IMAGE: A MAP OF THE STARS OF THE ORION CONSTELLATION

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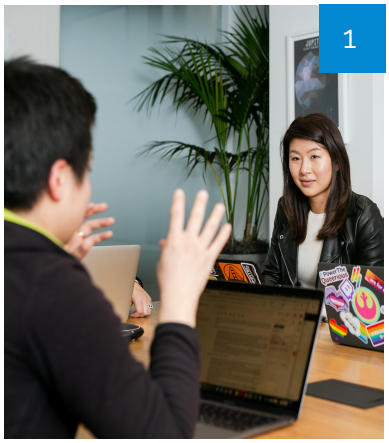

A Statistical Evaluation of the Gender Hypothesis in the Aetiology of Feminicide in Spain

José Luis Palacios

Rey Juan Carlos University

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Keywords: statistics, ecological hypothesis, gender hypothesis, time series, feminicide.

Author: PhD, Rey Juan Carlos University (Madrid, Spain).

I. INTRODUCTION

Gender violence has become an increasingly visible problem in our society in recent decades, occupying a prominent place in the political and media agenda, public opinion and even in academic debate. The term "gender violence" refers to a type of violence inflicted on some women simply because they are women, because they belong to the female sex. The political perception of the gravity of this problem, which is substantiated by an alarming number of assaults of all kinds on women, in a multitude of circumstances and with effects of varying degrees, including death, prompted the enactment in 2004 of a special law aimed at tackling this phenomenon and protecting women in general against this kind of violence: Law 1/2004 of 28 December, known as the Law against Gender Violence (Spanish initials: *LIVG*).

As is well known, enactment of this law has given rise to considerable legal controversy, with some legal scholars claiming that in the field of *criminal* proceedings, it undermines the presumption of innocence (e.g., Huerta, 2008; Martín, 2018), restores offender-based criminal law and compromises the principle of equality before the law (e.g., Boldova and Rueda, 2004a, 2004b; Lascuráin, 2013); furthermore, its enforcement requires the establishment of "exceptional" courts (e.g., Alba, 2005), all aspects that could be considered manifestly contrary to the spirit and letter of the 1978 Constitution and might lead to a negative legal assessment of the entire law (Villacampa, 2018; cf. Pérez, 2016). In fact, following its promulgation, numerous Spanish judges presented various "questions of constitutionality" regarding its content (127 as of 06/03/2008: *La Vanguardia*, 2008), and almost half of the members of the Constitutional Court issued individual votes against one or more of its precepts when its constitutionality was reviewed (STC 59/2008).

However, it is not our intention here to dwell here on these aspects of the law, but rather to examine some of the aetiological considerations it cites regarding the criminal behaviour of male persons towards female persons, which seem to serve as a motivation and justification for the precepts the law contains. The *LIVG* refers to these questions in two paragraphs in the "explanatory memorandum", when it assumes that the violence it is intended to combat (gender violence) is a unique violence that "is directed against women for the very fact of being women, because they are considered by their aggressors as lacking the minimum rights of freedom, respect and

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decision-making capacity", and when, further on, this violence is described as "... the aggressions suffered by women as a consequence of socio-cultural factors that act on the male and female gender, placing the latter in a position of subordination to men". It seems a clear generalisation to claim that when male partners or ex-partners assault female partners or ex-partners (the case that the law is intended to correct: art. 1.1), they do so regardless of any contingent circumstance, as a manifestation of a pathological social syndrome (the law seems to attribute this to socio-cultural rather than biological, psychological or other factors, and implicitly to machismo[1]), which affects all men but is only expressed consciously and intentionally by some.

The phenomenology by which this simplistic vision of social reality has become established as a socio-anthropological explanation of a certain type of criminality, inspiring a law such as the *LIVG* in a modern democratic state, represents an interesting problem in the sociology of knowledge, and has even attracted a broad consensus of opinion; however, a detailed consideration of this question would go far beyond the scope of the present article. However, a statistical assessment of the alleged monocausal explanation for the crimes of which some women are victims is somewhat simpler and more immediate, since the use of appropriate analytical techniques can determine whether a criminal behaviour, and more specifically feminicide, can be attributed to a single identifiable causal factor (machismo) or instead reflects a plurality of causes that can be measured and recorded. This is precisely the question that we address here.

It is important to emphasise that we limit ourselves here to lethal assaults classified as feminicides[2] because these constitute an indisputable indicator of the violence inflicted on some women within the context of an intimate partner relationship, which is *valid* (it serves to measure what we wish to measure: serious physical violence) and *reliable* (it measures this well, since the record of the event is precise and irrefutable), all indispensable methodological conditions of scientific observation to determine the reality and magnitude of a phenomenon. Other manifestations of gender violence are more difficult to apprehend in quantitative terms because the records are more imprecise and debatable and because their true incidence cannot be as reliably established as feminicide.

In short, here, we statistically assess the plausibility of the explanation given in the *LIVG* of a phenomenon that to a large extent would justify this law: that the fundamental cause of violence against a female partner or ex-partner by a male person is machismo. We shall call this monocausal explanation the gender hypothesis, a term that has been used before in other contexts (Hyde, 1995: 76ff) and which, more or less explicitly, is found in some of the literature on feminicide (e.g., Campbell, 1992; Dobash and Dobash, 2015; Johnson et al., 2017; Kelly, 1988; Laurenzo, 2012; Walker, 2012).

II. DESIGN AND METHOD

First, it is worth noting that although a statistical association between two variables does not imply a causal relationship between them (see e.g., Vigen, 2015), the inverse is ineluctable: if there is a causal relationship between two variables, there must necessarily be a statistical association between them expressing this. Therefore, if there is an identifiable cause (machismo) and an observable effect (feminicide), there must be a statistical relationship between the former and the latter. An important methodological requirement is that to observe the relationship between two (or more) variables, these must be operationalised and empirically substantiated in indicators, i.e., they must be *measurable*. For example, the variable "gender violence" can be measured with

[1] In order to avoid undesirable polysemy regarding this concept, we use the term "machismo" strictly in accordance with its definition in the Royal Spanish Academy Dictionary: (1) A male attitude of superiority in relation to females; (2) A form of sexism characterised by male dominance.

[2] We use this term to designate the intentional killing of women in the sense that is usually given to deaths caused as a result of gender violence, rejecting the also frequently used term "femicide". For a nuanced comparison of the two terms, see e.g. Toledo (2009), esp. pp. 23-36. For a legal discussion of feminicide and its criminal treatment, see e.g. Vázquez - Portomeñe (2018).

the indicator "number of women assaulted by a male partner or ex-partner" (with various sub-indicators, of which the number of feminicides is the most consistent). However, the variable "machismo" is, for these purposes, very difficult, if not impossible, to measure accurately in operational terms: when a woman is assaulted within the context of an intimate partner relationship, this may be due to a multiplicity of causes, among which machismo would be one of the possible causes, acting as the exclusive driver of the aggression or concomitantly with others. Isolating this factor from the other possible factors is highly complex methodologically. In the case of feminicides, if the perpetrator does not expressly state that he has killed the victim *solely* because she is a woman, the measurement instrument used for scientific observation will be incapable of tangibly identifying the cause, which is the independent or predictor variable (machismo); nor, therefore, will it be capable of establishing its real effect on the dependent or criterion variable (feminicide). In such circumstances, one feasible methodological option is to assume that the predictor variable exerts a general and constant effect, since according to the gender hypothesis, the "amount of machismo" should not fluctuate randomly or present marked variations in the short to medium term (which enables machismo to be defined as the effective cause of violence and is precisely the thesis assumed in the *LIVG*), and then to observe whether the criterion variable presents a structure of variability that can *only* be attributed to the effect of the former ($\sigma^2_{mach.} \Rightarrow \sigma^2_{fem.}$). Such is the methodological strategy employed here.

It should be stressed that if machismo is *the* effective cause of gender violence in general and of feminicides in particular, variations in its amount (whatever the indicator or scale used to measure it) will correspond to variations of the same magnitude in the number of feminicides: their correlation coefficient will be $\rho = 1$. This implies that the function modelling the variable "feminicide" must be the same as the one modelling the variable "machismo", since the contrary indicates that its variability structure is different and therefore $\rho \neq 1$, which is incompatible with the causality relationship argued by the gender hypothesis. If the "machismo" variable is satisfactorily modelled with a linear function, which is the inherent assumption of its status as a constant and immutable social phenomenon in the short to medium term, the "feminicide" variable must necessarily also be modelled with a linear function. Thus, when modelling the feminicide series with a linear function, the goodness of fit to this model, measured according to the coefficient of linear determination [$0 \leq R^2 \leq 1$], would indicate the extent of the difference with the functional equivalence of both variables, "machismo" and "feminicide", and consequently, of the magnitude of their causal relationship.

A classic time series regression analysis (Chatfield, 2004; Rodríguez, 2000; Uriel, 1995), taking feminicides as the criterion variable and limited to the study of the trend component, *TC*, with a global focus and a fitting method using the basic function $TC = f(t)$, where time, t, in a given period, is the stochastic predictor variable (Rodríguez, 2000): 42-54; Parra, 2015: 27-31), is an acceptable statistical tool to test or verify the hypothesis of causality. The operational analysis procedure employed basically consisted of testing the goodness of fit of linear and non-linear models of the feminicide series for the period 2001-2019[3], with arbitrary serial segmentation to better study the total series, complemented with an autocorrelation analysis using the Ljung-Box test in order to achieve a more refined functional interpretation.

Using this method, a perfect (or very good) fit to a linear function of the feminicide time series would provide clear evidence in favour of machismo as its effective cause, since this variable is modelled as a linear function in the gender hypothesis (at least, as mentioned above, in the short to medium

[3] We did not include the 2020 data on feminicides in Spain because although known —albeit provisional— at the time of writing (47 cases), they reflect the phenomenon studied in a year marked by the exceptional circumstances of the COVID19 pandemic, with distorting effects on most human and social behaviours, which impedes comparison in the terms required by the methodology of quasi-experimental designs using interrupted time series, such as the present study.

term). In contrast, a poor fit to a linear function of the feminicide series would be clear evidence of a departure from the linear function that characterises machismo, and therefore, of its lack of covariation, which is *necessary* to confirm this hypothesis; similarly, a better fit to a *non-linear* function of the feminicide series would constitute evidence in favour of the intervention of other causal variables in the phenomenon (which may or may not include machismo). The concurrence of linear and non-linear functions to satisfactorily fit the entire empirical series of feminicides would be compatible with a random pattern in the statistics of the phenomenon.

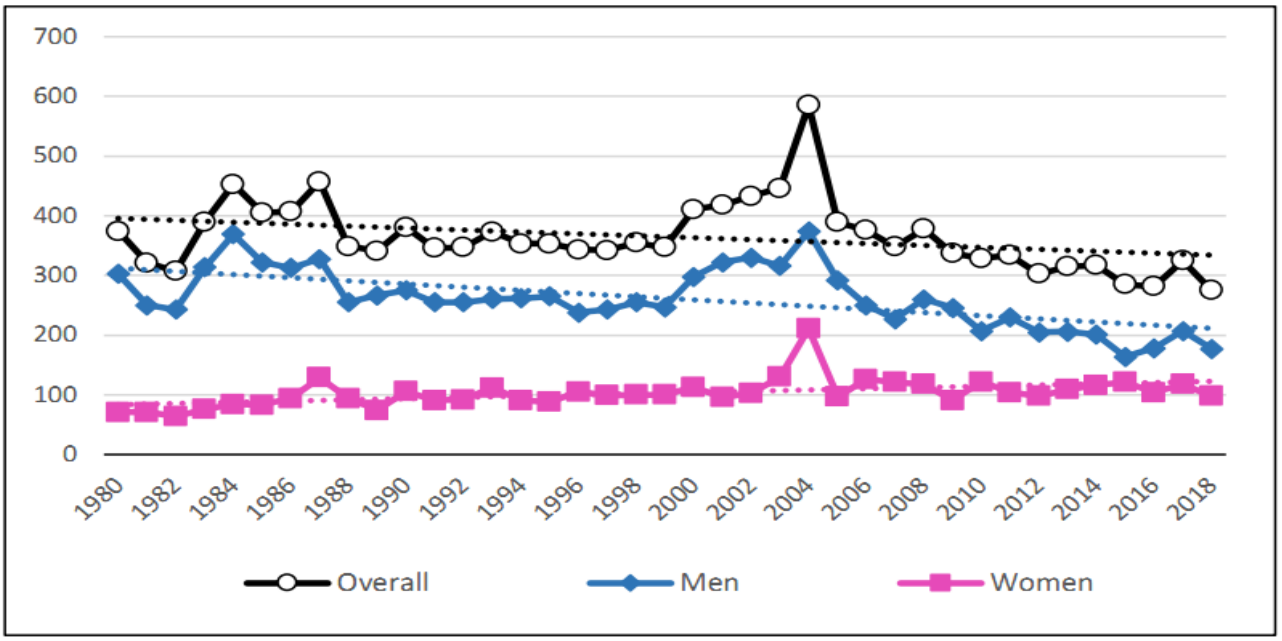
Complementarily, and despite the short "length" of the feminicide time series, because the total number of observations it comprises is only nineteen, we conducted a statistical analysis that went a little further than mere visual inspection and regression analysis. Thus, we analysed two segments of the series, 2001-2004 and 2005-2019, hypothetically assuming that the data came from two samples and considering enactment of the *LIVG* as an "intervention" or "treatment". This implied examining the series from the perspective of a quasi-experimental design with time series without a control group (Campbell and Stanley, 1973; Campbell, 1992), using the customary methodology for interrupted time series analysis (González and Del Puerto, 2009; Mc Cleary and Hay, 1980; Rodríguez, 2000; Uriel, 1985; Vallejo, 1996). To test the effect of this intervention, we performed a *t*-test for independent samples, having previously performed Levene's test to determine whether the variances in the data in the pre/post intervention series were equal or not. This analysis was intended to complete the statistical assessment of the aetiology of feminicide reported here.

The time series analysis of feminicides is preceded by a statistical description of homicide in Spain disaggregated by sex, in order to provide a contextualised overview of the phenomenon studied and facilitate a better understanding.

III. FIELDWORK AND DATA ANALYSIS

The figures for victims of intentional homicides (intentional homicides and murders) in Spain by sex in 2018, the latest year available from the Spanish National Institute of Statistics[4], show that of the 275 deaths resulting from an assault (INE, 2018), 177 were men and 98 were women, yielding a female/male ratio (F/M) slightly higher than 1/2. As can be seen in Figure 1, the number of deaths from assault shows a stable pattern for the entire period 1980-2018, with a slightly decreasing trend in general, which is repeated in the case of male deaths but shows a slightly increasing trend in the case of female deaths (the peak in 2004 is exceptional, being due to the 11-M massacres, and does not substantially modify the trend of the entire series). However, the ratio of female/male deaths (F/M) and the rate of female deaths due to assault over total deaths indicate two phases: one from the beginning of the series until the beginning of the 21st century and a later one, where both indicators underwent a clearly perceptible increase. In the final years of the period under consideration (2010-2018), the pattern characterising the final phase appears to become more pronounced, reproducing itself with little variation, with an F/M ratio oscillating around the value 1/2 (i.e., 0.50, when it had been lower than 0.34 on average in the period 1980-2002) and a percentage of women out of the total number of homicide deaths oscillating around 35% (when it had been lower than 25% on average in the period 1980-2002). Bearing in mind that the resident population in Spain grew by almost 25% over this period, with the increase for men being 24.88% and for women 25.20%, it can only be concluded that the relative incidence of intentional homicide in Spain has decreased considerably in relative terms for men, but has increased significantly for women.

[4] The INE only gives data up to 2018, but the Spanish Ministry of the Interior provides data without disaggregating by sex for 2019, when there were 333 intentional homicides (Spanish Ministry of the Interior, 2019), which represents an appreciable (+20%) but insufficient increase in the number of homicides to break the general trend of the series; meanwhile, 2020 is not statistically comparable for the reasons already noted with respect to feminicides in a quasi-experimental research design using time series.



Source: Spanish National Statistics Institute and by the \authors

Figure 1: Evolution of the number of homicides in Spain, by sex (1980-2018)

Complementing the longitudinal perspective of homicide disaggregated by sex, Figure 2 shows that between 1980 and 2018, the F/M ratio and the F/Total rate both presented an increasing trend, with a double regression coefficient in the case of the former ($b_{F/M}$ = 0.0088 >> b_{FT} =0.0044: the steeper slope of the fitted trend line[5]), indicating that with time, *a*) there was a smaller difference between those killed by homicide by virtue of their sex, and *b*) correlatively, there was a larger share of women in the total number of homicide deaths.

[5] If the effect on the series of the homicides caused by the 11-M massacre is neutralised, these coefficients remain practically the same, at $b_{F/M}$ = 0.0090 and b_{FT} = 0.0045.

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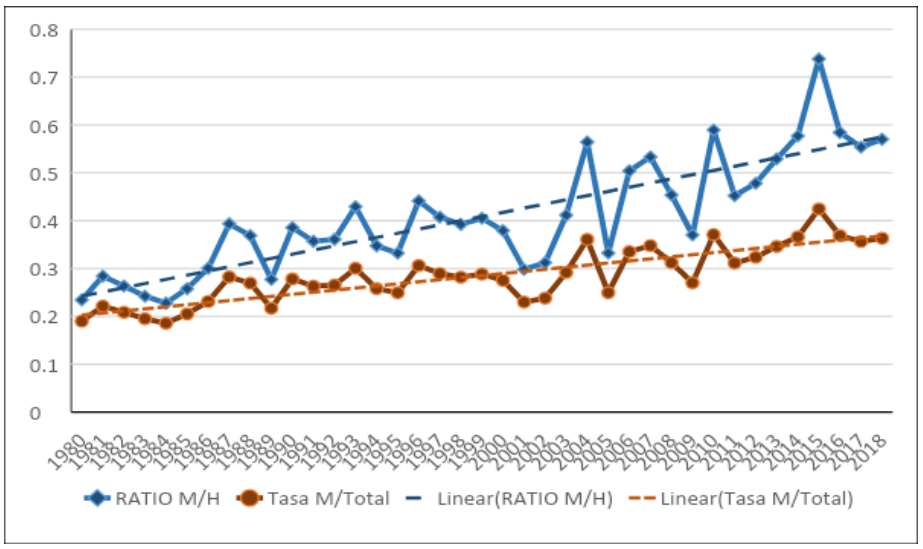


Source: Spanish National Statistics Institute and by the authors

Figure 2: Relative evolution of homicide in Spain, by sex (1980-2018)

Turning now to the deaths of persons *of either sex* caused by assaults by persons of *either sex*, it should first be noted that determining this is very difficult because the judicial statistics do not disaggregate by sex the perpetrator of the homicide about the sex of the victim of the homicide. It is possible to establish the sex of the murderers and the sex of the victims, but not to cross-reference them for differential purposes, except in the specific case of what was for a time generically termed domestic violence and later classified as gender violence, when the person perpetrating the lethal aggression is the victim's partner or ex-partner. Figure 3 shows the statistics for this type of homicide, distinguishing between deaths due to assaults on persons of both sexes by intimate partners or ex-partners or similar for the entire period 2001-2019 (C.G. Poder Judicial, 2019). The figures for women killed by feminicide in 2001 and 2002 were calculated from the numbers of deaths due to domestic violence. The figures for men killed due to an assault by an intimate partner or similar in domestic contexts in 2001-2003 were calculated by extrapolating those known for the rest of the period of men killed by intimate partner or ex-partner assaults in domestic contexts.

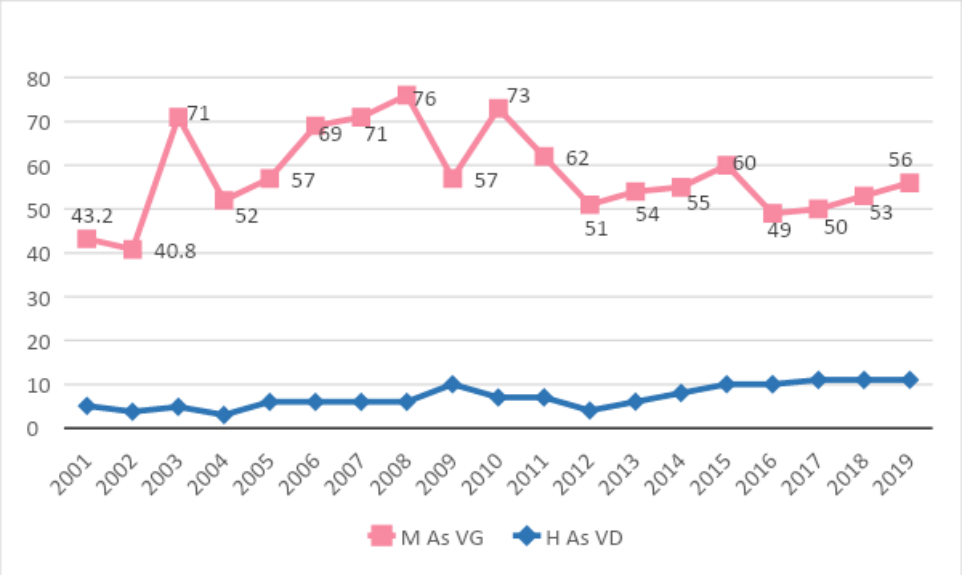
The M/F (male/female) ratio for the entire period was 1/8, although it was 1/5 or lower in some years (particularly in the last years of the time series considered). In some of the official reports on homicide between partners, ex-partners, or similar, the M/F ratio even exceeded the value of 1/4 slightly (C.G. Poder Judicial, 2016: 6). It should be noted that although the rates (and derived ratios) for male victims of this type of assault in Spain are low in relation to female victims[6], it is possible that in reality they are higher[7], because at least in some years (2010 and 2011) it has been possible to document (Toldos, 2013: 77-84) that the actual number of men killed by their female partners or ex-partners was almost twice as high as those included in the official statistics with which we constructed the graph of the time series in Figure 3 (in this respect, the Spanish Judicial Police reported that for the period 1996-1998, homicides perpetrated by wives on their husbands and vice versa were distributed in a proportion of 30%/70%: vid. Tobeña, 2001: 237).

On the other hand, contextualisation of this type of homicide due to partner or ex-partner assault within homicides in the general population

[6] It is also worth noting that in 2018 (the last year with available data), Spain ranked the fifth lowest of all European Union countries (plus the four EFTA countries) for female deaths due to intimate partner assault, with a rate of 0.20 per 100,000 inhabitants (Eurostat, 2018).

[7] This circumstance renders it inadvisable to subject the series of homicides of men by their partners or ex-partners to the same type of analysis as that of feminicides.

indicates that while the latter show a decreasing trend over time, the former present a pattern of quantitative stability, especially in the period 2001-2019.



Source: General Council of the Judiciary, V.G. Observatory and by the authors

Figure 3: Number of intentional homicides in Spain in the context of intimate partner or similar relationships, by sex (2001-2019)

IV. RESULTS

Below, we report the results of our time series regression analysis, taking the number of feminicide victims as the criterion variable and the correlative year of occurrence as the predictor variable, as is customary in time series analyses. Table 1 shows the goodness of fit of the different regression models tested, reported with the coefficient of determination R^2 (indicating the amount of variance explained by the predictor).

When the 2001-2019 time series was modelled with a linear equation (a straight line), the slope of the curve was slightly negative, with a regressor coefficient b = -0.1565, clearly indicating that the incidence of the phenomenon (in absolute values) tended to decrease over time. However, the goodness of fit with this function was very poor, as the coefficient of determination was only R^2 = 0.0076, which means that the passage of time only explained 0.76% of the variance in the number of victims. When modelling the time series with a second-order polynomial function, a smooth parabolic curve was obtained with a slightly decreasing trend in the final phase, but the fit was much better than with a linear function, as R^2 = 0.3093.

When the time series was modelled with a third-order polynomial function, the slope of the curve was imprecise for the entire series, although the final phase showed a slightly positive trend, but the coefficient of determination was R^2 = 0.5388, i.e., the model now explained almost 54% of the variance in the phenomenon (more than seventy times more than with the linear function). With a fourth-order polynomial, the gain in goodness of fit was negligible (R^2 = 0.5431). What all this demonstrates is that the variance in the criterion variable presents the characteristics of a random or a multicausal phenomenon with indeterminate variables in which time elapsed in the strict sense barely plays a role.

The series was also divided into segments by attributing a meaning to each of them. Taking the 2001-2004 period (initial phase of the series), the

linear model showed a slightly positive slope (b = 0.026) and explained 95% of the variance in the phenomenon (R^2 = 0.9501), but a third-order polynomial model explained all the variance in the criterion variable. Taking the 2005-2011 period (period immediately after enactment of the *LIVG*), the linear model yielded a positive slope (b = 0.3214) and explained a very small part of the variance in the criterion variable (R^2 = 0.008), but the second-order polynomial model explained almost 30% (R^2 = 0.2943), while the fourth-order model, better fitted to the empirical form of the series, explained almost 45% of the variance (R^2 = 0.4492). Lastly, considering the 2012-2019 period, the linear model showed a slightly negative slope (barely noticeable on visual inspection) and explained only 0.2% of the variance in the criterion variable, but the third-order polynomial explained 49% (the gain in variance explained was small with a fourth-order polynomial). In short, segmenting the 2001-2019 time series always yielded a better fit to a third-order (or higher) polynomial function than to the linear model. This confirms the previous conclusion for the series as a whole: it presents the characteristics of a random phenomenon or a multicausal phenomenon whose explanatory variables are unidentified.

Table 1: Comparison of goodness of fit with different regression models

Period of the series	Coefficients of determination R^2 with different regression models			
	Linear function	Polynomial function of degree 2	Polynomial function of degree 3	Polynomial function of degree 4
Complete series (2001-2019)	0.0076	0.3093	0.5388	0.5431
2001-2004	0.9501	0.4064	1.0000	1.0000
2005-2011	0.0080	0.2943	0.3985	0.4492
2012-2019	0.0011	0.0021	0.4930	0.5034
2005-2019	0.4098	0.4101	0.6093	0.6601

An analysis of the autocorrelation of the time series using the Ljung-Box test (Ljung and Box, 1978) showed (Table 2) that this phenomenon does not occur systematically and that in a hypothetical sample of the time series data, almost none of the non-zero autocorrelations was statistically significant at the level α = 0.05, indicating that the hypothesis of independence of the observations (of the different annual data of the series) can be accepted. This is also of interest for the purposes of interpreting the data in terms of inter-annual dependence, as it supports the assumption that the series data are not interdependent and present a random pattern.

Table 2: Time series autocorrelation analysis

Autocorrelations					
Series: Feminicides					
Delay	Autocorrelation	Dev. Error[a]	Ljung-Box test		
			Value	gl	Sig.[b]
1	0.253	0.212	1.424	1	0.233
2	0.130	0.206	1.821	2	0.402
3	0.219	0.200	3.022	3	0.388
4	0.031	0.194	3.047	4	0.550
5	-0.108	0.187	3.377	5	0.642
6	-0.500	0.181	11.045	6	0.087

London Journal of Research in Humanities and Social Sciences

7	-0.127	0.173	11.581	7	0.115
8	-0.212	0.166	13.209	8	0.105
9	-0.338	0.158	17.756	9	0.038
10	-0.146	0.150	18.705	10	0.044
11	-0.033	0.142	18.760	11	0.066
12	0.063	0.132	18.984	12	0.089
13	-0.044	0.123	19.111	13	0.120
14	0.026	0.112	19.167	14	0.159
15	0.116	0.100	20.516	15	0.153
16	0.096	0.087	21.732	16	0.152

Dividing the series into two segments, 2001-2004 and 2005-2019, considering enactment of the *LIVG* as an "intervention" or "treatment" and observing the series from the perspective of a "quasi-experimental design with interrupted time series and no control group", we compared whether the differences in feminicide means in both segments were statistically significant. The *t*-test for independent samples, with a prior Levene's test to determine whether the variances in the data in the pre/post intervention series were equal or not (the test for equality of means requires homoscedasticity or equality of variances), with the corresponding comparison of means, yielded the results shown in Tables 3 and 4.

Table 3: Descriptive statistics for the two time series segments

Periods	N	Mean	SD	Standard error of the mean
2001-2004	4	51.75	13.71	6.85
2005-2019	15	59.53	8.75	2.26

Table 4: Levene's test and *t*-test for equality of variances and means of the time series segments

Levene's test for equality of variance			*t*-test for equality of means				
Assumption	F	Sig.	t	gl	Sig. (two-tailed)	Difference in means	Standard error of difference
Assuming equal variances	0.734	0.403	-1.409	17	0.177	-7.7833	5.5226
Not assuming equal variances			-1.079	3.679	0.346	-7.7833	7.2168

As can be seen, Levene's test indicated that there were no statistically significant differences between the variances in the two periods, and therefore, their means could be compared (for inferential purposes not necessary here, although this statistical conclusion was also useful for the regression analysis we performed). A comparison of the means, using the *t*-test, showed that the difference in means between both periods was not statistically significant at the chosen level of significance (α = 0.05). When the time series data were divided into the periods 2001-2004 and

2005-2011, the comparison of means was statistically significant (two-tailed significance = 0.046), with a mean of 51.75 for the first segment and 66.43 for the second. However, when the data were divided into the periods 2001-2011 and 2012-2019, the difference in means test was not statistically significant (although in the latter case, Levene's test indicated heteroscedasticity, requiring a non-parametric test such as the Mann-Whitney test, the result of which [Sig. 0.091] also supported the null hypothesis that the distribution of the variable is similar between the two periods into which the series was subdivided: Siegel and Castellan, 1998: 157-165; Pardo and San Martín, 2010: 132ff).

In short, statistical analysis of a time series consisting of the number of women killed by gender violence or feminicide in the period 2001-2019, subdivided into the time periods 2001-2004 and 2005-2019 (before and after enactment of the *LIVG*), on the assumption that they came from two random population samples, has not allowed us to conclude that there are differences other than those generated by a random pattern between the means for deaths before and after enactment of this law. The difference in feminicide means between the period 2001-2004 and the period 2005-2011 also indicates, somewhat paradoxically, that the mean number of feminicides increased in the six years following enactment of the *LIVG*.

V. DISCUSSION AND CONCLUSIONS

The bulk of this paper has been devoted to an analysis of feminicides in Spain in the period 2001-2019 using regression techniques with time series and interrupted time series, previously contextualising them in the time series of homicides from 1980 to the present. As a result of our analyses of the time series of feminicides, we conclude that:

a) The linear regression scheme (with time as the stochastic criterion variable) used to model the time series of feminicides in the period 2001-2019 was barely capable of explaining 1% of the variance, whereas a third-order polynomial model explained almost 54%, which is compatible with a *random* pattern of the phenomenon, or alternatively, an indeterminate *multicausal* one.
b) Segmenting the series into the periods 2001-2004, 2005-2011, and 2012-2018 did not fit well according to a homogeneous scheme of regression models (linear and polynomial models must be combined to obtain acceptable fits), which is compatible with a *random phenomenon*, or alternatively, with a multicausal model whose explanatory variables are unidentified. A serial autocorrelation analysis supported this conclusion as there was no evidence to indicate interdependence between the observations (cases) in the series.
c) Subdividing the feminicide series into two segments, 2001-2004 and 2005-2019, in order to observe the possible effect of Law 1/2004 (*LIVG*) as a "treatment" (or "intervention") variable, using the appropriate statistical techniques (hypothesising the sampling origin of the observations) to complement visual inspection of the series, failed to identify significant differences between the feminicide means for the two segments of the series, suggesting that *the law has had no appreciable effect on the phenomenon of feminicide* and indicating a random (or indeterminate multicausal) pattern in the cases computed.

The statistical results outlined above with respect to feminicide indicate a phenomenon of complex and multiple aetiology with undefined intervening variables, and they do not support a structural monocausal explanation but instead suggest individual behaviours that cannot be attributed to a general motivational pattern that can be scientifically determined. We found no statistical evidence in support of a single causal factor for feminicides such as machismo; rather, the recorded cases of feminicides in the form of a time series corresponded to a random (or perhaps indeterminate multicausal) pattern that does not allow us to assign a specific general cause. One possible explanation for the statistically null effect of the *LIVG* on the recorded frequency of feminicides is that it attributes the causality of these crimes to a factor that does not in general

possess it and it therefore has no appreciable statistical effect.

These findings refute the gender hypothesis as the origin and cause of all assaults, and especially lethal assaults, on women in Spain by their perpetrators.

The view of machismo as the fundamental driver of feminicides, without making circumstantial, psychological, pathological, life history, economic and sociological distinctions but instead indiscriminately grouping together not only all men but all concurrent cultural structures irrespective of time, appears to be a theoretical assumption that does not have the empirical support to be sustained in scientific terms. In fact, there is an abundance of accumulated, available scientific evidence that questions this, reported in criminology (e.g. Cuaresma, 2016; García-Pablos, 2014; Marchiori, 2007), the psychopathology of criminal behaviour (e.g. Garrido, 2003; Pozueco, 2014; Redondo, 2008) and in studies on intersex violence (e.g. Álvarez, 2014; Archer, 2000; Graham-Kevan, 2017; and especially the *PASK* project, 2012, in which more than 2,000 studies were reviewed). Furthermore, in light of the most recent multidisciplinary research conducted in Spain (López-Ossorio et al., 2018; González et al., 2018; cfr. Palacios, 2020; Cantera, 2005), it seems that an ecological model (Heise, 1998; cf. Jewkes, 2002; Vives et al., 2009) of a *multicausal* nature may provide a better explanatory approach to the phenomenon of feminicide, and such is the stance that the WHO appears to have assumed (see, for example, World Health Organisation, 2013).

In conclusion, the additional statistical evidence that we report here works in two different but complementary ways: on the one hand, it undermines the gender hypothesis, showing that its monocausal explanation of feminicide is weak and inconsistent and does not withstand a scientific falsification test based on an analysis of its quantitative structure; and on the other hand, it supports the plausibility of the ecological hypothesis that a multifactorial approach to feminicidal violence is possibly more suitable to explain this phenomenon, being more realistic and probably more useful to understand it well and combat it better.

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Cooperatives and Sustainable Development: the Case of Coffee Marketing in the Matengo Highlands in Tanzania

Osmund M. Kapinga & Victoria A. Gores

St. Augustine University of Tanzania

ABSTRACT

This paper historically dissects the contribution of cooperative movement in sustainable develop- ment of the Matengo Highlands. The main objectives were to examine the evolution and development of the coffee farming in the Matengo Highlands. This examination is important as it directly relates to the formation, evolution and formation of cooperative movement as a colonial strategy in controlling production and marketing of coffee as an export crop which earned the colonial power raw materials and foreign exch- ange. This contribution was also important to the paper to address so that it is able to know how cooperative movement was instrumental in bringing about sustainable development through the handling of coffee farming and the marketing thereof. In this case the role of the state in the promotion of cooperative movement through enactment of laws, legislations and passing of policies was also under focus in this paper. The paper benefited from a research which was structured in a historical design so that to capture the dynamics of changes and transformations through which coffee production and marketing was implemented in the Matengo Highlands in Tanzania. The research was basically qualitative in nature due to the types of historical sources to be used in developing this paper both primary and secondary sources.

Keywords: Matengo Highlands, cooperative movement, sustainable development, coffee production, AMCOS.

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Osmund M. Kapinga[α] & Victoria A. Gores[σ]

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This paper historically dissects the contribution of cooperative movement in sustainable development of the Matengo Highlands. The main objectives were to examine the evolution and development of the coffee farming in the Matengo Highlands. This examination is important as it directly relates to the formation, evolution and formation of cooperative movement as a colonial strategy in controlling production and marke- ting of coffee as an export crop which earned the colonial power raw materials and foreign exch- ange. This contribution was also important to the paper to address so that it is able to know how cooperative movement was instrumental in bringing about sustainable development through the handling of coffee farming and the marketing thereof. In this case the role of the state in the promotion of cooperative movement through enactment of laws, legislations and passing of policies was also under focus in this paper. The paper bene- fited from a research which was structured in a historical design so that to capture the dynamics of changes and transformations through which coffee production and marketing was implemented in the Matengo Highlands in Tanzania. The research was basically qualitative in nature due to the types of historical sources to be used in developing this paper both primary and secondary sources. The main argument of this paper is that cooperative life in the Matengo Highlands has been marked by a series of changes emanating from legislation, policies and statements. Cooperation here had existed in the pre colonial period as an economic production and socio-economic strategy. Cooperation was self-sustaining given the economic and historical conditions obtained in the Matengo Highlands. The colonial state during the British administration institutionalized cooperative movement for the purpose of promoting the export crop economy. Postcolonial state inherited the colonial system of suppressing farmers' cooperative movement to allow the state to accumulate surplus value. The situation was much more precarious during the socalled mlango mmoja cooperative movement under the Agricultural Marketing Cooperative Societies. As a result, AMCOs are no longer organs for sustainable development of the people who were systematically reduced to poverty-stricken situations .

Keywords: Matengo Highlands, cooperative movement, sustainable development, coffee production, AMCOS.

Author α: St. Augustine University of Tanzania.
σ : Mwenge Catholic University.

I. INTRODUCTION

This paper examines the introduction and development of coffee production and on the other side the formation and the development of cooperative movement in the Matengo Highlands to 2019. Agricultural production and cooperation among the Matengo Highlands dwellers have been a common practice and indeed one of their traditional values. They used to cultivate the highlands with their unique *ngolo* farming method growing a variety of crops including but not limited to maize, beans, legumes, tubers, vegetables and wheat. The labour process had developed a kind of cooperative work spirit popularly known as *ngokela*. Cooperation and crop cultivation

were based on the subsistence needs of the society. The coming of the colonialists engendered in transfor- mation of the people in the Matengo Highlands. The crop which the colonialists introduced was an arabica coffee cash crop highly demanded in the world market. A crop which was not for subsistence of the people in the Matengo Highlands. The cooperation which was introduced through an alien cooperative movement from Europe was essentially for cash crop marketing. This was contrary to the traditional cooperation of ngokela which was based on the producer initiative.[1]

The modern marketing cooperatives were launched as part of the colonial economic strategy to control the coffee industry hence it was institutionalized through cooperatives and marketing policies and government legislation of 1932. More specifically section 36 of 1932 cooperative legislation[2] and was further reinforced by policies of Coffee rules passed by the Wamatengo Native Authority conferred by section 15 of the Native Authority Ordinance of 30th August 1933 as it was amended by the Redrafted Umatengo Coffee Rules of 1938. It was further agreed that the Coffee Industry (Improvement and Registration) Ordinance of 1936 be applied to the Matengo Highlands.[3] By this ordinance, coffee growers in the Matengo Highlands were obligated to sell their coffee through cooperative union. Through the African Agri- cultural (Control and Marketing) Ordinance in 1949 a separate Department of Cooperative was established in Tanganyika which accelerated the increase of the number of marketing cooperatives.[4] Other laws include the 1968 Cooperative Act which repealed the 1932 Cooperative Ordinance, in order to establish multipurpose cooperative societies, the 1982 Act which reestablished cooperative societies as Rural Primary Cooperative Societies after being abolished in 1976 geared towards implementing socialism and self-reliance policy. The 1991 Cooperative Societies Act, which prompted the registration of Agricultural Farmers' Cooperative Societies (AMCOS) in order to operate against CPBs allowed by the 1993 government circular which permitted private buyers to buy coffee direct from farmers through liberalization of the coffee market.[5] The 2017 Prime Minister directive on *mlango mmoja* marketing of coffee through the AMCOS and the subsequent directives from TCB infringed upon the working of cooperative general principles. In 2020 the minister of agriculture allowed private buyers to operate alongside the AMCOS. This has been the situation of coffee producers in the Matengo Highlands for the whole period they have been engaging in coffee production and its marketing.

II. BACKGROUND TO THE PROBLEM

Cooperatives have a long history in Tanzania as they flourished after independence, but then became part of state structures in a top-down approach and were used as a tool for government policy. Marketing cooperatives expanded their business tremendously in the early 1960s. One source indicates that in 1966 there were 1,616 registered cooperatives and out of these 1,339 were engaged in the marketing of agricultural products. In 1960 cooperatives handled 145,000 tons of produce, in 1965 they handled 496,000 tons, and in 1966 they handled 628,833 tons of produce, which was worth TZS 605,200,500. By 1967 the cooperative movement had 3,000,000 members in rural areas.[6] The data quantify that the cooperatives sector was making huge business and members benefited from it.

Despite all changes in the operation of production and marketing of coffee, Matengo Highlands has been undergoing a lot of transformations in this process. Cooperative societies in the marketing of

[1] M.O.Kapinga, Capitalism and the Disintegration of Pre capitalist Social Formation: the Case of Cash Crop Production in the Matengo Highlands, MA Dissertation UDSM, 1993, pg. 39.

[2] Cooperative Societies Ordinance Cap 211, Laws of Tanganyika of 1932.

[3] TNA, 155/A.3/22.

[4] Tanganyika (Cooperative Enterprise) HC Deb 13December 1957 Vol. 579 cc 1714-26, cf Herbert Ndomba, A History of Peasant Tobacco Production in Ruvuma Region, Tanzania, c. 1930 – 2016, PhD Dissertation, Stellenbosch University, 2018 pg 168.

[5] National Records Center (NRC) Dodoma, Several Cooperative societies files.

[6] Ally M. Kimario, *Marketing Cooperatives in Tanzania: Problems and Prospects*, (Dar Es Salaam: Dar Es Salaam University Press, 1992): 27.

Matengo coffee started by the unregistered Ngaka society in 1926 selling its coffee through NGOMAT. This society was formed to market coffee produced by themselves instead of middle men who were exploiting the farmers. Given the well organized operation of cooperative movement in coffee marketing the people of Matengo Highlands had achieved tremendous economic development as it was manifested in the pattern of consumption.[7]

Colonialists institutionalized cooperative societies for their own advantage through legislation, polic- ies and other instruments. Post - colonial state consolidated cooperatives for its policy implemen- tation strategies as witnessed in the changing policies, laws and circulars. From the late 1980s Tanzania introduced SAPs and subsequent liberalization of coffee marketing in 1993 onwards dealt a death blow to cooperatives which seemingly relied on government subsidies which were now withdrawn. Private buyers were allowed to buy coffee but unlike Cooperatives which failed to compete with private traders.[8] This was a condition which reverted to the pre-cooperative era when farmers were vulnerable to unscrupulous greedy traders.

In 2018 the government issued an order that the marketing of coffee should be done through one door/channel (*mlango mmoja*) that is the Cooperative movement through Agricultural Marketing Cooperative Societies–AMCOS. This decision seemed inconsistent to the general principles of cooperative movement based on voluntary membership; democratic decisions; members benefit; cooperatives are independent; cooperatives provide education, training and information; cooper- atives work together and cooperatives work for their communities.[9] The results of which was resistance from peasants which culminated into the government deploying extraordinary power to suppress the rebelling masses.

The worst scenario in the Matengo Highlands happened in July 2019 where police from Mbinga inva- ded and rampaged Mahiro village in Kitura ward Mbinga district. The police pursued the citizens all around apprehending several including the councilor of Kitura Ward,[10] the village chairper- son, members of the village government and other citizens. Six of them were locked in for 72 hours without any charge under the District Commis- sioner's order accused of subverting cooperative movement. A case was instituted against them for sabotage of cooperative movement through incitement. In Langiro village leaders including the party chairman had a case pending in the district court for subverting cooperative movement.[11] In both cases the claimants were the government agents who apparently were not members of any of the AMCOS. The Kipololo leaders including the counselor were locked in for subverting cooper- ative unions.[12] In Ngima and Kihereketi the AMCOS leaders were arraigned for embezzling member's money but it seemed that the district cooperative office was in support of the culprits.

This research wants to investigate several issues on cooperatives and coffee marketing as a strategy for sustainable development. given the fact that the Matengo Highlands is one area where cooperative movement found its place way back in the pre-colonial period and 1926 through the Ngaka Cooperative Society.

III. LITERATURE REVIEW

The underlying theory on the development of cooperative movement, the operation of and theory underlying cooperatives in Tanzania have been adopted both from the Rochdale Pioneers in England as well as the Chayanov's theory of peasants' cooperatives, which advocate for agricultural cooperation among small-scale farmers. This theory addresses how farmers' cooperatives can enhance their sustainability under pressure from large-scale production

[7] M.O.Kapinga 1993 op. cit. pg 39.
[8] Wazungu liberalization of coffee marketing.
[9] Tanzania Cooperative Development, A Simplified Guide for Cooperative Development Policies and the Cooperative Societies Act of Tanzania Mainland 200six pp. 2-3.
[10] Alex Ngui councilor Kitura ward October 2019 Mbinga.
[11] Adam Mkilima Party Chairperson Langiro branch interviewed October 2019.
[12] Angelus Nchimbi, Councilor Kipololo Ward, interviewed in October 2019, Mbinga.

organizations and private traders, who, in most cases, are more organized than the small-scale farmers. It promotes the idea of producers' cooperatives as forms of horizontal integration in agriculture. Furthermore, it operates on the assumption that cooperatives are formed by groups of individual farmers or small agricultural cooperatives for the purpose of large-scale marketing, purchasing agricultural inputs, acquiring credit, and marketing the produce. Thus, agricultural production activities are best organized in small individual units to preserve incentives; however, in some areas, voluntary coopera- tion among such units is necessary to achieve the advantages associated with economies of scale[13]. Thus, given the characteristics of the small-scale farmers in Tanzania, Chayanov's theory is appropriate and applicable to this paper.

Cooperatives have long history with vital contribution to the rural population[14] Weak organizational structure, and inferior financial position, poor management structure based on inherited organizational structure and attitudes from the past.[15] However, from the 1980s the cooperatives have a negative image and are unable to cope with socio-economic challenges of members. Most of them are associated with poor administration, poor leadership, poor business practices, corruption and embezzlement of member's resources.[16] With liberalization of coffee marketing in 1993 private coffee buyers became very aggressive in collecting and buying coffee from farmers, something very uncommon to cooperatives. The single marketing channel popularly known as *mlango mmoja* in the Matengo Highlands completely paralyzed the cooperative societies.

With this order in place confusion ensued in the marketing of coffee in the Matengo Highlands. Against the cooperative principles the government forced all coffee to be marketed through AMCOS. The implementation of this order was compulsory by ordering the formation of AMCOS where they did not exist. Where AMCOS existed, all farmers of coffee were forced to register to the existing cooperatives. All coffee farmers were forced to join cooperative societies with no regard for principles of cooperative principles.

Thus, in 1982 Cooperative Societies Act resulted in the reestablishment of cooperatives but they were placed under the patronage of the ruling party, making membership almost compulsory. As a matter of fact, the cooperatives were under the close supervision of the government and the ruling party (CCM), which appointed leaders and controlled their daily activities. That means, the cooperatives were introduced from the top and not from the grassroots, which was contrary to the principles of cooperatives.

On his trip to southern region the president disclosed that more than 1.2 billion shs belonging to farmers have been eaten by AMCOS body members. He called upon the relevant security officers to follow up the matter and arraign all the culprits. On 26th October, 2019 the Minister for Home Affairs speaking in Bunda but addressing the all nation urged the people who have eaten the farmers' money across the country to be apprehended . The District Commissioner of Mbinga admitted that farmers should be prepared for their money being stolen by the body members.[17] A suggestion was thus posited to institute a cooperative regulatory framework if modernization of cooperative movement is to be rescued.[18] This should go alongside a launching of cooperative transformation by focusing on principles that cooperatives are owned and controlled by their members so that they can be

[13] Chayanov, Alexander *The Theory of Peasant Co-operatives*. translated by David Wedgwood Benn : Ohio State University Press Columbus 1991, pp 10-11.

[14] Methew Mrema, Coffee marketing System in Rombo, MA MoCOBS Moshi, 2017.

[15] Damian Sambuo and Juda Msaki, Mechanism for Co-operative Revitalization in Tanzania: a Policy Review *Journal of Co-operative and Business Studies (JCBS)* Vol.4, Issue 2, 2019: pg. 1

[16] Albert Omar Mruma, Fifty Years of Cooperatives and Economic Development in Tanzania (1961-2011), Moshi University College of Cooperative and Business Studies, P.O. Box 474, Moshi, Tanzania, *European Journal of Business and Management* www.iiste.org, Vol.6, No.13, 2014 pg. 88.

[17] Mwananchi Sunday 27.10.2019 and Mtanzania Monday 28.10.2019.

[18] Sambuo and Msaki, op. cit. pg. 28.

able to meet their social and economic needs.[19] Most of the suggestions put forward are too technocratic and legally based. There was little regard for the members who are basically not knowledgeable on the basics of the ideal cooperative movement. The cooperative officer at the district level was not helpful in disseminating cooperative education due to their small number and lack of interest.[20] This paper is a pioneering attempt to use cooperative movement in the Matengo Highland to test the suggestions on how best to revive cooperative societies among coffee producers.

IV. METHODOLOGY

The research was conducted in the Matengo Highlands in Mbinga district of Ruvuma region in Tanzania. This geographical area was among the early producers of coffee and founded one of the earliest cooperative societies. Furthermore, despite all those pioneering endeavors Matengo Highlands has reverted to impoverishment unable to achieve sustainable development as envisioned by the millennium goals. The research was structured in a historical design so as to capture the dynamics of changes and transformations through which coffee production and marketing was implemented in one of the principal coffee producing zones in Tanzania.[21] The research was basically qualitative in nature due to the types of historical sources to be used in developing this study. The bulk of information and data were generated from the National Archives of Tanzania (TNA) where most of the colonial records on coffee farming and marketing were accessed, the research also accessed data from the Director, President's Office Records Center, Dodoma where most post-colonial records on cooperative movement and marketing of coffee have been housed and The Registrar, Cooperative Societies, Dodoma office where most of the authoritative documents on cooperatives were accessed. Mbinga District Council and Town Council authorities provided the necessary information and documents. MBIFACU provided the historical documents on coffee growing and the changing systems of marketing of the product from Tanzania Coffee Board (TCB) Mbinga branch. Furthermore, Mbinga provided the majority population for interviews from pioneer veterans, coffee farmers, members of societies and leaders on behalf of the government and volunteered a lot of valuable information on the production and marketing of coffee. The Coffee Curing factories gave valuable information on the processing and grading of coffee before taking the processed coffee to the auction. AMCOS leaders and members from sampled wards were used to provide contemporary information about cooperative movement, District Administrative Secretary of Mbinga and The District Commissioner (DC) provided valuable information on how they oversaw the production of coffee in the Matengo Highlands. The data collected were then arranged according to the research questions and interpreted using a qualitative approach.

V. MATERIALS AND DISCUSSION

5.1 The formation and adoption of cooperative societies

5.1.1 Origin of Cooperation in the Matengo Highlands

A cooperative is a group of people who work together voluntarily to meet their common economic, social, and cultural needs through a jointly owned and democratically controlled enterprise. Cooperatives are based on the values of self-help, self-responsibility, democracy, equality and solidarity. Cooperative members believe in honesty, openness, social responsibility and caring for others.[22] Cooperatives are organizations in which a group of people come together to achieve a particular economic goal for all members of the group.[23] These organizations achieve their objectives through a democratic process in which each member has an equal voice.

[19] Mruma, op. cit. pg. 11.

[20] Interview with Cooperative officers at Mbinga DC in October 2019.

[21] By the 1920s the missionaries and the colonial officers experimented with coffee production.

[22] Tanzanian Federation of Cooperatives (TFC) in Collaboration with the Cooperative Development Department - October 2006.

[23] G. R. Cloulte, 1987. Co-operatives and rural development. *Develo- pment Southern Africa, 4*(3): 543–552.

Thus, members not only participate in discussions regarding economic interests, they also engage in and nurture a democratic process for doing so. The primary goal of any cooperative is to meet the needs of its members in a cost effective manner.[24] The cooperatives, as well as their underlying principles, are rooted in the philosophy of the Rochdale Pioneers in England, who established a consumer cooperative store in 1884. Thus, the Rochdale organization and its operational patterns have been used as a prototype for all contemporary cooperatives worldwide.[25]

However, the modern concept of cooperation was the result of the great Industrial Revolution of Great Britain. It was somewhat different from the earlier concept and denoted a special method of doing business.[26] It was a new ideology developed as a solution to the domination and exploitation in the industrialist era. Cooperation emerged as a defense against the early abuses of the rigors of the capitalist industrial system.[27] Robert Owen (1771- 1858) came as a messiah with certain plans to reorganize the people on a cooperative basis.[28] This idea came to dominate the thinking of the exploited working class who started subscribing to cooperation as a way to improve their working condition .

The concern of this paper is to ascertain the course of development of cooperative societies in the Matengo Highlands. Several phases are identified and an in depth tracing will be engaged. The traditional or local cooperation among the Wamatengo existed before the advent of the British in the form of *ngokela* as the first form of cooperation. Cooperative societies in the Matengo High lands were indeed conceived by the indigenous population through their traditional spirit of *ngokela*. This was essentially producer cooperation. Better conceived as the producer cooperative endeavor in a traditional fashion. *Ngokela* was based on a communal mutual help system among the clan members.[29] This cooperation simplified work and guaranteed the reproduction and security of the clan and society at large by saving it from food shortage.

Under the *ngokela* system work was organized on a family basis whereby when farming, weeding and harvesting seasons came the work was rotational. Starting from the first family to the last family on the order they had agreed. Even when a member of the clan falls sick, the clan members under the spirit of *ngokela* will attend his farm. In the case of harvesting the members of *ngokela* will carry home part of the produce from the farm they had spent their labour on that day. as a token appreciation of existing cooperation. The owner of the farm would prepare food and local beer for the participants. However, this was not payment, instead one has to reciprocate in terms of labour supply. The process of cooperation in different activities would continue until all the clan farms are completely worked on.

There also existed another form of cooperation in the social arena through traditional dances whereby several groups of *maboma* from different villages were invited to perform in *mangengesa/mhambo, mganda and kihola* in a competitive manner. The guest *boma* would upon receiving an invitation which indicated the dates for the dance. Upon arrival of the guest, they will line up for the hosts to *sanga* them. The event will continue until all guests from all guest bomas have been accorded an accommodation. If there were ten groups each member of the host boma would have accommodated ten guests. An arrangement would be made by leaders of the host boma to host them.

The other form of social cooperation was that of *matola/majamanda* involving friendship affection emanating from dance friendship, wedding, *zawadi* for an important event such as birth, baptismal, wedding, death or just *ukosi*.

[24] F. F Lyimo,. 2012. *Rural Cooperation in the Cooperative Movement in Tanzania*. Mkuki Na Nyota Publishers Ltd., Dar es Salaam.

[25] Brett Fairbairn, The Meaning of Rochdale: The Rochdale Pioneers and t bhe Co-operative Principles, Occasional Paper Series, Center for the Studies of Cooperatives University of Saskatchewan, 1994, pg. 8

[26] Cooperation in India (Maclagan) Committee 1914-1915: Report. Simla, 1915,

[27] D.R. Gadgil, *Towards a Cooperative Commonwealth*, Punjab University, Chandgarh, 1961, pg. 67).

[28] John Winfred, 1987.

[29] Kapinga op. cit. pg 39.

Normally, these events were conducted in a reciprocal manner. A host will be informed by the wouldbe guest of their intention to make a friendship visit or to join them in an event they have prepared. This cooperation intended to forge cooperation between the two families or the two parties. Further to this cooperation is also engendered by the visitor inviting friends and family members for an escort to the host. Each member will carry some- thing ranging from maize, flour, beans, hens, and even money. The host will have to reciprocate at a later date during a similar or related event.

This practice perhaps was a very crucial foundation for the peasants who organized themselves in formation of cooperative societies, the example of Ngaka cooperative society formed in 1926 is a case in point. It started operating as an unregistered society charged with assisting the marketing of coffee in resistance to the exploitative individual buyers who used to provide a very low price for coffee produce.

5.1.2 Co-operation under German colonial period

The German era witnessed the systematic effort to incorporate the Matengo Highlands into the colonial economy. The German rule started by issuing bank notes as a medium of exchange. In 1898 poll tax and hut tax were introduced to be paid in kind. The local people were supposed to pay tax on food stuff, hoes, and livestock. These items were sent to the German headquarters in Songea. Cash was also used to pay tax, the tax rate was fixed at three rupees per hut, house or building.[30] The Germans also established government-controlled market halls and customs posts to handle business. African and Asian itinerant traders from Ungoni travelled to Matengo Highlands carrying with them different merchandise including iron goods, soap, utensils, lamps, kerosine, sugar, beads and cloth.[31] Mission centers at Lituhi, Kigonsera, Peramiho and Litembo developed as marketing institutions where items traded included onions, potatoes, and wheat. Songea *boma* administrative workers, Europeans, *akidas* and *jumbes,* was another market place for goods from Matengo Highlands. Coffee as an important export crop did not form part of the German colonial economy in Matengo Highlands. It was until the British colonial period that coffee became one of the important cash crops produced in the area.

5.1.3 Cooperation under British colonial period

During the British period wheat production formed one of the important export produce. It was the British government which encouraged wheat production for export.[32] Wheat was marketed through the mission centers; small milling machine was installed at Litembo and a large milling machine was installed at Peramiho. The local demand was limited to 10 kilos and external buyers could not be accessed easily because of transport costs hence the price to farmers dropped and farmers could no longer continue producing wheat.[33]

The British had to supervise not only the production of coffee in the Matengo Highlands, but they had to set cooperative unions as a mechanism to market the coffee crop in the Matengo Highlands. Potential cash crop was coffee which was first marketed by unregistered Ngaka Cooperative Society through the registered cooperative union the Ngoni Matengo Cooperative Marketing Union (NGOMAT) with its three affiliated primary cooperatives (Mbinga Society 1937, Mbagamao Society 1938, and Tingi Society1938) was registered in 1936.[34] In 1942 Chrisostomus Makita initiated the formation of the Matengo marketing cooperative. This was so because the Coffee Industry (Improvement and Registration) Ordinance 1936 among other things required growers to sell their coffee through a

[30] Doris Schimied Subsistence Cultivation, market Production and Agricultural Development in Ruvuma Region, Southern Tanzania, Southern Tanzania, Bay Renth African Studies Series 1986, pg 66.

[31] Kapinga, 1993, op.cit. pg. 53.

[32] TNA Songea District Book MF 40 sheet 27, 1929.

[33] TNA Acc. 155. 11/126/1952.

[34] Sam Maghimbi, Cooperatives in Tanzania Mainland: Revival and Growth, Coop Africa Working Paper, ILO 2010: pg 1 cf. Tanganyika Annual report of Co-operative Department, (Dar Es Salaam: Government Printer, 1947),

cooperative union. Unregistered farmers were to sell their crop to any individual licensed dealer.[35]

The colonial intervention came in with a strategy of controlling cooperatives through the infamous Cooperative Societies Ordinance of 1932 together with the formation of the office of Registrar of Cooperatives and its application in the Matengo Highlands. The justification of which was the claim of modernization of cooperatives in order to facilitate the marketing of coffee crops in the Matengo Highlands. The Matengo chose local chairmen 1934 who later formed Ngaka Cooperative Society which sold coffee through NGOMAT which dealt with selling of tobacco crop in Songea[36] The Ngaka society of 1926 still unregistered was supposed to be abolished [37]

Post-World War II years coffee prices went skyrocketing from 53 cents per kilogram in 1936 to 5.50 shillings per kilogram in 1950 this rise led to expansion of planting, the number of trees increased the number of villages increased, the number of coffee growers increased, coffee growing to non-traditional coffee areas.[38] Apart from the registered Ngaka society, more primary societies were formed to handle coffee production and marketing in the Matengo Highlands.[39] The primary societies were united to form a union with the Matengo Native Cooperative Union. MANCU transferred all activities pertaining to coffee from NGOMAT Songea to MANCU at Mkinga in the Matengo Highlands. The contribution of the colonial state in promoting cooperative movement during this period was quite remarkable by enacting a Cooperative Development Act which empowered the Department of Cooperative to coordinate, promote and register the development of African cooperative societies in Tanganyika.[40] Laws, policies and legislations were passed to effect institutionalization of cooperatives. Appointments of the registrar and assistant registrar were implemented in 1938.[41]

5.1.4 The Matengo cooperative movement in postcolonial period

The postcolonial state perpetuated the colonial policies and legislations in promoting cooperatives and the control of marketing under the National Agricultural Products Board (Control and marketing) Act of 1962 by strengthening the control and state intervention. The necessity to control export earnings called for increased promotion and direction of cooperative movement. The cooperatives were privileged to be given monopoly to handle export crops that led to the government getting central control. Strengthened through agriculture marketing legislation that provides power to the marketing boards from as early as the 1960s to 1980s. For example, the National Agricultural Products Board (NAPB) was established and became the only legal channel for agricultural marketing which provided for the national wide boards The Tanganyika Coffee Board 1962. The performance of cooperatives was fairly good during the period of 1960 to 1976. The 1963 Cooperative Ordinance was aimed at assisting the spread of cooperative societies to non-cash crop producing areas, hence a strategy towards rural transformation.[42] The frequent changes of laws and policies related to cooperative societies prompted a top down setting in the running of cooperative societies contrary to the principles of running cooperatives.[43]

Further to that it was the Cooperative Societies Act of 1968 which dealt a death blow to cooperative movement by assigning powers to the registrars over the cooperative societies thus failing to serve the farmers. In 1968, in response

[35] TNA Acc. 155. Coop/27/110.

[36] John Iliffe, *A Modern History of Tanganyika,* TPH, 1979, pg 295.

[37] TNA Acc 115, Coop/11/27/125.

[38] TNA 155.11/260/50.

[39] NRC Ngaka 1947, Kitumbalomo 1960, Pilikano 1952, Mhagawa 1953, Nyoni 1959, Mtua, Lituru 1959, Mhagawa Asili 1960, Lipumba 1937, Coffee Growers Societies were formed and registered in the Matengo Highlands.

[40] Herbert Ndomba, Tobacco Production in Songea op. cit.pg.169.

[41] NRC Dodoma, File Appointment of Registrar and Assistant Registrar of Cooperative Societies.

[42] Gongwe Mhando, Conflict as Motivation for Change: the Case of Coffee Farmers' Cooperatives in Moshi,Tanzania, African study monographs. Supplementary issue (2014), 50, pg 141.

[43] F.F Lyimo *Rural Cooperation in the Cooperative Movement in Tanzania*. Mkuki Na Nyota Publishers Ltd., Dar es Salaam. 2012,

to problems caused primarily by rapid growth, the 1932 legislation was replaced by an Act which greatly strengthened the power of the government to intervene in Cooperative affairs. Cooperatives were organized at regional level (Ruvuma Region Cooperative Union - RURECU) with no regard for economic viability as required by the law.[44] RURECU was registered in September 1972 with its headquarters at Songea after the cancellation of three unions in Songea, Mbinga and Tunduru.[45] In a situation like this the power of the central government over cooperative societies was entrenched.

The Arusha declaration had a serious impact on this reorganization. The policy of rural development was to be implemented through the hitherto cooperative societies. The Villages and Ujamaa Villages (Registration, Recognition and Adminis- tration) Act 1975 dealt a death blow to the coop- erative movement because cooperative societies and their union (MANCU) were now abolished and reorganized by the government so that they can implement ujamaa policies. Every 250 households were to constitute a village and regist- ered as a multipurpose cooperative society. These villages in the Matengo Highlands were then affiliated to Coffee Authority which was a government parastatal formed in 1976 to involve in coffee marketing and related issues as agents. The mould-breaking Villages and Ujamaa Villages Act made each village into a single corporation responsible both for the administrative functions of local government and the commercial functions hitherto carried out by Cooperatives. Coffee Authority was formed to promote coffee farming and marketing through overseeing and following up the activities of extension officers and delivery of agricultural inputs to coffee farmers. Villages were entrusted with the work of coffee marketing through their Economic and Planning Committee[46]

The Cooperative movement between 1976 and 1982 reflected more government control than before, the primary societies were not members of the Coffee Authority. The villages had no say or control over the Coffee Authority; they were only buying posts of coffee. The functions of cooperative unions were taken over by crop authorities, which had to buy crops directly from villagers. were taken over by state owned companies, such as the Regional Trading Companies and District Development Corporations. The crop authorities failed in buying peasant crops and in providing price incentives. They did badly in the supply of farm inputs and credit. Cooperatives were reestablished by the Cooperative Societies Act of 1982 and its performance after its re-establishment was not on the earlier successful footing. Ever since their abolition in 1976 and subsequent reestablishment in 1982, cooperatives have faced a myriad of challenges including those arising from financial, structural, governance and policy framework.[46] There was a challenge based on increased politicization of cooperative movement by the ruling TANU encouraged the formation of the apex organ Cooperative Union of Tanganyika (CUT) in 1963. The CUT placed regional co- operative unions under its umbrella and therefore facilitated incorporation into the government and ruling party machinery. Following the Arusha Declaration cooperatives became the tool of buil- ding socialism and self-reliance policy regardless of how compatible they were.[47] This politicization was finalized in 1979 when the CUT was renamed *Jumuiya ya Washirika* (Union of Co-operative Societies - UCS) and officially became an arm of the ruling party, Chama cha Mapinduzi (CCM) charged with mobilization, providing guidance and supervision of growers during the implementation of the ideology and the 1976 ujamaa villages policy.[48]

[44] National Records Center (NRC) Dodoma, Kimuli and Matiri Agricultural Marketing Cooperative Society (AMCOS) one condition for a society to be registered has to prove that it is economically viable.

[45] NRC, Box 244 2/7/02, CCU/R/80/37 F II, Annual Reports from D.C.Os 1972. *Taarifa ya mwaka unaoishia tarehe 31 Desemba 1972, Idara ya Ushirika Mbinga*

[46] Albert Omar Mruma, Fifty Years of Cooperatives and Economic Development in Tanzania (1961-2011*), European Journal of Business and Management* www.iiste.orgVol.6, No.13, 2014, pg. 7.

[47] Gerald Albaum and Gilbert L. Rutman, The Cooperative-Based Marketing System in Tanganyika *Journal of Marketing*, Vol. 31, No. 4, Part 1 (Oct., 1967), pg. 58

[48] Seimu Somo Makanyaga Liheta, The Growth and Development of Coffee and Cotton Marketing Co-operatives

The 1982 Cooperative Act on the reestablishment of the cooperative movement but were put under the patronage of the ruling party. MBICU in the Matengo highlands was a victim of this threat when the management was at loggerheads with politician until its liquidation in 1993[49] The 1982 Act, which was discussed in January 1986 brought Tanzania more than half-way back to cooperative orthodoxy. The principles of cooperative movement according to the International Cooperative Alliance (I.C.A.) cooperative activity in a village should be under the umbrella of one multi-purpose cooperative supervised by the Cooperative Development Committee.[50] There was practical support for small group enterprise since groups with specialized skills were allowed to register with as few as four members. All villagers were automatically cooperative members, the village economic development committee of the village government automatically assumed a cooperative function, and the village government became in charge of the cooperative movement at the village level. The cooperative societies registered under the 1982 act were referred to as Rural Primary Cooperative Societies.[51] The nature of the formation and operation, no wonder explains why most of them were unable to function as marketing cooperative societies due to lack of working capital for crop purchase, processing, marketing and supply of agricultural inputs.

5.1.5 Cooperatives and Coffee marketing during Liberalization

Mbinga Cooperative Union Ltd (MBICU) was established in 1989 after Ruvuma Region Cooperative Union (RCU) was found unable to cater for the needs of coffee farmers in the Matengo Highlands. The Mbinga Cooperative Union (MBICU) was formed by the Ministry of Co-operatives to cater for the financial needs of coffee producers in the region, particularly the Matengo Highlands where coffee was the main export crop.

After the Tanzanian government liberalised the domestic coffee market in 1993,[52] MBICU had difficult economic power and could not compete with the private coffee buyers and hence went bankrupt.[53] In 1994/95 season MBICU purchased 1,790 tons of coffee equivalent to 20% only, while the private sector the remaining 80%. MBICU projects in distribution, transportation, Ugano Coffee Estate, Bar and Guest House, and purchase of crops were faring badly. Besides these problems MBICU was at loggerheads with political figures especially the Regional Commissioner and the District Commissioner because of personal grudges with MBICU manager.[54]

Before liberalization of the trade cooperatives were not purchasing coffee from farmers but collected and sold it at the auction on behalf of the farmers. Currently, cooperatives must compete on equal footing with private buyers in the liberalized coffee environment. Thus, cooperatives, while unable to use three tiers payment systems, must purchase coffee from farmers and sell at the auction.[55]

During coffee liberalization the relationship between cooperatives and farmers was based on marketing of coffee. Farmers depended on primary society as their initial marketing point. Primary societies collected coffee from farmers and sold it directly at the auction through TCB. Farmers expected to be paid by instalments. The situation was made worse because primary societies did not assist farmers in the purchase and distribution of agricultural inputs.

in Tanzania, c.1932-1982, PhD Dissertation, University of Central Lanchire, 2015, pg. 155.

[49] NRC Dodoma, The MBICU Manager had serious bickering with the then RC and DC.

[50] Tanzanian Affairs, The New Co-operative Societies Act, 1992, September 1, 1992 at 12:52 am, Filed under Issue 43, Politics.

[51] NRC Box 210 2/6/2, have records of Mbangamao, Mkwaya, Mahilo, Kitanda, Liparamba, Ndongosi, Rural Primary Cooperative Societies, all were registered in 1987 and 1988.

[52] NRC

[53] Mark Napier, Making financial services work in rural Tanzania on 3 September 2010.

[54] NRC, Box 69 2/2/03/ MBICU Ltd (1989) Estimates and Expenditure 1990-1993.

[55] NRC ibid Masharti mapya ya uuzaji zao la Kahawa kwa njia ya mnada.

Private Coffee buyers purchased coffee from farmers and marketed it at the auction.[56] They are the result of privatization of domestic coffee marketing. In some cases, private traders have brought competition at the present coffee marketing environment, but in other cases where there are no cooperatives, they have created monopoly and offered farmers very low prices as the case of Mbinga in 1995. Besides, PCBs have been criticized for not assisting farmers in the production process, and thus, farmers were left alone to produce with limited use of agricultural inputs, only to meet farmers during marketing.

PCBs and farmers related mostly during the harvesting and marketing time and there was no legal obligation between them. Farmers sold coffee to PCBs in times of hardship and were paid only once. PCBs purchased coffee from farmers and did not assist them in the production process. However, PCBs expected farmers to use income accrued from coffee sales to purchase agricultural inputs and continued with coffee production. PCBs did not issue receipts and paid only once. Even when PCBs realized the high price at the auction, they didn't pay farmers another increment since they did not have records which show where the coffee was purchased. Thus, farmers take advantage of this by selling low quality coffee to PCBs which buy coffee regardless of its quality.

The PCB pressure on MBICU led to its collapse and hence liquidation in 1996/97 season and a new Union in the name of MBIFACU was registered under the 1991 Cooperative Societies Act.[57] Together with this new registration the Rural Primary Cooperative societies in the Matengo Highlands were not faring well due to lack of working capital. They were unable to live to their by-laws and promised to serve the members by promoting their wellbeing.

The new Cooperative Societies 1991 Act permitted members to shape their own Cooperatives and it also called for additional Cooperative education. Educators put before the members ideas associated with Socialism and Ujamaa as well as those associated with Free Market and Competition, unless people are encouraged to look at ideas from both sources, the chances that they will create cooperatives that meet their needs will be unnecessarily reduced. The result of this education together with the needs of the new law, primary societies were to be reconstructed and registered under the Cooperative Societies 1991 Act as Agricultural Marketing Cooperative Societies.[58] AMCOS was formed on the basis of amalgamation of several primary societies which can meet the economic viability criterion. KIMULI was an amalgamation of economically weak primary societies of Kitanda, Mtama, Utiri and Lipumba.[59] Matiri AMCOS was an amalgamation of Kilindi Rural Primary Cooperative Society, Mhongosi Rural Primary Society and Matiri Rural Primary Cooperative Society.[60] This exercise of registering AMCOS went across the Matengo Highlands among coffee growers.

Mbinga Farmers Cooperative Union Limited 2000 (MBIFACU) was formed in order to stand for coffee farmers in Matengo Highlands against the exploitation of PCB.[61] The union relation with farmers and their primary societies did not fare very well on the grounds that farmers were suspicious at it based on the experience of the performance of preceding union MBICU. It received little cooperation from farmers who continued trusting the PCB though a better devil. Unlike MBICU, the private coffee buyers did not supply the necessary agricultural inputs at the detriment of coffee quality and consequently impoverishment of the Matengo coffee farmers. The coffee trade by private buyers begins immediately when flowering starts. Buyers approach farmers by entering into contract with these farmers who are already impoverished. The buyers make an advance for the forthcoming crop

[56] NRC Dodoma, The regional authorities of Ruvuma issued a Circular allowing private buyers to buy coffee from farmers along with MBICU 1993.

[57] NRC, A study ofFinancial Position of Cooperative Unions 1995/96/,/1998/99, Mbinga Agricultural Cooperative Union (1993) Ltd.

[58] NRC Box 253 2/7/04, Matiri and Kimuli Agricultural Marketing Cooperative Societies.

[59] NRC, RVR 380, Box 253 2/7/04

[60] NRC RVR 379,

[61] MBIFACU, By-laws approved by the General Assembly Mach 2018.

produce at a very low price. When time of harvest comes, buyers make a shunt to collecting their illegal proceeds from already poor farmers. They normally had their shadow governments by which they arrested and punished defaulters of the illegal contacts. This illegal practice in the Matengo Highlands was normally called *magoma*.

5.1.6 The Mlango mmoja cooperative and coffee marketing

In February 2018, the Tanzanian government issued new directives which were to be used to guide coffee marketing from the 2018/19 season.[62] Under the directives, coffee was to be purchased/collected through one channel or gate *(mlango mmoja)* from farmers by the cooperatives (AMCOS) only. At the surface the spirit was to protect coffee farmers from unscrupulous PCBs. Farmers' groups and private traders were not allowed to collect and purchase coffee from farmers. Cooperatives will take coffee to curing factories and thereafter, sell it at the TCB auction in Mbinga.[63] All licensed private traders will purchase coffee at the auction only. These directives were aimed at increasing prices of coffee received by farmers by abolishing middlemen who were claimed to reduce farmers' income.

The implementation of this directive revealed several challenges including the AMCOS being unable or being late to pay advance payment to farmers, coffee delayed to be sent to the market due long value chain of coffee and problem of liquidity to many AMCOS. When the government dictated these guidelines, they did not consider non-member coffee farmers who were in any way forced to join existing AMCOS. In most AMCOS the few members dictated terms especially concealing necessary information about sensitive trans- actions and even the by-laws.[64]
The other side of the government's good intention was to make intervention in the coffee trade as a strategic crop for government earnings. By using *mlango mmoja* the government was able to make collections out of coffee proceeds. The chain was as follows, MBIFACU the union, District Council, TCB, TFD, and the banks. This chain, which was extracting a percentage from one kilogram of a poor farmer's coffee, was just too long.[65]

Bwambo, and Huka show how Kimuli AMCOS assisted its members accessing coffee farm inputs at reasonable prices compared to other shops in the village or town centre. The inputs sold included improved seeds, farm tools and pesticides. Hence, farmers who were members of AMCOS could access the inputs conveniently and even by credit when they do not have cash. This allowed them to start production at the right time. Other services provided were market information and services, extension services, temporary storage and processing services. The services provided farmers with an opportunity to improve their production practices and adopt the best practices to increase productivity.[66] This best practice did not extend to other AMCOS in the Matengo Highlands.

For many years, stakeholders of the coffee industry have been complaining about the number of government and district council taxes and licensing fees which they were required by the law to pay.[67] These taxes and fees were mostly charged to coffee traders and eventually passed to coffee farmers as reflected by the low producer price that farmers were getting. T²hese taxes and fees are said to be a burden to small holder farmers as they decrease the profit margin expected by these farmers.

From the 2018/19 coffee season, the government decided to abolish some of these taxes and license fees in order to increase revenue accrued by farmers as well as increasing efficiency along the chain. To start with, from the 2018/19 coffee season, TCB abolished all licensing fees in the

[62] Bodi ya Kahawa Tanzania, Mwongozo Kuhusu Maboresho ya Taratibu za Mfumo wa masoko ya Kahawa Machi 2018, cf Prime Minister Speech.
[63] From 2019 the Matengo Highlands coffee was auctioned at Mbinga.
[64] Mahilo, Kipololo, Ngima, Hagati, Kipela AMCOS were plunged into very serious conflicts.
[65] Interviews Noel Ngailo, Kisima at Mbinga DC 2019 October.
[66] M. Bwabo, A. Mchopa and H. Huka, Agricultural Productivity, Co-Operatives and Organisational Innovations: A Case of Selected Coffee Production Communities in Mbinga District Tanzania, (n.d.) pg 7.
[67] Tanzania Coffee Board, 2017.

coffee sector for the companies which fulfilled the conditions for trading on coffee. Ruben *et al.* indicated the number of taxes and licensing fees on the coffee industry before 2016/17 and after abolition in the 2018/19 coffee season.[68]

Likewise, stakeholders complained about the presence of multiple regulatory bodies (TCB, TDFA, Districts councils, curing factories - MCS, MCCCO, DAE) which almost performed similar functions and thus, creating unnecessary bureaucracy which was not conducive for the smooth operation and efficiency of coffee sector.[69] From 2017/18, the government reduced the tax burden to the stakeholders of the coffee industry. Only 4 taxes and cess remained in the coffee industry. These were the district cess taxation (3 percent of sold beans at the auction; reduced from 5 percent), research contribution tax (0.375 percent of sold beans), the contribution to the trust fund (0.1 percent by farmer and 0.1 percent by the exporter).[70] It was expected that reduction of the taxes, cess and license fees which were a burden to farmers will increase prices of coffee and benefit to farmers along the value chain and not benefit the traders who have been exempted but end up paying farmers as it was before abolition.[71] Both cooperatives and the private sector were involved in transporting coffee in forms of cherries and parchment. TCB on behalf of the Tanzanian government issued licenses to coffee exporters who were allowed to purchase coffee from the coffee auction in Mbinga and export it. That is, exporters have met all the requirements for an export license. Coffee exporters (cooperatives and private traders) were members of the TCB auction which was conducted once a week on Thursdays. The main actors at the auctions were licensed exporters who purchased coffees from the auction for export, farmer's groups/primary societies who sold their coffee at the auction and cooperative unions purchased from farmers and sold at the auction.

Although the 2002 Coffee Industry Act prohibits possession of multiple licenses in order to increase competition at the auction, PCBs have designed a way of possessing multiple licenses. This was done through establishment of sister's companies which operate in the same premises but perform different functions (one purchasing parchment coffee from farmers and another purchasing coffee from the auction and export). It was reported that initially, the relationship between the sister companies was a secret, but eventually it has become public. For example, at the auction, the sister company with the exporter license purchases coffee at the auction, which is sold by its sister company, leading to what was now called reposition of coffee. Sister companies operated along the coffee chain freely, purchasing their own coffee. The effects in the coffee chain have been the lack of competition among buyers, decreasing price and income to producers.[72]

The Cooperative Reform and Modernization Programme (2005- 2015) was produced as a blueprint for cooperative revival in Tanzania. To achieve their goals, cooperatives need to be commercially viable enterprises, able to compete in the liberalized market and prosper in the marketplace so as to achieve its purpose of fulfilling the members' economic and social needs.[73]

VI. CONCLUSION

The role of the state in production, processing, marketing and supervision of coffee in the Matengo Highlands from 1926 to 2018 for sustainable development have long history. Sustainability is recognized as one of the five pillars of the International Co-operative Alliance's (ICA) Blueprint for a Cooperative Decade, which aims to position cooperatives as builders of economic, social and environmental sustainability

[68] Ruben, R., Allen, C., Boureima, F., Mhando, D., Dijkxhoorn, Y. 2018. Coffee Value Chain Analysis in the Southern Highlands of Tanzania. Report for the European Commission, DG-DEVCO. Value Chain Analysis for Development Project, (VCA4D CTR 2018) pg 44

[69] Interview with farmers at Mbinga in October 2019.

[70] Ruben op. cit. pg 45.

[71] The coffee auction at Mbinga October 2019 this author attended, the highest price was 5000/= shs per kilogram before the statutory deductions were effected.

[72] Soochak Bush and Company Ltd, Tropex Ltd, 2001

[73] Albert Omar Mruma, Fifty Years of Cooperatives and Economic Development in Tanzania (1961-2011), *European Journal of Business and Management* www.iiste.orgVol.6, No.13, 2014

by 2020.[74] To evaluate the nature and significance in the form of quality, ability and extent of quality, ability and extent in the enactment of ordinances, laws, policies and other supervisory instruments like departments, and cooperative machineries.

Cooperatives societies in the Matengo Highlands were indeed conceived by the indigenous population through their traditional spirit of *ngokela*. The colonial government thought of suppressing revolutionary peasant cooperation hence decided to impose a control mechanism to curtail the revolutionary nature of cooperation. The Matengo Highlands adopted the new system hence came under the umbrella of colonial supervision. Postcolonial state despite revolutionary rhetoric did much worse in improving the Matengo living conditions through the new cooperative movement. Many cooperative policies, rules, regulations and laws passed were in spirit aimed at controlling Matengo coffee farmers. The orthodox of cooperative movement was not practiced in its ideal concept. The impoverishment was alarming and the cooperative movement was turned into an instrument of exploitation rather than liberation. The claim of sustainable development just ended into a myth rather than a reality. At the end of the day the coffee industry in the Matengo Highlands had produced the cluster of people grouped as follows: the coffee farmers or producers were the toilers, no say, no decision making, slaves who were easily manipulated by other clusters. The regulators like Tanzania Coffee Board used to pass laws, regulations, licenses, and orders on how coffee should be marketed. The cooperative offices served as marketing agents or middlemen. The politicians manipulated other stakeholders including the farmers and cooperatives and the TCB for their own good. There were other parasitic organs, banks, coffee curers who also benefited from the sweat of the coffee growers in one way or another.

[74] ILO and COOP ICA Cooperatives and Sustainable Development Goals, 2015, pg.1

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URT, Cooperative Societies Act 2013
URT, National Records Center, Dodoma - several archival documents
URT, Tanzania National Archives (TNA), Dar es Salaam - several archival documents

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ABSTRACT

This article utilizes the Bohn framework for panel data and penalized spline technique for testing public debt sustainability in 20 Indian states during 2007-08 to 2018-19. The study shows that the primary surplus reacts positively to public debt only in 4 states, indicating debt sustainability in these states. Interestingly, the reaction coefficients are time-varying in 10 states, of which three are sustainable. Further, we descriptively verified whether the sustainable debt is welfare-enhancing as well during the study period. We found that debt is neither sustainable nor welfare-enhancing in the case of 12 states, so they need to take corrective actions.

Keywords: sustainable debt, indian states, bohn model, penalized spline.

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Author α: Professor and Director, Madras School of Economics, Gandhi Mandapam Road, Chennai 600 085 (India).
σ : Assistant Professor, Gulati Institute of Finance and Taxation, Sreekariyam,Thiruvananthapuram – 695017.

I. INTRODUCTION

The Public debt sustainability issue has always been paramount in the macroeconomic analysis of fiscal policy. Conceptually, sustainable public debt is given as long as the debt does not increase at a rate, reaching beyond the limit of the government to service it (IMF 2011). That is, it is basically about good housekeeping. Three theoretical views exist on the debt/deficit financing in the literature: (i) Classical (Ricardian equivalence theorem) view which asserts that fiscal deficit does not matter except for smoothing the adjustment to expenditure or revenue shocks. If a government reduces its taxes without adjusting its present or future expenditures, the budget deficits today lead to higher taxes in the future; (ii) Keynesian view that considers a growth stimulated effect of deficit financing. The debt is not an issue when the government raises its borrowing largely from domestic market because public deficit implies a reallocation of resources from taxpayers to bondholders (Greiner and Fincke 2009); and (iii) Neo-classical view, which considers that fiscal deficit is detrimental to investment and economic growth. Thus, the economists' views differ on whether deficit financing is good or bad or neutral for an economy (Rangarajan and Srivastava, 2005).

In order to assess the debt sustainability, past studies followed the traditional approach. They utilized the popular Domar (1944) condition, which states that "as long as the real economic growth is greater than the real interest rate, the government can have a positive primary deficit such that its debt will not rise and so the debt is sustainable."Later, this approach was extended with additional indicators like liquidity, creditworthiness, fiscal burden, fiscal space, etc., and renamed as "Indicator Approach" (see Blanchard et al. 1991; Pattnaik et al. 2003; Rajaraman et al. 2005; and Kaur et al. 2014). However, many criticized the traditional approach as it depends on a year-on-year basis. It does not validate whether the government's intertemporal budget is satisfied.

After the seminal contribution by Hamilton and Flavin (1986), three alternative empirical approaches have emerged in the literature: (i) *Unit Root approach,* which suggests that debt is sustainable if it is a stationary series (Trehan and Walsh 1991; Uctum et al. 2006); (ii) *Cointegration approach* that requires that public debt and primary surplus variables or public revenue and public expenditure variables need to be co-integrated (Hakkio and Rush 1991; Jha and Sharma 2004);[1] and (iii) *Bohn's model-based*

approach, which considers that a government needs to take corrective actions in future by increasing its primary surplus if it has a considerable deficit today. Otherwise, the debt is not sustainable (Greiner and Fincke 2009). The advantage of this approach is that it provides a straightforward and powerful method to conduct nonstructural empirical tests (D'Erasmo et al.,2016). These tests use the time series data on the primary balance, debt, and control variables and estimate linear/nonlinear fiscal reaction functions, which map the response of the primary balance to change in public debt, conditional on the control variables.

If the response of primary balance to public debt is positive and statistically significant, the debt is sustainable. This implies that the initial stock of debt is equal to the sum of present discounted values of primary balances. The Intertemporal Budget Constraint (IBC)[2] is satisfied if the discounted sum of end-period debt converges to zero. The positive reaction coefficient ensures this convergence. Among these three approaches, the Bohn model became popular because of its statistical property. The extended versions of this approach include time-varying coefficients (estimated using the penalized spline technique),[3] panel data context, etc. Many researchers have widely used the Bohn model and its extended versions to verify whether the public debt levels in various countries are sustainable or not (e.g., Bohn (1998) for USA, Haber, and Neck (2006) for Austria, Greiner and Kauermann (2008) for European countries, Greiner and Fincke (2009) for the USA, Euro countries and developing countries, Abiad and Ostry (2005) for 31 emerging economies using panel framework and Tiwari (2012) for India). See Fincke and Greiner (2011) and D'Erasmoet al. (2016) for a review of these studies.

As the debt sustainability issue is also relevant for sub-national governments like states, a few studies have dealt with debt sustainability at the sub-national level. For instance, Fincke and Greiner (2011) use the Bohn framework (time series data) and spline technique to evaluate the debt sustainability of individual states in Germany. Employing a panel version (fixed effects model and not spline technique) of the Bohn framework, Mahdavi (2014) analyzes the debt sustainability of 48 American states from 1961 to 2008. Table 1 summarizes some of the existing empirical evidence (using the Bohn model) on debt sustainability.

A few earlier studies like Dholokia et al. (2004), Rajaraman et al. (2005), and Maurya (2015) used the traditional indicator approach to evaluate the debt sustainability of Indian states. Kaur et al. (2014) use the panel data for 20 major Indian states from 1980-81 to 2012-13 and find evidence of the sustainable debt position of all states together (on average). Renjith and Shanmugam (2018) explored the public debt sustainability issue of 20 major Indian states using the Bohn framework and regular panel data estimation procedures for the period 2005–2006 to 2014–2015. The study results indicated that debt policies are successful in sustaining the debt situation of Indian states; however, at the disaggregated level, the debt is sustainable only in 12 states.

Nevertheless, the debt situation in each state may vary over time. For instance, the debt relative to GSDP (Gross State Domestic Product) was 16.93 percent in Maharashtra and 49.30 percent in Jammu and Kashmir in 2018-19, while it was16.52 percent in Chhattisgarh and 51.07 percent in Himachal Pradesh in 2007-08. Therefore, it is essential to analyze the time-varying response of the primary balance ratio to the debt ratio of the individual states. This study attempts to analyze debt sustainability at the individual state level in India with time-varying effects.

This study's main contribution is that it utilizes the panel data version of the Bohn model ("within" specification) and the regular penalized spline (p-spline) estimation procedure for testing sustainability of public debt of each of 20 Major Indian states during 2007-08 to 2018-19. It is worth noticing that most of the earlier studies extended the basic Bohn model either by employing penalized spline technique (capturing non-linearity) or broaden the observations with panel framework. Still so far, no study attempted

to club both extensions together. Here lies the scope of this paper. Since the data supported the fixed effects panel data model, which is in general estimated with Ordinary Least Squares (OLS) method, this study uses the panel framework, but estimate the model with regular p-spline method. Further, it shows how the time-varying coefficients or reaction coefficients associated with the debt-GSDP ratio of each sample state evolve study period [4]with the use of the p-spline estimation procedure.

This study proceeds as follows. Section 2 briefly describes the debt scenarios of the Indian states, and Section 3 explains the model, the data and the estimation procedures used in the study. While Section4 discusses the empirical results, and the final section 5 provides the concluding remarks of the study.

II. PUBLIC DEBT SCENARIO OF INDIAN STATES

Indian Constitution (1950) has provided for a two-tier federal system of Governments: centre (or national) and states and assigned separate tax powers and expenditure responsibilities. As it allocates all mobile and more buoyant taxes to the centre and more expenditure functions to the states, this led to the excess central revenues relative to its spending responsibility and the larger deficits of the states because their expenditures exceed the own revenues. This is known as the vertical fiscal gap (Rangarajan and Srivastava 2008). To mitigate this vertical imbalance, the Indian Constitution has allowed for transferring resources from the centre to the states through tax devolution (or sharing), grant-in-aid, and centrally sponsored schemes (Rao 2005).

Both Governments borrow when their revenues are not enough to meet the growing expenditure needs. Since the state governments can borrow from limited sources, they have problems in borrowing based on their requirements, and debt servicing. The states in general borrow mostly from internal sources, which include market loans and bonds, ways and means of advances from the central bank, loans from banks and other institutions, provident funds etc., while external debts of the states are subject to a ceiling and approval from the centre.

On the other side, the annual debt requirements depend on the interest payments on the accumulated debt. The extent of these commitments every year is the reflection of primary balance. It is the amount of additional borrowings of the government to meet expenses other than the interest payments (primary deficit) or the pressure of the government on the interest obligations on earlier borrowings (primary surplus). Therefore, the primary balance is the root cause for all forms of deficits.

In some years, governments use fiscal stimuli, often financed by excess borrowing, to expand their activities above the trend levels in India. There are two motivations for this. The first one is to play a countercyclical role to minimize the impact or volatility of the cyclicality of growth. In contrast the second one derives from the government's expansionary intervention for a political motive. The first is a response to economic cycles, and the second is a cause of the political cycle driven by the timing of elections (Srivastava 2012). Many past studies have shown that since independence, trend in primary deficit-GDP ratio indicates the cyclical nature and public debt-GDP ratio exhibits the secular upward nature (Rangarajan and Srivastava 2005).

Since 1995, there has been a sharp deterioration in the debt-deficit situations of both centre and state governments in India, mainly because of the revision of pay scales for government employees (Rajaraman et al. 2005). To improve the fiscal situation, the centre adopted a rule-based fiscal framework called the Fiscal Responsibility and Budget Management (FRBM) Act in 2003-04. It specifies a complete removable of revenue deficit and reduction of fiscal deficit to 3 percent of the GDP with an annual reduction rate of 0.3 percent and 0.5 percent, respectively, and target should be achieved within a given period (initially by 2008-09). Following the centre, most states also enacted their own FRBM rules during 2003-07. Although these efforts brought some initial

success, the situation again worsened after the global slowdown in 2007-08.

The primary balance account showed the success. All states together had a primary surplus of 0.36 percent of GDP in 2006-07. Of course, other fiscal consolidation measures also helped. For instances, (i) Debt Swap Scheme introduced by the centre mitigated the burden of interest payments on the states, which allowed them to swap high-cost loans against open market borrowings and small savings during 2002-03 to 2004-05; (ii) Debt Consolidation and Relief Facility, which is the combination of two subsidiary schemes i.e., debt consolidation and debt write-off, based on the recommendations of 12th Finance Commission during 2005-06 to 2009-10;[5]and (iii) Debt ceilings in terms of GSDP by all the states in pursuance of 13th Finance Commission recommendations.

But in 2009-10, all states' primary deficit was -1.22 percent of GDP, and the combined primary deficit of states and centre was -4.53 percent. The total liabilities of the states increased from Rs. 13283 billion in 2008 to Rs 52584 billion in 2020 (RBI 2021). Although the aggregate debt position of the state governments recently improved significantly in line with the FRBM Review Committee (2017), which recommended the debt to GDP ratio target of 20% for the state governments, the debt-GSDP ratio crossed 25 percent level in many states in 2019-20.[6] Slow economic growth in recent years, introduction of Goods and Services Tax (GST), implementation of Seventh Pay Commission's recommendations, etc already added fuel to the debt accumulation process in each state and it seems that the debt situation in those states may deteriorate further in coming years. Given the above trend on deficit and debt, it is essential to check whether state government debts are on a sustainable path in India.

III. MODEL, DATA, AND ESTIMATION

In order to analyze the debt sustainability of Indian states, this study specifies the following fiscal reaction function based on Bohn Framework:

$$s_{it} = \phi_0 + \psi d_{it-1} + \phi_1 yvar_{it} + \phi_2 gvar_{it} + \ _i + \ _t + \epsilon_{it} \quad (1)$$

where s_{it} is the primary balance to GSDP ratio in i th state in year t, d_{it-1} is the debt to GSDP ratio of state i in $t-1$year (the use of lagged debt ratio avoids the endogeneity issue). This model rests on tax smoothing hypothesis, which implies that the governments use public deficits to keep tax rates constant, minimizing the excess burden of taxation. Therefore, the government can use its revenues to finance the regular expenditures and deficits to finance the unexpected expenditures. Hence, this study considers a business cycle variable, namely *yvar*, which accounts for fluctuations in revenues, and another business cycle variable *gvar*, which accounts for fluctuations in primary expenditures as non-debt determinants of primary balance, as in other studies. It calculates the *yvar* by subtracting the long-term trend of GSDP (computed using the Hodrick-Prescott (HP) Filter and the real GSDP series) from its actual values. Similarly, it computes the *gvar* as realized value minus the trend value of real primary expenditure with later again estimated by the HP Filter. The term $_i$ is unobserved heterogeneity of the i^{th} state and the term $_t$ is time (year) effects, and they control state specific and time specific factors which may influence the dependent variable.

This model also rests on the fact that discounting public debt with a given interest rate is crucial to test whether a given time path of debt is sustainable. As future interest rates are unknown, the debt sustainability tests need to be independent of the discounting factor used to compute the present value of debt. If the primary surplus to GSDP ratio is a positive function of debt to GSDP ratio, then the above condition is met indirectly. The rationale behind the test is that such policy ensures that the debt to GSDP ratio is a mean-reverting process.

The above panel version of the Bohn model can be estimated using either fixed effects or random effects estimation techniques. The Hausman statistics can choose the appropriate technique. In the initial analysis, the Hausman statistics (=34.3) supports the fixed effects model, and so the equation is specified equivalently with "within" specification as:

$$s_{it} - \overline{s}_i = \psi\,(d_{it-1} - \overline{d}_i) + \phi_1\,(yvar_{it} - \overline{yvar}_i) + \phi_2\left(gvar_{it} - \overline{gvar}_i\right) + \in_{it} - \overline{\in}_i \qquad (2)$$

where all variables are in their mean differences. This within estimation has wiped out the individual and time effects, and it can be estimated using OLS. The estimation parameter ψ will give us on average whether the debt situation in all states is sustainable or not. Many Past studies hence used this approach. Since our objective is to evaluate the debt sustainability in each state, we can modify the equation (2) as:

$$s_{it} - \overline{s}_i = \sum \psi_{it}\,(d_{it-1} - \overline{d}_i) * D_i + \phi_1\,(yvar_{it} - \overline{yvar}_i) + \phi_2\,(gvar_{it} - \overline{gvar}_i) + \in_{it} \qquad (3)$$

where D_i's are state-specific dummies. D_i= 1 if state i *and* 0 otherwise. As respective state dummies interact with debt variables, we can get state-specific debt coefficient, ψ. Besides, we would like to obtain the time-varying ψ for each state. Therefore, we can estimate equation (3) using the p-spline (which is more robust than OLS) procedure.[7]Thus, with this innovative approach, which mix panel within specification and penalized spline procedure, we can get state-specific and time-varying response coefficient ψ_{it}. Notice that the lagged debt variable avoids endogeinity problem evolved over time for each state.

The study draws the data for the period 2007-08 to 2018-19 from various published sources. It compiles the GSDP data (real and nominal) for 20 major Indian states from the Central Statistical Organization (CSO), and other fiscal variables from Comptroller and Auditor General (CAG) of India Audit Reports and Finance Accounts of the sample states. The total observations included in the final analysis are 240.

The sample states account for more than 90 percent of the population of India.[8]The choice of this latest period is due to the following facts. Firstly, this period represents a fiscal control era due to the enactment of the FRBM act. Secondly availability of a comparable new base (2011-12) GSDP series restricts from using the data after 2000. Thirdly, as debt accumulates fiscal deficit (net debt) every year, the recent trend is more relevant. Finally, many past studies have used a few years' data when employing a panel framework.

Column 2 of Table 2 shows the descriptive statistics of the study variables. We use GSDP deflator of the respective states to convert the nominal fiscal variables into real. Both Levin, Lin, Chu (LLC), and ImPesaran Shin (IPS) panel unit root tests confirm that all variables used in the study are stationary, i.e., they are I(0).

IV. EMPIRICAL RESULTS

Column 3 of Table 2 shows the penalized spline estimation results of the fiscal policy reaction function (3). As expected, the primary expenditures variable *gvar* has a negative coefficient, and the business cycle variable *yvar* has a positive coefficient. Both these coefficients are statistically significant at 1 percent level. These results imply that, on average, the primary spending above its normal value has reduced the primary surplus of the Indian states and the GSDP growth above normal value has increased the primary surplus.

The variable of our interest is the debt-GSDP ratio. As expected, this reaction coefficient is

positive and statistically significant for four states (Assam (ASM), Bihar (BIH), Madhya Pradesh (MP), and Odisha (ODI) at 5 percent level. These results indicate that the public debt is sustainable in these 4 Indian states. For Himachal Pradesh (HP) and West Bengal (WB), the reaction coefficient is negative and significant only at 10 percent level. For Andhra Pradesh (AP), Chhattisgarh (CHA), Gujarat (GUJ), Jammu and Kashmir (JK), Karnataka (KAR), Kerala (KER), Maharashtra (MAH), Punjab (PB), Rajasthan (RAJ), and Uttar Pradesh (UP), the reaction coefficient is positive. However, it is not significant even at 10 percent level of significance. In Haryana (HAR), Jharkhand (JHA), Tamil Nadu (TN), and Uttarakhand (UTK), this coefficient is negative and is not statistically significant. Thus, the debt is not sustainable in these 16 states. These 16 states deserve policy attention.

The smooth interaction term, *sm(t)* with the state dummy variable, shows the deviations from the mean coefficient of the state over time. The edf, the estimated degrees of freedom, of *sm(t),* provides information on possible time dependencies in each state. These details, given in Columns (4-5) of Table 2, indicate that in 9 Indian states, the reaction coefficient has not stayed over time. For instance, Himachal Pradesh, the edf=8.133, and the smooth term is significant at 1 percent level, thereby implying time-varying reaction coefficient. Similarly, for Andhra Pradesh, Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Jharkhand, Odisha, and Rajasthan, the smooth term is statistically significant at 5 percent level, and their reaction coefficients are time-varying. For Gujarat, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Punjab, Tamil Nadu, Uttar Pradesh, Uttarakhand, and West Bengal, the smooth parameters are time-invariant. The goodness of fit (Adj.R-sq.) is 0.630, indicating a good fit of the model, and the Durbin Watson test statistic does not imply a correlation of the residuals.

Chart 1 shows the path of the smooth terms for all 20 Indian states.[9] The two stashed lines show the 95 percent confidence interval, and the solid line shows the point estimate of the smoothed term over time. In the curve, the larger (smaller) values above (below) zero indicate that the parameter was above (below) its average value shown in Table 2 for the state. The actual reaction coefficient of a state in a given year is the sum of the average coefficient of that state plus the value of the curve of that state for that year. For instance, for Andhra Pradesh, the average reaction coefficient is 0.0653 and the difference is below0 in 2007-08. Therefore, the actual value of the coefficient in that year is 0.0653 - (-0.02) = 0.0853. One may also observe that for Assam, the reaction of primary balance to public debt started rising over the years. However, for Andhra Pradesh, the reaction coefficient in Table 1 is not significant, i.e., debt is not sustainable. For Assam, Bihar, and Odisha, the time-varying reaction coefficients started rising after a point, and for Chhattisgarh, Haryana, Himachal Pradesh, Jharkhand, and Rajasthan, the time-varying coefficients started declining after a point. Thus, many variations in the path of reaction coefficients are mainly due to various policy initiatives of the states.

The unsustainable debt path of 16 Indian states may be due to the following reasons: (a) the late implementation of FRBM legislation in states like West Bengal, Jharkhand, Jammu and Kashmir, etc. (b) transfer dependency, particularly central grants and unconditional bailouts, that undermine states' incentives to control deficits (in the case of Assam, Gujarat, Jammu and Kashmir, Rajasthanm and Uttarakhand) (c) growing trend in the committed liability in states like Andhra Pradesh, Karnataka, Kerala, Punjab etc. (d) less capital disbursements than the budget estimates in states like Haryana, Uttar Pradesh, etc. (e) sizable reduction in the state own revenue collection in case of Gujarat, Himachal Pradesh, Jharkhand, Madhya Pradesh, Tamil Nadu, and West Bengal (f) yearly debt receipts are remarkably higher than the yearly debt repayment in the case of Maharashtra and Tamil Nadu (g) the revenue component in fiscal deficit is high in states such as Kerala, Punjab, Uttar Pradesh, and Tamil Nadu and (h) persistence of huge outstanding liabilities in the case of Jammu and

Kashmir, Punjab, Rajasthan, Uttar Pradesh, and West Bengal.

Despite the debt unsustainability situation, one may argue that higher debt may lead to higher welfare (See Ghosh, 1998, and Greiner and Fincke, 2015)[10] if the states use the borrowed amounts for investment purposes which may yield revenues in the future. According to the FRBM legislation, states' net debt each year should not exceed 3 percent of GSDP, which must be utilized for investments. To check whether the debt is welfare-enhancing, Table 3 compares the aggregate capital expenditures with public debt receipts over the study period for each state.

Accordingly, we have categorized the sample states into four groups considering the sustainability as well as welfare effects. Among these, states in A group are fiscally sound as they are both sustainable and welfare enhancing. In B group of states, although debt is sustainable, it is not welfare enhancing. If this trend continues, they may be in trouble in the long run. For states in C group, the debt is not sustainable, but it is welfare enhancing. These states need to cut their borrowings such that they attain sustainability. For the states in D group, the debt is neither sustainable nor welfare enhancing. This is the major concern and they deserve policy attention.

V. CONCLUSION

This study has analyzed the public debt sustainability issues of Indian states during 2007-08 to 2019-20 using the panel version of the Bohn model and p-spline estimation procedure. The results imply that only in four states, the debt is sustainable. Of these, only in three states', the reaction coefficient is time-varying. In the remaining 16 states, the debt is not sustainable and they need to take corrective actions to improve their debt situation. Only in 6 out of these 16 states, the reaction coefficient is time-varying and in the remaining 10 states, they are time-invarying. The variations in the path of reaction coefficients are due to various policy initiatives of the states. Although the FRBM act suggests 3 percent of the ceiling of net borrowing every year and too for investment purposes, and the FRBM review committee recommends 20 percent of state liabilities, many states violate the norms. Further, the central government also bails out many states based on the recommendations of various finance commissions. This support of the centre may be a disincentive for states to maintain fiscal discipline and control debt. Another fact is that the finance commissions use a traditional approach to suggest sustainable debt levels for each state. For instance, according to the 13th Finance Commission, the debt is sustainable in more states. Our model-based results contradict them. The Finance commissions should consider the model based approach so that the states would get reliable estimates of debt sustainability.

This study has also verified whether the debt is welfare-enhancing during the study period and for that in Andhra Pradesh, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Maharashtra, Kerala, Punjab, Rajasthan, Tamil Nadu, Uttarakhand, and West Bengal, the debt is neither sustainable nor welfare enhancing. These states need policy attention. We hope that these results are useful for policymakers, academicians, international agencies, and other researchers to make appropriate strategies to improve the debt situations of Indian states where debt is not sustainable and not welfare enhancing.

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Notes:

1. See Afonso (2005) for a survey of analyses that tested debt sustainability using classical

empirical approaches, Unit root, and Cointegration.

2. The IBC is $d_t^* = \sum_{j=1}^{\infty} \frac{1}{(1+r)^j} E_t\left[s_{t+j}\right]$, *i. e*,Where d_t^* = $(1+r_t)$. d_{t-1} is the stock of debt-output ratio in the beginning of period t, $E_t[.]$ is the expectation operator conditional on the information available at time t, and s_t is the primary surplus relative to GDP. As per the IBC of the government, the present value of public debt asymptotically converges to zero. This ensures a sustainable debt policy.
3. Bertola and Drazen (1993) argue that as fiscal authorities, in general, initiate corrective actions if the disequilibria reach a given trigger point (for instance, if government expenditure reaches critical level), we need to use the time-varying coefficients approach. Fincke and Greiner (2011) used a penalized spline approach due to the fact that a liner model with time-varying coefficients can approximate any nonlinear model.
4. Fincke and Greiner (2011) provide the following justifications for using time-varying coefficients: (i) the true data generating process is not known and most likely nonlinear, and a liner model, with time-varying coefficients can approximate any nonlinear model, which is more robust than OLS and gives the estimation results that are closer to the true data generating mechanism; (ii) this will facilitate to check whether the response of the government with respect to debt varies over time; (iii) random coefficients make the short term coefficients the expectation of the long-run coefficients and so they are the best estimates for the long-run coefficients.
5. Debt consolidation provided for the consolidation of all central loans contracted by the states into new loans for 20 years to be repaid in 20 equal installments carrying a lower interest rate, if the concerned state enacts its FRBM Act. Repayments due from states during the period 2005-06 to 2009-10 on these loans were eligible for a write-off. The quantum of debt write-off relates to the absolute amount by which the state reduces its revenue deficit in each successive year during the award period. The debt write-off Scheme has also offered a complete write-off to states with zero revenue deficit in 2008-09 on debt repayment by states to centre and concession on interest rate etc, with a set of conditionalities (RBI 2013).
6. Andhra Pradesh (32.14), Assam (21.73), Bihar (33.72), Chhattisgarh (14.76), Gujarat (24.83), Haryana (20.59), Himachal Pradesh (41.25), Jammu and Kashmir (48.49), Jharkhand (23.56), Karnataka (17.71), Kerala (27.94), Madhya Pradesh (26.70), Maharashtra (19.66), Odisha (22.17), Punjab (34.57), Rajasthan (30.57), Tamil Nadu (18.92), Uttar Pradesh (35.36), Uttarakhand (22.83) and West Bengal (40.89).
7. The relationship between primary balance to GSDP and debt to GSDP may not be linear, and the linear model with time-varying coefficients can approximate any nonlinear relation. The approximation is good if it changes smoothly and so the estimation resorts to spline. For estimation purposes, it considers the parametric form: $f(d_t) = d_t \beta_d + Z(d_t) \gamma$, where Z is a high dimensional basis in d (for instance, a cubic spline basis) and γ is a corresponding coefficient. The high dimensionality restricts the use of OLS. So, it imposes a penalty term on γ, shrinking its value to 0. It obtains the estimates by minimizing penalized OLS criteria: $\sum\{s_t - d_t \beta_d - Z(d_t) \gamma\}^2 + \lambda \gamma^T P \gamma$; where λ is smoothing the penalty parameter and $\gamma^T P \gamma$ is a penalty. P matrix is chosen in accordance with the basis (see Ruppert et al., 2003 for details). λ basically steers the amount of smoothness of the function (if it is zero, then the model becomes unpenalized OLS). The fitted functions (f^*) can be written as $f_1^*(d) = H(\lambda)$, where H is the smoothing matrix. To obtain reliable fit, λ should be chosen data-driven. One possibility is the use of Generalized Cross-Validation (GCV) criterion as GGV= $\sum\left[\frac{st - f(dt)}{1 - tr(H)/n}\right]^2$; A suitable choice of λ is achieved by minimizing GCV. This procedure is same if the time varying coefficients are estimated

(See Greiner and Kauermann, 2007 for more details).

8. There are about 10 other smaller states and Union Territories (UTs). The Finance Commission uses special formulae for smaller states in allocating transfers and thereby they enjoy constitutional support. For UTs, the centre meets all the deficits. So, we are not considering these in our analysis. Also, we used unified Andhra Pradesh data in our study as the centre bifurcated the state of Andhra Pradesh into Andhra Pradesh and Telangana in 2014.
9. The standard time series spline can be estimated using Mixed GAM Computation Vehicle (MGCV) package with Automatic Smoothness Estimation in R software. In particular, Generalized Additive Model (GAM) attempts to find the appropriate smoothness for each applicable model term using prediction error criteria or likelihood-based methods and will produce the results for a single entity. Since we are pooling the data for all 20 states, we code the estimation (mod) as GAM of the dependent variable followed by non-debt explanatory variables (*yvar and gvar)* plus state-wise dummy interaction of debt variable followed by the smooth term *s* of time multiplied by dummy interaction of the stimulus (debt) variable for each state in order to get the individual-specific reaction coefficients i.e. mod = *gam(primary balance ~ yvar + gvar +* $d_{it-1}\times$ Andhra Pradesh (K_1)+ .....+ $d_{it-1}\times$ West Bengal (K_{20}) + *s(time, by =* K_1*)*+....+ *s(time, by =* K_{20}*)* on R console. Accordingly, we have generated the nonlinear effects of the reaction coefficient and plots for each of 20 States without any additional coding.
10. Greiner and Fincke (2015), using simulation technique, states that a scenario where public debt grows at the same rate as output yields low growth and welfare in the long run compared to the scenario where debt grows but less than output. That is a scenario where debt grows, but less than production leads to higher welfare than the balanced budget scenario.

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Table 1: Some Existing Empirical Evidence (using Bohn model) on Debt Sustainability

Study	Country	Data Period	Methodology	Sustainability?
Bohn (1998)	US	Annual; 1916-1995	OLS	Sustainable
Abiad&Ostry (2005)	31Emerging countries	Annual; 1990-2002	Panel GLS, Arellano Bond	Sustainable
Bohn (2005)	US	Annual ; 1792-2003	OLS	Sustainable
Haber & Neck (2006)	Austria	Annual; 1960-2003	OLS	Sustainable
Greiner et al. (2007)	US & 4 EU countries	Annual; 1960-2003	OLS	Sustainable (except US)
Kia (2008)	Iran &turkey	Annual ; 1970-2003 &1967–2001	OLS	Not sustainable
Greiner &Kauermann (2008)	Germany & Italy	Annual; 1960-2003	p-spline	Sustainable (only Germany)
De mello (2008)	Brazil (central & sub-national)	Monthly (1995:1-2004:7)	OLS	Sustainable
Adams et al. (2010)	33 countries	Annual; 1990-2008	panel GLS	Sustainable
Doi et al. (2011)	Japan	Quarterly; 1980:I - 2010:I	markov-switching	Not sustainable
Fincke& Greiner (2011a)	Euro countries	Annual; 1971-2009	p-spline	Sustainable (except Greece and Italy)
Fincke&Griener (2011b)	11 German federal states	Annual; (1975-2006)	p-spline	Sustainable (except Berlin)
Tiwari (2012)	India	Annual; 1970-2009	p-spline	Not Sustainable
Kaur & Mukherjee (2012)	India	Annual;1980-81 to 2012-13	OLS	Sustainable
Jose (2013)	India	Annual; 1983-2010	OLS	Sustainable
Mahdavi (2014)	48 US states	Annual; 1961-08	Panel FE	Sustainable
Kaur et al. (2014)	20 Indian states	Annual; 1980-2013	Panel FE	Sustainable
Shastri and Sahrawat (2015)	India	Annual; 1980-2013	ARDL	Not sustainable
Belguith and Gabsi (2017)	Tunisia	Annual; 1965-2013	p-spline	Sustainable
Ranjith &Shanmugham (2018)	Indian States	Annual; 2004-05 to 2015-16	Panel FE	11 states are Sustainable

Table 2: Penalized Spline Estimation Results of Fiscal Policy Reaction Function for the Indian States during 2007-08 to 2018-19

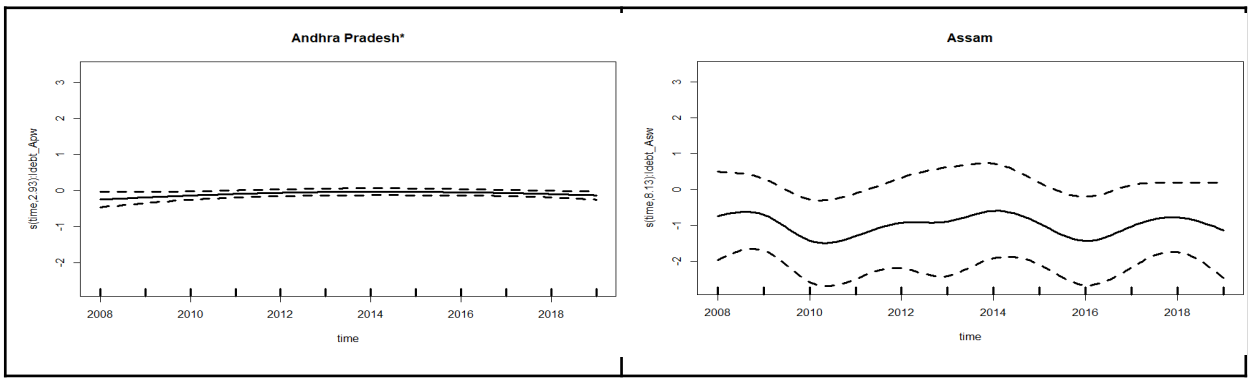
Variables	Mean (S.D)	Coefficient (t-value)	Smooth Term	edf.	F (p-value)
(1)	(2)	(3)	(4)	(5)	(6)
s_{it}	-0.7457 (1.564)	-	-	-	-
$s_{it} - \bar{s}_i$	-0.00001 (1.365)	-	-	-	-
d_{it-1}	27.8815 (10.315)	-	-	-	-
$d_{it-1} - \bar{d}_i$	0.0231 (5.376)	-	-	-	-
yvar	-1086.8240 (17858.510)	0.00001 (2.899)	-	-	-
gvar	-191.1497 (5612.579)	-0.0001 (-11.324)	-	-	-
$(d_{it-1} - \bar{d}_i) \times$ *Dummy for AP*		0.0653 (1.422)	*sm(t)*:AP	2.926	2.708 (0.040)
$(d_{it-1} - \bar{d}_i) \times$ *Dummy for ASM*		1.2100 (2.164)	*sm(t)*: ASM	8.133	3.004 (0.002)
$(d_{it-1} - \bar{d}_i) \times$ *Dummy for BIH*		0.0650 (2.320)	*sm(t)*:BIH	1.500	8.355 (0.022)
$(d_{it-1} - \bar{d}_i) \times$ *Dummy for CHA*		0.5545 (0.787)	*sm(t)*: CHA	5.279	2.276 (0.038)
$(d_{it-1} - \bar{d}_i) \times$ *Dummy for GUJ*		0.0005 (0.014)	*sm(t)*: GUJ	1.500	0.001 (0.999)
$(d_{it-1} - \bar{d}_i) \times$ *Dummy for HAR*		-0.2140 (-1.013)	*sm(t)*: HAR	2.757	2.354 (0.084)
$(d_{it-1} - \bar{d}_i) \times$ *Dummy for HP*		-0.9257 (-1.735)	*sm(t)*: HP	8.850	10.605 (0.000)
$(d_{it-1} - \bar{d}_i) \times$ *Dummy for JK*		0.1049 (1.402)	*sm(t)*: JK	1.500	0.435 (0.447)
$(d_{it-1} - \bar{d}_i) \times$ *Dummy for JHA*		-0.3982 (-0.678)	*sm(t)*: JHA	5.255	2.331 (0.092)
$(d_{it-1} - \bar{d}_i) \times$ *Dummy for KAR*		0.0106 (0.052)	*sm(t)*: KAR	1.500	0.481 (0.660)
$(d_{it-1} - \bar{d}_i) \times$ *Dummy for KER*		0.1192 (1.218)	*sm(t)*: KER	1.500	0.751 (0.307)
$(d_{it-1} - \bar{d}_i) \times$ *Dummy for MP*		0.0784 (2.333)	*sm(t)*: MP	1.500	2.144 (0.121)
$(d_{it-1} - \bar{d}_i) \times$ *Dummy for MAH*		0.3085 (0.775)	*sm(t)*: MAH	3.129	0.524 (0.609)
$(d_{it-1} - \bar{d}_i) \times$ *Dummy for ODI*		0.1122 (3.977)	*sm(t)*: ODI	1.500	10.809 (0.002)
$(d_{it-1} - \bar{d}_i) \times$ *Dummy for PUN*		0.0515 (0.896)	*sm(t)*: PUN	1.658	0.831 (0.486)
$(d_{it-1} - \bar{d}_i) \times$ *Dummy for RAJ*		0.0594 (0.313)	*sm(t)*: RAJ	3.739	2.415 (0.097)
$(d_{it-1} - \bar{d}_i) \times$ *Dummy for TN*		-0.0705 (-0.589)	*sm(t)*: TN	1.500	0.649 (0.606)
$(d_{it-1} - \bar{d}_i) \times$ *Dummy for UP*		0.0710 (0.640)	*sm(t)*: UP	2.285	0.325 (0.691)
$(d_{it-1} - \bar{d}_i) \times$ *Dummy for UTK*		-0.0999 (-0.473)	*sm(t)*: UTK	2.269	0.292 (0.739)
$(d_{it-1} - \bar{d}_i) \times$ *Dummy for WB*		-0.0424 (-1.674)	*sm(t)*: WB	1.500	0.439 (0.446)
(Intercept)		-0.0109 (-0.122)			

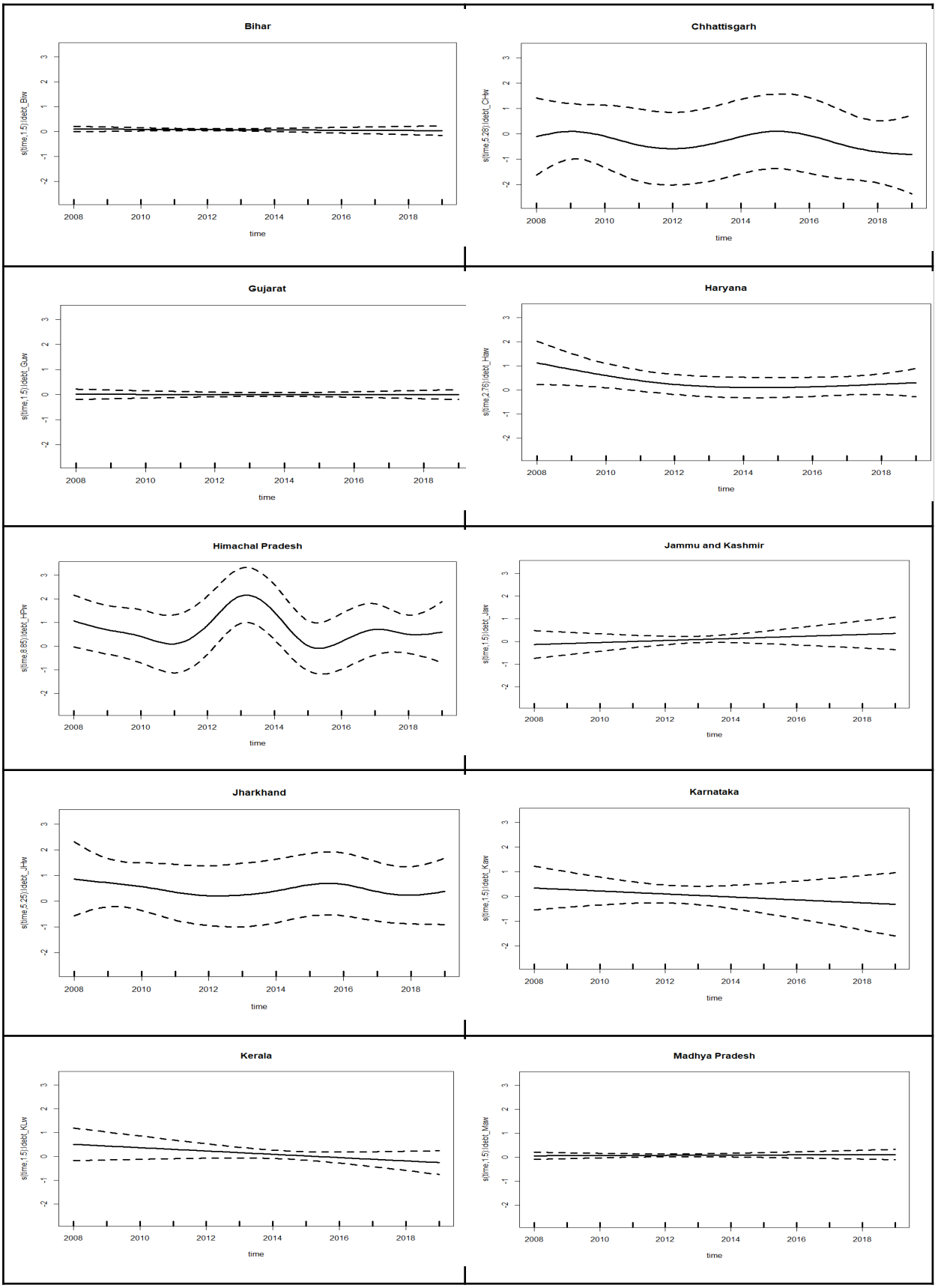
Adj.R^2 (GCV)	0.630 (0.9887)
D-W Stat.	2.0201

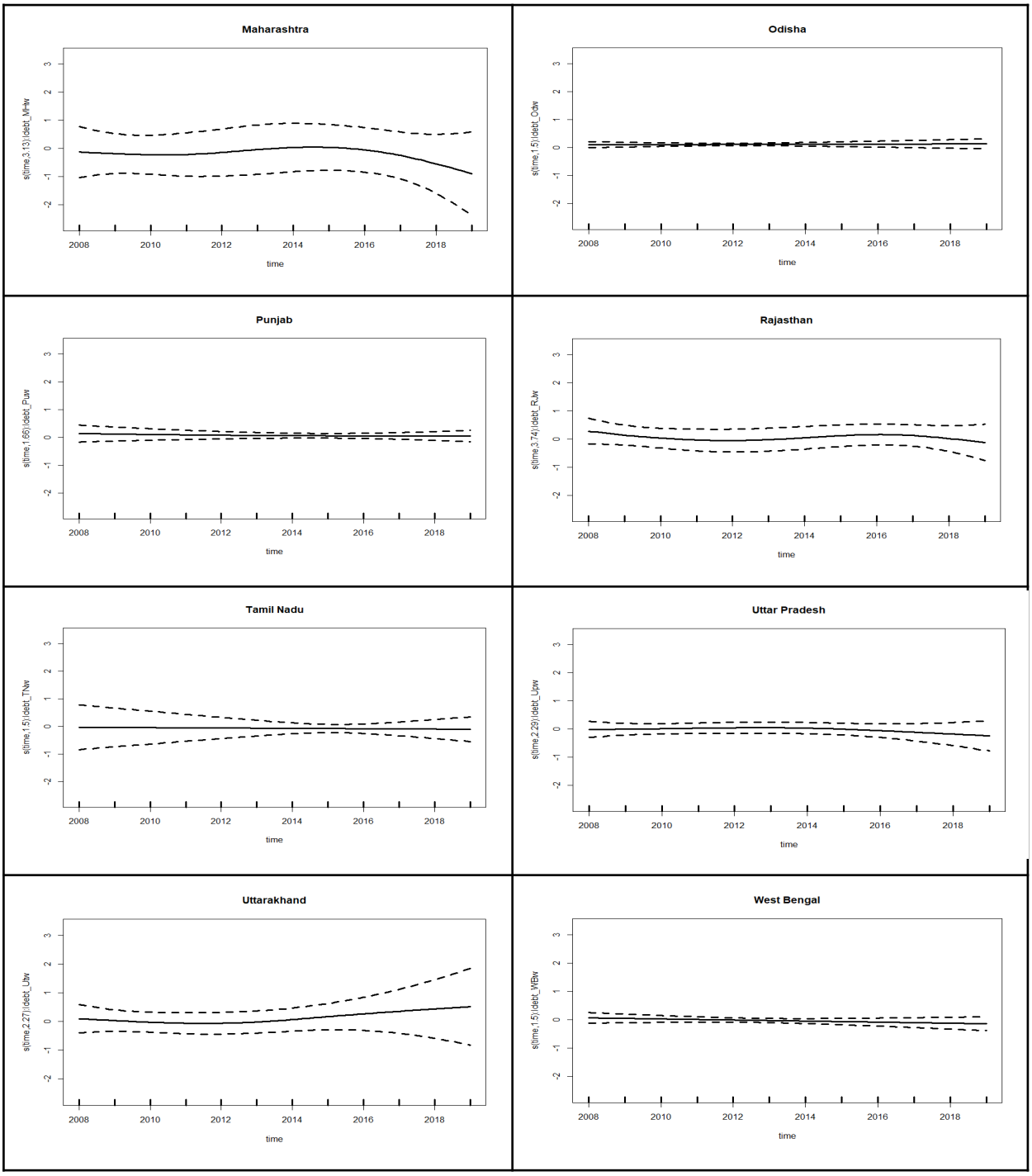
Table 3: Welfare Effects of Debt Policies of Indian States (2003-04 to 2014-15)

State	Borrowed Funds/ Capital Expenditure
(A) Both sustainable and welfare-enhancing	
Odisha	0.4418
Chhattisgarh	0.6158
Bihar	0.7313
(B) Not sustainable but welfare-enhancing	
Karnataka	0.7870
Uttar Pradesh	0.7974
Jharkhand	0.8047
Madhya Pradesh	0.9309
(C) Sustainable but not welfare-enhancing	
Assam	1.2197
(D) Neither sustainable nor welfare-enhancing	
Gujarat	1.2214
Andhra Pradesh	1.2950
Maharashtra	1.3775
Rajasthan	1.4539
Uttarakhand	1.5194
Tamil Nadu	1.6187
Jammu and Kashmir	1.6569
Himachal Pradesh	1.8956
Haryana	2.7693
Kerala	3.8913
West Bengal	8.9574
Punjab	9.7758

Chart 1: Deviations of sm(t) from the respective Average Coefficient ψ for Indian States







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Security Consciousness in Insecure Communities

Shehu Mustapha Liberty & Muhammad Abdullahi

University of Maiduguri

ABSTRACT

Being security conscious is paramount in this century that communities across the world are battling with different forms of criminal activiti- es, which distort peace and security and hinders physical, political, and socio - economic growth and development. Being security conscious there- fore empowers individuals with the knowledge and skills needed to protect their lives and comm- unities, as well as being aware of the dangers, threats, and risks in one's surrounding. Against this backdrop, therefore, this paper examines security challenges and strategies for effective security consciousness in insecure communities. The article is based on Theory of Planned Beha- vior (TPB) and utilized conceptual analyses to conclude that criminal activities keep growing across communities in this 21st century due to poverty, illiteracy, religious extremism, ethnic and sectional intolerance, natural disasters, un- met interests, and economic imbalance among people, especially in less developed countries.

Keywords: security, insecurity, security consciousness, crime.

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Shehu Mustapha Liberty[α], PhD & Muhammad Abdullahi[σ]

ABSTRACT

Being security conscious is paramount in this century that communities across the world are battling with different forms of criminal activities, which distort peace and security and hinders physical, political, and socio - economic growth and development. Being security conscious therefore empowers individuals with the knowledge and skills needed to protect their lives and communities, as well as being aware of the dangers, threats, and risks in one's surrounding. Against this backdrop, therefore, this paper examines security challenges and strategies for effective security consciousness in insecure communities. The article is based on Theory of Planned Behavior (TPB) and utilized conceptual analyses to conclude that criminal activities keep growing across communities in this 21st century due to poverty, illiteracy, religious extremism, ethnic and sectional intolerance, natural disasters, unmet interests, and economic imbalance among people, especially in less developed countries. It therefore, concludes that despite the existence of physical security forces provided by governments or local groups, individuals must take up the role of protecting themselves by being conscious of the security, as well as continuous improvement in community protection skills.

Keywords: security, insecurity, security consciousness, crime.

Author α σ: Department of Public Administration, University of Maiduguri - Nigeria.

I. INTRODUCTION

The challenge of insecurity is a key discourse of many communities in this century due to the world's affliction with protection-related concerns. Security challenges such as theft, fraud, cultism, kidnapping, banditry, insurgency, terrorism, or rituals are global pandemics that continues to distort world peace and affect the progress made in the physical, political, and socio-economic lives of the people and their communities.

In communities where people are increasingly becoming victims of crime and criminal activities, it is significant to be security conscious. It is not enough to have guards all the time. Still, one must be security conscious themselves because it helps in avoiding and responding to dangerous situations (Abundant Life Evangelical Mission [ALEM], 2020), which everyone is supposed to know, digest, and adopt.

Security is a universal entitlement that is a core part of human life. When insecurity bedevils a particular community, instability and confusion sets. The absence of peace and security sabotages all forms of development in communities and creates social disorder, which subsequently leads to the underdevelopment of communities. Insecure communities are characterized by the prevalence of conflict, violence, poverty, illiteracy, fraud, infrastructural decay, and many other social problems.

II. COMMUNITY SECURITY

Community security includes both group security and personal security, which focuses on ensuring communities and their members are safe and free from threat, fear, or anxiety. It promotes a multi-stakeholder approach that is driven by analysis of community needs and taking cognizance of cultures and contexts whether individual-oriented (including many in Latin America) or group-oriented (including many in South Asia and Africa). The core feature of the community security approach is a bottom-up method of security creation (both short and long term), not a top-bottom method, where decisions such as peace agreements are made at central or national levels (UNDP, 2009).

Communities must be conscious of conflict-driven issues around them through ensuring community safety and security, which ensures that communities are protected against the breakdown of communities which provide members with a reassuring sense of identity and shared value system, which includes protection of ethnic minorities and indigenous groups as a central focus, including being liberated from (UNDP, 1995):

1. threats from the state (physical torture);
2. threats from other states (war);
3. threats from another group of people (ethnic tension);
4. threats from individuals or gangs against other individuals or gangs (crime, street violence);
5. threats directed against women (rape, domestic violence);
6. threats directed at children based on their vulnerability and dependence (child abuse);
7. threats to self (suicide)

According to Bennet (2014), community security provides an important avenue for peace, security, and development progress because it permits communities to define and execute interventions in line with their actual needs and priorities, thereby helping communities discover creative, collaborative, and preventive solutions to security challenges, including:

1. Weak and poor state relations;
2. Overly state-centric models and views of security;
3. Lack of institutional resource and capacity;
4. Challenges of fostering genuine accountability and political incentives for security and justice reform;
5. Tensions within and between communities, particularly involving marginalized groups;
6. Lack of effective models for providing security, including poor rule of law and access to justice at the local level;
7. Lack of decent opportunities for income generation and better livelihoods;
8. Gender inequality and its potential to feed into gender-based violence and gender-related conflict dynamics;
9. The need to reintegrate former combatants into communities;
10. The need to decentralize, or extend the reach of, security and justice provision while maintaining values and accountability; and
11. The need to anticipate tensions and security challenges and work on them preventatively and constructively.

III. SECURITY AND SECURITY CONSCIOUSNESS

Security is described as the stability and continuity of livelihood, predictability of daily life, protection from crime, freedom from psychological harm, and protection from emotional stress, which results from the certainty of knowing that one is accepted, wanted, or loved and protected in one's community and by people around a particular surrounding (Oni, 2016). While this description has different dimensions, it can be summarized in a composite definition as the protection against all forms of psychological, physical, and economic harm (Adeyemi & Olotu, 2020). Contrarily, being open to danger, threat, or lack of protection represents insecurity. It also includes the anxiety involved when people feel insecure or lack confidence.

Being conscious is practically not a one-off feeling. It is constant for a living being. Relating this with our daily security concern means the need to be aware of threats and dangers one is exposed to on a daily basis. Being unaware of this, one innocently becomes a victim of insecurity in communities (ALEM, 2020). Being security conscious connotes knowing the happenings around us, what to do about them, or how to react to them. The term 'consciousness' here represents knowledge because it is impossible to react if one does not know or have an idea of the impact of a situation (ALEM, 2020).

Security consciousness is about being in the state of noticing discrepancies in situations of our surroundings. It also means noticing people who behave strangely or any other thing that is different from usual in the surrounding. Put differently, being security conscious can be the difference between being in safety and being in danger (Professional Alert Security Limited [PASL], 2019). Security consciousness is the knowledge

and attitude that citizens possess about the protection of their lives, information, networks, or organizations through taking sensible precautions and reasonable measures, as well as being aware of risks, threats, vulnerabilities and available safeguards.

A secured community is the community that is attributed with peace and the presence of all sorts of non-violence acts, and such acts could even become unthinkable and unlikely. Community members have a responsibility to protect their communities. These communities serve as one's home, and such home is their largest investment and identity. When crime bedevils a community, the members of that community often respond by taking some local measures, sometimes with elements of external support depending on the gravity of the criminal activities.

IV. SECURITY CHALLENGES IN COMMUNITIES

The world is experiencing a dramatic increase in criminal activities, lawlessness, and terrorism-related atrocities with series of killings, shootings, kidnappings, bombing, arson, or threat caused by series of factors such as poor human capital development, high level of poverty and illiteracy, religious extremism, political violence, unmet interests, natural disasters, ethnic and sectional intolerance, and economic imbalance.

Udoh (2015) emphasized that porous borders nowadays contribute significantly to promoting insecurity, which leads to the free flow of migrants from one country to another through unguarded borders. Several arms and ammunitions come through these borders in large quantities that end up in the hands of criminals, which aid their nefarious activities in communities of abode (Udoh, 2015). Furthermore, illegal armed groups sometimes import such arms to launch robbery attacks, bunker petroleum pipelines, kidnap for ransom, resist government decisions and engage in many other violent activities.

Community insecurity halts community development. No meaningful development can take place in conflict-prone communities because development can only thrive in safe, secure, and peaceful societies. In insecure communities, all energy and resources are wasted in restoring peace and security. It is in this light that Denney (2013), as cited in Adekola and Enyiche (2017) concluded that, "the relationship between insecurity and underdevelopment is much stronger than the relationship between peace and development (p. 35). In communities where conflict exists, underdevelopment often exists. Lack of security of lives and property is a major obstruction to meaningful and sustainable development. Fear and anxiety that insecurity breeds discourage investors from established firms that can foster progress by boosting employment, infrastructure and socio-economic development.

V. BEING SECURITY CONSCIOUS AND ENSURING SECURITY IN COMMUNITIES

Keeping safe in insecure communities requires conducting regular surveillance because most criminals are opportunists who look for opportunities to carry out criminal activities. They study potential victims, learn their habits and look for the best opportunity to strike. To counter this, one should avoid doing the same thing every day. Be random to confuse the potential criminals (IGS Security, 2017). When smart criminals want to commit a crime, they often study their targets by observing the routine of people in the community and find out where there is a lapse in security (PASL, 2019). Conducting regular community surveillance will discourage criminals from criminalizing a community. It will further allow communities to respond to crises by either setting up appropriate response strategies or liaising with appropriate authorities to provide the needed solutions.

Individuals who keep late hours at night are prone to danger, threat, kidnapping or robbery because criminals like to operate late hours at night, especially in narrow, dark, or quiet paths. When individuals walk alone in such a state, the risk is even higher compared to when in groups. These criminals use arms, which makes it easy to threaten, attack, snatch or even kill. Due to the darkness involved at night hours, criminals are hardly identified or detected. They find it very

easy to hide their identities and run away, even when security forces are involved.

Criminals are known for the habit of studying people's consistent patterns of life, such as the route they follow, programmes they attend, cars and devices they use, schools they take their kids to, their interests and hobbies, among others. Doing the same thing regularly eases criminal activities. Being unpredictable is therefore necessary for keeping safe. The more predictable individuals become, the easier it is for criminals to strike. Now that criminal activities are regular, individuals are urged to be unpredictable and random. Allow some randomness in your life and try to change some static patterns that can be used as clues by enemies (ALEM, 2020).

Being secretive is an important aspect of being security conscious. Sharing information with unnecessary people or strangers makes people vulnerable or prone to attacks, as ALEM (2020) notes that the more criminals know, the accurate they attack, and vice versa. Individuals are urged not to share private information in public spaces such as markets, buses, trains, clubs, schools, or any public gathering. More so, when speaking on the phone, be cautious how you talk about money, properties, gold, diamonds, and other valuables until one is sure who is around them. Often lower your voice, and be mindful of who is around you. Any information unguardedly whispered can get to the enemy, whose source may be from someone eavesdropping from the conversation.

The utilization of physical security as guards is significant in the protection of lives and properties. Communities must make an effort to have adequate security (personnel) presence with enough arms and ammunition, and should be complemented with the traditional safety measure like the use of locks, burglaries, gates, etc. Aside from these, communities should adopt state-of-the-art technology such as installing functional CCTV cameras, password protected locks, high-capacity memory, and alarms. According to PASL (2019), make regular security checks despite the existence of the latest technology. In addition, doors and windows remain locked unless necessary, and residents should have their keys with them all the time.

Adequate planning in respect of the community's security is paramount. It can take the form of knowing escape routes, having emergency phone numbers, being aware of the safest and quickest escape routes, and knowing good hiding spots in communities (GPS Security, 2014). Furthermore, individuals or groups in communities may keep approved weapons in case the need for self-protection for criminals may arise. Community members are encouraged to be on good terms with their neighbours, monitor strange faces and other movements continuously. Review security plans regularly. Individuals should act based on the plan such as changing movement routes and gate/door locks. Animals such as monkeys, parrots and dogs can also be used for surveillance. Planning is key in everything. With good plan, unforeseen dangers can be prevented or countered.

Improving community security can be achieved through establishing community watch systems, improving lighting of dark places, community clean up initiatives, surveillance of homes and neighbours, addressing empty buildings, hiring and consulting security service, informing neighbours about security issues, and consider renting out parking spaces in one's driveway (Weisberg Cummings, 2015).

The entire community should be involved in this by setting up a neighborhood watch committee system. This committee should observe and report suspicious behavior, work with police, put up signs to let would-be criminals know the community's pro-activeness, and inform other people of the community about criminal activities. Poor lighting spaces can be a good hideout for criminals. Community members, through local or state authority strategies, must therefore provide adequate lighting that will discourage criminals from hiding.

Community members should organize a clean-up campaign from time to time to get rid of overgrown trees, litter, and other wastes capable of promoting crime and suspicious activities. The system will not only help in cleaning the community but will also encourage community spirit among members, which is key to achieving collec-

tive security. In addition, one's home will be less of a target when doors, windows, and gates are in good working conditions, with complimentary alarms and other deterrence. Where empty buildings in the community exist, owners should be contacted to either use or rent them out. Leaving it empty can attract criminal activities.

In ensuring community security, local security strategies play a significant role. Civil society organizations (CSOs), traditional institutions, religious centers, market associations, motorist unions, youth groups, women groups, elders' forums, and people living with disabilities (PLW- Ds) in their formal and informal camps are critical in community security. The roles these groups could play take the form of intelligence gathering, logical consideration, early warning signals, physical confrontation, or social security measures, depending on each group's capability, relevance, and expertise, as well as the context in which it is needed.

VI. SOCIAL COHESION IN COMMUNITIES

Communities that lack social cohesion are known for social tensions, violent conflicts, targeting minorities and human rights violations. With social cohesion, there would be tolerance and respect for diversity in terms of ethnicity, religion, politics, gender, economy, or age, both individually or institutionally (UNDP,2009). According to Berger Schmidt (2000), there are two principal dimensions to social cohesion in communities:

i. The reduction of disparities, inequalities, and social exclusion.
ii. The strengthening of social relations, interactions, and ties.

The first dimension is about developing techniques for engaging excluded groups. Such exclusion takes different forms (economic, political, social, or cultural). Promoting social inclusion involves tackling power relations and confronting social groups or institutions in charge of the exclusion. The objective is to ensure that people of diverse backgrounds have similar life opportunities. People become more insecure if they are victimized due to their ethnicity, religion, culture, or gender. Such can become societal crises if a marginalized or affected group decides to use violent means in claiming rights or redress inequalities (Colleta & Cullen, 2000; Stewart, 2006).

The second dimension of social cohesion in communities entail developing social capital in all its forms, which serves as invisible glue that keeps society together even in stressful and difficult times (Colleta & Cullen, 2000; Stewart, 2006). Social capital can be strengthened through the following ways:

i. Building trust–people trusting one another.
ii. Fostering respect–developing an understanding of others.
iii. Supporting social networks that connect groups together.
iv. Increasing the responsiveness of state to its citizenry.
v. Encouraging participation and active engagement by people from different backgou- nds developing a common sense of belon- ging, a shared future vision, and a focus on what different social groups have in com- mon.

VII. THEORETICAL FRAMEWORK

This article is based on the Theory of Planned Behavior (TPB), which posits that attitude, subjective norms, and perceived behavioral control shapes people's behavioral intentions. The theory further posits that people make logical and reasoned decisions to engage in specific behaviors through evaluating the available information. People's behavior is determined by people's intention to engage in it and the perception that behavior is within one's control (Ryan & Carr, 2010).

TPB is one of the most used models in analyzing security compliance and behaviors. It is one of the reasons why it is highly established in behavioral sciences. The theory insists that behavior is influenced by intentions that are related to the behavior, and by actual behavior control, which moderates the effect of intentions on behavior. Attitudes, subjective norms and perceived control are the results of the individuals in the community and the strength of these beliefs. The theory describes how the assessments of the underlying beliefs are aggregated into attitudes and behaviors (Sommestad & Hallberg, 2013).

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Applying TPB to security consciousness in communities can be seen from the angle where community members' attitudes and intentions are mediated by goals and needs. For example, those who want a secure community can devise local defense strategies and liaise with existing security forces. Put differently, the goals and needs must relate with the attitude and intentions. TPB aids in understanding how people's behavior changes, as it assumes that behavior is planned. Hence, it predicts deliberate behavior.

People's behavior significantly influences security. Practices intended to lower security risks can be promoted in communities and be made local security policies that individuals and groups are expected to abide by. With TPB in this context, suitable and unsuitable behaviors can be identified. What determined its suitability will be its ability to proffer solutions such as promoting secu- rity consciousness. It will be unsuitable when considered as behavior that will not promote sec- urity-related awareness among communities.

IX. CONCLUSION

Many strategies exist to become security conscious. While adopting them will increase security measures, citizens are urged to continue devising more sophisticated means of protecting their communities and consult experts when unsure or need clarification and improvement. Security is a sine qua non for equitable and sustainable growth and development. Communities must therefore be adequately knowledgeable about security situations and continue devising means of restoring peace.

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