

# Moderating Effect of Index Based Livestock Insurance on Political Situations Affecting Performance of Livestock Projects in North Eastern Kenya

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**Abstract:** Livestock keeping is a major source of wealth and accounts for more than two-thirds of average family income in arid and semi-arid lands of Kenya. Due to the climate change, North Eastern Kenya has been experiencing severe drought and several projects had been initiated to help communities to manage risk such as provision of micro-insurance for low income people but the efforts has not been productive. Thus, the objective of this study was to investigate the moderating effect of index based livestock insurance on political situations affecting performance of livestock projects in North Eastern Kenya. The study used cross sectional design and targeted population from households in Garissa and Wajir. Structured questionnaire was administered to the sampled population which was randomly selected using multi-stage random sampling technique. Quantitative data collected was analyzed by statistical models such as Analysis of variance (ANOVA), Multivariate regression analysis was applied to measure moderating effect of index based livestock insurance on socio-cultural factors. The study found out that there was positive linear relationship between political situations and performance of livestock projects in North Eastern Kenya using Pearson correlation coefficient. However, introduction of moderating variable into independent variable political situations there was insignificant relationship with performance of livestock projects in North Eastern Kenya North Eastern Kenya. The study recommends to the project managers to work as team with the area leaders and community to beef up security and reduce conflict. Security and conflict management would improve the performance of livestock projects in North Eastern.

**Keywords:** index based livestock insurance, performance of livestock projects, political situations.

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## 1. INTRODUCTION

North Eastern Kenya lies in arid and semi-arid lands (ASAL) which covers approximately about 467,200 km<sup>2</sup> or 88 per cent of the Kenya's total landmass, with an Annual rainfall ranges between 125 - 1250 mm. Quite a large proportion of people living in arid and semi-arid land (ASAL) in Kenya depend overwhelmingly on livestock (Wambua et al, 2014). This represents the vast majority of household wealth and accounts for more than two-thirds of average family income (Chantarat & Mude, 2013). This region has been experiencing severe drought for the last four decades and there has been increased effort to help communities in ASALs manage their risk better (Channa, 2013). Weather related risks experienced in the ASALs have driven most pastoralists into destitution (Chantarat et al., 2014) and the situation is exacerbated by the lack of access to adequate risk management tools (Channa, 2013). Several projects, with approaches or models for managing risk and promoting sustainable development in the ASAL were implemented. The Emergency Drought Recovery Project (EDRP) was implemented by the Government of Kenya with the support of World Bank from 1991–1996 in Mandera, Marsabit, Tana River, Turkana and Wajir districts (Johnson & Wambile, 2011).

Recently, introduction of index-based weather insurance has attracted considerable attention as it is free from information asymmetry problems. An innovative feature of the index insurance is that indemnity payouts are determined based not on actual losses experienced by policy holders, but on easily observable, objective weather parameters that are highly correlated with expected losses, such as rainfall, temperature, and satellite-measured vegetation level. Despite sweeping claims that index-based micro-insurance would be the next “revolution” in development practice (Murdoch, 2006), evidence to date shows that unexpectedly low uptake, rarely above 30%, causing many to rethink the attractiveness of the product or suggest ways to improve it (De Bock & Gelade, 2012; Miranda & Ferrin, 2012; Matul et al., 2013). For example, Binswanger-Mkhize (2012) provides an argument for why index-based insurance will not proliferate. Through a review of the literature, he finds that higher income farmers are already self-insuring against risk by diversifying their income portfolio. Lower income farmers and landless laborers who are unable to diversify optimally would, therefore, be more likely to gain from index-based insurance; however, the cost of doing so generally prohibits uptake. In this regard, the mediating effects of IBLI on political situations affecting performance of livestock projects in North Eastern Kenya, is of great significance.

### Statement of the Problem:

A large proportion of people living in arid and semi-arid land (ASAL) in Kenya depend overwhelmingly on livestock (Wambua et al., 2014). This represents the vast majority of household wealth and accounts for more than two-thirds of average family income (Chantarat et al., 2013). Most livestock mortality is associated with severe drought and this has been linked to the climate change in Eastern Africa (Ngugi et al., 2015). To combat drought in ASAL, several projects or models for managing risk and promoting sustainable development has been implemented such as the Emergency Drought Recovery Project (1991-1996), Arid Lands Resource Management Project 1, (1996-2003) and Arid Lands Resource Management Project 11(2003-2011), Drought Management Initiative, Kenya Rural Development Project ASAL –DM and Hunger Safety Net Project (Johnson & Wambile, 2011).

Also, insurance companies had provided micro-insurance for small-scale products aimed at low income people who are generally excluded from more traditional insurance products. This has attracted widespread interest as a means to enhancing the resilience of the rural poor against climate risks (Churchill, 2006; Mechler et al., 2006; de Bock & Gelade, 2012). In particular, the introduction of Index Based Livestock Insurance which uses observable parameters, such as rainfall, temperature, and satellite-measured vegetation level pays out compensation to clients in the event of livestock mortality occasioned by drought (Banerjee, 2015). The low uptake of the ILBI product in countries where it has been introduced shows that purchasers are doubtful if it really can deliver welfare gains (Gineet al., 2008; Cole et al., 2013). A wide search in existing literature does not indicate the moderating effect of Index Based Livestock Insurance (IBLI) especially on the performance of livestock projects in Northern Kenya, and that the weather based index insurance for livestock is not getting adequate momentum.

### Objective of the study:

The general objective of the study was to determine moderating effect of Index Based Livestock Insurance (IBLI) on political situations affecting performance of livestock projects in North Eastern Kenya.

### Hypothesis:

Ho – there is no moderating effect of Index Based Livestock Insurance on political situations affecting Performance of livestock projects in North Eastern Kenya.

H<sub>1</sub> – there is moderating effect of Index Based Livestock Insurance on political situations affecting Performance of livestock projects in North Eastern Kenya.

## 2. LITERATURE REVIEW

The study was supported by the push and pull marketing theory, covariate and idiosyncratic risks theory and theory of project performance and review of relevant literature.

### Push and Pull Marketing theory:

Push-pull theory has been widely used in studies to explain motivation (Baloglu & Uysal, 1996; Cha et al., 1995). Push factors describe the drive for an individual to participate in insurance activities or the internal “igniter” that propels the individual to take up insurance product (Crompton, 1979). In push strategy, the primary aim of marketers is to design

marketing strategy in way that will push products onto the consumers. The main forms of communication mediums used are price inducements, promotions, trade shows, trade promotions, sponsorships and many more that will get the attention of retailers, wholesalers and other businesses to purchase the company's products or services (Segal, 2012).

In respect to agriculture insurance, the push factors are different influences that come from outside agriculture and individual entities, which are related to the application of various stimulating measures of agricultural policy such as subsidizing access to insurance. In pull marketing strategy, marketers try to inspire consumers to demand the company's products or services. In this technique, a lot of money is spent as the tools used to grab customers' attention. Marketing mediums for pull strategy include word of mouth, sponsorships, product placement and advertisement in newspapers, on radio and Television (Segal, 2012).

Livestock insurance applies the basic principle of Insurance. However, it needs more precise marketing programs and techniques, which require identification of individual needs of pastoralists and a dialogue with smaller groups of the insured persons/business entities. Insurance marketing in general, and in the agricultural sector as well, applies a complex marketing metric today (Kočović et al., 2010).

### **Covariate and Idiosyncratic Risks:**

Risks can be categorized into economic, human and asset risks. These can either be covariate risks or individual (idiosyncratic) risks (Skees & Enkh-Amgalan, 2002). The insurers are able to fully cover risks and indemnify clients against significant risks by pooling individual risks of many clients at relatively low premiums (Brown & Churchill, 1999). For a risk to be insurable their occurrence must be determinable and they must lend themselves to specificity (Litzka, 2002).

In practice, idiosyncratic risks can be pooled and turn out profits while covariate risks cannot. The idiosyncratic risks are sanitized after pooling at the macro-economic level while covariate risks accumulate thus negatively impacting savings and consumption. Thus, at a macro-economic level, covariate risks should be insured while idiosyncratic can be left to their own. Usually, farmers go against this analysis and insure idiosyncratic shocks instead of covariate. Notably, covariate risks are more feasible to an insurer and more common (Collier, 2001). It is unproductive to pool covariate risk since the insurer would be forced to keep reserves at the same level as the insured would keep if uninsured (Priest, 1996).

Examining the ratio of covariate to total risk at various scales reveals considerable geographic heterogeneity (Jensen et al., 2014). Covariate shocks represent only a small portion of households' risk portfolio in some locations, while in others the majority of livestock mortality is associated with covariate shocks. The degree of geographic heterogeneity in the relative importance of covariate shocks points towards regions where IBLI may be well suited and others where it may not offer an appropriate approach for reducing risk associated with livestock mortality. The idiosyncratic risk that index insured households continue to face is mostly the result of random, unobserved household characteristics and events, but is also positively associated with a higher household dependency ratio and income diversification away from livestock-related activities, both of which likely reflect reduced managerial attention to animal husbandry, as well as geographic location (Jensen et al., 2014).

### **Theory of Project Performance:**

There are two groups of project performance measurement methods: pragmatic and economic. Pragmatic measurement methods consider other aspects of project performance apart from economic aspects. Performance is determined based on, typically, a pre-specified success criteria (Rosenau & Githens, 2011). At the end of the project, during evaluation, the success criteria set at the beginning is referred to, in determining success or otherwise of a project. For complex projects, it is not feasible for the requirements to be adjusted while on-going.

Economic measurement methods, concentrate on the financial aspects of projects. They determine the extent to which a project meets its financial value. Examples of such economic methods are the Return on Capital Employed (ROCE), Return on Investment (ROI), and Balanced Scorecards (Francis & Minchington, 2002). The limitation with this method is that it dwells on the past with may be rather too late with profound monetary consequences. Although, forecasting is available in all of these metrics, true values can only be ascertained at the end of the project (Thomas & Mullaly, 2008).

With pragmatic measurement models, project managers are not encouraged to deviate from the success criteria that have been agreed at the outset (Wernham, 2012). They – and the project team – are expecting to be assessed against those criteria. There is little room, if any at all, to revisit and amend the success criteria as the project progresses (Grabher & Thiel, 2015). These create artificial boundaries for the project manager to work within, limiting the opportunities for

creative thinking and employing professional judgment to the challenges the project presents as it progresses (Grabher & Thiel, 2015).

#### **Political Situation:**

The political situation in Northern Kenya can be examined in dual concentration: insecurity and conflict. Since 1990, Kenya has experienced a marked decay in human security, from ballooning petty crime to the advent of ethnic cleansing and terrorism. The local and international press often mentions the phenomenon of rising crime and insecurity (Brown, 2003). Causal human security factors are dynamic even as they are deep-rooted.

Human security has been cited as a pre-requisite to human development (Chandler, 2012; Donnelly, 2013; Malik, 2013). The northern region of Kenya has lagged behind due to insecurity that dates back to the shifta war in 1960s. It is the most marginalized part of the country, in core human development factors (Kumssa et al., 2009). Insecurity leads to displacement of persons and impacts on the livelihood of people. When families are displaced livelihoods are impacted, and pastoralists lack the time and freedom to freely mingle and share ideas (Menkhaus, 2008). Insecurity therefore prevents awareness creation. Additionally, when the livelihoods of pastoralists are affected, their disposable income is reduced and purchasing power limited. Therefore, the number insured also drops

Cattle raids, inter-communal resource conflicts and banditry are common across much of the arid lands of northern Kenya, where firearms are common among pastoralist communities. However, the north eastern part of the country has not reported livestock raids. In 2009 alone, such violence claimed more than 354 lives, according to the UN Office for the Coordination of Humanitarian Affairs (UN-OCHA), Kenya (Whittaker, 2015).

Livestock movement in search of water and pasture remains a driver of conflict. Competition for scarce natural resources is widely understood to be a primary cause of conflict in the region (ODI, 2009). Pastoralist communities across the Horn of Africa frequently cross national borders in search of pasture and water. Although neighbouring states often share ethnic groupings, such migrations can be problematic (Menkhaus, 2015).

Communities are the primary victims of conflicts even as they are the main perpetrators. They are both targets and instruments of conflict. While the effect of conflict on people bears many faces, it is appreciated that it prevents people to benefit from what available to them (Eriksen, 2009). In times of conflict, pastoralists will not benefit from insurance. Their pre-occupation will be to save their livestock from raids and themselves from attacks. Further, they will fall back on their premiums and be uninsured. New customers will also not be found.

### **3. RESEARCH METHODOLOGY**

The study used cross sectional design and targeted population from pastoralist households in Garissa and Wajir. Structured questionnaire was administered to the sampled population which was located using Snowball Sampling, also referred to as referral chain sampling, for locating research cluster (pastoralist households) whereby one subject gives the researcher the location of the other cluster, then a multi-stage random sampling technique used to sample the household. Quantitative data collected was analyzed by statistical models such as Analysis of variance (ANOVA), Multivariate regression analysis was applied to measure moderating effect of index based livestock insurance on socio-cultural factors in North Eastern Kenya.

### **4. RESEARCH FINDINGS AND DISCUSSION**

The study focused on 153 questionnaires administered to pastoralists' communities living in Garissa and Wajir Counties. All the distributed questionnaires were returned. A total of 21 questionnaires were from Lagdera, 14 from Balambala, 35 from Fafi, 5 from Garissa, 11 from Wajir south, 36 from Wajir west, 29 from Tarbaj, 1 from Wajir north and 1 from Wajir east. The study achieved an overall response rate of 100 % which was acceptable as suggested by Fosnacht (2013).

#### **Political Factors:**

#### **Insecurity and Conflicts:**

Insecurity and Conflicts factor was measured using the Likert scale and the results, expressed as percentages, mean and standard deviation. The mean values represent points of convergence of the different respondents opinions regarding the insecurity and conflict construct. The low standard deviations of the opinions indicated a high clustering around the mean of the distribution. This implied that there was close agreement in the opinions among the respondents. The results in

Table below indicates that majority of the respondents 63% agreed that terrorism is exposed to their district/religion, 56.3% agreed that predominant nature of insecurity in their area is gang related or shifta, 91.7 agreed that the predominant nature of conflicts in their area is family or clan related, 55% were afraid that their livestock could be stolen, 37.4% are careful not to stock so many livestock for fear of insecurity, 22% agreed that security apparatus are good enough to make them comfortable, 96.5% use community measure to address insecurity and 3.4% don't use community measure to address insecurity. These results agree with the reviewed literature that since 1990, Kenya has experienced a marked decay in human security, from ballooning petty crime to the advent of ethnic cleansing and terrorism. The local and international press often mentions the phenomenon of rising crime and insecurity (Brown, 2003).

### Insecurity and Conflicts:

Political Factors	SD (%)	D (%)	N (%)	A (%)	SA (%)	Mean	Std. Deviation
Your District/Religion is exposed to Terrorism	17.3	11.3	8	51	12	3.29	1.314
The predominant nature of insecurity your area is gang related or shifta	19.3	15.3	8.7	49	7.3	3.1	1.309
The predominant nature of conflicts your area is family or clan related	2	1.3	5.3	49	42.7	4.29	0.797
You are always afraid that your livestock could be stolen	0.7	18	26.7	51	4	3.39	0.851
You are careful not to stock so many livestock for fear of insecurity	10.1	26.4	26.4	36	1.4	2.92	1.04
The security apparatus are good enough to make you comfortable	22.7	44.7	10.7	22	0	2.32	1.058
You use community measure to address insecurity	2	1.3	0	73	23.5	4.15	0.672
You don't use community measure to address insecurity	31.1	65.5	0	1.4	2	1.78	0.708

Key: SA-Strongly Agree; A-Agree; N- Neutral; D-Disagree; SD-Strongly Disagree

### Moderating effect of IBLI on the relationship between study variable and livestock performance:

#### Moderated multiple regressions for political situations:

The third specific objective of this study was to explore the moderating effect of Index based livestock insurance on political situations affecting performance of livestock projects in North Eastern Kenya.

The hypothesis tested for this specific objective was:

$H_0$  – there is no moderating effect of Index Based Livestock Insurance on political situations affecting Performance of livestock projects in North Eastern Kenya.

In model1 there is a significant relationship between the predictor (political situations) and Performance of livestock projects in North eastern Kenya. ( $R^2 = 0.137$ ,  $F(1, 126) = 19.66$ ,  $p < 0.001$ ). The  $R^2 = 0.137$  shows that political situations explains 13.7% of the variation in Performance of livestock projects in North Eastern Kenya. The remaining 86.3 % is due to other factors not captured in this model.

The results in Model 2 present the results for the independent variable (political situations) and the moderator (Index Based Livestock Insurance). The results in Model 2 indicate that political situations has a significant and positive relationship with Performance of livestock projects in North Eastern Kenya ( $\beta = 0.423$ ,  $t = 4.534$ ,  $p < 0.001$ ). The  $\beta$  of 0.423 indicates that a unit change in political situations increases the performance of livestock projects in North Eastern Kenya by 0.423 units, Index Based Livestock Insurance being constant. Further there is an insignificant positive relationship between Index Based Livestock Insurance and Performance of livestock projects in North Eastern Kenya ( $\beta = 0.143$ ,  $t = 0.991$ ,  $p = 0.323$ ).

$$Y = 1.003 + 0.423X_3 + 0.143X_5$$

Where Y is Performance of livestock projects in north eastern Kenya,  $X_3$  is political situations,  $X_5$  is Index Based Livestock Insurance.

In model 3, the moderation is tested by introducing the interaction term political situations \* Index Based Livestock Insurance. There was a significant relationship between relationship political situations and performance of livestock projects in North Eastern Kenya ( $\beta = 0.437$ ,  $t = 3.819$ ,  $p < 0.001$ ).

Therefore  $\beta = 0.437$  indicates that a unit change in political situations is associated with a 0.437 increase in performance of livestock projects in north eastern Kenya, Index Based Livestock Insurance being constant. The  $\beta$  changed from 0.423 to 0.437 after moderation. Further there was an insignificant relationship ( $\beta = 0.134$ ,  $t = 0.896$ ,  $p = 0.372$ ) between Index Based Livestock Insurance and performance of livestock projects in North Eastern Kenya.

The interaction term political situations \*Index Based Livestock Insurance is insignificant ( $\beta = -0.042$ ,  $t = -0.209$ ,  $p = 0.834$ ). In this regard, the study failed to reject  $H_0$ .

There was a change in  $R^2$  from 0.007 to 0.0000 giving a  $R^2$  change of 0.007 which was small and insignificant (p value 0.834).

$$Y = 0.955 + 0.437X_3 + 0.134X_5 - 0.042X_1 * X_5$$

The three models were significant as indicated by their F-values were (19.666, 10.323 and 6.843) and their corresponding p values were  $< 0.01$ ,  $< 0.01$  and  $< 0.01$  respectively. On adding IBLI variable on the model containing Insecurity and conflict, the change in F was not significant (F-change = 0.983,  $p = 0.323$ ) indicating that IBLI as a predictor has no significant influence on performance of livestock projects. On adding the interaction term (Insecurity and conflict \*IBLI) to the model containing insecurity and conflict and IBLI as predictors, the change in F was not significant (F-change = 0.044,  $p = 0.834$ ) meaning that IBLI is not a significant moderator of the relationship between insecurity and conflict and performance of livestock projects.

## 5. CONCLUSION AND RECOMMENDATIONS

The study concluded that there was weak positive relationship between political situations such as security and conflict and performance of livestock projects in North Eastern Kenya was significant. Thus, the study concluded that variation in performance of livestock projects in North Eastern Kenya is explained by variation in political situations. The study concluded that if security is beefed up in North Eastern Kenya, performance of livestock projects in North Eastern would be enhanced. However, on moderating political situations and index based livestock insurance there was an insignificant relationship on the performance of livestock projects in north eastern Kenya. This could be as a result of index based livestock insurance product only covers the insured's against the risk of drought related livestock deaths and do not cover livestock risks against the loss of theft hence the reason why there insignificant moderating effect between political and index based livestock insurance on performance of livestock projects. Also, the study concluded that terrorism, shifta and cattle rustling was major challenges exposed to the people of North Eastern Kenya districts and could affect the performance livestock projects negatively. Conflicts and insecurity a rose because of scarce resources such as water and pasture and these issues would be solved politically. Hence the study found out that security apparatus are not good enough to make them comfortable and therefore they are forced use community measure to address insecurity.

The study recommends to the project managers to work as team with the area leaders and community to beef up security and reduce conflict. Security and conflict management would improve the performance of livestock projects in North Eastern. Likewise the study recommends to the project managers be cautious not to moderate political situations with index based livestock insurance since it affect is insignificant in the performance of livestock projects in North Eastern Kenya. This could be as a result of index based livestock insurance product only covers the insured's against the risk of drought related livestock deaths and do not cover livestock risks as a result of loss through theft. Lastly, the study recommends it would be appropriate to the government to provide adequate security through involvement of all stakeholders such as politicians and community to find the lasting solution on security.

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