and the model in section 2, followed by data, model construction and estimation in section 3, the results and discussion in section 4, and ends with the conclusion.

2. THEORETICAL BACKGROUND AND THE MODEL

2.1 Theoretical Background

There are quite a few but meaningful related works conducted in this study area. One of those was conducted by Park et al (2002) and these authors focused on determinants of insurance pervasiveness. Adopting the multilinear regression (OLS) model, they regressed various economic and institutional variables on the response variable insurance penetration. These researchers

investigate various cultural and sociopolitical variables and their significant influence on insurance pervasiveness. Findings from this research show that aggregate income, masculine-feminine dimensions of the national culture, government regulation, and the sociopolitical stability statistically significantly affect insurance penetration. Despite the difficulty in getting available data, this work incorporates cultural dimensions with the analysis.

Beck & Webb (2003) also researched on the usage of life insurance using cross country analysis by controlling for both fixed country and time-specific effects. These authors adopted the multilinear regression model and estimated the regression model with fixed effect and random effect models. Findings show that the economic indicator variables inflation, income per capita, and banking sector development statistically significantly contribute to the use of life insurance. Religious and institutional variables used for the analysis were also significant predictors. However, education, life expectancy, young dependency ratio, and the size of social security system had no robust contribution to life insurance consumption.

Elango and Jones (2011) focused on drivers of insurance demand in emerging markets. These researchers adopted apanel regression model and regressed several demographic, economic, and institutional variables on insurance demand using insurance density and insurance growth rate as proxies. Findings from their work show that demographic factors explain a greater variance relative to economic and institutional variables for insurance density. In terms of insurance growth rates, economic factors explained the greatest amount of variance. While their study shows an opposite direction in the measure of growth rate influence in non-life and life density of the country, GNI per capita, interest rate, merchandise trade, business freedom, and growth rate influence insurance density of the country. However, this study does not consider cultural factors due lack of available data.

Based on the discussions above, we state the following hypotheses:

- **Hypothesis 1**: Demographic factors statistically significantly influence creating fertile environment for microinsurance market development.
- **Hypothesis 2**: Economic factors statistically significantly influence creating fertile environment for microinsurance market development.
- **Hypothesis 3**: Institutional factors statistically significantly influence creating fertile environment for microinsurance market development.

2.2 The Model

Based on extant literature on the insurance market demand and development (Outreville, 1996), we adopt the quantitative approach; multilinear regression to determining the contribution of key variables towards microinsurance market development. (see those used by B. Elango, James Jones, 2011; Beck & Webb, 2003; Browne et al, 2000; Chui & Kwok, 2008; Hokinson, 1969; Rajeev K. Goel, 2012). In order to ascertain the influence of key variables on market development, four models were employed for each of the proxies used in our study. Models one to model three assess the contribution of the key variables categories separately while model four is the full model assessing all variable categories together to determine their contribution to the given proxy for market development. Due to unavailable data on some key variables for most of the selected countries, we considered a review of the sample size and noted a major reduction in the sample size used. The full model (model 4) used to test the above hypothesis is given by the form:

$$Dependent\ Variable_{it} = \alpha_t + \beta_j\left(\sum_{k=1}^{3} Explanatory\ Variable\ Category_{itk}\right) + \varepsilon_{it}$$

Where $i = 1,2, \ldots \ldots and$ represents the country considered, t = 1,2…….. and represents the time, β_j where j = 1,2……and represent the coefficients of explanatory variables and K = 1,2 ,3 represent the three category of explanatory variables considered, α_t represents the time-specific intercepts and ε_{it} represents the country-specific random error term.

The proxies used for this study are Microinsurance Density, GDP per Capita PPP (current international $), and Ease of Doing Business. Extent literature claims that key factors contributing towards market development can be considered in three categories: Demographic factors, Economic factors, and Institutional factors (See e.g. B. Elango, James Jones, 2011) shown in figure 1. Conceptually, we test this claim that each of the three categories of factors influence market development at different dimensions (B. Elango, James Jones, 2011).

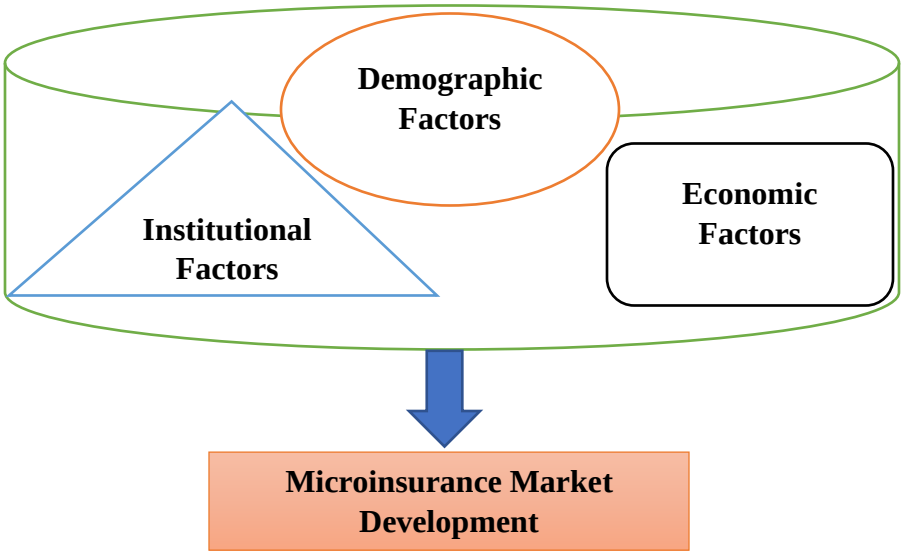

Figure 1**.** Factors Influencing Inclusive Insurance Market Development

- *Demographic Factors*: These refer to the distribution of individuals in a society and these are in terms of population, sex, age, income, marital status etc., and these influence buying patterns. As the demand for microinsurance would vary by a particular population profile such as Age dependency ratio, population size, percentage of population poor etc.,(see e.g. Table 1 for

complete list and details of these variables used in this study) these factors may influence the maximum potential of a given market.

- *Economic Factors:* These are variables that capture the overall economic situation of a county. These factors determine whether underlying demand profile could be sustained by the options (See e.g. Table 1 for complete list and details of economic variables used for this study are).
- *Institutional Factors:* Institutions are human device constraints that structure human behavior (North, 1981). Countries' institutional structures are the formal/informal mechanisms that governs human behavior (B. Elango, James Jones, 2011). These include the legal system in place to protect property rights of the people and companies in the country. One important role of institutional setup is to mitigate uncertainty felt by firms and the individuals (Peng, 2000) hence are most likely to influence the microinsurance market demand and development in general (e.g. government size, rule of law, etc. See Table 1 for complete list and details of institutional variables used for this study).

TABLE 1. Variable definitions, summary statistics and data sources.

Variable Category	Variable Code	Variable Definition (mean; std. dev.)	Source
Demographic	ADR	Age Dependency Ratio (% working -Age population). (5.983, 1.9047)	I
Demographic	PSIZE	Population Total (Per 1000). (35981.8, 42083.9)	I
Demographic	PGR	Population Growth Rate(annual%). (2.367, 0.704)	I
Demographic	PROOR	Percentage of the Population Poor. (38.969, 18.140)	I
Demographic	PPLRA	% Population Living in Rural Area. (59.2536, 16.574)	I
Demographic	PIUI	% individual using internet. (27.357, 16.668)	II
Demographic	MTSUBS	Mobile-Cellular telephone subscriptions per 100 Inhabitants. (91.099, 34.0644)	I
Demographic	LEB	Life Expectancy at Birth (Years). (63.675, 5.603)	I

Economic	GDPCAP	GDP per Capita, PPP (constant 2017 international $). (5362.656, 4943.312)	I
Economic	EODB	Ease of doing Business. (57.9834, 7.745)	I
Economic	MICROIDEN	Microinsurance Density (Total Premium per Population), 2014-2015 and few observations in 2018. (41.176, 146.029)	V
Economic	GNIPC	GNI per Capita PPP (current international $). (4968.182, 4334.913)	I
Economic	NETIPC	Net Income Per Capita (Annual % Growth). (2.53, 4.190)	I
Economic	INFLAT	Inflation, GDP deflator (Annual %). (5.9118, 6.050)	I
Economic	REALIR	Real Interest Rate (%). (5.524, 6.429)	I
Economic	GDPOMT	Merchandised Trade (% of GDP). (53.644, 20.642)	I
Economic	INSP	Insurance Penetration (Premium as a % GDP). (2.346, 2.9095)	III
Economic	INSDENS	Insurance Density (Premium per capita in USD). (82.527, 183.769)	III
Institutional	BUSFRD	Business Freedom (The ability to establish and run a business without any form of interference). (56.5181, 11.444)	IV
Institutional	OPOE	Openness of Economy (The degree of openness of a country to cross boarder capital transactions. (57.227, 6.279)	IV
Institutional	FISFRED	Fiscal Freedom (Extent to which individuals/businesses are granted freedom to keep and control their income and wealth for their benefit and use). (74.9091, 6.3471)	IV
Institutional	FINSF	Financial Freedom (Transparency and openness in financial system). (75.046, 6.487)	IV
Institutional	PROPR	Property Right (The ability to accumulate private property and wealth). (38.373, 12.878)	IV
Institutional	INFREED	Investment Freedom Index (the extent to which there is no constraint on the flow of investment capital in economy free country). (53.318, 15.463)	IV
Institutional	FRAGST	Fragile State Index (states vulnerability to conflict or collapse). (85.877, 11.584)	VI
Institutional	GOVSIZE	Government size. General government final consumption expenditure (% of GDP). (15.361, 5.534)	I
Institutional	RULELAW	Rule of Law (Norms that ensures equality of all citizens before the law). (-0.335, 0.4226)	I

Institutional	LABORFRE	Labor Freedom (56.416, 15.780)	IV

Note: All data are by country and collected from 2014 to 2018

Data sources:

I World Development Indicators,**https://databank.worldbank.org/source/world-development-indicators**

II ITU, **https://www.itu.int/en/ITUD/Statistics/Pages/stat/default.aspx**

III Swiss Re Institute, **https://www.sigma-explorer.com/**

IV Heritage Foundation (various years), **http://www.heritage.org/index/explore**

V World map of Microinsurance**. http://worldmapofmicroinsurance.org/**

VI Fund for peace, **https://fundforpeace.org**

3 DATA AND MODEL ESTIMATION

3.1 Data

The data used for this study consist of 110 observations from the year 2014 to 2018. The African countries from which the data were collected include Benin, Burkina Faso, Botswana, Egypt, Ethiopia, Ghana, Ivory Coast, Kenya, Malawi, Morocco, Mozambique, Niger, Nigeria, Rwanda, Senegal, South Africa, Namibia, Togo, Tunisia, Uganda, Zambia, and Zimbabwe. Table 1 above shows the variables definition, data sources, and summary statistics for each variable used for the study. All analyses were done using Python-Jupyter Notebook.

The Person product moment coefficient of correlation in Table 2 shows that no strong correlations exist among the variables except for the positive correlation between Insurance Penetration (INSP) and Insurance Density (INSDENS) with $r = 0.97$, Fiscal Freedom (FISFRED) and Financial Freedom (FINSF) with $r = 0.99$, and Openness of Economy (OPOE) and Property Right (PROPR) with $r = 0.61$. These correlations may be sufficiently severe which may cause

estimation problems which could impair the validity of our results[3]. All other variables are not strongly correlated.

The microinsurance density is positively correlated with Percentage of population using Internet, GDP per Capita PPP, Insurance penetration, Insurance density, Business freedom, Openness of Economy, Fiscal freedom, Financial freedom, Property right and Investment freedom; and negatively by Population growth, Mobile telephone subscriptions, Real Interest Rate, Ease of doing business, Inflation, and Fragile state Index[4].

Also, GDP Per Capita PPP is also positively correlated with Percentage of population using Internet, Mobile telephone subscriptions, Microinsurance density, Real Interest Rate, Business freedom, Fiscal freedom, Financial freedom, Investment freedom and Fragile state Index; and negatively correlated with Percentage of population using Internet, Ease of doing Business, Inflation, Insurance penetration, Insurance density, Openness of Economy, and Property Rights.

Further, Ease of Doing Business is positively correlated with Real Interest Rate, Insurance penetration, Insurance density, Business freedom, Openness of Economy, Fiscal freedom, Financial freedom, Property Rights and Investment freedom; and negatively by Population growth, Mobile telephone subscriptions, Percentage of population using Internet, GDP Per Capita PPP, Microinsurance density, Inflation, and Fragile state Index.

3.2 Model Construction and Estimation.

[3] These variable maybe excluded from the model if their Variance Inflation Factor (VIF) are greater than 10 as suggested by Hair et al., 1995 and so we test for multicollinearity using VIF whose result are discussed in the later session below.

[4] See Table 2 for the details of the correlation among various variables used for this study. A positive correlation implies as one variable increase the other variable tends to increase while a negative correlation implies as one variable falls the other variable tends to decrease.

Given the structure of our data set, a One-Way-Fixed Effect Model was employed to test the relationship between the three categories of key variables on microinsurance market development. A multilinear regression model was constructed and using the OLS to estimate the specifications of the model, we then test the hypotheses posed earlier in this paper. The dependent variables were first checked for normality and afterwards, the explanatory variables were also checked for multicollinearity (eg. See that of Maddala, 1988). We then construct our panel model[5] by first splitting the data into 80% training data set and 20% testing data set. The 80% data set is then used to train the model while the remaining 20% was used for prediction. Next, we perform the module validation and end by checking the model assumptions[6].

4. RESULTS AND DISCUSSION

Tables 2 - 7 and Figures 1 - 6 present the summary results of this study. The probability plot (P-P plot) was used to check for normality assumption of the dependent variables and then Box-Cox transformation was employed to transform the dependent variables since they were not normally distributed[7]. Variance Inflation Factor (VIF) analysis was conducted to check for multicollinearity among the independent variable. Using the cut-off point of 10 as suggested by (Hair et al., 1995), we exclude all variable with VIF greater than 10[8]. The fixed effect model controls for time-specific effects not controlled by other variables included in our model. The One-

[5] For this panel model, Model-1 focuses on Demographic factors, Model-2 focuses on Economic factors, Model-3 focuses on Institutional factor and Model-4 focuses on the full model (Thus all factors together).
[6] The model OLS assumptions are checked to make sure our estimates and P-values are not misleading.
[7] The output for the distributions and transformations are shown in Appendix A1-A6.
[8] The variables having VIF greater than 10 include Insurance Density, Insurance Penetration, Fiscal Freedom, and Financial Freedom and are not included in the model.

Way-Fixed Effect Models used in this study are the time-specific intercepts. The results of our OLS models are consistent with that of the fixed-effect models and are presented.

The Ljung-Box test and Breusch-Pegan test were employed to test for Autocorrelation and Heteroscedasticity respectively. Q-Q plot was also used to check for linearity assumption and the residual approximately equal to zero assumption was also checked.

TABLE 2. Correlation Matrix.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) PGR	1																
(2) PIUI	-0.65	1															
(3) MTSUBS	0.20	-0.16	1														
(4) MICIDEN	-0.41	0.09	-0.17	1													
(5)GDPCAP	0.05	-0.08	0.17	0.46	1												
(6) EODB	-0.04	0.08	-0.06	-0.03	-0.05	1											
(7) INFLAT	-0.03	-0.01	0.03	-0.18	-0.07	-0.10	1										
(8) REALIR	0.09	-0.13	-0.02	-0.06	0.12	0.06	-0.15	1									
(9) INSP	-0.13	0.19	0.06	0.06	-0.02	0.24	-0.03	-0.15	1								
(10) INSDENS	-0.10	0.14	0.03	0.16	-0.04	0.23	-0.02	-0.15	0.97	1							

(11) BUS FRD	0.13	0.02	0.00	0.22	0.07	0.37	0.05	-0.32	0.30	0.36	1					
(112) OPOE	0.19	-0.01	-0.04	0.19	-0.02	0.41	-0.08	-0.03	0.14	0.22	0.57	1				
(13) FISFRED	0.22	-0.05	0.01	0.06	0.02	0.07	0.17	0.12	-0.34	-0.28	0.27	0.60	1			
(14) FINSF	0.21	-0.06	0.02	0.04	0.02	0.06	0.21	0.09	-0.34	-0.28	0.28	0.59	0.99	1		
(15) PROPR	0.02	0.12	-0.10	0.07	-0.06	0.44	0.07	-0.14	0.34	0.41	0.47	0.61	0.16	0.15	1	
(16) INFREED	0.10	-0.08	-0.12	0.08	0.01	0.06	-0.11	0.27	-0.26	-0.18	0.12	0.51	0.46	0.46	0.24	1
(17) FRAGST	0.53	-0.39	0.00	-0.10	0.02	-0.05	0.01	0.10	-0.10	-0.10	0.15	0.30	0.42	0.39	0.05	0.07	1

Note: N = 110

TABLE 3. Parameter Estimation of Panel Models with **Microinsurance Density** as Dependent Variable.

Variable	**Model-1**	**Model-2**	**Model-4**
const	16.672***	0.1145	13.3784
	(0.003)	(0.925)	(0.135)
ADR	-0.0782		-0.4692
	(0.825)		(0.182)
PSIZE	-0.0201		- 0.0126
	(0.408)		(0.578)
PGR	-1.1263		- 2.1621**
	(0.211)		(0.011)
PPOOR	-0.0157		-0.0047
	(0.544)		(0.849)
MTSUBS	-0.0304		- 0.0180
	(0.041) **		(0.10) *
PPLRA	-0.1178**		- 0.0713*
	(0.020)		(0.10)
PIUI	-0.1326***		- 0.0734
	(0.010)		(0.125)
NETIPC		-0.0243	0.0268
		(0.767)	(0.756)
INFLAT		-0.1807***	-0.1723***
		(0.001)	(0.002)
REALIR		-0.1160**	-0.1154*
		(0.038)	(0.067)
GDPOMT		0.0479**	0.0425**
		(0.023)	(0.049)
BUSFRD		0.0386	0.395**
		(0.395)	(0.0386)
Observations	50	50	50
***R*-squared**	0.344	0.341	0.660
***F*-statistic**	3.141***	5.833***	3.659***

Notes: 1. Refer to Table 1 for variable definitions. Standard Errors for this OLS regression are reported in the parentheses below coefficient estimates.

2. Variables LEB, INVFREED, FRAGSTAT, GOVSIZE, RULELAW, and LABORFRE included but not reported. The fixed effect model result is reported when the null hypothesis is rejected for the F-statistics at 5% level. (Model-3 included but not reported)

3. * **p≤0.01, **p≤0.05, *p≤0.10

TABLE 4. Parameter Estimation of Panel Models with **GDP per Capita, PPP (constant 2017 international $)** as Dependent Variable.

Variable	Model-1	Model-2	Model-3	Model-4
const	24.9261*** (0.000)	17.2196*** (0.000)	29.753*** (0.000)	15.2631*** (0.000)
PSIZE	0.0240** (0.039)			0.0112*** (0.001)
PGR	-0.8807** (0.033)			-1.3071*** (0.002)
PPOOR	-0.0255 ** (0.043)			0.0105 (0.449)
PIUI	0.0361** (0.092)			0.0083 (0.684)
MTSUBS	0.0031 (0.645)			0.0105* (0.089)
PPLRA	-0.0991*** (0.000)			-0.1182*** (0.000)
INFLAT		0.0232 (0.629)		0.0359 (0.193)
REALIR		-0.0471 (0.346)		-0.0059 (0.835)
BUSFRD			0.0228 (0.434)	0.0326* (0.100)
PROPR			0.0583 (0.998)	-0.0475*** (0.007)
FRAGST			-0.1525*** (0.000)	0.0332 (0.263)
RULELAW			3.8031*** (0.000)	0.8952 (0.165)
LABORFRE			0.0233 (0.205)	0.0694*** (0.000)
Observations	110	110	110	110
***R*-squared**	0.691	0.260	0.328	0.809
***F*-statistic**	3.141***	5.833***	5.432***	18.79***

Notes: 1. Refer to Table 1 for variable definitions. Standard Errors for this OLS regression are reported in the parentheses below coefficient estimates.

2. Variables ADR, LEB, NETIPC, CPI, GDPOMT, INVFREED, GNIPC, and GOVSIZE included but not reported. Fixed effect model result is reported when the null hypothesis for the F-statistics is rejected at 5% level.

3. * **p≤0.01, **p≤0.05, *p≤0.10

TABLE 5. Parameter Estimation of Panel Models with **Ease of doing Business** as Dependent Variable.

Variable	**Model-2**	**Model-3**	**Model-4**
const	2.2054***	2.2289***	2.1173***
	(0.000)	(0.000)	(0.000)
PGR			0.0030
			(0.687)
PPOOR			0.0003
			(0.249)
PIUI			0.0006*
			(0.095)
MTSUBS			0.00913
			(0.902)
GNIPC	0.01413***		0.01012***
	(0.000)		(0.002)
INFLAT	-0.0005		-0.0003
	(0.397)		(0.597)
REALIR	0.0018***		0.0021***
	(0.002)		(0.000)
BUSFRD		0.0011***	0.0008**
		(0.001)	(0.032)
OPOE		0.0015**	0.0017***
		(0.068)	(0.041)
PROPR		0.0007**	0.0007***
		(0.036)	(0.023)
INFREED		0.0621	0.0002
		(0.710)	(0.449)
RULELAW		0.0033	-0.0069
		(0.679)	(0.550)
LABORFRE		-0.02266	0.0001
		(0.871)	(0.678)
Observations	110	110	110
***R*-squared**	0.383	0.427	0.618
***F*-statistic**	6.155***	5.432***	5.737***

Notes: 1**.** Refer to Table 1 for variable definitions. Standard Errors for this OLS regression are reported in the parentheses below coefficient estimates.

2. Variables ADR, PSIZE, PPLRA, LEB, NETIPC, CPI, GDPOMT, INVFREED, FRAGST , and GOVSIZE included but not reported. The fixed effect model result is reported when the null hypothesis for the F-statistics is rejected at 5% level. (Model-1 included but not reported)
3. * **p≤0.01, **p≤0.05, *p≤0.10

4.1 Microinsurance Density

Table 3 shows the panel model results for microinsurance density. Comparing the three categories of key variables independently (Model 1 – 2)[9], Model 1 explains the highest extent of variance indicating the importance of demographic factors on microinsurance density. This supports the first hypothesis. This finding is consistent with that of B. Elango, James Jones, 2011. To answer the research question 1 posed earlier in this paper, among the various variables tested in Model 4, Merchandised Trade (% of GDP) and Business Freedom impact positively on microinsurance density while Population Growth Rate (annual%), Mobile-Cellular telephone subscriptions, Percentage of Population living in Rural Areas, Inflation, and Real Interest rate impact microinsurance density negatively.

For the second question, empirically, for a 1% increase in Merchandised Trade (% of GDP) and Business Freedom, the microinsurance density increases by 4.25% and 39.5% respectively while a 1% change in Population Growth Rate, Mobile-Cellular telephone subscriptions, Percentage of Population Living in Rural Area, Inflation, and Real Interest rate results to a fall in microinsurance density of respectively 216.21%, 1.80%, 7.13%, 17.23%, and 11.54%. This result opposes those of Beck & Webb, 2003, Li et al., 2007, in their work on Life insurance demand in the sub-Saharan Africa and Madagascar. Some plausible implications for our third question could be that as there is an increase in the degree of Merchandised Trade and Business Freedom, microinsurance activities in Africa booms while the lack of success of microinsurance industry in Africa may be linked to the lack of awareness of microinsurance policies in Africa coupled with increased population growth rate characterized by an increased rural population for which the individuals

[9] Model 3 not presented because it is insignificant hence rejected for random effect model which is not of interest to the researcher.

view insurance as luxury product. Increases in Inflation can also have a disruptive effect on microinsurance industry when real interest rate cycles spur disintermediation. This results coincides with those of Beck & Webb, 2003.

4.2 GDP per Capita, PPP (constant 2017 international $)

Table 4 presents the panel model results for GDP per Capita PPP as a gauge of economic development in creating fertile environment for microinsurance development. Among the three categories (Model 1 – 3), demographic factors explain the highest variance. This supports the first hypothesis. To answer the first research question posed earlier, Population total, Mobile-Cellular telephone subscriptions, Business Freedom, and Labor Freedom positively influence GDP per Capita PPP, whereas Population Growth Rate (annual%), Percentage of Population Living in Rural Areas and Property Right have negatively influence on GDP per Capita PPP.

For the second question, empirically, a 1% increase in Population Total, Mobile-Cellular telephone subscriptions, Business Freedom, Labor Freedom results in an increase in GDP per Capita PPP of respectively 1.12%, 1.105%, 3.26%, 6.94% while a 1% increase in Population Growth Rate, Percentage of Population Living in Rural Area, and Property Right leads to a fall in GDP per Capita PPP of respectively 130.71%, 11.82%, 4.75%. Surprisingly, the findings show inflation and real interest rate as not significant regressors to the dependent variable. One plausible implication for population growth rate and percentage of population living in rural areas having negative influence on GDP per Capita PPP is that population growth leads to the increase in youth population within the population total which implies that more people are injected into the workforce and with high population living in rural areas, if their GPD growth rate fall below the population growth rate, the government may be unable to erase the income inequalities among the

growing masses while a considerable population size below their GDP per capita could facilitate the government ability to erase the income inequality among the given population which leads to economic development, hence create fertile environment for microinsurance development.

If the individuals/businessmen get the ability to establish and run business without any form of interference, are granted the freedom to keep and control their business and wealth in the countries, and take advantage of technology through mobile-cellular telephone usage, more jobs would be created to curb unemployment and there will be a sustained production growth with minimum government deficit and a balance foreign trade which will improve the living condition of the people hence creating fertile environment for microinsurance products patronage.

4.3 Ease of doing Business

Further, Table 5 presents the panel model results for Ease of doing Business. Here, Institutional factors among the three categories explain the highest variance hence supporting the third hypothesis. This shows the importance of institutional factors on Ease of doing Business. To answer the first question posed earlier in this paper, the results from Model 4 shows that all statistically significant factors contribute positively to Ease of doing Business. These include Percentage of Individual using Internet, GNI per Capita, Real Interest Rate, Business Freedom, Openness of Economy, and Property Right.

For the second question, empirically, a 1% increase in Percentage of Individual using Internet, GNI per Capita, Real Interest Rate, Business Freedom, Openness of Economy, and Property Right results to increase in Ease of doing Business of respectively 0.06%, 1.012%, 0.21%, 0.08%, 0.17%, 0.07%. Some plausible implications are that, when countries are characterized by high percentage of the individual using internet, there is an avenue for ease of creating the awareness of the people on insurance policies, internet advertisement, and internet sale of insurance products with promotions. When Business

freedom, openness of economy, and property right regulations are made flexible by government as they influence positively to ease of doing business, these will give high score for more regulation and better-functioning institutions (World Bank Group, 2020).The strength of the microinsurance business environment may be scored on the basis of an economy's performance for which GNI per Capita contribute positively to ease of doing business.

Doing business in Africa deals with the process of starting a business, dealing with construction permits, registering properties, owing properties, protecting minority investors, and enforcing contracts. These could be successful through online business incorporation process, allowing online procedures related to property transfers, advancing the functionality of credit bureaus and registries, streamlining property right process and property registration, openness of economy and automating international trade logistics. Business freedom and openness of economy presents fertile ground for establishing businesses and employing workers. These highlight the positive effects of flexible employment regulation for firms affecting job creation and productivity growth (World Bank Group, 2020). These further provide fertile grounds and avenues for microinsurance establishment and growth in Africa.

5. CONCLUDING REMARKS

This study examines creating a fertile environment for the development of microinsurance market in Africa. Using data on 22 nations in Africa from the year 2014-2018, we analyze the influence of the key factors of microinsurance market development using the proxies Microinsurance Density, GDP per Capita PPP, and Ease of doing Busines. The microinsurance market in Africa is in early stage of insurance penetration and this study focuses on providing an insight on factors that influence microinsurance development and creating fertile environment for

microinsurance operation. Not only will this work add to the literature, it will serve as a guide and highlight the implications for policymakers and the private sector wishing to scale up inclusive insurance market development and will help inform their decision to minimize investment losses.

We find that Merchandised Trade (% of GDP), and Business Freedom influence microinsurance density positively while Population Growth Rate, Percentage of Population Living in Rural Areas, Mobile-Cellular telephone subscriptions, Inflation, and Real Interest Rate influence microinsurance density negatively. Population Total, Mobile-Cellular telephone subscriptions, Business Freedom, and Labor Freedom also influence GDP per Capita, PPP positively while Population Growth Rate, Percentage of Population Living in Rural Areas, and Property Right influence negatively on GDP per Capita, PPP.

Also, we find that Percentage of Individual using Internet, GNI per Capita, Real Interest Rate, Business Freedom, Openness of Economy, and Property right all influence positively on Ease of doing business and none of the variables influence negatively here. One may claim that these findings are largely comparable with those of B. Elango, James Jones, 2011; Outreville, 1996 whose study focused on developing countries. However, a direct comparison is not feasible since the variables used in this project differ. Overall findings indicate that demographic factors explain the higher variance relative to economic and institutional factors in terms of microinsurance density and GDP per Capita, PPP while institutional factors explain the greater variance in terms of Ease of doing Business.

At a practitioner level, this study's findings are useful to policymakers and the private sector wishing to scale up inclusive insurance market development. For individuals and firms planning to enter into the microinsurance market in Africa, this study is helpful in identifying the potential attractive countries for investment and setting up microinsurance operations. It will also serve as

a guide to identify the key factors influencing microinsurance market development and creating fertile environment for microinsurance operation in Africa.

Some of the areas that were not considered by this study, due to lack of data, were cultural factors, Urbanization, microinsurance growth rate, corruption perception Index and microinsurance penetration. Therefore, future research could consider mining data covering many years on the variables used for this study in addition to the Hofstede cultural dimensions, Urbanization, microinsurance growth rate and microinsurance penetration for the countries. Incorporating these variables in the model may lead to a more interesting results.

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APPENDIX

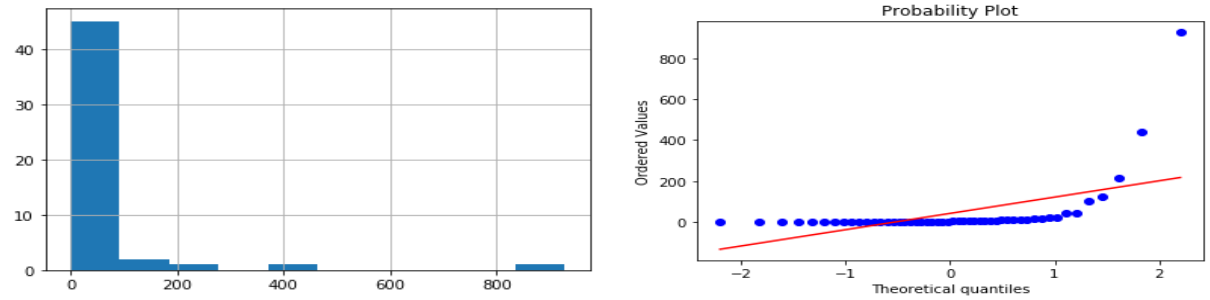
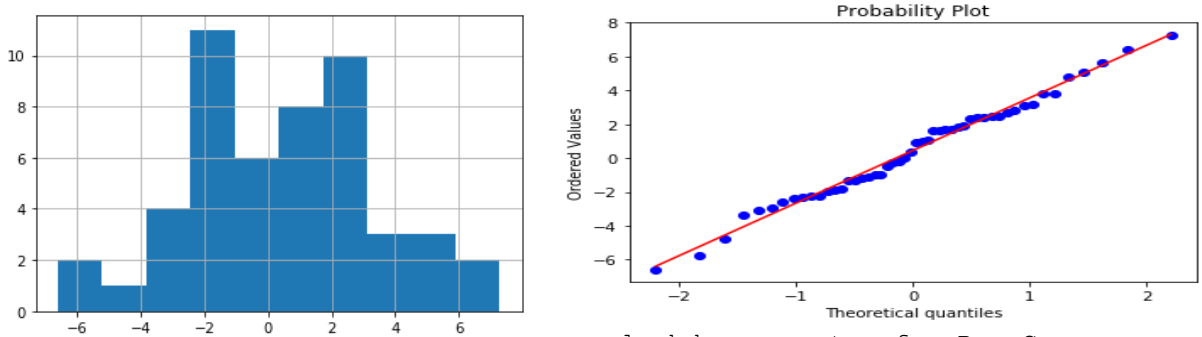


Figure A1. Distribution of MICROIDENSITY

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lambda parameter for Box-Cox
Transformation is 0.01858074798886532
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Figure A2. Distribution of MICROIDENSITY after Box-Cox transformation.

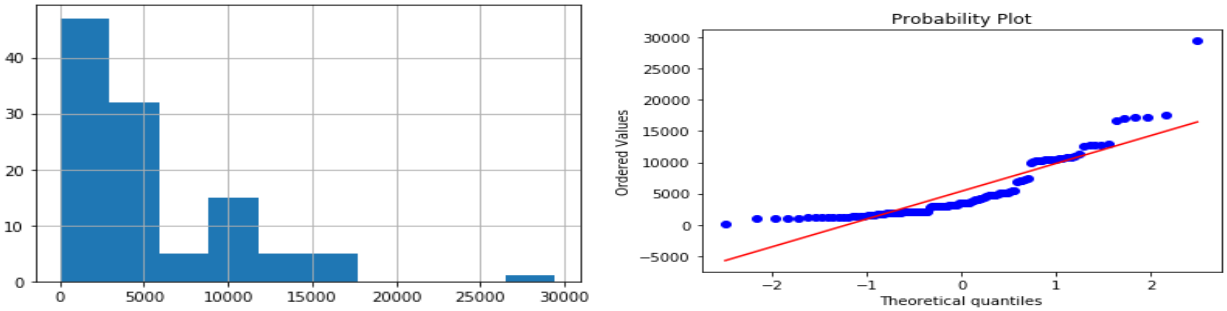

Figure A3. Distribution of GDPCAPITA

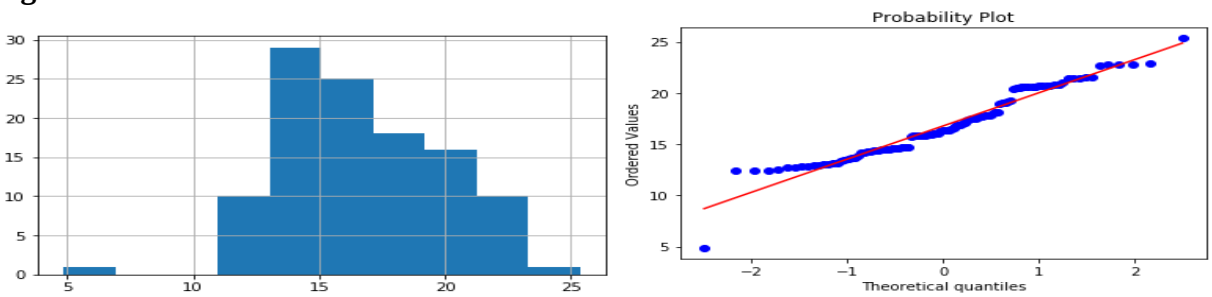


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Figure A4. Distribution of GDPCAPITA after Box-Cox transformation

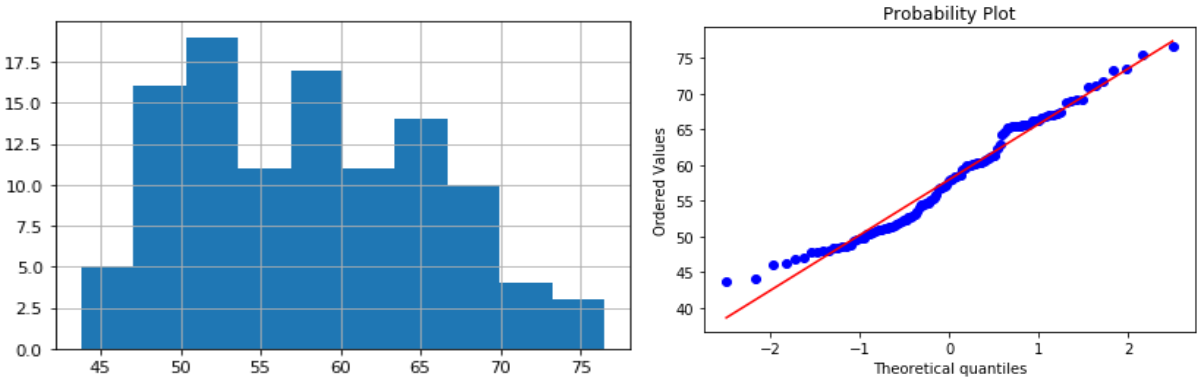
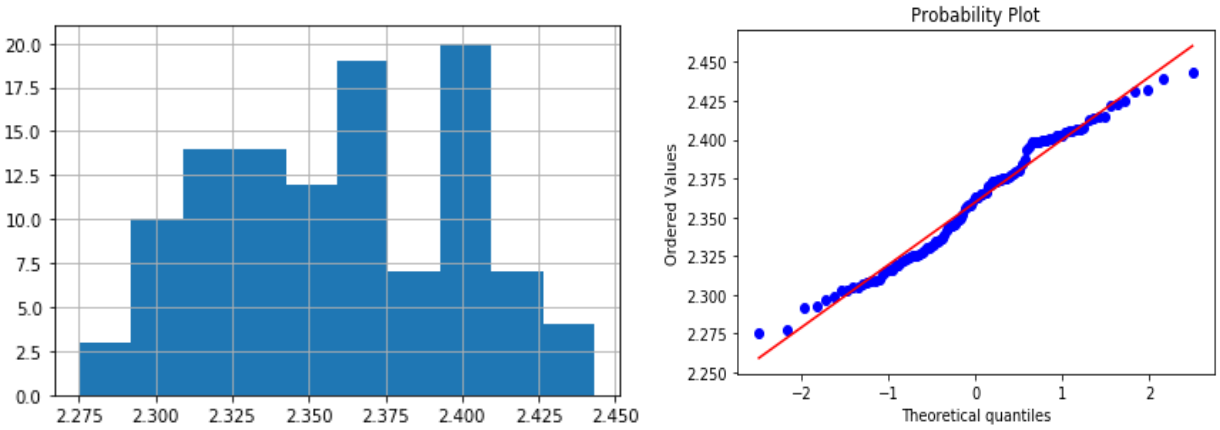


Figure A5. Distribution of EODB

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lambda parameter for Box-Cox Transformation is -0.29586192328220007
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Figure A6. Distribution of EODB after Box-Cox transformation