IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

INSURANCE AND INCLUSIVE INSURANCE: A REVIEW OF UNDERPINNING THEORIES

By

Dr. Kingsley Kwesi Kwabahson[1], Dr.Pradeep Sharma[2]and Dr Amy Eshun Atiwoto[3]

ABSTRACT

Insurance manages financial risks for individuals and organisations by transferring the potential losses from the policyholder, who pays a premium to mitigate these risks, to an insurer. It is crucial for economic development, growth and survival.Asongu and Odhiambo (2020) studied insurance's impact on African economic growth, finding minimum penetration thresholds of 4.149% and 1.805% for life and non-life insurance in 48 African countries from 2004-2014.

Insurance operations might seem very simple, but it is highly technical in nature with many underpinning theories and concepts. Insurance in Ghana has largely focused on the provision of services for the formal sector, an approach described as traditional insurance. However, the Ghana Living Standards survey estimates that over 80% of the workforce in Ghana can be found in the informal sector. Therefore, insurers have extended focus to the informal sector and specialised groups (described as micro-insurance or inclusive insurance) with view to increasing uptake and penetration of insurance, which has consistently been lower than 2%.

This paper reviews the extant literature on traditional and inclusive insurance, focusing on the fundamental theories and concepts that underpin their operations and implementation. Over 120 writings are reviewed comprising books, peer-reviewed journal articles, dissertations, and other writings. The implications of these theories and concepts are also provided and key issues summarised.

Key Terms: Insurance, Inclusive Insurance, Economic Development, Economic Growth, Insurance Penetration, Insurance Density

1. Chief Executive Officer, Ghana Insurers Association and Senior Lecturer, Ghana Insurance College, Ghana
2. Professor, Department of Law, KAAF University College, Ghana
3. Consultant,Global Financial Inclusion Institute, Ghana

Introduction

Insurance is a financial risk management tool that transfers potential losses from the policyholder to the insurer, who then pays a premium to mitigate these risks. Insurance policies cover various risks, including life, health, motor, travel, home, rural, commercial, and business interruption. Insurance plays a crucial role in economic growth, development, and overall survival for individuals, households, and industries.

Research shows that insurance penetration positively affects economic growth in Africa, with minimum penetration thresholds of 4.149% and 1.805% for life and non-life insurance respectively. Dawd and Benlagha (2023) found a non-linear relationship between insurance development and economic growth, providing valuable lessons for policymakers and practitioners.

Traditional insurance, often for the formal sector, is now focusing on the informal sector and underserved groups. Insurance focused in these populations is referred to as micro-insurance, inclusive insurance or 'informal sector insurance'. In Ghana, micro-insurance is defined as a product designed to meet the needs of low-income persons, marketed to them, affordable, and accessible. Inclusive insurance targets underserved segments of the population, and the terms are used interchangeably for simplicity and cohesion.

Research on inclusive insurance, like traditional insurance, shows positive impacts on income distribution and growth, particularly in eastern, rural areas, and low-income households, as demonstrated by Zhang andSu's 2022 study using China Family Panel Studies data.Tsiboe and Turner (2023) studied the effectiveness of premium subsidies in promoting crop insurance, focusing on the US Federal Crop Insurance Program, finding an inelastic response to premium rate changes.

This write-up, comprising over 120 sources, reviews existing literature on traditional and inclusive insurance, examining the fundamental theories that underpin their implementation. It includes sources such as academic databases, refereed or peer reviewed journals, textbooks, and seminal works by authorities, practitioners, and pioneers of major theories and concept as well as dissertations. It is to be noted that dated resources including journal publications that seminal or timeless in nature are equally considered if found to be relevant.

Overview

This Paper reviews a number of theories: risk and uncertainty, expected utility, insurance and insurance regulation as well as economic development, and poverty alleviation; Inclusive insurance is treated as a special case of insurance. The approach adopted is to review the theories as well as provide the necessary synthesis, and assessment in each section of the Paper.

Review of Theories of Risk, Uncertainty and Expected Utility

Risk and uncertainty theories explain the impact of future events on individuals or organizations, improving, preventing or delaying set goals(Cliath, 2015).Knight (1921) distinguished between the two terms by focusing on the measurability of each phenomenon. He restricted "risk" to measurable outcomes "uncertainty" to non-measurable outcomes of events.

Martinez-Correa (2012) argues that Knight's(1921) definition of risk involves knowledge of all possible outcomes and accurately measured probabilities, while uncertainty is non-foreseeable. These terms are crucial in decision making and impact on organizations and individuals in diverse ways. It is often said that a quantity that can be measured can be managed. Hence there is much focus on measurable events defined variously to include expectedvalue of decisions under risk, which is more practical and useful.

Traditionally, the outcomes of risky events have been measured through the concept of expected value. This is obtained by first multiplying the possible outcomes of the said events with their respective probabilities and subsequently totaling the results of such a product (Hansen, 2022). This helps in ascertaining the profitability or other wise of the said event or activity. For example, consider an Oil drilling company faced with the opportunity of acquiring a new drilling machine worth $200 million, that might help them to drill a gusher well (highest output) with 20% probability of a $500 million profit; a 40% chance of drilling a wet well that might earn the company $200 million (medium output) and a 10% chance of drilling a grey well (moderate output) that might earn them $100 million and with a 30% chance of drilling a worthless dry well.

The expected value of this drilling would then be computed as: EV= (500,000,000 * 0.2) + (200,000,000 * 0.4) + (100,000,000 * 0.1) + (0*.3) = $190 million. On the basis of the result of the computation, this would not be a viable venture for the drilling company because it would have made a net loss of $10 million (which is computed as $190million -$200 million).

Bernoulli (1738) argues that the definition of expected values of decisions as the sum of all possible outcomes multiplied by probabilities is flawed due to the assumption of risk equality as basis for computation, rather than individual characteristics. He advocates for a shift from defining value in terms of price to using 'utility', as computing expected value with price is limited.

Utility is a crucial factor in determining value, as it depends on an individual's or organization's circumstances(Garcia, 2013). The hypothesis of expected utility suggests that the measurement of risk value depends on the extent of utility exploited, or the level of profit required for a particular utility. This value is calculated by multiplying each expectation by the number of possible cases.

Bernoulli (1738) argues that profit corresponding to this ‘mean utility’ will equal the value of the respective risk. As a corollary, if one assumes a continuous incremental growth in the wealth of individuals and organisations, then increases in wealth can be associated with increase in utility. However, such increase in utility is found to be inversely proportional to ‘quantity of goods’ or things that add to life’s conveniences already possessed.

The advantage of the use of ‘expected utility’ over ‘expected value (with price as the key value) in the evaluation of the value of risk is demonstrated by the consideration of a case where a fair coin would be tossed continuously until it turned out heads. The probability of heads or tail of a fair coin is ½. If the coin came up heads on the nth toss, using price as the determinant of outcome, the consumer would receive $2^n (thus on the 5th toss, consumer receives $2^5 = $32, say). In this case the probability of the coin turning up heads on the nth toss is $(1/2)^n$

and the value of the outcome is $\$2^n$. Therefore, the expected value (based on the traditional definition mentioned previously) is;

$EV = [(1/2)^1*2^1 + (1/2)^2*2^2 + (1/2)^3*2^3 + (1/2)^4*2^4 + (1/2)^5*2^5+\ldots] = 1+1+1+1+1+\ldots\infty$

This results in the so called St Petersburg's Paradox which is a phenomenon where an event's expected value is infinite but seems worth very little to participants. This is because rationale consumers are unlikely to risk large finite amounts, but the infinite nature of expected values means the value of a risk depends on the utility of each profit.

A Benoulli utility function is generally defined as U (w) = klog10 (w) + constant. Assume the particular case where a fair coin would be tossed continuously until it turned out heads (as previously mentioned). If the constant in the Bernoulli utility function is assumed to be '0' and w (wealth or price) is assumed to be $2, and a probability of ½ , k=1, then computing the expected utility, we obtain:

$U(w) == [((1/2)^1*\log 2^1) + ((1/2)^2*\log 2^2) + ((1/2)^3*\log 2^3) + ((1/2)^4*\log 2^4) + (1/2)^5*\log 2^5) + ((1/2)^6*\log 2^6) + ((1/2)^7*\log 2^7) + ((1/2)^8*\log 2^8) + ((1/2)^9*\log 2^9) + ((1/2)^{10}*\log 2^{10})] = [0.1505+1505+ 0.1129+0.0753+0.0470+0.0282+0.0165+0.0094+0.0053+0.0029] \approx 0.602$

Antilog (0.602) ≈ $4.

Thus expected utility converges to about $4, unlike the previous case where the expected value was indefinite (St. Petersburg's paradox).Thus the equation

$EV = [(1/2)^1*2^1 + (1/2)^2*2^2 + (1/2)^3*2^3 + (1/2)^4*2^4 + (1/2)^5*2^5+\ldots] = 1+1+1+1+1+\ldots$ becomes finite based on the principle of diminishing marginal utility even though its expected return may be infinite. It is important to note, that, Bernoulli (1738) admits that Cramer (1728) had earlier developed similar theories with similar conclusions.

Bernoulli's concept of expected utility was limited in cases involving large pay-offs. In 1944, von Neumann and Morgenstern (1944) postulated axioms to resolve ambiguity in decisions. These axioms, grouped into completeness, transitivity, continuity, and independence/substitution, were used to define the von Neumann-Morgenstern (1944) function. The function must satisfy the condition that a decision maker conforming to the axioms maximizes the expected value of the function in risky outcomes.

Consider two events A and B respectively. Then:

Event A is less than Event B or A< B, isdefined to mean Event B is preferred over Event A.

Event A is less than or equal to Event B or $A \leq B$ is defined to mean Event B is preferred over Event A or with indifference to Event A

$A \backsim B$ is defined to mean an Agent is indifferent between Event A and Event B.

Axiom1: Completeness

This states that for any event defined as Event A and Event B respectively, exactly one of the following holds: a) Event A< Event B, b) Event B< Event A, c) Event $A \backsim$ Event B

Axiom 2: Transitivity

This refers to consistency of preference across 3 options i.e.(Event A, Event B, Event C). Thus if Event A ≤ Event B and Event B ≤ Event C then Event A ≤ Event C

Axiom 3: Continuity

According to this axiom,there is a tilting point between the conditions of 'better than' and 'worse than' in a given central option. Therefore if Event A is less than or equal to Event B but Event B is less than or equal to Event C (i.e. Event A ≤ Event B ≤ Event C) then there exists

a certain probability (p) which is between 0 and 1 (both inclusive) i.e. p Ɛ [0, 1] such that [(p*Event A) + (1-p)* Event C ~ Event B] where Event A is received with probability p; and Event C is received with probability 1-p.

Axiom 4: Independence

The axiom dictates that regardless of the opportunity for other outcomes, the preference of an individual holds.

Expected Utility Theorem

The theorem of expected utility, based on axioms by von Neumann and Morgenstern (1944), suggests that a rational agent can predict intriguing outcomes if they satisfy certain conditions. A function 'u' assigns a real number to any outcome, and expected utility is defined as less than an event if the expected value is less.

Event A < Event B iff E(u(A) < E(u(B))

where E(u(A)) is defined as the Expected value of the function 'u' in Event A and the function 'u' can be uniquely determined. The reverse is also true. This means that if an agent acts to make the best use of the expectation of a certain function 'u' then it will obey the axioms prior. The function 'u' is then defined as a von Neumann-Morgenstern function.

The von Neumann-Morgenstern approach aims to measure 'utility' through linear transformation using reasonable axioms and correct Bernoulli's function weakness. These theories are crucial for practical application in real life situations like insurance, as it provides a finite expected value.

Review of the Theories of Insurance

Risks pose a threat to individuals, organizations, and society, potentially threatening their lives, property, and valuables (Borch, 1967). According to Buckham, Jason and Stuart (2010), since the dawn of modern history, risks like dying, serious injuries, and famine have been present. The reliance on collective society guarantees has changed, leading to a proliferation of individualistic approaches to protecting lives and property. Institutional arrangements have evolved to mitigate these risks.

Modern protection against death and property loss is achieved through risk management, which involves identifying and choosing appropriate techniques for treatment. According to Rejda and McNamara(2014), two major

approaches are risk control and risk financing. Risk control aims to minimize risks through avoidance, prevention, and reduction, while risk financing funds losses through retention and transfer. One important tool for managing risks is insurance which is obtained by transferring such risk to a capable agent.

Insurance and its Historical Perspectives

Insurance has been a crucial transfer mechanism for reducing the financial impact of risks on individuals and organizations. It has evolved through various specializations, such as 'bottomry' practiced by the Babylonian merchants (in 4000-3000BC), which was a loan granted to merchants in case of sea loss. Ancient Romans recognized this, and marine insurance emerged in the 15th century (The Actuary, 2018).

Historical events like the Great Fire of London, Hamburg Fire, and 1906 earthquakes have influenced insurance's relevance. The Royal Exchange and London Assurance Act of 1720, Babylonian Code of Hammurabi, and Church separation of insurance from banking ensured its existence. These events, along with the 1907 panic, contributed to the growth of insurance (The Actuary, 2018).

The Theory of Insurance and Expected Utility

The insurance theory is based on the expected utility property, which analyzes consumer preferences and demand for valuable items (Klein, 2015). It suggests that consumers spend resources to maximize utility, and appropriate utility functions and budget constraints can determine their willingness to pay for the associated utility.

Utility functions can determine supply functions for goods or services, with three categories: risk aversion, risk neutrality, and risk loving function. Bernoulli's (1738) concave logarithmic utility function represents risk aversion, where expected utility is less than expected value, identifying decision-makers as risk averse. These functions represent consumer and supplier preferences under risk and uncertainty.

Consider an event comprising a toss of a coin with a $20 payout for a toss of a head and a $40 payout if the coin lands on a tail. It is trite knowledge that the probability of head or tail is 0.5. The expected value for such an event is computed as EV= (0.5*20) +(0.5*40) which is $30.

Now consider a Bernoulli function defined as : $u(w) = \sum p\log(w)$. Therefore, utility of the expected value is log 30 which is 1.471. However the expected utility of the event is computed as (0.5*log (20) +0.5*log (40)) =1.451. Thus the utility of the expected value is greater than the utility of the event itself. Such a characteristic of a decision maker is referred to as risk aversion and the person is said to be risk averse. Therefore, a risk averse person is willing to have an expected utility of an event whose value is less than the utility of the expected value of that event.

Abraham and Schwarcz (2015) argue that risk aversion drives insurance transactions, as policyholders are willing to accept small, certainty-based losses over big, uncertain ones. Hansen (2022) suggests that the lack of finite expected value can make economic transactions difficult. In situations like the St Petersburg paradox, modeling events and decision-making as expected utility functions can help solve the challenge of infeasible insurance contracts.

Klein (2018) posits that risk aversion is the primary factor driving insurance demand. He explains that as an individual's wealth increases, their utility curves become concave, resulting in diminishing marginal utility. This principle is applicable to insurance, as the expected payout, the amount a policyholder receives upon an insured event, is determined by multiplying the probability of a loss with the expected loss.

The insurance theory suggests risk-averse individuals pay premiums to protect their wealth, influenced by the theory of expected utility. The concave curve of utility versus wealth suggests that these individuals' utility increases with wealth at a decreasing rate.

Position of the Law in Ghana

The Insurance Act, 2021 (Act 1061) in Ghana directs commercial buildings to be insured against fire, collapse, and earthquake hazards, as well as their owners' liabilities. For example, section 214 of Act 1061 **(requirement to insure and maintain public liability insurance) states:**

(1) A person of a class type or description specified in the Second Schedule shall insure and maintain an insurance under any public liability insurance for contract with a licensed insurer. (commercial buildings, including office spaces, banks, shopping malls, factories, and hospitals).

(2) If a person takes out two or more public liability insurance contracts, the insurance contracts taken together shall meet the requirements with respect to the minimum amount of the public liability insurance required under the Regulations.

(3) A person who contravenes subsection (1) commits an offence and is liable on summary conviction to a fine or term of imprisonment or to both as specified in the First Schedule.

Failure of a person specified to insure and maintain an insurance under any qualifying liability insurance contract, upon summary conviction, is liable to a term of imprisonment of between a minimum of one year and a maximum of five years or to a fine of a minimum of two thousand five hundred penalty units and a maximum of five thousand penalty units (First Schedule). Commercial buildings specified for the requirement of public liability insurance include office spaces, banks, shopping malls, factories, hospitals and any other place that may be specified by Regulations (Second Schedule).

Also, section 218 of Act 1061 (**requirement to insure commercial buildings**) provides as follows:

(1) A person who constructs or causes to be constructed a commercial building specified in the Second Schedule shall insure and maintain insurance under any qualifying commercial building insurance with a licensed insurer.

(2) The occupier or the owner of a commercial building shall insure and maintain an insurance under any qualifying commercial building insurance contract with a licensed insurer.

(3) A person who contravenes subsection (1) or (2) commits an offence and is liable on summary conviction to a fine or a term of imprisonment or to both, as specified in the First Schedule.

Failure of an occupier of owner of building or a personwho constructs or causes to be constructed a commercial building specified to insure and maintain an insurance under any qualifying liability insurance contract, upon summary conviction, is liable to a term of imprisonment of between a minimum of one year and a maximum of five years or to a fine of a minimum of two thousand five hundred penalty units and a maximum of five thousand penalty units (First Schedule). Commercial buildings specified for the requirement of commercial building insurance include office spaces, shopping malls, factories, hospitals and any other place that may be specified by Regulations (Second Schedule).

The scope of cover in respect of commercial building insurance contracts is provided in section 219 of Act 1061 as follows:

(1) A commercial building insurance contract shall provide with respect to

(a) A building under construction

(i) An indemnity against liability for loss or damage caused to a person where claim arises from the negligence or a breach of duty of care by the owner, the building contractor, or any employee or agent of or consultant to, the building contractor in connection with the construction of the building;

(ii) The legal and other costs connected with defending a claim referred to in subparagraph (i); and

(iii) The cost of investigating and settling such a claim

and

(b) Any commercial building

(i) An insurance cover against the hazards of collapse, fire, earthquake, storm and flood; and

(ii) An indemnity against the liability of the owner or occupier of the commercial building for loss or damage caused to any person using the premises.

It is to be noted that the above insurances are compulsory insurances and the sole objective is to protect innocent third parties in respect of the tortious liability of the specified persons.

Illustration of the Theory of Expected Utility and Insurance

Consider a businessman whose wealth consists of $100,000 in cash and an office complex worth $400,000 which has a 3% probability of being totally lost in a fire outbreak. The total wealth is $500,000. However, in case of a fire outbreak the businessman loses $400,000 and his wealth is reduced to $100,000. In the scenario provided, assume that Enterprise Insurance offers such a commercial building insurance (as stated above) with a premium computed as (0.03*$400,000 = $12,000). Based on the expected utility theory, there would be a motivation to buy insurance under certain conditions (for example,if he calculates his expected utility of buying insurance and finds out that it is higher than his expected utility of not doing so) as illustrated in the Bernoulli utility function below.

Let us assume that there is a certain Bernoulli utility function for this businessman which is defined as U (w) = $\log_e$ (w). In this case, U stands for utility and 'w' stands for wealth.

The utility is equal to the natural log of wealth, with a concave shape, reflecting diminishing marginal utility in risk-averse individuals. The Businessman can choose to buy or not to buy insurance.

1. The expected utility of the businessman if he does not buy insurance is
   E_{UN} =0.97*$\log_e$ ($400,000) + 0.03*$\log_e$ ($100,000) = (0.97*12.512) + (0.03*11.5129) = 12.857
2. The expected utility of the businessman if he buys the insurance is computed as E_{U1} = loge ($500,000-$12,000) =loge ($388,000) = 12.869
3. The decision rule is that the businessman is likely to buy insurance if the computed expected utility from buying insurance exceeds the expected utility of not buying insurance.
4. From (1) and (2) it is clear that the expected utility of buying insurance (12.869) is more than the expected utility of not buying insurance (12.857).
5. Therefore in the example, the businessman is more likely to buy insurance as a protection for his assets.

Insurance premiums are calculated based on factors such as risk, cost of insurance, expenses, and profitability of the insurance business. The case of the businessman suggests that insurers may charge for additional services beyond the payout. M Financial Group suggests that pricing of life insurance policies is influenced by mortality, investment earnings, expenses, and taxes, with some policies even charging surrender premiums for early termination. According to Klein (2018) risk-averse individuals are willing to pay insurance companies' 'loadings', which may include risk premiums, as long as they provide security for their possession, up to acceptable levels.

The insurance company may charge additional premiums for expenses, charges, and profits beyond the basic payout. In determining the businessman's willingness to pay this additional risk premium, the expected utility of the businessman with insurance E_{U1} and the expected utility of the businessman without insuranceE_{UNI} are considered. The risk premium is then calculated as the difference between the wealth generated by E_{U1} and E_{UNI} respectively.

Since EU (w) is $\log_e$ w it follows that w is the antilog$_e$ of EU (w). Recall that E_{U1} and E_{UN1} were 12.869 and 12.857 respectively. Therefore, risk premium is computed as:

Risk Premium = Antilog (12.869) – Antilog (12.857) = $388,092-$383,463 = $4,629

It can therefore be inferred that the businessman must be willing to pay a Total Premium computed as:

Total Premium = Basic Premium + Risk Premium = $12,000+ $4,629 =$16,629

On the other hand, the businessman will not be prepared to pay a risk premium which is higher than $4,629 neither will he be willing to pay a total premium higher than $16,629.

The discussion on insurance demand suggests that risk-averse individuals, organizations, or society are willing to protect their possessions, but the question remains whether insurance companies would offer products and services to potential policyholders.

Provision of Insurance by Insurance Companies

Insurance companies' decisions on providing products or services are influenced by factors such as their risk characteristics and their ability to charge a commensurate premium to the risk in question(Barch,1985). Accordingto the von Neumann and Morgenstern (1944) expected utility theory, the expected value of an insurance company's investing decision equals the expected utility, a linear Bernoulli (1738) utility function. This characteristic is attributed to the company's model which is based on the fact that insurance companies are risk neutral.

Insurance Principles and Concepts

The National Association of Insurance Commissioners (NAIC) which is the insurance standard setting body of the United Staes defines insurance as a mechanism that transfers individual or corporate risk to a an insurance entity, thereby reducing uncertainty through pooling or the law of large numbers (NAIC 2024). This law of large numbers distributes losses among the majority, reducing actual losses to manageable averages (Rejda and McNamara,2014).

NAIC (2024) suggests that the basic insurance model underwrites pools of diversified risks, making it less dependent on debts and premiums. The reversed production cycle and upfront premium payment reduce failure risks, allowing insurance companies to remain risk-neutral with steady cash-flow.

Unfortunately, insurance companies face a number of challenges in adhering to basic principles that underpine their operation. Some of these concepts are utmost good faith or uberimaefidei, insurable interest, proximate cause, indemnity, contribution, and subrogation(BelmontInternational(BI,2013).Violations could be detrimental to the survival ofinsurance companies. The sustainability or otherwise of insurance operations is largely dependent the on upholding or violating these principles by relevant stakeholders such as policyholders, claimants and third parties (individuals and institutions). Some of these principles are explored below.

Fundamental Principles of Insurance

Insurance is underpinned by two fundamental principles;

1. The premium of the many are used to pay for the losses of the few (based on the law of large numbers)
2. The premiums shall be commensurate with the risks.

The fundamental principles of insurance are crucial for the survival of companies, as violent violations could lead to their collapse.

The Principle of Utmost Good Faith or *uberimaefidei*,

The doctrine of uberrimaefidei (utmost good faith), established by Lord Mansfield in ***Carter v Boeme*** (1766), mandates all parties to insurance contracts to disclose all material facts to the risk. This is based on morality, efficiency, and economic necessity (Bland III (2013)). . Insurers may not have access to an insured's private information, so not disclosing a material fact can render a policy voidable. If there are no clear terms, the doctrine cannot be disregarded. Incorrect information can lead to contract repudiation and insurers may refuse to pay claims.

The Mersley Law Group (2015) argues that non-disclosure of material facts relied upon by insurers can lead to contract voiding. This doctrine, based on the principle of utmost good faith, is fundamental to insurance law, with both American and Canadian courts emphasizing this requirement.The American Courts expanded the doctrine of bad faith after contract formation, imposing an implied condition for truthful disclosure and fair dealings. In ***Bhasin v Hynew*** (2014), a duty of hones was imposed, requiring policyholders to disclose risk nature and insurers to ensure ad idem coverage of insured needs and benefits.

The uberrimaefidei doctrine, despite its widespread application in law courts, faces significant challenges from the perspective of insurance companies due to information asymmetry, particularly adverse selection and moral hazards, which negatively impact insurance transactions and operations.

Adverse Selection

According to Do (2004), adverse selection occurs when an individual has more information than another in a contract, as demonstrated by Akerlof (1970) work in the automobile market in 1970.

Illustration: In a vehicle market, sellers may have exclusive information on vehicle quality, which buyers may not have access to. The "fair price" may be used as an indicator of quality, but sellers may price low quality vehicles as high-quality ones. This can lead to sellers exiting the market, and the cycle continues until the average price is lowered to $50, preventing buyers from buying except sellers with the worst quality vehicles(Do, 2004; Akerlof, 1970).

Spence (1973) argues that hiring employees is a classic case of 'investment under uncertainty', as employers may not have complete information on an employee's capabilities. Employees have private information about their capabilities, determined by signals and indices. Employers form conditional probabilities and formulate wage schedules, incurring signaling costs inversely related to productivity (Auronen, 2003; Spence, 1973; Do, 2004).

Adverse selection in insurance contracts arises from the assumption that insureds have better information about driving behavior, accident risks, and health status than insurers (Chiappori&Salanie,2013), which impacts insurance risks and expected costs.

Rothschild and Stiglitz (1976) studied adverse selection in insurance modeling, defining insurance markets as risk averse buyers and risk neutral sellers. They found that insurance increases are valuable when income is low, while insurers are indifferent (Auronen, 2003).

. Variables were defined for appropriate models as shown below:

W is the size of income without accident;

W- d is the size of income with accident;

P_1 is the premium for motor insurance

P_2 is the payout when accident occurs.

There are two income sets and a defined vector namely:

1. The Income set without insurance defined as (W, W-d)
2. The Income set with accident and insurance defined as (W- P_1, W-d+ P_2^1) where $P_2^1 = P_2 - P_1$
3. A resulting vector is defined as (P_1, P_2)

In line with the theory of expected utility, demand for insurance can be modeled as U (w) with the following definitions:

U (w) is the expected utility associated with income;

p is the probability of an accident happening;

Ɯ is the Expected utility to an individual,

W1 is the Income of individual without an accident happening

W2 is the Income of individual with an accident happening

Based on the definitions,The expected utility of an individual is defined as

Ɯ (p, W1, W2) = (1-p) U (W1) + p U (W1).

If the worth of an insurance contract to insured is defined asV (p, α):

V (p, α) = Ɯ (p, W- P_1, W-d+ P_2).

On the other hand, the Value of not buying insurance is V (p, 0) = Ɯ (p, W, W-d)

In the case of the insurer, ∏ (p, α) is defined to be how important the insurance contract is to the insurance company (insurer). This is known as the value of the contract

Insurers, who are assumed to be naturally risk neutral will have a value for an insurance contract defined as: ∏ (p, α) = (1-p) P_1 + p P_2

There are two important statements to be made in respect of insured and insurers respectively, in terms of the forgone analysis (Rothschild and Stiglitz, 1976; Aurenone, 2003):

1. Assuming an individual utility function of U(w), then U11 < 0. This is because an insured is assumed to be risk averse and in line with the principle of expected marginal utility, an increase in income is most valuable

when the income is low and vice versa. Additionally, value of not buying insurance is V (p, 0) = ₩ (p, W, W-d), so that insurance contract less than this will never be bought.

2. Insurance companies assume risk neutrality, valuing income at any point and providing contracts with value greater than zero.

Considering the fact that the value of an insurance contract to an insurer can be modeled as ∏ (p, α) = (1-p) α1 + p α2, where p is the probability of an accident happening, the major challenge regarding the decision of insurers to offer insurance contract is with 'p'.The discussion focuses on insurers providing accident-related policies and death and health insurance contracts. Insurers face a dilemma as they assume the insured has better information on factors like driving habits, accident proneness, and health status. They only have information on average accident percentages and life-related data from institutions like the National Road Safety Authority or Ghana Police Service.

Adverse selection refers to the phenomenon where policyholders with higher risk of non-standard loss (e.g. those with high driving records or serious health conditions) purchase insurance at standard rates, potentially leading to higher loss if not controlled by professionals like underwriters, (Rejda and McNamara,2014).

AccordingtoDo(2004),adverse selection mechanisms, such as risk segmentation, help insurers to minimize information asymmetry. However, complexities exist, including exclusive and non-exclusive insurance contracts. Insurers may face difficulties accessing private information, such as driving behavior, which could negatively impact risk classification and pricing, potentially leading to low-risk individuals subsidizing high-risk premiums (Yamukhamedov,2013).

Insurance companies often discriminate pricing based on age, sex, and other parameters, but this can lead to over-pricing and regulatory intervention. Excess or deductibles, coinsurance, and experience ratings also play a role in pricing. However, these mechanisms are insufficient to address issues related to adverse selection, which occurs prior to insurance purchase. There are also concerns about the legality of such discriminatory practices e.g. using age as a differentiating factor).

Moral Hazard

Moral hazard is a threat that increases the likelihood and severity of a loss derived from an insured peril, influenced by the policyholder's character and the peril's features. Insurance allows individuals to transfer risk to others, but it can also lead to harmful consequences, such as diminished incentive to prevent losses or intentional loss, potentially impacting insurance premium computation and insurer profit (Josifovska, 2012; International Risk Management Institute(IRMI,2019).

Klein (2018) and Rejda and McNamara (2016) define moral hazard as a market failure, characterized by policyholders intentionally inducing losses to benefit financially. Attitudinal risk refers to lackadaisical behavior, such as unlocked doors, increasing theft risk. Insurers tackle moral hazard through various instruments and policies.

According to IRMI (2019), insurance companies may impose policy exclusions or not underwrite certain businesses, such as unoccupied buildings, to reduce moral hazards. Policy terms like deductibles, policy limits, and co-payments aim to ensure policyholders bear part of their loss financially.

While implementing measures to reduce risk may improve insurers' willingness to provide insurance, these measures must be in tandem with other underpinning principles of insurance, such as uberrimaefidei, for a holistic approach to effective provision of service.

The Principle of Indemnity

The principle of indemnity in insurance ensures policyholders cannot profit from their policy but must be financially restored to their previous position before a loss (Rejda and McNamara(2014)). This principle is crucial in non-life insurance policies to prevent fraudulent claims. Indemnity can be provided through cash, repair, replacement, and reinstatement payments. The goal is to prevent financial gain, reduce moral hazard, and act as a disincentive to cause loss. Claims settlement methods include actual value, depreciation, or fair market value (BlackFriarsGroup, 2019;Klein,2018).

Life insurance and antique policies are classified as valued policies and notpolicies of indemnity since human lives to quantify human lives (Klein, 2018).

The principle of indemnity, as outlined in ***Castellin v Preston*** (1883), is a legal principle controlling insurance, ensuring full indemnity for policyholders without preventing them from obtaining more than full indemnity.

Insurance contracts have various measures to sustain the principle of indemnity, including "new for old," agreed additional costs, and agreed valued costs. Insurers are entitled to salvage if a claim is settled on total loss. The principle becomes complicated when insured with multiple insurers or multiple participating insurers. Corollaries like contribution and subrogation help preservethe principle (Malta International Training Center, 2010).

The Principle of Contribution (A corollary to the doctrine of indemnity)

An indemnity policyholder is not allowed to benefit financially beyond the stated risk(Gellert, 2018). The principle of contribution states that if a policyholder insures with multiple companies, they are entitled to claim from only one company. The paying company may require proportionate payment from other insuring companies(MITC, 2010).

The Principle of Subrogation (A corollary to the doctrine of indemnity)

Subrogation is a concept in indemnified policies that prevents insureds from benefiting from third party claims. It involves ceding creditor rights to a third party, who may then succeed the creditor's rights in the creditor-debtor relationship (Sheldon,1882) . In this case, subrogation principle transfers insured rights to the insurer after receiving payment for a loss

(Huseynov, 2016; King, 1951). Polinsky and Shavell (2017) highlight subrogation as a crucial aspect of an optimal policy, allowing the insured to sue third parties for additional compensation,and insurers to act on the claimant's behalf.Subrogation could be in tort, contract of statutes (MITC, 2010) or by equitable assignment or subrogation-cum-assignment (Das, 2013). Huseynov (2016), posits that the concept of subrogation has been contentious and with various schools of thought.

The concept of indemnity in insurance contracts is viewed as harsh and unreasonable by some authors, while others maintain strict principles. Concepts like the whole doctrine principle, pro rata loss sharing, and common fund theory aim to minimize perceived unfairness by requiring all parties to initiate legal action against negligent parties.

Insurers must file proceedings against negligent third parties in the insured's name for the whole loss. If the proceeds equal the loss, insurers can keep the amount. If recovery exceeds loss, insurers are entitled to excess proceeds. Subrogation benefits policyholders and insurers by lowering insurance premiums (Polinsky and Shavell,2017).As an illustration, consider an insurance company with 200 policyholders in an experienced period. Assume that the insurance company uses its historical net costs as basis for computing its insurance premiums. If the total claim cost for the period was $50,000 then its actuarial premiums will be set at $250 per policy. Consider the scenario in which the company received an amount of $30,000 in subrogation. Then the computed premium reduces to $100 per policy (i.e. ($50,000-$30,000)/200)) According to Nagpal (2024) subrogation makes insurance companies more profitable and these firms may pass on such savings to policyholders as reduced premiums.

Principle of Insurance Interest

Insurance contracts are based on the principle of insurable interest, which represents the financial challenge an insured may face if there is loss. This interest is crucial for the effectiveness of concepts like indemnity, contribution, and subrogation. Insurable interest includes any legal or financial relationship between the insured and the insurance subject matter (International Risk Management Institute ,2019).

The principle of insurable interest is a crucial requirement for insurance contracts to be valid and enforceable. It refers to the financial loss an insured is likely to incur in case of a covered loss. The doctrine was promulgated in the 18th century to minimize risks from unrepentant gamblers and unscrupulous seafarers (Meggit ,2014).The Marine Insurance Act of 1845 nullified policies without insurable interest, and the Life Assurance Act of 1774 extended this requirement to all classes of insurance except ships, goods, and merchandise.The Marine Insurance Act of 1906 defined insurable interest in property damage or detention, criminalizing marine policies without such interest (MITC, 2010).

Insurable interest is derived from property and contract rights, as well as potential legal liability. Policyholders' insurable interest in the case of life insurance is determined by their relationships with insured persons, with closer relationships determining better interest (IRMI, 2019).Wright (2016) defines insurable interest in life insurance as common relations between parties, not necessarily blood relations. The common interest is defined by the importance of another's continuous existence or financial loss in case of death. Classifications include

policyholders and dependent parties. Insurable interest doesn't need to be proven, but legal obligations can suffice.

The Principle of Proximate Cause

Insurance payment depends on factors like the cause of the loss, which can be single, direct, or multiple. Insurance companies face challenges in determining the most significant cause.The doctrine of proximate cause, established in ***Pawsey v Scottish Union and National Insurance Company*** (1908), helps identify the most plausible cause for a loss by examining factors such as the most important activity triggering a series of actions or events, with a distinction made between immediate and remote causes.

Rahman (2016) categorizes insurance policies into insured, uninsured, and expected perils. Insurance perils are those mentioned in the policy as potential causes of loss, whileuninsured perils are those not covered in the policy. The efficacy of a cause determines its proximity, not its time.

Insurance companies must identify the proximate cause of a loss, as it can combine insured and excepted perils. If the proximate cause is an insured peril and followed by an excepted peril, the loss is not covered by the policy (Watson,2016). The chain of events between the proximate cause and the loss is crucial. If the insured establishes a prima facie case, the insurance company must prove the proximate cause was an excepted peril.

The Law of Large Numbers and the Central Limit Theorem

Insurance transfers risk by pooling homogeneous risk from a large sample population, following the law of large numbers and central limit theorem. The law suggests that large exposures may approximate the expected outcomes of an infinite population (Rejda and McNamara, 2014). On the otherhand, the central limit theorem suggests that a distribution can transform into a normal distribution if certain conditions are met, provided the iterates are large and well-defined.

Insurance involves pooling homogeneous risks to create a portfolio with reduced volatility. Non-homogeneous risks can be transformed through measures like charging extra premiums, exclusions, and waiting periods. Insurance principles establish legality for contracts from inception to termination, guiding insurers and insureds(Lohrey,2019;Macedo,2009). These principles are applicable to both parties and serve as guidelines for initiating insurance contracts and claims-related suits.

Review of Research on the Theories of Insurance Regulation,

Economic Development and Growth

Insurance theories of expected utility and fundamental principles are crucial for effective financial protection. The Organization for Economic Cooperation and Development (2018), emphasizes the need for sound and safe markets for policyholders and operators. Institutional structures like supervision and regulation are essential for responding to market challenges. Insurance regulation focuses on legislation, non-legislation, and policy making processes.

Supervision involves monitoring insurers and insurance intermediaries, as well as compliance and enforcement in insurance market operations. In most jurisdictions, including Ghana, both functions are performed by the same institution. In Ghana, Act 1061 grants the National Insurance Commission (NIC) the power to ensure effective administration, supervision, regulation, monitoring, and control of the insurance business.

Dembeck (2008) asserts that insurance companies promise to pay claims when losses occur, but only if they have the funds. Regulators ensure insurers are solvent enough to fulfill these promises, while also ensuring fair dealings with policyholders.

Regulators/supervisors must ensure stakeholders are licensed for their legitimate functions, with economic theory underpinning principles. Potential market failure, such as asymmetric information, principal-agent conflicts, and excessive risk, can lead to market regulation. Inappropriate market conduct practices, such as policy selection and unclear terms, can result in misrepresentation and claim failure (Klein, 2012)

Klein (2012) emphasizes the importance of insurance regulation, which must balance market failure correction with associated costs. International standards guide regulation, with major supervisory bodies like the National Association of Insurance Commissioners (NAIC) and the Insurance and Private Pensions Committee (IPPC) providing benchmarks. NAIC ensures insurance companies adhere to best practices, while IPPC reviews insurance systems, focusing on markets, regulatory issues, and institutional arrangements.

The OECD (2018) analyzed the regulation and supervision structures of 50 member and non-member countries, highlighting diverse institutional arrangements. It stressed the need for effective independence and accountability, prioritizing objectives for optimal performance and outcomes.

The International Association of Insurance Supervisors (IAIS) is a global organization with over 200 regulators and supervisors. It promotes effective regulation for safe insurance markets and sets standards and principles. IAIS is a member of financial standards bodies like the Financial Stability Board and IASB, and provides input into insurance standards for developed economies like the G 20(IAIS, 2018).

Solvency II is the European Union's guiding document for insurance supervision and regulation, aiming to introduce a harmonized prudential framework to ensure robust insurance companies. It considers risk, openness, and competitiveness, replacing Solvency I due to deficiencies. The framework consists of three pillars: quantitative asset valuation requirements, risk management, governance, and transparency.

The European Commission states that insurance companies can be accurately assessed for risks and intervene promptly to optimize resource deployment. Ghana has three insurance regulatory bodies: National Pensions Regulatory Authority (NPRA), National Health Insurance Authority (NHIA), and National Insurance Commission (NIC). NPRA regulates and monitors pension schemes, ensures compliance with pension regulations, sets standards for pension fund management, and investigates complaints of impropriety. NPRA is a member of the International Organisation of Pension Supervisors (IOPS), which collaborates with international organizations.

NHIA is a regulator and player in health insurance provision, running the National Health Insurance Scheme (NHIS) to achieve universal health insurance coverage and ensure access to healthcare services. The

Insurance Act, 2021 (Act 1061) governs the retail end of the insurance industry, giving better regulatory powers to the National Insurance Commission (NIC), which regulates insurance, reinsurance companies, and intermediaries.

The regulated entities comprise 26non-life, 18 Life, 3 Reinsurance, 113 Broking, 4 Reinsurance Broking companies respectively and 1 contact office as well as over 7,000 agents. Act 1061 sets out the general requirement for the governance and legal framework for regulated entities, but detailed requirements are provided for in the directives and guidelines. Regulations are also required to operationalize the dictates of the Insurance Act, 2021. For example there are guidelines for relevant aspects of business operations such as governance, claims management and premium payment, reinsurance, mobile insurance, new solvency and appointment of principal officers (NIC, 2021).

Insurance regulation and supervision are crucial for market stability, but new trends demand a shift from compliance-based supervision to risk-based and group-wide supervision. IAIS (2018) emphasizes the importance of ensuring fairness, safety, and stability for stakeholders, including policyholders, insurers, and the financial system, through preventive, precautionary, and corrective measures.

Insurance supervisors and regulators typically use a compliance-based approach, ensuring companies adhere to prudential rules and regulations. This involves strict inspection schedules and penalties for non-compliance. However, due to financial crises, there is a shift towards a risk-based approach in insurance and other financial services sectors(Randle, 2009; Toronto Centre, 2018).

Risk Based Supervision and Collaborations for Group Operations

Risk based supervision (RBS) is a principle-based approach to supervision that assesses potential risks a regulated entity may encounter and their impact on supervisory objectives and financial markets, enabling the supervising authority to identify and manage these risks.

The RBS approach involves continuous grading of institutions and factors, considering macro-environment, industry, and firm-specific risk. It aligns capital requirements with specific risks, using a two-step method: minimum and solvency capital requirements, to ensure prompt supervisory intervention.

Risk sensitivity is crucial for insurance companies' solvency, especially in group operations where regulated entities span different regulatory regimes. Solvency II advocates for collaboration between regulators to address challenges collectively, incorporating a broader perspective like RBS for international or local conglomerates (NIC, 2014).

RBS emphasizes the importance of effective information sharing between supervisory entities within the same jurisdiction or the wider financial group a firm may come from. This is crucial for understanding and addressing risks in international or domestic conglomerates. Act 1061 provides relevant sections to curb this menace, focusing on financial statement preparation and supervisory cooperation at two levels.

According to section 158 of Act 1061 (**Group financial statements**):

(1) Where a reporting licensee is a member of a group of companies, the Commission may require that reporting licensee to submit group financial statements.

(2) The Commission may require that the group financial statements are audited by the auditor of the reporting licensee or by any auditor approved, in writing by the Commission.

(3) The directives may provide for the form and content of group financial statements to be submitted under this section and specify the requirements in relation to group financial statements.

Also section 189 (**Duty to co-operate**) states:

(1) The Commission shall co-operate with

(a) Law enforcement authorities;

(b) Supervisory authorities in the country; and

(c) Foreign supervisory authorities.

(2) Cooperation under subsection (1) involves sharing information and documents that the Commission cannot disclose, as per sections 190 and 191 related to the provision of assistance to other authorities.

The Financial Stability Council, comprising the National Insurance Commission (NIC), Bank of Ghana (BoG), National Pensions Regulatory Authority (NPRA), and Securities and Exchange Council (SEC), is expected to collaborate to prevent or minimize the collapse of insurance companies and other financial service providers, due to financial sector challenges.Insurance regulation and supervision aim to protect policyholders and the insurance industry through licensing and solvency requirements, standard setting, product pricing, while also addressing dishonesty, malpractices, and incompetence.

Economic development, Economic Growth and Poverty Reduction

Insurance companies' activities have economic dimensions, as Willett (1901) suggests. Insurance is an economic arrangement where capital is accumulated to meet uncertain losses, transforming uncertainty into certainty and reducing the cost of these risks to society.Insurance companies offer services like investment, inspection, and property valuation, reducing the burden of risk on society. While insurance may have economic implications, its extent is debated. Concepts like economic development, growth, poverty alleviation, and insurance penetration provide valuable insights into these implications.

Haller (2012) suggests that economic development and growth are universally accepted concepts but there exist variations in definitions. Economic development involves quantitative and qualitative changes, aiming for durable growth and increased national product. Economic growth, on the other hand, may involve increased national income per capita, requiring analysis of national wealth factors.

Economic growth measures the increase in a country's production of goods and services, excluding inflation, and is best measured by GDP. Economic development measures the impact of these growth on society, focusing on

improved living standards. However, computations can be deficient due to unreliable data and may not be comparable across borders.

Bucknail (2018) suggests that economic development focuses on measuring population well-being and improvement. Measuring economic development can be challenging due to lack of consensus. Measures include the number of doctors, nurses, hospital beds, radio, television, and the Human Development Index (HDI). The UN Development (UNDP) associates economic development with factors like longevity, high education, and improved living standards.

Robinson (1972) distinguishes between economic growth and development, arguing that growth involves aggregate product increases without significant structural changes, while development includes growth, changes in economic structure, culture, and social changes.

The schema for analyzing economic growth consists of three elements: the existence of profitable opportunities, exploitation of these opportunities, and the needed capital. Conversely, that for defining economic development consists of four elements: technical structure, institutional structure, aggregate production structure, and mechanism of interdependence. These concepts are relevant only if they impact the general population, inclusingpoverty alleviation, and reduction. Poverty is defined as a person's inability to meet societal minimum needs, including social participation (D'arcy and Goulden,2014). Development Initiative (2016) defines deprivation as the absence of resources like income, assets, skills, knowledge, or technology.

According to the World Bank Global Monitoring Report (World Bank, 2015), over 900 million people live below the income poverty line, with a high concentration in sub-Saharan Africa, including Ghana. Additionally, 1.6 billion people may be deprived of non-income variables like social services and security. Research on insurance is crucial to understand its contribution to economic development, poverty alleviation, and societal gro ``wth. Curak, Loncar, andPoposki (2009) as well as Akinlo&Apanisille (2014) found that insurance development positively impacts economic growth in transition European Union member countries. They also found that premiums from insurance operations contribute to economic growth in sub-Saharan Africa, with a positive relationship between human capita and economic growth.Zouhaier (2014) and Ozuomba (2013) found a positive relationship between insurance and economic growth, with non-life insurance positively impacting growth. Ozuomba's study on Nigeria suggests a significant relationship between insurance and economic development, recommending policies for insurance development.

Insurance plays a crucial role in financial and economic development, stimulating growth in economies. Studies show a unidirectional causality relationship between insurance development and financial growth. Azman-saini and Smith (2010) found that insurance impacts macro-economic variables like output growth, capital accumulation, and productivity, depending on the type of economy. The studies show a growing interest in the relationship between insurance and economic development and growth globally. While there is evidence of a positive relationship, income level is crucial for determination. Generally, these relationships are examined by

consideration for key economic and insurance indicators: gross written premium, insurance penetration and insurance density, as discussed below.

Gross Written Premium, Insurance Penetration and Insurance Density

Insurance benefits the population by maintaining social status and property values. However, insurance contracts are legally binding, and premiums are a legal consideration. The insured pays premiums for insurance services, which can vary depending on the insurance company. This study focuses on gross written premiums, as they are of interest.

Gross written premium is the total premium written by an insurer, including direct and assumed premiums before deductions like reinsurance and ceding commission. It is collected as of the policy issue date and is relevant to individual insurance companies and the economy as a whole. The concept derives from the fact that insurance is a contract and basic insurance precepts must be satisfied for legitimacy. A valid contract must among others possess an element of 'consideration'. Premiums represent the 'consideration' for a valid insurance contract. When Gross Written Premium is juxtaposed with economic indicators such as Gross Domestic Product, then insurance penetration and density (which determine the effect of insurance on society) come into the fray.

Insurance penetration, the ratio of gross written premium to GDP, is a crucial indicator of a country's insurance development. It measures the impact of insurance (inclusive insurance) on GDP. Insurance density and penetration are key indicators, indicating the efficiency of the insurance sector. These factors determine the contribution of insurance to a country's growth and improvementin citizens' lives (Onduso,2014). Research on insurance penetration and density have gained interest, with studies examining their impact on economic development and growth. Han et al. (2010) found a positive correlation between insurance development and economic growth in 77 economies between 1994-2005, using insurance density as a measure.

Dash et al. (2017) studied the causal relationship between insurance market penetration and per capita economic growth in 19 Eurozone countries from 1980-2014. They found both unidirectional and bidirectional causality, but these are non-uniform across the Eurozone. They advocate for policies to smooth these differences for sustainable growth.

Das and Shome (2016) suggest that insurance penetration is influenced by factors such as inflation, foreign direct investment inflow, life expectancy, labour productivity, global terrorism index, and dependency ratio. They found a positive relationship between these variables and insurance penetration, indicating a significant influence of insurance on a country's GDP.

Insurance penetration and density are crucial indicators for assessing a country's economic contribution. Swiss Re Sigma (2016) reports an average world penetration of 6.2% and density of $662. North America and Europe have higher penetrations and density, while Africa has lower rates. Ghana's insurance penetration rate is consistently under 2%, posing a challenge for the country's insurance regulator.

Review of Research on the Theories of Inclusive (Micro) Insurance

Inclusive insurance is a special type of insurance that focuses on the informal sector, providing services to low-income groups. All the afore-mentioned theories: risk and uncertainty theories, expected utility, and insurable interest are all germane to inclusive insurance although its very nature allows for idiosyncratic considerations regarding the application of the theories.

Definitions, scope and regulations of Inclusive insurance

The International Association of Insurance Supervisors (IAIS) and CGAP WG MI argue that inclusive insurance can have different supervisory connotations in different jurisdictions. It is classified as protection for low-income households, small benefits, low premiums, and insurance for those in the informal economy. Inclusive insurance must adhere to accepted practices and be funded by premiums.

The IAIS-CGAP WG MI (2017) defines inclusive insurance as services run in accordance with national laws and principles within local jurisdictions. Government social welfare systems not funded by risk premiums or managed according to insurance principles cannot be classified as inclusive insurance.

Inclusive insurance is a type of insurance designed for low-income individuals, focusing on the informal economy. It is characterized by benefits and premiums, ensuring protection against specific risks. Churchill and McCord (2012) argue that four main operationalizations of inclusive insurance are flawed: target group, product-based, provider, and distribution channel. They propose a'mixed' definition, encompassing elements such as target group, products and services, processes, and distribution channels. This approach aims to address the shortcomings of each approach and ensure inclusivity for the informal sector.

In Ghana, section 259 of Act 1061 (**Interpretation**) defines a micro-insurance contract as an insurance product that:

(a) Is designed to meet the needs of low income persons;
(b) Is marketed to low income persons or specific description of low income persons in a particular geographical area;
(c) The premium charged under the product is affordable to low income persons;
(d) Is accessible to low income persons

However, section 259 of Act 1061 states that “Inclusive insurance contracts target a specific population segment often underserved by traditional insurance, as defined in Regulation (Section 259 of Act 1061)”. The Regulations is yet to be promulgated. In the absence of same, the terms micro-insurance and inclusive insurance will be used interchangeably bearing in mind the extension provided in Act 1061 (i.e. “contracts that target specific population segment often under served by traditional insurance”).

Types and Classifications of inclusive insurance products

Inclusive insurance products are classified by the Micro-insurance Network (MiN, 2018) into life, property, health, and agricultural insurance, with reinsurance playing a crucial role in bundled or composite arrangements. On the otherhand, the Insurance Information Institute(2018) classifies inclusive insurance programs based on parametric products, such as life, agriculture, property, health, savings linked, value added services, and composite products. Accidental death and disability products are also important categories, indicating that products are designed to fit these broad categorizations.

Mukherjee (2012) and Star Micro Insurance Company (2018) provide comprehensive insurance products, including life, general, and child protection. These products can be classified into various types, such as bundled or composite products, which combine various types of coverage. These broad categorisations are important as they serve as basis for product design and provision of services to address the needs of the relevant target populations.

Delivery methods for inclusive insurance

Chandani (2009) highlights the inclusive insurance supply chain, which includes regulators, risk carriers, administrators, delivery channels, technology platforms, and service providers, ensuring quality service for low-income individuals through direct interaction and specialized support. Generally, inclusive insurance distribution channels include microfinance institutions, credit unions, cooperatives, labor unions, retail outlets, NGOs, post offices, and other specialized sales forces. Distribution is crucial for low-income people, as inclusive insurance typically has low margins. Currently, there are six main outlets: financial institutions, community-based organizations, retail chains, mobile network operators, employers, direct sales, healthcare providers, post office, and utility companies. Each has its own units, with community-based organizations offering homogeneous features to their members.

MiN (2018) identifies the following as main models of inclusive insurance coverage: partner-agent, mutual, cooperatives, community-based, all-in-one, franchise, and supplier models. In the partner-agent model, insurers offer and underwrite insurance products through various channels, such as microfinance institutions, retailers, utility companies, third-party bill payment providers, and religious institutions. These institutions provide trust and enable risk-bearers to reach low-income populations.

Inclusive insurance coverage models, such as mutual, cooperatives, and community-based organizations, share costs, risks, and benefits among members. Mutual inclusive insurance operates where insurers are owned by members, while cooperative micro-insurers may not be client-owned. Community-based organizations serve as distribution channels (Merry,PrashadandHofforth,2014).

The "All-in-One" model involves inclusive insurance companies using agents to sell products to low-income individuals, while the franchise model involves micro-insurers granting licenses and assigning capital, but the franchisee designs products, sets prices, and handles losses and gains.

Micro-insurers in the supplier model aim to increase demand and access to services like healthcare and funeral services, but face challenges like risk management inadequacies or regulatory restrictions.

Smith, Smit, and Chamberlain (2011) suggest alternative inclusive insurance distribution models, involving partnerships with non-typical entities like cash-base retailers, credit-based retailers, utility and telecommunications companies, and third-party bill payment providers. These partnerships range from joint ventures to commission-earning intermediaries, offering simplified personal accident and life insurance products.

Bhatted (2012) highlights the rise of new insurance distribution channels due to increased competition and consumer preferences. Micro insurers are leveraging technological advancements to innovate and improve operational efficiencies, bypassing traditional intermediaries and influenced by internet usage, social media, SaaS solutions, and automation of underwriting processes.

Demand and supply of inclusive insurance from insured and insurer perspectives

Studies have assessed the demand and supply of inclusive insurance, with Akotey, Osei, and Gemegah (2011) focusing on the informal sector in Ghana. Key determinants include premium flexibility, income level, nodal agency, insurance knowledge, and marital status. Ferguson and Hung (2008) suggest that institutions like Micro-Finance Center, NLC, and Inclusive Insurance Center develop demand-led products and investments for the poor.

A qualitative study in Vietnam aimed to identify risks and risk management in the low-income market, focusing on factors like sickness, transport accidents, funerals, crop/livestock, and seasonal variations. Uninsurable risks included land and house purchases, school fees, and inflation. New entrants should focus on quality, service convenience, and clear benefits.

Achampong-Kyei (2004) found that "Anidaso" is effective in poverty reduction. Trust, social networks, risk aversion, and initial wealth are critical factors for purchasing inclusive insurance products in rural Ghana. Promoting Insurance in Ghana (2015) and Micro Finance Opportunities (2015) assessed the impact of awareness creation on knowledge, attitude, and behavior in four districts.

Inclusive insurance coverage increased from 4.1% in 2010 to 28% in 2014, with 1.8 million lives and properties covered in 2012, 2013 and 2014. However, the majority of clients are in the informal sector with low income.

Malagardis' (2009) study on the demand for inclusive insurance in the Philippines found that insurance companies prioritize funding from the insuring public over addressing their needs. The study found that nine out of ten respondents experienced major crises over the past three years.

Impact of increased density and penetration of Inclusive insurance

Nelson and Isaboke (2015) found low penetration of loyalty-based micro insurance schemes in Kenya, with factors such as trust, product design, literacy, and demography contributing. Ceballos, Kramer, and Robles (2019) investigated index-based insurance and picture-based insurance for smallholder farmers in India, identifying high basis risk, limited trust, and poor understanding as reasons for insufficient quality insurable coverage.

Farmers use smart phones to indemnify crop damage, and PBI improves demand but doesn't show adverse selection. In Kenya, low income, complexity of insurance, and limited distribution channels limit insurance penetration, according to Onduso's 2014 study.

Inclusive insurance plays a crucial role in the Indian economy, increasing insurance penetration. In 2009-2010, the number of individual and group life policies written was 2.98 million and 16.84 million, respectively. The Indian government mandates a minimum of 20% of insurers' portfolios come from rural areas, leading to the emergence of Indian inclusive insurance schemes.

The Ghanaian regulator, NI,C, is working to address the low insurance penetration rate in the country by promoting inclusive insurance. It has consistently stated that developing insurance products for the informal sector is crucial for achieving high insurance penetration rates, as conventional insurance lacks suitable options.

The informal economy makes up 80% of Ghana's workforce. The National Insurance Council (NIC) developed the 'Market Conduct (Inclusive insurance) Rules: Guidance Note on Approval Process' for licensing inclusive insurance service providers. The rules require service providers to identify low-income target markets, assess demand potential, and provide value. However, Act 1061 has provided important sections on inclusive insurance which guide the operations of the inclusive insurance sector. This will be further strengthened when the Insurance Regulations is promulgated.

Section 209 allows unlicensed insurance agents to sell micro-insurance without obtaining an insurance intermediary license, allowing them to distribute and sell inclusive insurance contracts.

Act 1061 defines index insurance for agricultural purposes, focusing on smallholder farmers as underserved groups. The law introduces various insurance intermediaries, including insurance brokers, reinsurance brokers, agents, bancassurance, technical service providers, micro-insurance agents, and innovative insurance intermediaries. These provisions aim to improve inclusive insurance service delivery in Ghana.

Advantages and Disadvantages of Inclusive insurance on the side of the insurer and the insured

Inclusive insurance products reduce low-income households' vulnerability to economic stressors, offering lower premiums, wider market coverage, high volumes, and low administrative costs when partnered with financial institutions. However, it faces increased costs due to demographic characteristics, low income, and distribution challenges. These challenges are identifiable worldwide including countries like Vietnam, where 70% of the population is uninterested.

A.M Best Company (2012) suggests micro-insurers can overcome these hiderances by partnering with MFIs and NGOs, negotiating long-term contracts, and purchasing targeted, standardized consumer insurance schemes for low-income individuals.

Summary

Insurance operations *prima facie* seem to involve the simple task of offering opportunities for individuals and organisations to transfer the financial risks associated with their activities to entities that are able to shoulder

such risks, and come their aid in times of crises. However, insurance is technical in nature and underpinned by numerous theories and concepts

The paper sought to the examine these theories and concepts adopting a sequential approach, with focus on relevance in contemporary times and effective articulation. The key theoretical groupings include theories of risk, uncertainty and expected utility; insurance; insurance regulation, economic development and growth, insurance penetration and density and the theory and concepts of micro-insurance and by extension inclusive insurance.

The theories of risk and uncertainty examine explain the impact of events whose outcomes are either unknown or may have associated difficulties if known and its exact effect on decisions. Together with the theory of expected utility (Bernoulli, 1738; von Neumann and Morgensten, 1944) these concepts provide the bases for important phenomena such as insurance.

Insurance is one of the cardinal risk transfer tools which has been utilized throughout history (as historically evidenced by the 'bottomry' practiced by ancient Babylonians, Hindus and Romans as well as Greek). In modern times, events such as the Great Fire of London in 1666, Hamburg Fire etc. and the measures taken such as the legislation of a duopoly (Royal Exchange and Assurance Act of 1720) are evidence of the historical antecedents to insurance.

The theory of insurance is premised on the expected utility property, which takes into consideration its capability as basis for determining people's preferences (Klein, 2015). Consumers are said to be risk averse (prefer less loss with certainty to big loss with uncertainty) as their expected utility is less than utility of expected value (i.e. concave utility curve). Risk aversion defines the demand for insurance (Klein, 2018; Abraham and Schwarcz, 2015). Insurance companies can provide the service because they are risk neutral. Insurance has a number of underlying principles that have been upheld by the courts as critical to the survival of the concept. These include: ***uberrimaefidei***or utmost good faith, indemnity and its corollaries of contribution and subrogation, insurable interest and proximate cause. Violation of these principles could be basis for repudiation of claims.

The expected utility property (theories) and the fundamental principles (doctrines) of insurance have been found to be inadequate in ensuring smooth insurance operations. Insurance regulation and supervision are therefore critical for a sound and safe insurance market (OECD, 2018). The two functions provide structures for the smooth

insurance operations and appropriate economic theory underpinnings for such operations (Klein, 2018). Willett (1901) argues for economic dimensions of insurance and therefore impact of insurance on the general populace must be measured through such indicators as economic development and growth, poverty reduction/alleviation, and insurance penetration/density.

Micro-insurance (and by extension inclusive insurance) is a special case of insurance, with focus on the informal economy and special groupings. Therefore key principles and theories of insurance are equally applicable to micro-insurance. Whilst there is no universally accepted definition of micro-insurance, key themes and characteristics associated with the term include: low premiums, low income groups, small benefits (IAIS, 2017; Churchill and McCord, 2012; Kessler, de Montchalain and Thiamann, 2018). This might be extended to include such factors as target group, products, geographical locations and services as well as distribution channels.

Micro-insurance has many advantages to both insureds and insurers. For example, it is one of the tools for reducing the vulnerability of low income households against shocks and may be a profitable line of business for insurers. However, the low premiums and the general costs of providing the service (e.g. underwriting costs, regulation and design costs etc.) are major challenges to the insurer. Partnerships with MFIs and NGOs may help improve the profitability of insurance operations to micro-insurers.

REFERENCES

Abraham, K. and Schwarcz, D. (2015). *Insurance law and regulation (University casebook series).*Foundation Press

Abraham, K. (2015). Risk aversion, insurance and the limits of regulation. *UC Irvine Law Review5* (513). 513-536 Access to Insurance Initiative (2017). Access to Insurance Initiative- Annual Report 20172018: empowering regulation-developing communities. Eschborn, Germany: Access to Insurance Initiative Access to Insurance Initiative (2018). *Access to Insurance Initiative- **Annual Report** 20172018:empowering regulation-developing communities*. Eschborn, Germany: Access to Insurance Initiative

Akerlof, G.A. (1970). The market for lemons: quality uncertainty and the market mechanism.*The Quarterly Journal of Economic, 84*(3). 488-500

Akotey, O.J., Osei, K.A. and Gemegah, A.(2011). The demand for inclusive insurance in Ghana. *The Journal of Finance Risk, 12*(3). 182-194

Asongu, S.A., Odhiambo, N.M. (2020). Insurance Policy Thresholds for Economic Growth in Africa. European Rev Res 32, 672–689 (2020). https://doi.org/10.1057/s41287-019- 00234-2; accessed on 29 March 2024 from https://link.springer.com/article/10.1057/s41287-019-00234-2

Auronen, L. (2003). Asymmetric information-theory and application. Helsinki University of Technology, Department of Industrial Engineering and Management. 167 Seminar on Strategy and International Business.

Azman-saini, WMW. and Smith, (2011). Finance and growth.: new evidence on the role of insurance. *South African Journal of Economics, 7*(2). Retrieved on April 19, 2019 from https//ww.onlinelibrary.wiley.com

Bank of Ghana (2018). Government establishes new indigenous bank: bank of Ghana revokes licences of five banks and appoints receiver in respect of their assets and liabilities. Retrieved on April11,2020fromhttps://www.bog.gov.gh/notice/?jet-smart-filters=jet-engine/default&jet_paged=11 Bank of Ghana (2019). Press Release. Retrieved on April 5, 2020 from https://www.bog.gov.gh/wp-content/uploads/2019/07/PRESS-RELEASE-Grand-Final- August-2018.pdf

Belmont International (2013). The six key principles of insurance. *Belmont Virtual Academy,1*.

Retrieved on February 19, 2019 from www.belmontint.com.

Bernoulli D. (1738). Translated by Sommer, L.D. (1954). Exposition of a new theory of measurement of risk. *Econometrica*, *22*(1), 23-32 . doi:10.2307/1909829.

Bhatted, M. (2012). Trends in insurance channels. Retrieved on December 28, 2018 from www.capgemini.com/financialservices

Black Friar Group (2019). What is the principle of indemnity in insurance? Retrieved on February 27, 2019 from https://www.blackfriarsgroup.com/principle-indemnity insurance/

Bland III, W. (2013). Uberimaefidei: utmost good faith. Retrieved February 21, 2019 from https://mblb.com/admiralty-maritime/uberrimae-fidei-utmost-good-faith/

Borch, K. (1967) Economic theory of insurance. *Austin Bulletin 4*(1) DOI: 10.1017/S0515036100006292

Borch, K. (1985). Theory of insurance premium. *The Geneva Papers on Risk and Insurance, 10* (36)

Buckham, D., Jason, W. and Rose, S. (2010). *Executive guide to solvency II*. North Carolina,USA: SAS Institute Incorporated.

CDC Consult. (2020). *Public perception, awareness and confidence in insurance in Ghana.* Accra, Ghana: National InsuranceCommission (NIC), German Development Cooperation (GIZ).

Ceballos, F., Kramer, B. andChandani, T. (2009). Micro insurance business models. *Primer series on insurance, 3.* Retrievedon April 19, 2019 from www.worrldbank.org/nbfi

Chandani, T. and Garand, D. (2013). *Lessons learned and good practices in health micro insurance: a guide for practitioners.*Luxembourg: Inclusive insurance Network.

Chiappori, P.A. and Salanie, B. (2013). Assymetric information in insurance markets: predictions and tests. In *Handbook of Insurance*, 2edn (G. Dionni ed.) Retrieved on April 20, 2019 from https:// scholar.harvard.edu

Churchill, C. (2006). The demand for inclusive insurance. In: *Protecting the poor: A microinsurance compendium*. Vol. I, ed. C. Churchill (ed.) Geneva:InternationalLabour Organization.

Churchill, C. & McCord, M.J. (2012). Current trends in microinsurance. In: *Protecting the poor: A microinsurance compendium.* Vol. II, ed. C. Churchill and M. Matul, 8-39. Geneva: International Labour Organization.

Cliath, O.C. (2015). *Introduction to risk management: theory and practice*. Dublin City University
Cramer, G. (1728). Letter to Nicholas Bernoulli; extracts printed in Bernoulli (1738).
Curak, M., Loncar, S. and Poposki, K. (2009). Insurance sector development and economic growth in transition countries. *International Research Journal of Finance and Economics, 34*
D'Arcy, C. and Goulden, C. (2014). A definition of poverty. *John Rowntree Foundation Programme Paper*. Retrieved on April 20, 2019 from https://www.jrf.org.uk/publications
Dash, S., Pradhan, R.P., Maradana, R.P., Gaurav, K., Zaki, D.B. and Jayakumah, M. (2017). Insurance market penetration and economic growth in Eurozone countries-time series evidence on causality. *Future Business Journal, 4*. 50-67.
Dawd, I. & Benlagha, N. (2023). Insurance and economic growth nexus: New Evidence from OECDcountries, *Cogent Economics & Finance,*11:1, DOI:10.1080/23322039.2023.2183660
Dembeck, J. (2008). Insurance regulations in a nutshell. In *Understanding Insurance Law, No. 14269*. Retrieved on April 20, 2019 from www.pli.edu
Development Initiatives (2016). Poverty. Retrieved on March 1, 2019 from https://devinit.org
Economic Times. (2018). Definition of penetration rate: what is penetration rate? Retrieved on April 20, 2019 from https://economictimes.indian times.com
European Commission (2015). *Risk management and supervision of insurance companies (solvency 2).* Retrieved on April 20, 2019 from https://ec.europa
Ferguson, M. and Hung, D.V. (2008). *Assessment of demand for inclusive insurance: Thanh, Tri District, Hanoi, Vietnam.* Washington D.C: Microfinance Opportunities Garcia, J.A.(2013). A bit about the St Petersburg paradox. Retrieved on April, 2019 from https://www.math.tamu.edu.
Han, L., Li, D., Moshirian, F. and Tian, Y. (2010). Insurance development and economic growth. *The Geneval Papers, 35.* 183-199.
Hansen, B.E. (2022). *Probability and Statistics for Economists*. United States: Princeton University Press
Huseynov, E. (2016). Subrogation-right transfer mechanism in risk transfer industry.Baku State University Law Review, 2. 206-214
Insurance Act, 2006 (Act 724). Accra, Ghana: Assembly Press
Insurance Act, 2021 (Act 1061). Accra, Ghana: Assembly Press
International Association of Insurance Supervisors (2020). *Global insurance market report.* Retrieved on April 11, 2020 from file:///D:/CHAPTER%205/2019_Global_Insurance_Market_Report_(GIMAR)%20(1).pdf
Insurance Information Institute (2018). *Glossary.* Retrieved on October 20, 2018 from https://www.iii.org/resource-center/iii-glossary/
International Labour Organization, ILOSTAT database. Retrieved in December 10, 2019 https://www.ilo.org/global
International Risk Management Institute (2020). Glossary: definition-moral hazard. Retrieved from https://www.irmi.com/term/insurance-definitions/moral-hazard
International Standards Organisation (2009). *ISO 31000*. Retrieved on November 9, 2018 from https://www.iso.org/home.html
International Standards Organisation (2009). *ISO/EC Guide.* Retrieved on November 9, 2018 from https://www.iso.org/home.html
Karthigesan, K. (2018). Supply and demand side development of inclusive insurance in India. *Asia Pacific Journal of Research, 2*(LXXXVII). 109-111
Kaur, J. (2015). Insurance penetration and density. *International Journal of Business Management, 2*(1), 765-770.

Kaur, P., Stoltzfus, J. and Yellapu, V. (2018). Descriptive statistics. *International Journal of Academic Medicine, 4* (1), 60-68. DOI: 10.4103/IJAM.IJAM_7_18
Kendall, J., Wright G. and Almazan, M. (2013). *New sales and distribution models in mobile financial services.* Appleton: MicroInsurance Centre.
Kessler, D., de Montchatlin, A. and Thimann, C.(2018). Insurance and economic development: growth, stabilization and distribution. *Impact Insurance,* Paper 48. Retrieved on October 20, 2018 from http://www.ilo.org/impactinsurance.

Klein, R.(2015). *A primer on the economics of insurance.* George State University Technical Report. Retrieved on February 14, 2018 from http://www.researchgate.net/publications. doi: 10.13141214/2.1.4487.9681.
Klein, R.W. (2018). The economics of risk management. Retrieved on January 13, 2019 from http:// www.researchgate.net/publications. doi: 1013140/RG. 2.2.24248.
Knight, F H (1921), *Risk, uncertainty and profit*. Washington, DC: Beard Books
Life Assurance Act (1774). Retrieved on April 20, 2019 from https:// www..legislation.gov.uk
Kumari, C.(2017). Inclusive insurance in major developing countries. *Indian Journal of AppliedResearch, 7*(12). 570-571
Kumari, K. and Yadav, S. (2018). Linear regression analysis study. *Journal of the Practice of Cardiovascular Science, 4*(11). 33-36. Doi: 10.4103/jpcs_8_18
Lohrey, J.(2019). What are the six principles of insurance? Retrieved on March 14, 2019 from https://finance.zacks.com/six-principles-insurance-9383.html.
Macedo, L. (2009). The role of the underwriter in insurance. *Primer Series on Insurance, 8.* Retrieved on April 20, 2019 from www.worldbank.org/nbfi
Marine Insurance Act (1906). Retrieved on April 20, 2019 from https://www.legislation.gov.uk
Marine Insurance (Gambling Policies) Act (1909). Retrieved on April 20, 2019 from https:// www.legislation.gov.uk
McCord, M.J., Steinmann, R., Tatin-Jaleran,C. Ingram, M. and Mateo, M. (2013). The land scape of inclusive insurance in Africa 2012. Munich Re Foundation and GIZ Program Promoting Financial Sector Dialogue: Munich/Eschborn.
Meggit, G. (2014). Insurable interest-the doctrine that will not die. Retrieved on March 12, 2019 from https://doi.org/10.1111/lest.12059
Merry, A., Prashad, P. and Hoffarth (2011). *Microinsurance distribution channels: insights for insurers.* Geneva: Microinsurance Innovation Facility.
M Financial Group (2016). Life insurance basis: pricing and policy mechanics. *Advance Markets Insight.* Retrieved on February 14, 2019 from http://www.mfin.com
Mukherjee, P. (2012). Inclusive insurance products types in India. MicroSave*India FocusNote 86*
Nagpal, S. (2024). What is subrogation? Retrieved on March 11, 2019 from blogs.comparepolicy.com
National Association of Insurance Commissioners (NAIC) (2019). *State insurance regulation: history, purpose and structure.* Retrieved on March 14, 2019 from www.naic.org/meetings_home.htm.
National Pensions Act 2008 (Act 766). Accra, Ghana: Assembly Press
National Pensions (Amendment) Act 2014 (Act 883). Accra, Ghana: Assembly Press
Nelson, K.N. and Isaboke, C. (2015). Challenges facing the uptake of M-insurance loyalty-based life insurance schemes-a case study of the yu –Cover microinsurance scheme in Kenya. Retrieved on January 6, 2019 from www.imfti.uci.edu
Neumann, J. von., Morgenstern, Oskar (1953) [1944]. *Theory of Games and Economic Behavior* Princeton, NJ: Princeton University Press.
Onduso, B. (2014). Factors influencing penetration of inclusive insurance in Kenya. MBA Project,University of Nairobi. Retrieved on April 19, 2019 from repository.unobi.ac.ke
Osei-Boateng, C. and Ampratwum, E. (2011). *The informal sector in Ghana*. Friedrich Ebert Stiflung
Polinski, A.M. and Shavell, S. (2017). Subrogation and the theory of insurance when suits can be brought for loss suffered. *Stanford Law and Economics Online* Working Paper, 56.
Prashad, P., Merry, A. and Hoffarth, T. (2014). *Microinsurance distribution channels: insights for insurers.* Geneva: Microinsurance Innovation Facility.
Rahman, T.U. (2017). Insurance claims: the doctrine of proximate cause. Retrieved on March 13, 2019 from https://thefinancialexpress.com.bd/views/insurance-claimsthe doctrine-of-proximate-cause
Randle, T. (2009). Risk based supervision. Primer Series on Insurance, 14. Retrieved on April 19, 2019 from www.worldbank.org/nbfi
Rejda, G.E. & McNamara, M.J. (2014). Principles of risk management and insurance. Harlow, England: Pearson Education Limited.
Rejda, G.E. & McNamara, M.J. (2016). *Principles of risk management and insurance.*

Harlow, England: Pearson Education Limited.
Robinson, S. (1972). Theories of economic growth and development: methodology and content. *Economic Development and Cultural Change,21*(1). 54-57
Rothschild, M. and Stiglitz, J. (1976). Equilibrium in competitive insurance markets: an essay on the economics of imperfect information. *The Quarterly Journal of Economics90*(4). 629-649
Robles, M. (2018). The feasibility of picture-based insurance (PBI): smart phone pictures for affordable crop insurance. IFPRI Discussion Paper. Retrieved on April 12, 2019 from www.ifpri.org
SGA Services and Financial System Development (2019). *Financial Sector Report Ghana.*
Smith, A., Smith, H. and Chamberlain, D. (2011). *Beyond sales: new frontiers in microinsurance distribution, lessons for the next wave of inclusive insurance distribution innovation* . Geneva: International Labour Organisation
Smith, A. Smit, H. and Chamberlain, D. (2011). *Beyond sales: new Frontier in micro insurance distribution – lesson for the next wave of inclusive insurance distribution innovation.* Geneva:Microinsurance Innovation Facility.
Smith, A., Chamberlain, D., Hougaard, C., Smit, H. and Carlman, J. (2010). *Reaching the client: update on inclusive insurance innovation in South Africa*. Cape Town: The Centre for Financial Regulation and Inclusion.
Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics87*(3):355–374
Swiss Reinsurance Company Limited. (2016). *Swiss re global insurance review 2016 and outlook2017/18*. Switzerland: Swiss Reinsurance Company
Sheldon, H.N. (1882). *The law of subrogation.* Boston: Soule and Bugbee
The Actuary (2018). Insurance: a brief history. Retrieved on April 20, 2019 from https://www.theactuary.com
Toronto Center (2018). *Risk based supervision*. Retrieved on April 18, 2019 from https://res.torontocentre.org-guidedocs
Tsiboe, F. and Turner, D. (2023). The crop insurance demand response to premium subsidies: Evidence from U.S. Agriculture. *Food Policy*, Volume 119, August 2023, 102505
Willet, A.H.(1901). The economic theory of insurance. In Studies in history, economics and public law, XIV (2) ed (Faculty of Political Science of Columbia University)
World Bank (2016). *Global Monitoring Report 2015/2016-development goals in an era of demographic change*. Retrieved on March 15, 2019 from https://openknowledge.worldbank.org
World Bank Group (2019). GDP (current US$-Ghana). Retrieved on December 5, 019 from https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=GH
World Bank Group (2019). Labour force participation rate. Retrieved on January 5, 2020 from https://data.worldbank.org/indicator/SL.TLF.CACT.ZS
Wright, W. (2016). What determines insurable interest in a life insurance policy? Retrieved on March 13, 2019 from https://www.insurancescored.com/what-determines-an-insurable-interest-in-a-life-insurance-policy/
Zhang, L. and Su, Y. (2022). Inclusive Insurance, Income Distribution and Inclusive Growth.*Health Economics* in the *Frontiers in Public Health:* accessed on 30 March 2024 from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9046569/
Zouhaier, H. (2014). Insurance and economic growth. Retrieved on January 12, 2019 from http:// www.researchgate.net/publications. 20815362