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Review Article

The Regulation of Index-Based Agricultural Insurance Products as a Risk Management Tool for Small Holder Farmers in Cameroon

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Abstract

The regulation of index based agricultural insurance for small holder farmers in Cameroon are as a result of the risk they are exposed to like weather variability and related risks associated with their activities especially droughts, floods, pests and input costs and more importantly the limits of indemnity based agricultural insurance. Like any other poor and low income farmers with small land holdings their risk exposures can only be managed through good laws especially with the use of index insurance as a risk management tool. This article examines the CIMA Code as a regulatory instrument for agricultural insurance as far as small holder farmers are concerned. Book VII of the CIMA Code introduced microisurance in 2012 as a panacea to indemnity insurance which enabled the codification and development of index insurance by member states. The implementation of Index-based agricultural insurance faces considerable challenges that must be overcome to effectively service farmers in remote areas in a country like Cameroon. These challenges includes amongst others: regulatory insufficiency, limited historical rainfall and crop yield data, information on livestock mortality and limited infrastructures just to mention a few. It is recommended inter-alia that these aforementioned could be addressed through codification, infrastructural developments, inclusion of non-farming activities like banking and micro finance institutions amongst others.

Keywords: Regulation, Index Based Agricultural Insurance and Small Holder Farmers.

1-INTRODUCTION

The regulation of index based agricultural insurance for small holder farmers in Cameroon are as a result of the risk they are exposed to like weather variability and related risks associated with their activities. In Cameroon, agricultural activities include crop cultivation, livestock/poultry farming, as well as fish farming as major activities with major food crops like maize, sorghum, rice, potatoes and groundnuts and cash crops like cotton, cocoa and palm production. The main livestock activities in the country are cattle rearing, pig & poultry farming and fishery. Agricultural production in Cameroon like in most Sub-Saharan African countries is rain fed and as such is exposed to a series of disasters or risks some of which are weather related like drought, floods or wind, pests and diseases as well as input supply and market related risks.

It is important to note that most agricultural risks are linked to natural disasters which incidentally are regulated by the constitution [1], in relation to the state of emergency [2], because such climatic changes affects

[1]Article 9 of the 1996 Constitution of Cameroon gives the President of the Republic powers when circumstances require, to proclaim by decree a state of emergency which shall confer on him special powers to take measures in the event of the occurrence of a disastrous event which by its nature or gravity is considered a natural disaster and affecting part or all of the national territory.

[2] Law No. 90/47 Relating to the State of Emergency particularly in its section 1and Decree No.98/031 relating to the Organisation of Emergency and Rescue Plan.

small holder farmers output and over which they have very limited control or management capacity. With regards to the regulation on the general protection of civilians especially rural farmers, the government of Cameroon did put in place laws and policies for disaster management [3], that encouraged agricultural production even after such events. Earlier regulatory frameworks within the agricultural sector had to do with the provision of subventions, input supplies, post aid disasters and subsidies when adverse conditions like droughts or floods affected production of crops and animals leading to a drop in the yields or prices of the products. The President of the Republic is assisted by the National Council for Civil Protection (CNPC) which acts as an advisory organ in matters of civil protection [4]. A good number of these laws and decrees could be seen within the crop sub sector [5], and within the livestock sector, fishing and animal industries where specific laws were equally put in place to ensure the protection of small holder farmers who may be victims of catastrophic losses resulting from natural disasters as a result of climatic variability [6]. The aforementioned regulatory frameworks are many and varied, and provides protection to small holder farmers, but unfortunately very little was done on their protection through insurance be it through the traditional/ indemnity based agricultural insurance [7], or index based agricultural insurance [8 in spite the adoption of the laws to that effect in 1992.

This brings to light the focus of this article which intends to highlight the various regulations adopted to govern agricultural insurance in general and specifically index based agricultural insurance. The article further high lights the various index based agricultural insurance products; and brings out the challenges to this new approach of agricultural risk or disaster management as well as the opportunities provided by the said regulations to enhance the risk management capacity for small holder farmers in Cameroon.

1- Regulatory Agricultural Insurance Texts in Cameroon

In Cameron, the first major legal instrument that regulated the agricultural insurance sector as a risk management tool was the CIMA Code adopted on the 10th July 1992 [9]. The legal proviso regulating agricultural insurance is enshrined in article 55 of the said CIMA Code. It defines agricultural insurance as well as the type of activities covered together with the risk

[3] Law No. 80/016 Relating to the General Reorganisation of Civil Protection that abrogated the provisions of Law No.73/12 on Civil Protection.

[4] Law No. 96/054 Relating to the organization and functioning of the National Council for Civil Protection.

[5] Law No. 2001/014 of 23 July 2001 relating to the management of seed activity,

Law No. 2003/003 of 21 April 2003 on the Phytosanitary Protection,

Law No.2003/007 of 10 July 2003 on the Fertilizer Sub sector in Cameroon,

Decree No. 2005/0762/PM of 9 June 2005 amending and updating certain provisions of Decree No.92/455/PM of 23 November 1992, establishing the Implementation Modalities for Law No 92/066 of 14 April 1992 on Cooperative association and Common Initiative Groups.

[6] Law No. 2000/017 of 19 December 2000 on the regulation of veterinary health inspections,

Law No. 2000/018 of 19 December 2000 on the regulation of veterinary drugs,

Law No. 2001/006 of 16 April 2001 on the nomenclature and zoo sanitary regulations governing livestock diseases legally considered contagious and subject to compulsory reporting and

Decree No. 2001/546/PM of 3o June 2001 amending and updating certain provisions of Decree No. 95/413/PM of 20 June 1995, establishing certain modalities for implementation of the fishing regime.

[7] Traditional/Indemnity based agricultural insurance involves an insurance payout based on the actual loss at the insured unit level. It determines claim payment based on the actual loss incurred by the policy holder. Once an insured event occurs, an assessment of the loss and a determination of the indemnity are made at the level of the insured party to ensure indemnification.

[8] This is a new and innovative approach to insurance provision that pays out benefits on the basis of a predetermined index. Index insurance contracts pay out with reference to an indirect indicator intended to be a 'proxy' for loss or damage. With index-based insurance, payouts are related to an "index" that is closely correlated to agricultural production losses, such as one based on rainfall, temperature, wind speed, crop yield and livestock mortality rates or vegetation levels (e.g. pasture for livestock). Payouts are made when the index exceeds a certain threshold, often referred to as a "trigger".

[9] In 1992, some 14 French speaking African countries of the franc zone signed a treaty establishing the Conference Inter-Africaine des Marches d`Assurance (CIMA). The motivation for the creation of CIMA was threefold: To modernize and harmonize regulations relating to the insurance industry among all the franc zone countries; to promote the insurance industry and the uptake of insurance especially life insurance as an important component of economic development and to provide a regional structure which could inter alia support the regulatory function of signatory countries and adjudicate in case of dispute with particular insurers. In 1995 the "Codes des Assurances CIMA" was adopted replacing each country`s insurance regulation. Historically the CIMA region is an integrated organization of the insurance industry in 14 Francophone African countries. It was created in 1992 as a way to ensure the effective supervision of the insurance industry in order to develop and maintain fair, safe and stable insurance markets for the benefit and protection of policy holders as well as investors in the region

covered by the agricultural policies that included amongst others: Loss through destruction to agricultural productions by bad weather, hail storms, disease and pest. According to the Code, "an insurance contract is a bilateral contract which places on the insurer and insured some obligations to be respected. For the insurer, it is essentially the obligation to ensure the execution of the services laid down by the contract at the occurrence of the insured event [10]. For the insured, he has the obligation to declare the risk, pay the premium or contribution at the agreed dates and declare when the contract is in force, new circumstances which might either increase the risk, or create new ones thereby rendering inaccurate or null and void the answers given to the insurer" [11].

Index based agricultural insurance is a relatively new and innovative approach to insurance provision as regulated by the CIMA Microinsurance Code in Book VII [12], with crop and animal production insurance as some of the innovations. From a technical point of view, agricultural risks were considered in the developing Countries as those risks falling under the Act of God [13], and by implication excluded from insurable risks covered by insurance companies. However, technological advancement within the insurance sub sector and the provisions of the CIMA Microinsurance Code Book 7 have demystified this exclusionist principle hitherto put forward by insurance providers to shun away from insuring agricultural activities as shall be seen with the use of index based insurance [14]. It was introduced as a result of the high cost of assessing losses in traditional insurance schemes based on paying indemnities for actual losses incurred which most often were not viable and costly, especially for small holder farmers in a developing country like Cameroon.

The CIMA Code in it Book VII under microinsurance defines index insurance based on specific features to wit: as an insurance mechanism that is characterized mainly by low premium rates or insured capital with a simplified coverage system from the formality of subscription, management of contracts to the declaration of loss and indemnification of victims [15]. The target population is the low income population against specific risk subject to the payment of premiums or contributions. With regard to persons who can subscribe for microinsurance contracts, it extends and covers moral persons, enterprises or a community for the interest of its employees, customers or members as well as physical persons [16]. It provides for group insurance in derogation to article 95 of the insurance code and in this regard, a well constituted group or not, members of an enterprise through the enterprise can obtain an insurance cover [17].

With respect to the rules applicable to microinsurance contracts; the general principles of insurance contracts as enshrined in Book 1 are implemented here but with a few exceptions in relation to alienation of motorized land vehicles [18]. In all, risk management rules are applied under microinsurance schemes. The use for instance of very simple language as recommended for the drafting of microinsurance contracts to be easily understood by the target population, which can further be translated into local languages for easy understanding of the population in derogation to article 7 of the insurance code and sold to the insured population [19], greatly facilitate the uptake of agricultural insurance by small holder farmers. Procedurally, the Code has made it optional for the insured to apply to the insurer by way of a 'Lettre Commande' that must be received with proof as provided under the insurance code [20]. The concerned articles have to do with the obligations of the insured, the insured right to resiliation, forms of resiliations with lettre commandee, death of insured and sell of insured property, renunciation and declaration of insured in a life insurance as well as the exclusion of an adherent or member [21].

It flows from the above analysis that agricultural insurance as provided in article 55 of the insurance CIMA Code except civil responsibility risk can

[10] Article 16 (1) of the CIMA Code.
[11] Ibid. Article 12
[12] Regulation No.0003/CIMA/PCMA/PCE/2012 of 05 April 2012 bearing on the Organisation of the operation of Microinsurance within the countries of CIMA member states.
[13] By act of God we are talking of risks that cannot be insured because they are caused by acts independent of human control, for instance floods, droughts and other climatic variability.
[14] Launched in the 1970s, an index based agricultural insurance is one wherein payouts are related to an index that is closely related to agricultural production losses based essentially on rainfall, yield or vegetation levels e.g. Pasture for livestock. It is an innovative concept of evaluating agricultural risks and payouts using a set of index or index combination instead of the traditional on-site loss assessment. As a risk management tool it has shown significant promise in promoting sustainable development and resilience in developing countries as it helps small holder farmers and pastoralists to increase their resilience to weather shocks like drought or flood while encouraging investments in production. Payout are made when the index exceeds a certain threshold called a "Trigger" point.
[15] Article 700 of the Microinsurance Code.
[16] Ibid Article 700
[17] Ibid Article 704
[18] See articles 51,52,53 and 54 al relating to personal insurance and article 74.of the insurance code
[19] Ibid article 701
[20] See articles 12,21,26,40,65,99 and 97 of the insurance Code as read with article 701 of Microinsurance Code.
[21] Article 701 of the Microinsurance Code

be covered under a microinsurance contract which provides for two main branches to wit: nonlife and life insurance [22]. In line with the above branches this article focuses on the nonlife and specifically the agricultural insurance products.

Thanks to the index based agricultutral insurance, all perils can be measured and insured within a given area and period, for instance with the use of weather stations for rainfall. The intention envisaged in the putting in place of the Microinsurance contract makes it clear to the effect that it is meant for small farm holders and herders. With respect to indemnification after a loss, it is based on the level of the index, type of companies and amount of capital subscribed [23], thus an opportunity for small holder farmers in Cameroon to improve on their resilience.

A well codified or consolidated text in Cameroon will facilitates the uptake and purchase of index insurance in different part of the country where the various products offered under an index based agricultural insurance as examined below can be offered to the small holder farmers and herders. These include index based agricultural products and index based livestock products essentially.

2-Index Based Agricultural Insurance Products

The CIMA Microinsurance Code book VII is not limited to agriculture insurance alone as it provides for different branches of activities within non-life and life insurance [24]. Amongst the nonlife activities we have: Bodily accidents, Sickness, Loss in agricultural production, Loss in livestock farming, Fishing and others and with respect to Life insurance category, we have: Death, Life, Savings and Capitalisation [25]. Our interest in this section is limited to crop index insurance, area yield insurance and weather yield index insurance products that can be developed to enhance the activities of small holder farmers in Cameroon as highlighted below.

2.1-Crop Insurance Products

As provided for under article 717, the two main branches of microinsurance namely life and nonlife have been outlined and it indicates that crop production appears as a major innovation in the Code with many and varied products offered under it with the following as the outstanding identified products.

2.1.1-Index Based Crop Insurance (IBCI)

The index-based crop insurance is an innovative form of indemnity insurance that covers farmers against weather-related extreme events through the use of a proxy or index such as the amount of rainfall, temperature, wind speed and relative evapotranspiration [26]. It is thus a comprehensive yield-based policy meant to compensate farmer's losses arising due to production problems, failures or losses. The risks that can be covered under the scheme include damage of sowing or planted seeds, damage to the standing crop due to non-preventable risks like drought, flood, excess rains and wind, post-harvest losses like transportation and storage [27]. Crop insurance is the major component of agricultural insurance the world over and by far remains the most discussed and wide spread aspect of agriculture insurance simply because the growing of crops remains the dominant feature of agriculture [28]. Crop insurance is purchased by agricultural producers, including farmers, ranchers and others **t**o protect against either the loss of their crops due to natural disasters, or the loss of revenue due to declines in the prices of agricultural commodities.

In putting up a regulation to govern its activities in Cameroon, two elements should determine the insurability/coverage or not of any agricultural product: The first has to do with the extent of the activity in the area and this has to do with the amount of population involved, area covered while the second has to do with the role it plays on the socio-cultural wellbeing of the population. In this regard, activities worth regulating here include the Cotton in the North, maize farming in the Adamawa Region, rice production in Ndop/North and cattle rearing in the Northern regions and grass field areas. Smallholder farming is an integral part of Sub-Saharan Africa's (SSA) economies and Cameroon in particular. The devastating impacts of extreme weather events, especially drought, need to be addressed through a good policy guide providing innovative risk management mechanism and IBCI amongst other products is potentially capable of hedging small holder farmers against weather-related risks in Cameroon.

We have examples of index insurance policy covers that have been introduced in other African countries. We can cite the rainfall index derivative for wheat in Morocco and the Nyala Insurance Share Company (NISCO) in Ethiopia, wherein indemnifications are made for the selected crop, when actual rainfall in the cropping season**,** recorded in the nearest weather station, falls below pre-defined threshold levels [29]. The policy governing maize drought contract offered by Agriculture and Climate Risks Enterprise (ACRE) in Kenya which consists of three phase contract where for each phase different minimum rainfall

[22] Ibid. Aricle 717
[23] Ibid article 713 and 718
[24] Ibid article 717
[25] Ibid Article 717
[26] Microinsurance op cit. Article 707
[27] Insurance CIMA Code, op cit. Article 55
[28] Nepomuscene N. et al. Index-based agricultural insurance products: challenges, opportunities and prospects for uptake in sub-Sahara Africa. Journal of Agriculture and Rural Development in the Tropics and Subtropics Vol. 118 No. 2 (2017). P176
[29] Ibid P6

requirements apply. When the rainfall measures below the defined minimum threshold in a block of 5 to 10 days, a pay-out is triggered. The length of each phase, its relative importance, and the minimum thresholds are determined using the FAO's water requirement satisfaction index (WRSI) [30], with the local historical climate data, crop variety characteristics and farmer feedback [31]. The defined index as per the policy on IBCI can help to determine whether farmers have suffered losses from the insured peril and hence need to be compensated. Therefore, the crop index must be set within the policy so as to correlate, as accurately as possible, with the crop losses suffered by the policy holder.

2.1.2-Weather Index Insurance (WII):

The basic purpose of WII is to estimate the percentage deviation in crop output due to adverse deviations in weather conditions. There are crop modeling and statistical techniques to precisely workout the relationships between crop output and weather parameters. This gives the linkage between the financial losses suffered by farmers due to weather variations and also estimates the payouts that will be payable to them. The weather index insurance policy contract stipulates that for a specified area it will provide the same payouts to all farmers according to the value of an index based on a weather variable e.g. rainfall, temperature, and wind speed, just to mention a few [32]. Identifying weather risk policy for an agricultural producer or herder like in Cameroon will involve defining the time period during which risk is prevalent, and identifying a measurable weather index that is strongly correlated to farmers' losses on a particular crop. This is the most critical process in designing a weather risk management policy that requires state intervention with regulations. A weather index can be constructed using any combination of measurable weather variables, over any period of time and any number of weather stations that best represent the risk to the agricultural end user by the state. Common variables include temperature, wind and rainfall. After gathering the weather data, designing an index framework will simply be looking at how the weather variables have or have not influenced yield over time.

An important element of weather based index insurance is the rainfall index insurance contract which uses measurements of rainfall to predict losses of crops or livestock. Rainfall can be used as an index today in Cameroon, taking into consideration the fact that those measurements taken can vary, as does the accuracy of how well the index predicts crop losses. Many rainfall index insurance contracts are based on measurements taken from rainfall stations. The quality of an insurance index based on these measurements depends on a number of factors, but the main one is density, both between stations and their distance from covered farmers. Rainfall can be dramatically different even across relatively short distances depending on the features of the land. The microinsurance Code provides this opportunity to small holder farmers in Cameroon [33], by including rainfall as a proxy thus giving room for policy development in that direction. These measures overcome the problem of distance between weather stations, although rainfall might not be the only source of water for crops because it could come from runoff water from rain or snow pack in the mountains leading to healthy crops on lowland farms that get no rain. The possibility of introducing this scheme by small holder farmers in Cameroon is very high considering the impact of drought on maize production in the Adamawa Region for instance.

2.1.3- Area-Yield Agricultural Index Insurance (AYII)

AYII represents an alternative approach to address and overcome many of the drawbacks of traditional multi-peril crop insurance (MPCI). The main feature of this product is that it does not indemnify crop yield losses at the individual field or grower level, it rather makes indemnity payments to farmers according to yield loss or shortfall against an average area-yield called the index in a defined geographical area like: Village, Sub-division, Division, or Region [34]. The insured yield is expressed as a percentage coverage level of the historical average yield for a defined crop in the defined geographical region, considered as insured unit in a policy framework. The holder of an area yield insurance policy receives an indemnity whenever the realized unit area yield falls below some specified critical yield i.e., the "strike" regardless of the realized yield on his or her farm [35].

Traditional MPCI as earlier indicated is often constrained by a lack of reliable historical yield data at the individual farm level, the required 10 years' historical data at country level, divisional-level or Sub-Divisional level or village level that are needed and makes it difficult to determine the coverage level, fortunately, this can be waved or undermined under an area yield index insurance contracts [36]. The index is based on yields so

[30] WRSI is the ratio of seasonal actual crop evapotranspiration (AETc) to the seasonal crop water requirement, which is the same as the potential crop evapotranspiration (PETc).
[31] Gabriel Senay. Crop Water requirement satisfaction Index. Model description. July 2004. P1
[32] Nepomuscene N. et al op cit. P177
[33] Microinsurance Code op cit. Article 705
[34] Microinsurance Code op cit. Article 705
[35] World Bank 2009:. Index-based Crop Insurance in Senegal: Promoting Access to Agricultural Insurance for Small Farmers. The World Bank, Washington, DC. PP 104-105
[36] Mahul, O.et al. Index based Livestock Insurance in Mongolia. Innovations in Insuring the Poor, No 17, 2020 vision focus, International Food Policy Research Institute (IFPRI) 2009. P56

the insurance policy can provide covers for risks encountered from planting to harvesting; this implies that pre-planting and post-harvest losses are not reflected in the area yield index policy. In Burkina Faso for instance, index insurance pay-out occurs only if both the cooperative yield is below the cooperative strike point (e.g. 7507kg ha−1) and the district yield is below the district strike-point (e.g. 10007kg ha−1) [37]. In Mali unlike in Burkina-Faso, the cotton area-yield insurance policy provides for three level payments: namely, small pay-out, medium pay-out and big pay-out when yields are below 20, 8, and 4 % of the yield distribution respectively [38]. This product have been tested in many Sub-Saharan African Countries and Cameroon can benefit from it implementation by codifying its laws to facilitate coverage of maize, cotton and rice production in the country.

2.2-Index Based Livestock Insurance (IBLI)

Index-based livestock insurance (IBLI), as a product of agricultural index insurance protects livestock keepers (cattle, sheep, pigs and poultry) in drought-prone arid and semi-arid lands from climate-related mortality or losses [39]. Under IBLI, insurance pay-outs are tied to climatic conditions such as the amount of rainfall and distribution of pasture availability over a season. Studies have revealed that the Normalise Difference Vegetation Index (NDVI) is highly correlated with forage availability and therefore can be linked to animal mortality [40]. In addition, NDVI data are publicly available in near-real time and objectively verifiable, and widely used, as indicator of vegetative cover in drought monitoring programs in Africa. A predicted livestock mortality index is established from a statistical relationship between satellite generated vegetation imagery and historical records of community level livestock losses. This process generates a parameter objectively, cost effectively measured and non-human manipulable as an index that triggers insurance pay-out index [41]. In Kenya and Ethiopia, remotely sensed NDVI measures were used to set up an IBLI based on the relationship between predicted livestock mortality and forage availability. The insurance product covers the short rains short dry season (SRSD) or the long rains long dry season (LRLD). The contract policy is specific at the location level, based on the predicted mortality rate as a function of the vegetation index specific to the grazing range of that location [42]. The IBLI policy contracts can be designed and sold just before the start of rainy season and are assessed at the end of the dry period to determine whether indemnification payments are to be made. Herders in Northern and grass field areas in Cameroon stand to benefit from this product if well implemented by the state through the codification of the CIMA microinsurance Code Book VII. . It is a widely accepted product among international reinsurers and livestock insurance is often based on NDVI data.

A great advantage of NDVI is that the remote sensing data can be available from several public sources like the National Institute of Statistice (NIS). It is also a great asset to develop policies to help assess trends in land-use systems and vegetation. However the main limit for NDVI is the risk of cloud cover interfering with the observation and the difficulty in separating tree canopies from green pasturelands. Catastrophic herd loss due to drought identified as the major source of vulnerability and cause of poverty are bound in Cameroon as well as other African countries. For instance between 2008 and 2011 Kenyan economy suffered US$ 12.1 billion in damages due to drought, with over 70% due to livestock losses [43]. NDVI indices are based on measurements of living, green vegetation in an area. It is used to build the index for the successful Index-based Livestock Insurance (IBLI) program in Kenya through the national Kenya Livestock Insurance Program (KLIP) [44]. It measurements are most often taken from satellites in orbit around the Earth.

From the above analysis of the various products , one can affirm that Index based agricultural insurance has come to stay if well implemented in Cameroon, While the microinsurance code have provided the guidelines in terms of branches and types of agricultural product that can be insured, it behooves on Cameroon to codify the said text to cover expected insurable products. Suffice to state however that a series of challenges prevail that reduces the optimal performance of the scheme that could have improve small holder farmers resilience.

3-Challenges to the Realisation/Implementation of Index Based Agricultural Insurance in Cameroon

Most crops and livestock activities in Cameroon are rain-fed and as a result, highly exposed to the weather related perils like drought, floods, pests and diseases. Climate related weather disasters that have been accentuated by global warming have become more and more unpredictable with catastrophic outcomes whenever they occur, thus increasing the risk impact on small scale farmers. Studies shows that drought have occurred 26 times within 50 years (1970 to 2019) within the maize producing basins in the Adamawa Region which negatively affect farming and livestock activities

[37] Stoeffler, Q., et al: Indirect protection: the impact of cotton insurance on farmers' income portfolio in Burkina Faso. Agricultural and Applied Economics Association, Annual Meeting, Boston, Massachusetts, July 31–August 2, 2016.P7
[38] Ibid.PP7-8
[39] Article 717 of Microinsurance Code BookVII 2012
[40] Nepomuscene N. et al. Op Cit. P 7
[41] Ibid P8
[42] Ibid P8
[43] The World Bank Group. Towards a National Crop and Livestock Insurance Program, Summary of Policy Suggestion in Kenya. October 2015 p16
[44] Ibid.P16

[[45]]. The introduction of index based agricultural insurance as an innovative approach to agricultural insurance is not without challenges or problems.

3.1-Weak or the Lack of Regulatory Framework

Cameroon adopted and ratified the CIMA Code of 1992 and eventually adopted and ratified the CIMA Microinsurance Code Book VII in 2012. This initiative was encouraged in 2016 precisely December 15 2016, following a workshop in Douala sponsored by the World Bank through International Finance Corporation (IFC) with the technical support of Global Insurance Index Facility (GIIF) [[46]]. The outcome of the workshop was the implementation of a pilot phase of index insurance project by AXA Cameroon and Activa insurance Companies with the Cotton production company in the North- SODECOTTON [[47]]. Unfortunately this welcomed initiative that was to extend coverage to maize, sorghum and livestock covering above 70.000 farmers by 2021 failed for want of a regulatory framework both regulating insurance activities and farming groups to facilitate subscription as provided by the code [[48]]. As a matter of fact Cameroon is still to codify the said Codes to facilitate local implementation which is a great handicap to small scale farmers in the country. The lack or absence of laws regulating access to finances by small holder farmers from financial institutions stands out as a most pressing constraints faced by the development of agricultural insurance for crop and livestock farmers in Cameroon as no law regulates loans to small holder famers by banks or micro financial institutions like in Burkina Faso [[49]]. Unfortunately Cameroon is yet to codify the said code for local implementation as the case with the Insurance Regulatory Authority (IRA) established in Kenya and Uganda and Silimo Salama in Senegal [[50]].

3.2-Lack of Insurance Culture/Low Risk Awareness

Small holder farmers and pastoralists in Cameroon shares very limited understanding of the benefits of insurance. It is seen as a non-viable investment simply because premiums are paid and collected every year but indemnities are paid much less frequently. Agricultural insurance is seen by most as a privilege for the rich. Farmers and pastoralists equally do underestimate the likelihood or severity of catastrophic event in spite of the fact that they are aware of the negative impact of floods or droughts on their production.

3.3-Limited Agricultural Risk Management Infrastructure

In Cameroon there is a generalised lack of infrastructural support for agricultural insurance activities. The lack of weather stations and weather statistical databases as well as crop risk models providing agricultural insurers with reliable data to better assess their catastrophic risk exposure all hinders growth of the sector [[51]]. Proper training facilities for the personnel or education of farmers on insurance are lacking. Quality and availability of weather and yield data is a great challenge because the development of index based insurance products requires accurate and complete historical data on weather and crop yield. The amount of required data depends on the frequency of the risk to insure. Twenty years of data may be sufficient to set initial premium rates for relatively frequent weather events, while thirty or forty years of data may not be sufficient for infrequent but potentially catastrophic events [[52]]. The scarcity of these data may entail model risk and additional premium loadings that make crop insurance unattractive to potential buyers. In Cameroon like many other countries, weather data have public goods characteristics, they are unlikely to be collected, cleaned and archived. In addition, these data are not freely available, either as a result of restrictive use policies and fees being charged, or poor data coverage and quality. Consequently, data quality and access remain an important unresolved challenge in the implementation of weather index insurance at larger scale in the country.

3.4-Lack of Public Private Partnership (PPP)

The lack of a strong partnership between the public and the private sector makes it difficult to provide a foundation that can scale-up sustainable agricultural

[45] Ibid p3

[46] GIIF is a World Bank agency that provides technical assistance to countries in the training and development of index insurance sectors. As a World Bank Group's program it facilitates access to finance for smallholder farmers, micro-entrepreneurs, and microfinance institutions by providing climate and disaster risk transfer solutions and index-based insurance in developing countries. To date, GIIF has supported nearly a dozen partners in developing countries to set up index insurance markets and has facilitated more than 1.8 million contracts, covering approximately 7 million people, with $178m in sums insured. GIIF also works with private insurance and reinsurance providers, and is thus able to contribute to the development of sustainable insurance markets. GIIF is funded by the European Union/ACP Groups of States, Japan, and the Netherlands, and now also Germany.

[47] The World Bank: Index Insurance: protecting Cameroons Farmers from Climate Change. Feature story. January 17/ 2017. P3

[48] Microinsurance Codeop cit.Aricle 700

[49] Michael Albert &Alitou Ido: Microinsurance in Burkina Faso. Social Finance programme & Infocus Programme on Boosting Employment through Small Enterprise Development. Working Paper No. 39. PP 24-29.

[50] Peter H.et al: Innovations and emerging trends in agricultural insurance for small farmers-An Update. GTZ. December 2021. P 24.

[51] Ibid. P33

[52] Barrnet and Mahul: The World Bank Report. 2010 P3

insurance program in the country. There is a total lack of data for private insurers to use for the assessment of their premium which ought to be provided by the government making it very crucial just like the lack of basic infrastructures, training facilities and others. Most private sectors cannot afford such costly infrastructures which the state must provide for them. On the other hand, government provided subsidized agricultural insurance, lacks the expertise found in the private sector, thus making distribution of policies, delivering payouts and paying claims difficult to handle. There is need for both parties to build on the comparative advantage of the respective sectors to encourage growth of the agricultural insurance especially the regulatory environment.

3.5-The Prevalence of Basis Risk

Basis risk is the most problematic feature of index based insurance products; it represents the difference between the pay-out, as measured by the index, and the actual loss insured by the policyholder [53]. Generally, no field loss assessment is made under index insurance; the pay-out is based entirely on the index measurement and may be either higher or lower than the actual loss. Index-based insurance does not always provide farmers with indemnities when they experience crop or animal losses and the indemnity payments sometimes do not accurately reflect the size of the losses they experience. This is because an index is based on a geographical area within which farmers may have different experiences with, e.g., rainfall. As a consequence some farmers may achieve a good crop when most others in the area experience a crop failure. However, under an index-based system all farmers receive payouts. As a direct consequence of basis risk, farmers are usually reluctant to pay the same premiums for index-based insurance than they would for standard insurance. For instance, maize farmers within the Adamawa Region or cotton producers in the North cannot experience drought or flood in the same proportion over the farming area for which they will receive the same indemnification. Microclimates and uneven topography may affect the yields greatly and these aspects are sometimes not accurately factored into the product design.

In spite of all the above constraints or challenges, index based agricultural insurance still holds a better future for small holder farmers in Cameroon as can be seen through the numerous opportunities it provides.

4-Opportunities worth Exploiting to Enhance Index Based Agricultural Insurance for Small Holder Farmers in Cameroon

In spite of the challenges faced in the attempt to develop index based agricultural insurance in Cameroon, all is not lost if the existing opportunities are exploited for the benefit of the options. Opportunities provided under index based agricultural insurance go beyond the small holder farmers as the direct beneficiaries and through the instrumentality of the law the state has the power create the enabling legal environment and encourage uptake of agricultural insurance by farmers and it promotion by insurers in Cameroon.

4.1- Encouraging/Facilitating Public Private Partnership (PPP)

The institutional, financial and technical challenges that plague the agricultural insurance sector can well be managed in the event of a PPP arrangement facilitated through well-crafted text or legislations. This is an opportunity in Cameroon which has been well exploited by other countries in favour of their small holder farmers. In East Africa, precisely in Kenya, Rwanda and Tanzania the African Capacity Risk Enterprise (ACRE) have shown positive development input in index based crop insurance [54]. It has many partners like banks and micro-finance institutions, mobile networks operators, seed companies, government agencies like research institutions, insurance and Reinsurance companies as well as donor institutions like Global Index Insurance Facility (GIIF)[55] all governed by local legislation. All these have created a bond between the public and private sector and this same opportunity exist in Cameroon that can be exploited for the growth and development of index based agricultural insurance through a well codified text based on the CIMA Code Book VII of 2012. The International Finance Corporation (IFC) and its partners in collaboration with Cameroon government was to issue more than 135,000 agricultural index insurance contracts by the end of 2020, with cotton farmers which will enable about 700,000 farm households to cover their farms, access inputs and offset yield reductions in the event of a disaster [56]. This opportunity was a source of encouragement for the growth of the product in Cameroon. The African Federation of Insurance Companies commonly referred to in French as La Fédération des Sociétés d'Assurances de Droit National Africaines (FANAF) held its 44th Annual General Assembly in Libreville, Gabon, between February 17-20, 2020 [57]. During the said event, The World Bank Group: Global Index Insurance Facility (GIIF) and Disaster Risk Financing and Insurance Program (DRFIP), organized a session presenting their

[53] Nepomuscene N. et al. Op Cit. P 180
[54] Ibid P181
[55] Ibid P190
[56] The World Bank. Cameroon Index Insurance, 2018. P1
[57] That year's high-level event provided a platform to approximately 1100 participants from (re) insurance companies, regulators, brokers, and financial institutions to discuss the development of the sector in the continent in general, and their main challenges in operations in particular.

activities on the continent focusing on "CLIMATE RISKS and FINTECH" solutions applicable to the agricultural insurance. All these are opportunities provided to insurance companies to implement the activities with farmers in Cameroon worth applying through good text [58].

4.2-**The Use of Mobile Telephone Operators**

In compliance with article 4 and 5 of the Decree putting in place the Telecommunication Regulatory Agency (ART) [59], it has as mission and powers to ensure on behalf of the state, the regulation, control and follow-up of the activities of operators exploiting telecommunication services and suppliers of electronic communication services. Cameroon has three mobile telecommunication companies with one owned by the state to wit, CAMTEL [60], and two privately owned; MTN and Orange. The implantation of their activities in rural areas and the added money transfer services they were approved since 2022 provide within the rural residents an opportunity to be exploited by insurance companies, financial institutions especially credit unions and farmers for the facilitation of payment of premium, disbursement of loans or credits as well as payment of claims in time of losses. This facility can only be made possible through a codified or consolidated text that facilitates index insurance activities and by extension the PPP participation. This is working in some African countries and can equally work in Cameroon in facilitating index based insurance scheme premium payment as well as claim payments. For instance, under the community based health insurance in Rwanda and mi-life microinsurance in Ghana, MTN subscribers in the respective countries were able to buy life insurance products, pay premium, make claims and receive payments through their mobile phones. In Kenya through the collaboration with Safaricom, Agriculture & Climate Risk Enterprise (ACRE) Africa sold its products to over 390.000 Kenyan and Rwandan farmers by the end of 2015. In Ethiopia M-Birr, a mobile money channel targeting rural farmers enabled almost 50.000 account holders to transfer deposits or withdraw money without leaving the comfort of their homes [61]. Mobile handsets have become a common communication tool in the hands of rural farmers and can be technically exploited by the system to encourage index insurance uptake.

4.3-Cameroon as Member of Africa Risk Capacity Group [62]

The African Risk Capacity (ARC) Group [63], as the name implies is a Specialized Agency of the African Union established to help African governments improve their capacities to better plan, prepare, and respond to extreme weather events and natural disaster. Through collaboration and innovative financing, the ARC Group enables countries to strengthen their disaster risk management systems and access rapid and predictable financing when disaster strikes to protect the food security and livelihoods of their vulnerable populations [64]. By 2023, ARC ltd had 39 African Union Member States as members of the ARC and responsible for setting the direction of the organisation's Disaster Risk Management research and policy, and have access ARC's Disaster Risk Management tools services, including the Africa RiskView software, the ARC Capacity Building Program, and ARC Limited's risk transfer services [65]. There are ongoing efforts to ensure that more countries sign up to support this mechanism and endorse it as Africa's solution to the growing threats of natural disasters [66]. Cameroon as a signatory and member joined the group in October 2023 as the 37th member state following a presidential Decree [67], signed in 2022. This is an added opportunity for Cameroon to use its

[58] The World Bank. Cameroon Index Insurance, 2018. Opt Cit P2

[59] Decree No 2012/203 of 20 April 2012 bearing on the Creation and functioning of the Telecomunication Regulatory Agency-(ART)

[60] La loi N°2005/013 du 29 décembre 2005 amendant et complétant certaines dispositions de la loi N°98/014 du 14 juillet 1998 portant creation de Cameroon Telecommunications-(CAMTEL).

[61] Nepomusene N et al. Opt Cit P182

[62] 7800-treaty-0043_-_agreement_for_the_establishment_of_the_african_risk_capacity_arc_agency_e. https://au.in

[63]. The African Risk Capacity Ltd is a mutual insurance company that was adopted in Pretoria South Africa on the 23 November 2012 with an initial 16 member States who signed the memorandum of understanding for it implementation in their various countries as a support to the resilience of the small holder farmers against losses from natural weather disasters whenever they strike in. Its Head quarter is in Johannesburg-South Africa and its Secretariat in Abidjan- Ivory Coast. ARC is an insurance company Ltd (ARC Ltd), a hybrid of mutual insurance and commercial affiliate of the group founded in 2014. It is African led and the Africa Union integrated solution to tackling the impact of natural disasters on vulnerable population. It uses early warning information, combining this with an insurance mechanism that objectively and rapidly triggers payouts in the event of disasters. ARC intends to transfers the burden of weather risk away from governments, enabling them to build resilience and better plan, prepare and respond to extreme weather events.

[64] ARC Ltd Publication. 2016 P4. Available at: http://www.africanriskcapacity.org (accessed on: 15.01.2017)

[65] Nepomusene N et al. Opt Cit P179

[66] Ibid P181

[67] Decree No. 2022/168 of 23 May 2022 relating to Cameroon's accession to the Agreement for the Establishment of the African Risk Capacity (ARC) Agency, adopted in Pretoria, South Africa, on 23 November 2012.

membership and implement the scheme for the benefit of its rural farmers. AU Member States that sign the ARC Establishment Agreement become ARC Member States and therefore pay premiums and are eligible to participate in and benefit from ARC's disaster risk management facilities, as well as contribute to the governance of ARC through the Conference of Parties. The share of coverage against total disaster funding requirements ranges from less than 10% up to 30%, with the remainder largely sourced through the UN appeals process. With additional support from the German and UK governments, ARC Ltd issued nearly $130 million in drought coverage to Kenya, Mauritania, Niger, Senegal, The Gambia, Malawi and Mali for the risk pool in 2014– 2016 [68]. Cameroon is one of the members and stands to benefit from these advantages for it farmers once it starts paying it fair share of the premium as required by the agreement.

4.4-Limited Reliance on Historical Data

This is another opportunity provided by the index based agricultural insurance which has to do with workability of yields and weather index insurance. The need for historical data is a basic requirement for the practice of indemnity insurance which is lacking in Cameroon. However, under the index insurance insurance, it is not primordial for it to function because it can be implemented where historical farm-level yield data do not exist like in Cameroon. This therefore minimizes the problem associated with asymmetric information like the adverse selection of risks and moral hazards. With regards to weather index agricultural insurance, it can work even in areas and with crops which do not have historical yield data and so therefore local communities in the country where income depends on weather or their activities are rain-fed can buy the insurance and benefit from its fall out whenever disaster strikes in the form of claim settlements [69].

4.5- Extension of Coverage to Non-Farming Population

There are many persons or institutions besides farmers who stand to suffer financial losses from adverse weather events like the Banking and micro-finance institutions, input suppliers, food transporters and storage ware houses and by implication they are all potential clients for index insurance products [70]. Due to the fact that generally, there is no direct connection between a farming operation and the index, also known as the coupon covering the products, consequently even non-farming population like those at risk could in principle purchase this type of risk cover. This tells us the great opportunities that we stand to gain through index insurance product use which is not limited to farmers but can cover other private partners. This is an added reason for the development of the scheme especially the putting in place of a regulatory framework that protect and interconnects the different activities.

4.6-Possible Reduction of the Impact of Basis Risk

There has been significant research aimed at addressing basis risk problem like increasing the density of automatic weather stations (every 10–15 km) or designing hybrid index insurance products using a combination of satellite-rainfall estimates and vegetation indices in a bid to reduce the impact of basis risk [71]. Although NDVI can be more effectively used for monitoring pastoral forage and livestock losses, its use for crops like would be limited, because losses often do not correlate with extent of vegetation. This too can be done in Cameroon which will encourage farmers and herders to subscribe to the product through a well codified legislation.

5-CONCLUSION

Judging from the opportunities provided by index insurance, there is need for the government of Cameroon to push forward and incorporate a local codified legislation on index insurance in general and agricultural index insurance in particular as a risk management mechanism that can be subscribed to by small holder farmers like in many African countries. Area yield index and Weather Index all have opportunities and key advantages in that the payouts could be made faster, besides the fact that the insurance contract is more transparent and the transaction costs are lower. Small holder farmers in Cameroon have the opportunity to benefit from Index insurance because it uses objective, publicly available data; it's less susceptible to moral hazard. Most importantly in Cameroon, historical data whatsoever are very limited and unavailable for such use, there is need therefore for a policy guideline to ensure that the needed infrastructures like weather stations are provided because it is only through weather data that index insurance can be well instituted.

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