

Statistical Analysis of Factors of Country Microinsurance Market Size

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Goal of the Study

- Make a statistical model to measure microinsurance market size
- Quantitative, intercountry analysis
- Identify factors of microinsurance market size

Process of the Study

- Use data provided by the Microinsurance Network to measure microinsurance market size
- Survey literature to suggest factors of microinsurance market size such as:
 - gdp per capita
 - literacy rate
 - microfinance penetration
- Gather data from sources (eg. Worldbank)
- Create a statistical model of microinsurance market size using the factors
- Analyze and interpret the model

Microinsurance Coverage Ratio – Dependent Variable

- Dependent variable used to measure each county's microinsurance market size is the Microinsurance Coverage Ratio
- Coverage ratio = number of active insured/ total population
- Aggregate measure of microinsurance, does not make distinctions by product line
- Source of data: World Map of Microinsurance courtesy the Microinsurance Network (worldmapofmicroinsurance.org)

Process to Obtain Countries Used in the Study

- Data of this nature is sparse.
- Table of Microinsurance Network Data Collection:

2011	2012	2013	2014	2015	2016	2017	
							Africa
							Latin America
							Asia
							Oceania

- In order to mitigate changes over time while still maintaining a large enough data set, data is taken from 2014 to 2017.

Process to Obtain Countries cont.

- The Microinsurance Network has data for the coverage ratios of 56 countries from years 2014 to 2017.
- 19 Countries with insufficient data were removed.
- Statistical methods judged that Ghana, South Africa, and Togo all had extremely high microinsurance coverage ratios (above 20%) that would skew the results of the study. These countries were removed from the dataset.
- The final dataset consists of 34 countries.

Countries in the Study

Africa

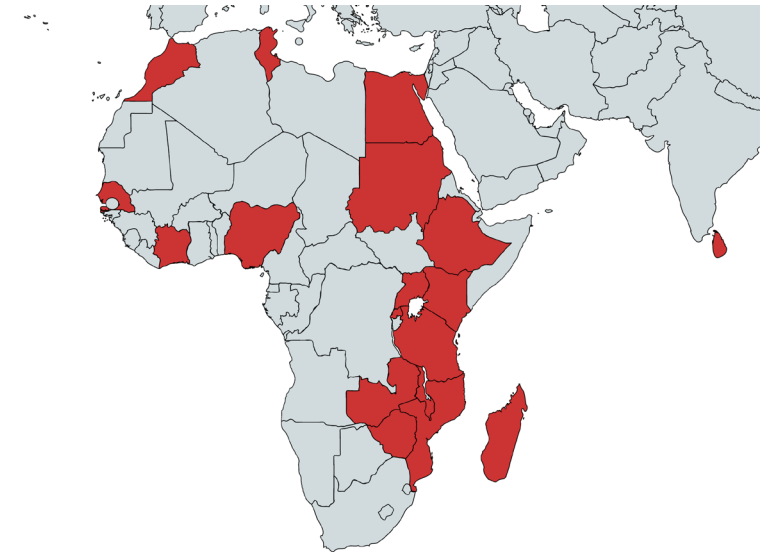
Cote d'Ivoire
Egypt
Ethiopia
Kenya
Madagascar
Malawi
Mali
Morocco
Mozambique
Nigeria
Rwanda
Senegal
Sudan
Tanzania
Tunisia
Uganda
Zambia

Americas

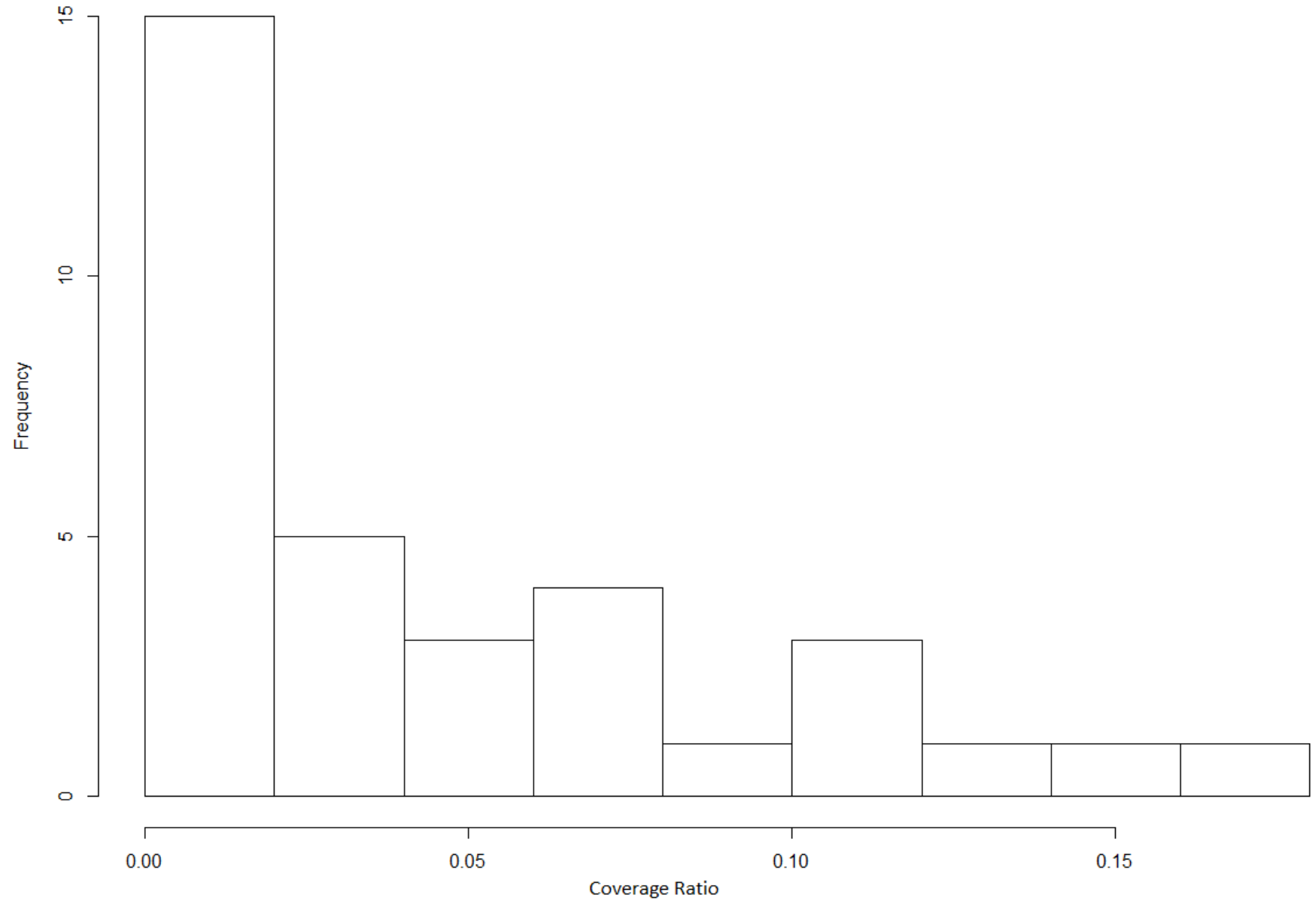
Bolivia
Brazil
Chile
Colombia
Costa Rica
Dominican Republic
Ecuador
El Salvador
Guatemala
Honduras
Mexico
Nicaragua
Panama
Paraguay
Peru

Asia

Sri Lanka



Histogram of Microinsurance Coverage Ratios



Factors of Microinsurance Suggested by Literature Review

- Demand – Insurance Customers
 - Income
 - Insurance education
 - Trust in insurance products
 - Supply – Microinsurance Companies
 - Market data
 - Technology
 - Distribution channels
 - Priority of microinsurance on company agenda
 - Non-profit organizations and networks in the country
 - Government regulation
- However, quantitative, intercountry measures of the above factors are difficult to find.

Factors of Microinsurance – Independent Variables

Socioeconomic Factors

- GDP per capita
- Literacy rate

Technological Factors

- Mobile phone usage
- Internet penetration

Business and Finance Factors

- Financial account usage
- Microfinance penetration
- Insurance density
- Governmental and Nonprofit Factors
 - Ease of doing business
 - Political stability
 - Government effectiveness
 - Net ODA per capita received

Factors of Microinsurance - Descriptions

- GDP per capita – Gross Domestic Product/ Population
- Literacy rate – Persons over 14 that are literate (% of population)
- Mobile phone usage – Mobile phone subscriptions per capita (number between 0 and 2)
- Internet penetration – % population using the internet
- Ease of doing business – Effectiveness of government regulation as pertaining to starting and operating a business
- Financial account usage - % of population with an account at a financial institution

Factors of Microinsurance – Descriptions cont.

- Microfinance penetration – Number of active borrowers/ population
- Insurance density – Total Premiums/ population
- Political stability – WGI Worldbank index
- Government effectiveness – WGI Worldbank index
- Net ODA per capita received – Net official development assistance (ODA) per capita

Factor Variables – Data Sources

Factor	Source
GDP per capita	Worldbank WDI
Literacy rate	
Mobile phone usage	
Internet penetration	
Ease of doing business	
Financial account usage	
Net ODA per capita received	
Political stability	Worldbank WGI
Government effectiveness	
Microfinance penetration	Mix Market Report
Insurance density	Swiss Re

Process of Obtaining the Model

- Logistic Regression, Backwards Stepwise Selection
- The final model has 5 factors
- The obtained model has a pseudo R-squared of 0.64

Model Coefficient Signs

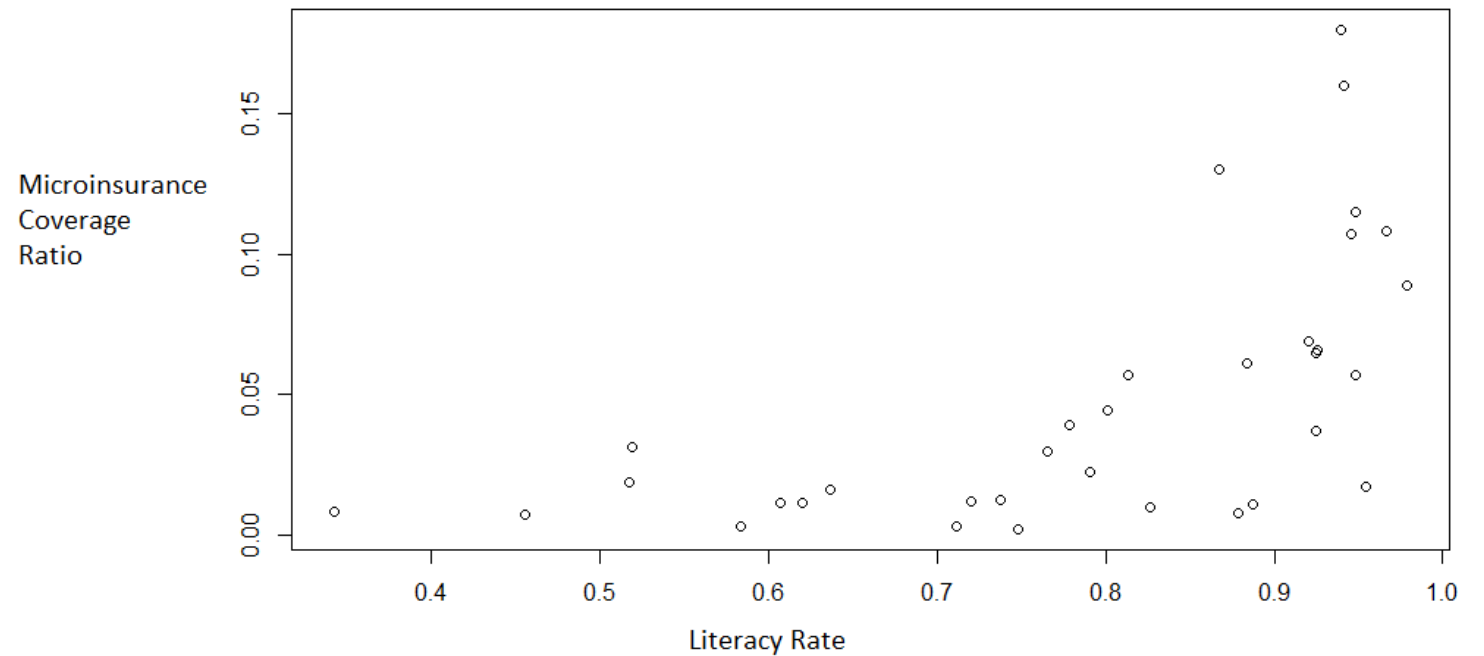
Factor	Coefficient Sign
GDP per capita	Negative
Net ODA per capita received	
Literacy rate	Positive
Government effectiveness	
Microfinance penetration	

- Signs with Negative Coefficients have an inverse relationship with microinsurance coverage ratio within the model
- Signs with Positive Signs are associated with increased microinsurance coverage ratio

Interpretation of Model Coefficients

- Negative coefficients
 - GDP per Capita - microinsurance is targeted towards poorer countries
 - Net ODA Received - High ODA is received by countries with populations who cannot afford microinsurance
- Positive Coefficients
 - Literacy Rate: insurance education, trust in insurance products, negatively correlated with extreme poverty
 - Government Effectiveness: good regulation, confidence in broader economic outlook
 - Microfinance Penetration: insurance education, trust in insurance products, distribution channel, target income segment

Literacy Rate



- Full model pseudo R-squared: 0.64, Literacy Rate pseudo R-squared: 0.39
- Literacy rate won't change from year to year, but what are the underlying implications
- Litmus test for insurers looking to enter a country's industry

Further Research

Microinsurance Network future data collection paves the way:

- Same-country data will be collected across sequential years
- More data, better models
- Panel regressions and eventually Time Series analysis
- This study looked at market *size*, but more frequent data will allow for analysis of market *growth*.
- This study was limited to studying the aggregate microinsurance market. Data by product line which will allow for more focused studies.