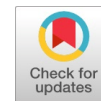


Extramarital Affairs in Sikkim and their Causes: A Study with Emphasis on the Difference Between the Sexes



Ruma Kundu, Kul Bahadur Chettri, Girijasankar Mallik

Abstract: *Collecting data for 240 individuals from rural and urban regions, this study examines the possible determinants of number of extramarital affairs (EMANO) in a hill state (Sikkim) in India. Using Poisson, Zero Inflated Poisson (ZIP) and instrumental variable Poisson (IV Poisson) model, this study found that income; financial satisfaction and marital satisfaction has positive and significant effect on number of extramarital affairs. Religiousness and same caste marriage reduce the chance of having EMANO significantly. This study also found that the relationship between the number of years married and EMANO are nonlinear and the tendency of having extramarital affairs reduces once the married life reached 12-13 years on average. Level of significance and importance of the variables on EMANO differs between male and female population.*

Keywords: India, Extramarital Affairs, ZIP, IV Poisson-GMM

I. INTRODUCTION

The success or otherwise of the institution of marriage depends on a number of associated external factors like the existence of trust and compatibility between partners and the level of comfort they experience with one another. In addition, similarities in terms of social, economic and cultural background can also play a significant role with regard to the longevity of a marriage. Finally, the ability of each partner to address the emotional and sexual needs of the spouse is also closely linked to the success of the marriage. Any deficiency or derangement in these factors can lead to marital disharmony, which may manifest in various ways, including extramarital relationships.

An “extra-marital” affair is seen as the contamination of marriage by the introduction of a third party. Such eventualities are almost invariably preceded by various smaller harbingers of disharmony, such as verbal or physical aggression, and psychological, emotional and physical separation (Bassard 1995) [5]. Certain social circumstances can further foment personal and interpersonal tension, for

example increased working hours, financial stress factors, and the element of social isolation that is inevitable in urban individuals; economic independence also increases the probability of having an affair, as wealthier people have the capacity to maintain illicit relationships. More obviously, extramarital affairs (EMA) can on occasion arise simply from a failure of impulse control; humans are wont to succumb to carnal desires, some of which may even be Darwinian in nature, particularly if the marriage is racially or genetically incompatible.

A common perception is that people enter EMA from a desire of fulfilment of carnal desires. However, many other factors may contribute to such infidelity; people may undertake such affairs out of revenge, boredom, or even to seek a real bond of understanding and even friendship which has been absent in their existing relationship. These other factors must not be underestimated, and therefore this paper seeks to determine what other variables may contribute to the formation of extramarital affair in Sikkim, a small state in India.

II. REVIEW OF LITERATURE

Despite of the strength of social norms and the myriad of negative consequences, extradyadic relationships among married men and women are common and increasing (Shackelford et al. 2000; Treas and Giesen 2000) [31]. Because of the complexity of the reasons for having an EMA [35], interest in ascertaining the determinants of EMA have also increased [32]. Among many others, Fair (1978) and Cameron (2002) have developed economic models of infidelity [13]. In his work Fair treated extramarital activities a subset of leisure activities [34], and used a Tobit model to examine whether economic analysis could be employed to predict the occurrence of EMA [33]. Elmslie and Tebaldi (2008) acknowledged Fair’s work and have followed a similar approach of carrying out an economic analysis of extramarital behaviour with particular emphasis on the differences between men and women in this regard [7].

Other factors that have been explored include a lack of adequate communication between husband and wife (Olayinka 2000) [30], and unemployment and financial instability, particularly in relationships where the man is the breadwinner (Akinbodunse 1996; Ogundana 1998) [2]. Meanwhile [29], using National Survey of family Growth (Cycle 5) data, Lehrer (2008) found that [25], “the relationship between age at marriage and marital instability is strongly negative up to late 20s,

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with a flattening of the curve thereafter”, The pioneering work by Becker et al. (1997) found that the relationship between age at the marriage and divorce may be nonlinear [6], while, in contrast, Buunk and Van Driel (1989) found that men are more inclined to have an EMA with increased marital dissatisfaction, whereas in women, increased financial independence was associated with higher rates of EMA (Lammers et al. 2011; Hiedemann et al. 1998; Aghajanian 1986) [1]. Not unsurprisingly, Atkins and Kessel (2008) observed in a cohort of 1439 individuals that religiousness and educational qualification reduced the likelihood of having an affair [12]. The consequences of EMA have also been studied. Fan and Liu (2004) showed how the perceived changes of marital satisfaction affect marital stability using a unique data set obtained in Hong Kong [18]. Among their findings, the change of marital satisfaction due to extramarital affairs clearly increased the probability of divorce, but this outcome was modified by other influences, such as the presence of dependent children, and good marital quality before the discovery of extramarital affairs, both of which would lower the probability of divorce [19]. Hartnett and Wollman (1979) examined how partners were perceived by others after the revelation. The results indicated that the perception regarding both husbands and wives was lower when either of them was in love with the third party [21].

Li and Racine (2004) examine Fair’s model of extramarital affairs and reveal that the number of years of marriage is not a relevant predictor for the propensity to engage in extramarital affairs, while controlling for other factors [24]. As per their admission, this goes against the prevailing wisdom gleaned from mis specified parametric models. Whisman et al. (2007) examined predictors of 12-month prevalence of sexual infidelity in a sample consisting of 2291 individuals and concluded that the association between marital dissatisfaction and infidelity was moderated by religiosity and wives’ pregnancy [36]. Nath (2011) studied the influence of demographic features like gender, age, education, occupation, years married, number of children, satisfaction with married life and degree of religiousness on EMA [27].

The literature in the area of gender difference in EMA is limited [28]. Some researchers have found that men are likely to be more involved in EMA than women, which is broadly explained by evolutionary theory (Buss and Schmitt 1993; Kenrick and Keefe 1992) [22], namely that men have traditionally had greater financial independence as well as social exposure (and hence opportunity) compared to women [10]. Given the same opportunities such as independent sources of power, wealth and economic independence, female infidelity should also increase and there should not be significance difference between men and women. (Buller 2005; Wood and Eagly 2007) [8]. Given the myriad of social, sexual and cultural determinants of EMA, there is much scope for examining the prevalence of extramarital affairs in particular communities; we chose to investigate the semi-urban population in the north-eastern princely state of Sikkim, India [17]. This study seeks to address the gap in the current literature in the following ways [37]. Our study is related to Fair (1978), Cameron (2002) and others who used two dependent variables separately to determine the incidence of EMA and frequency of transgressions [14].

However, our study differs by examining the number of EMA one has had, along with many explanatory variables. It is unique in that, thus far, this is the only study on the issue of EMA in India, hence the dataset is unique [20]. We also used count data modelling to examine the determinants of the number of extramarital affairs, and a broader set of variables were considered which may be widely generalised (drinking and smoking habits of the respondents, age difference between respondents, financial satisfaction) or of more local significance (the impact of inter-caste marriages). Certainly, the findings allow one to make certain inferences on the causes of EMA, and thereby make interesting comments on our own society.

III. DATA AND METHODOLOGY

The data was collected from Sikkim, India by the researchers using a questionnaire, however the process of gathering data was hindered by some cultural factors which had been anticipated; India being, by and large a conservative society, many people were reluctant to participate.

The model utilised for the present study is as follows:

$$\ln (E[EMANO]) = \beta_0 + \beta_1 \text{Yearsmarried}_i + \beta_2 \text{Yearsmarriedsq}_i + \beta_3 \ln \text{Income}_i + \beta_4 \text{Agedifmf}_i + \beta_5 \text{Child}_i + \beta_6 \text{Finsat}_i + \beta_7 \text{Samecaste}_i + \beta_8 \text{Ddrink}_i + \beta_9 \text{Dsmoke}_i + \beta_{10} \text{Partnersat}_i + \beta_{11} \text{Religiousness}_i + \beta_{12} \text{Asset}_i + \beta_{13} \text{Drlici}_i + \beta_{14} \text{Druci}_i + \beta_{15} \text{Graduate}_i + \beta_{16} \text{Gender}_i + \beta_{17} \text{Durbani}_i + e_i \quad (1)$$

We estimate equation (1) using Poisson regression model (PRM), Zero Inflated Poisson (ZIP) and instrumental variable Poisson (IV Poisson)-GMM (Gaussian mixture model) methods for different specifications. The existing literature suggests that age could have a nonlinear relationship with number of extramarital affairs (EMANO) outcomes. We consider Yearsmarried and Yearsmarried-squared as independent variables in equation (1). If the hypothesised relationship is supported by the data, the estimated coefficient of yearsmarrieds should be positive, and the estimated coefficient for Yearsmarried-squared should be negative. Based on the expectation that such a relationship is supported, it has been further assumed that there will be a threshold level of value for Yearsmarried for each dependent variable at which the response of the dependent variable to a change in yearsmarried will reverse. This research identifies the threshold level of yearsmarried at which this change in response occurs through the use of the following model.

$$\frac{dEMANO_i}{d\text{Yearsmarried}_i} = \beta_1 + 2\beta_2 \text{Yearsmarried}_i = 0$$

$$\text{Threshold value of Yearsmarried} = - \frac{\beta_1}{2\beta_2} \quad (2)$$

Since our dependent variable is a count variable, it is most appropriate to PRM or Negative Binomial regression model (NBRM) 1. If the p-value of the Pearson’s Chi-square is

¹ PRM and NBRM regression produce very similar estimates if over-dispersion is absent. In Poisson distribution mean and variance are equal. If the variance is much higher than the mean, NBR produce better result.

Table 1: Definition of the variables and summary statistics

Name of the variables	Description	Average	Standard deviation
EMANO	No of Extra marital affair: ranging from 0 to 3	0.825	1.024
Yearsmarried	Years of marriage	9.723	6.605
Yearsmarriedsq	Square of years of marriage	13.799	17.279
lnIncome	Natural logarithm of the income of the respondent	9.195	1.572
Agedifmf	Age of respondent (if male) minus partners age or age of partner minus respondent (if female)	4.542	4.006
Child	No. of children	1.588	1.281
Finsatis	Financial satisfaction; 1= totally satisfied, 11= totally dissatisfied	5.488	2.737
Samecaste	If the respondent and partner are same caste=1, no=0	0.608	0.489
Ddrink	The respondent's habit of drinking alcohol: Yes = 1, No = 0	0.550	0.499
Dsmoke	The respondent smokes: Yes = 1, No = 0	0.267	0.443
Maritalsatis	Self-rating of marital satisfaction; 1 = very unhappy, 5 = very happy	4.167	0.945
Religiousness	Ordinal variable (1-11), 1= Do not believe in religion, 11= Highly religious	9.313	1.872
Asset	0= No asset, 1= house, 2= house + other asset, 3= house + investment property + other asset	1.725	1.264
Drlc	Respondent belongs to lower caste = 1, Otherwise = 0	0.058	0.235
Drmc	Respondent belongs to middle caste=1, Otherwise=0 (Default dummy)		
Druc	Respondent belongs to upper caste = 1, Otherwise = 0	0.608	0.489
Graduate	If respondent is a graduate=1, Otherwise= 0	0.254	0.436
Gender	Male = 1, Female = 0	0.621	0.486
Durban	The respondent is an Urban resident=1, Otherwise=0	0.500	0.501
Tsrfamily	Time spent by the respondents with family (days per month)	15.575	3.608
Helsatis	Health satisfaction; 1= totally satisfied, 11= totally unsatisfied	2.517	1.611

above.10, the Poisson and Negative Binomial will produce the same result. This study also performs ZIP regression because the number of zeros (133) are more than 50%. In the case of ZIP, if the result for the Young test is not significant it implies that ZIP and Poisson will produce a similar result. Empirically speaking, a higher level of marital satisfaction should be associated with fewer EMA, however according to Glass and Wright (1977), the relationship between extramarital sex and marital satisfaction is mixed [16]. Levin (1975) found high marital satisfaction among 61 percent of wives who are engaged in extramarital sex [26]. Using structural equation modelling (Shackelford et al. 2008) did not rule out the 'reverse causal relationship'² between these two variables. Therefore, EMANO and marital satisfaction most probably are simultaneously determined and marital satisfaction can be considered as an endogenous variable. In order to deal with the endogeneity effect, it is necessary to choose appropriate instruments which affect marital satisfaction but do not affect EMANO directly. This study selected time spent by the respondents with family (tsrfamily) and health satisfaction (helsatis) as these instruments. Other things remaining constant, these two parameters would satisfy the respondent's partner, which in turn would increase marital satisfaction positively but may not influence EMANO directly.

We used IV Poisson analysis, since the dependent variable EMANO is a count data ranging from 0 to 3, using the STATA software. To justify the appropriateness of the use of IV Poisson, our study performed a test of the selected

endogenous variables³.

If some of the regressors are endogenous, IV Poisson estimates the parameters of a Poisson model using appropriate instruments, where the regressor (if it is endogenous) is related to the unobserved error term.⁴We also modelled the EMANO using an exponential conditional mean method with additive errors. Robust standard errors were used to allow for the heteroscedasticity of the random error terms as a default. Hansen's J statistic was used to determine the validity of the over identifying restrictions (validity of the instruments⁵) in a GMM model. A p-value of the Chi Square (with 2 degrees of freedom, because three instruments were used) statistic above 0.10 implies that the model is correctly specified.

IV. RESULTS AND DISCUSSIONS

If you are using Word, use either the Microsoft Equation Table 1 shows the description of the variables under study including the means and standard deviations. An appraisal of the sample summary reveals that the average number of extramarital affairs within the last five years is 0.825 with a standard deviation of 1.025. The average year of marriage is

³ To do the IV Poisson regression in STATA this study used the "IV Poisson GMM" command and to test the appropriateness of the selection of the endogenous variable marital satisfaction, this study used "IV Poisson CFUNCTION" command.

⁴See Wooldridge (2010) and Cameron and Trivedi (2013)

⁵See Hall (2005, sec. 5.1) for detail. Stata code: "ESTAT OVERID"

²Previt and Amato (2004) also found "that the estimated probability of infidelity could be both a cause and a consequence of marital satisfaction".

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9.723 and its standard deviation is 6.605. The average income of the respondents is Rs 9.915 with a standard deviation of 1.572. The mean age difference between the partners is 4.452 with a standard deviation of 4.00. The religiosity of the respondents is 9.313 and its standard deviation is 1.872.

Table 2 shows the estimated co-efficients of the model using different estimation methods and also for different specifications. Column (2) and (3) show the estimated coefficients using PRM. The p-value for the Pearson Chi-square test is above 0.10 implying that PRM is the appropriate method in this case and there is no need to

perform NBRM. In column (1) the PRM considered the variable yearsmarried alone. Because the relationship of yearsmarried and EMANO is non-linear we have considered the square of yearsmarried and found it to be significant for most of the cases. ZIP (see column (3) of table 2) is also considered because the zero-objects are more than 50% but the probability of the Young test is 0.484. Therefore, the estimated coefficients from PRM and ZIP will not differ.

Table 2: Estimated coefficients for the whole sample (dependent variable=EMANO)

Independent variables	Estimated co-efficient using						Marginal effects
	Poisson (2)	Poisson (3)	ZIP (4)	IVPoisson-GMM (Robust) (5)	Poisson (6)	IVPoisson-GMM (Robust) (7)	IVPoisson-GMM (Robust) (8)
Yearsmarried	-0.009 (-0.50)	0.122** (2.06)	0.122** (2.03)	0.120* (1.66)	0.122** (2.02)	0.131* (1.89)	0.108* (1.92)
Yearsmarriedsq		-0.050** (-2.27)	-0.050** (-2.23)	-0.045 (-1.54)	-0.051** (-2.28)	-0.051* (-1.78)	-0.042* (-1.80)
lnIncome	0.385*** (4.07)	0.372*** (3.88)	0.373*** (3.86)	0.346*** (3.79)	0.336*** (3.17)	0.288*** (2.98)	0.236*** (2.91)
Agedifmf	0.019 (0.98)	0.015 (0.77)	0.015 (0.77)	-0.009 (-0.38)	0.015 (0.75)	-0.009 (-0.40)	-0.008 (-0.40)
Child	0.0001 (0.00)	-0.077 (-0.73)	-0.076 (-0.70)	-0.112 (-0.89)	-0.093 (-0.87)	-0.123 (-0.95)	-0.101 (-0.96)
Finsatis	0.084*** (2.72)	0.085*** (2.75)	0.085*** (2.75)	0.051 (1.54)	0.084*** (2.67)	0.057* (1.78)	0.047* (1.77)
Samecaste	-0.383*** (-2.58)	-0.423*** (-2.84)	-0.417*** (-2.59)	-0.400** (-2.52)	-0.424*** (-2.79)	-0.369** (-2.24)	-0.304** (-2.23)
Ddrink	0.367** (2.16)	0.383** (2.26)	0.382** (2.24)	0.433** (2.40)	0.369** (2.15)	0.419** (2.29)	0.344** (2.24)
Dsmoke	0.117 (0.73)	0.092 (0.57)	0.092 (0.58)	0.076 (0.44)	0.133 (0.81)	0.143 (0.83)	0.118 (0.84)
maritalsatis	-0.145*** (-4.20)	-0.136*** (-3.88)	-0.135*** (-3.70)	-0.300*** (-5.11)	-0.140*** (-3.85)	-0.309*** (-5.10)	-0.254*** (-4.37)
Religiousness	-0.11*** (-3.08)	-0.099*** (-2.73)	-0.098*** (-2.67)	-0.055 (-1.47)	-0.088** (-2.37)	-0.041 (-1.19)	-0.034 (-1.22)
Asset					0.097 (1.30)	0.100 (1.30)	0.082 (1.31)
Drlc					0.362 (1.10)	0.644** (2.23)	0.530** (2.18)
Druc					0.028 (0.16)	-0.060 (-0.32)	-0.050 (-0.32)
Graduate					-0.042 (-0.21)	0.163 (0.69)	0.134 (0.69)
Gender	-0.175 (-0.95)	-0.109 (-0.58)	-0.111 (-0.59)	-0.085 (-0.40)	-0.204 (-1.02)	-0.161 (-0.73)	-0.133 (-0.72)
Durban	-0.107 (-0.73)	-0.117 (-0.79)	-0.110 (-0.65)	-0.193 (-1.22)	-0.120 (-0.80)	-0.156 (-0.98)	-0.128 (-0.98)
Constant	-3.82*** (-3.73)	-4.28*** (-4.06)	-4.29*** (-4.04)	-4.83*** (-4.59)	-4.16*** (-3.88)	-4.72*** (-4.52)	
Sample size	240	240	240	240	240	240	240
Pseudo R2	0.206	0.215			0.220		
Threshold years of marriage		12.20	12.20	13.33	11.96	12.84	12.86
Pearson χ^2 (p-value)	0.619	0.624			0.642		
Hensen's J-stat (p-value)				1.832 (0.608)		1.781 (0.410)	
Endogeneity test (p-value)				(0.004)		(0.004)	
No of Moments				32		21	

As discussed earlier, because EMANO and marital satisfaction are simultaneously determined this study considered marital satisfaction as an endogenous variable and therefore considered the IV POISSON-GMM estimation procedure. In order to justify the appropriateness of the use of the endogenous variable we used the control-function estimator and estimated the coefficient of the endogenous variable marital satisfaction;

we found that the p-value of the estimated coefficient of the control variable is significantly different from zero, suggesting that marital satisfaction is endogenous. Column (5) and (7) show the results for the IV Poisson estimation while column (8) shows the marginal effects of the estimated coefficients shown in column (7). The p-value for the Hansen J-statistic is also above 0.10 implying that our chosen IV Poisson-GMM method and the chosen endogenous variables and the instruments were appropriate for all specifications. Our results concluded that marital satisfaction significantly reduces EMANO, which supports the findings of existing studies.

Notes: i) ***, ** and * implies significance at 1%, 5% and 10% respectively; ii) Instruments for IV Poisson-GMM estimation are: tsfamily, healthsatis; iii) The p-value for the instrumented variable obtained using the command-“ivpoissonfunction” (cfunction=controlfunction for instrumenting in STATA; iv) Marginal effects are calculated using delta method; v) p-value Vuong test is 0.484 and zero objects=133.

To capture the effects of years of marriage on the incidence of EMANO, the square of years married was considered and it was found that both years married and years marriedsq are significant, implying that a nonlinear relationship exists between years of marriage and EMANO. The threshold level of years of marriage is approximately 12 years implying that the likelihood of having an affair increases with the years of marriage and reaches a peak after 12 years (approximate age = 47 years⁶), after which it decreases. Elmslie and Tebaldi (2008) also found an inverted U-shaped curve for age and EMA and concluded that the threshold level of age is 55 years for men and 45 years for women [15].

This study also found a positive and significant relationship between income and EMANO. The marginal effect for income derived from the IV Poisson regression (presented in Column (8) of table 2) is at 0.236, suggesting that for every 10000 rupees increase in income the EMANO will increase by 0.13 unit⁷. As outlined by Atkins et al. (2001) [3], EMAs require financial independence to carry out the relationship; furthermore, wealthy individuals have greater potential to attract extramarital partners. For the same reason financial satisfaction should also have positive relationship with EMANO [4].

In case of same caste marriage (same caste) the coefficient is negative and significant, implying that if the respondent and his/her partner are of same caste there is less tendency to have EMAs. In India, in general the same caste marriages are a part of the arranged marriage culture which is strongly supported, both financially and emotionally by the extended family. On the contrary, inter-caste and inter-religion marriages are considered undesirable; such couples face more difficulties, ranging from disapproval to outright ostracism. Notably, the coefficient for Drlc was positive and significant for the IV Poisson-GMM estimation. That is, if the respondent’s caste was lower than her spouse’s, the probability of having an EMA was higher.

The coefficient of Ddrink was positive and significant, indicating that alcohol consumption of the respondent increased EMANO. This phenomenon can be explained by the associated of alcoholism with mental health issues such as depression, boredom and high levels of stress; such risk factors lead to escapist behavior, of which EMA may be a manifestation.

Table 3: Estimated coefficients for Male and Female (dependent variable=EMANO)

Independent variables	Male				Female			
	Poisson		IV Poisson-GMM (Robust)		Poisson		IV Poisson-GMM (Robust)	
	Estimated coefficients	Marginal effects	Estimated coefficients	Marginal effects	Estimated coefficients	Marginal effects	Estimated coefficients	Marginal effects
	-2	-3	-4	-5	-6	-7	-8	-9
Yearsmarried	0.218***	0.199***	0.234***	0.212***	-0.066	-0.045	-0.053	-0.033
	-2.63	-2.57	-2.57	-2.63	(-0.63)	(-0.63)	(-0.50)	(-0.50)
Yearsmarriedsq	-0.087***	-0.080***	-0.094***	-0.085***	0.032	0.022	0.039	0.024
	(-2.87)	(-2.78)	(-2.99)	(-2.98)	-0.91	-0.91	-1.13	-1.12
lnIncome	0.472**	0.431**	0.430*	0.388*	0.416***	0.283***	0.500***	0.313***
	-2.09	-2.06	-1.89	-1.84	-2.79	-2.63	-2.87	-2.86
Agedifmf	-0.022	-0.02	-0.033	-0.03	0.087**	0.059**	0.084**	0.052**
	(-0.84)	(-0.83)	(-1.08)	(-1.08)	-2.32	-2.22	-2.38	-2.44
Child	-0.119	-0.109	-0.143	-0.129	-0.117	-0.08	-0.362*	-0.227*
	(-0.85)	(-0.85)	(-0.80)	(-0.81)	(-0.56)	(-0.55)	(-1.68)	(-1.72)
Finsatis	0.047	0.043	0.016	0.014	0.131**	0.089**	0.140**	0.088**
	-1.19	-1.18	-0.42	-0.42	-2.09	-2.02	-2.39	-2.46

⁶Since the average age in the sample is 35 (35+12=47)

⁷ $\frac{d \ln Income}{d EMANO} = \frac{1}{Income} \times \frac{d Income}{d EMANO} = \frac{1}{18116} \times 0.236 = 0.000013$, and $0.000013 \times 10000 = 0.13$

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Samecaste	-0.358*	-0.327*	-0.236	-0.213	-0.603*	-0.411*	-0.637**	-0.400**
	(-1.91)	(-1.89)	(-1.21)	(-1.22)	(-1.94)	(-1.88)	(-2.41)	(-2.44)
Ddrink	0.353*	0.322*	0.546***	0.493***	0.636*	0.433*	0.565	0.354
	-1.65	-1.63	-2.59	-2.5	-1.72	-1.68	-1.24	-1.22
Dsmoke	0.121	0.11	0.178	0.16	0.371	0.253	-0.064	-0.04
	-0.6	-0.6	-0.86	-0.87	-0.9	-0.9	(-0.16)	(-0.16)
maritalsatis	-0.183***	-0.167***	-0.326***	-0.295***	-0.06	-0.041	-0.237**	-0.148**
	(-4.15)	(-3.91)	(-5.13)	(-4.30)	(-0.59)	(-0.59)	(-2.06)	(-2.06)
Religiousness	-0.085**	-0.078**	-0.073**	-0.066**	0.01	0.007	0.161	0.101
	(-2.09)	(-2.06)	(-2.23)	(-2.33)	-0.07	-0.07	-1.08	-1.09
Asset	0.123	0.112	0.093	0.084	0.097	0.066	0.098	0.062
	-1.31	-1.3	-0.92	-0.91	-0.61	-0.61	-0.68	-0.69
Dric	0.345	0.315	0.672**	0.606**	0.957	0.652	1.416	0.888
	-0.87	-0.87	-2.21	-2.15	-1.27	-1.26	-1.48	-1.48
Druc	0.063	0.058	-0.009	-0.008	-0.084	-0.057	-0.47	-0.295
	-0.28	-0.28	(-0.04)	(-0.04)	(-0.24)	(-0.24)	(-1.20)	(-1.21)
Dgrad	0.045	0.041	0.215	0.194	-0.860*	-0.586*	-1.376**	-0.863**
	-0.18	-0.18	-0.69	-0.69	(-1.85)	(-1.80)	(-1.99)	(-2.03)
Durban	-0.183	-0.167	-0.198	-0.179	0.034	0.023	0.567	0.356
	(-1.00)	(-1.00)	(-1.11)	(-1.09)	-0.1	-0.1	-1.5	-1.54
Constant	-6.067***		-6.385***		-5.404***		-8.194***	
	(-2.71)		(-2.85)		(-2.70)		(-2.70)	
Sample size	149	149	149	149	91	91	91	91
Pseudo R2	0.216				0.316			
Threshold years of married	12.53	12.44	11.7	12.47				
Pearson χ^2 (p-value)	0.471				0.941			
Hansen's J-stat (p-value)			2.36				7.44	
			-0.307				-0.024	
Endogeneity test(p-value)			-0.004				(N/A)	
No of moments			20				20	

Notes: i) ***, ** and * implies significance at 1%, 5% and 10% respectively; ii) Instruments for IV Poisson-GMM estimation are: tsrfamily, healthsatis; iii) The p-value for the instrumented variable obtained using the command-“ivpoissoncfunction” (cfunction=control function for instrumenting in STATA; iv) Marginal effects are calculated using delta method. v) p-value for the endogeneity test for IV Poisson for female cannot calculated because of lower sample size; vi) threshold age for female Is not presented because the coefficients for yearsmarried and its square terms are not significant.

Table 3 shows the estimated coefficients for equation (1) for male and female separately. The p-value for the Pearson Chi-square test is above 0.10 which implies that the PRM is appropriate in this case and there is no need to perform the NBRM. It is clear from table 3, that the quadratic relationship of EMANO with years of marriage exists for males only. It may be the fact that men are involved in EMA as an act of ‘sexual infidelity’ and women as an act of ‘emotional

infidelity’ (Buss et al., 1992), therefore age of marriage may not be important for women [9].

The coefficient of income is positive and significant for both males and females, which supports the findings of Lammers et al. (2011) [23]. It should also be noted that the coefficient of financial satisfaction is significant only for women; this implies that, given more financial independence and higher position of power women may also be more likely to be unfaithful to their partners. The coefficient of marital satisfaction is negative and significant for males in both models and negative and significant for females when IV Poisson-GMM estimation was used.

The coefficient of religiousness was negative and significant when the PRM estimation method was considered but not significant for IV Poisson-GMM estimation method.

Most of the previous studies found that religiousness reduces the probability of having an EMA. In our study we could not agree strongly with the previous findings.

Religiousness is negative and significant at the 5% level for men in case of both Poisson and IV Poisson-GMM, however it is not so for females. The estimated coefficient for the age difference (agedifmf) is positive and significant for females but not for males; this implies that if the male partner is much older than the female partner, the female partner is most likely to go for EMA. In the case of females if the male partner is much older than the female, the female partner may not necessarily be sexually happy. A majority of times men are searching for more sex and attention while women are looking to fill an emotional void. According to the evolutionary hypothesis (Buss et al., 1992), the reason for infidelity among men is sexual while that for women is emotional⁸. It is also possible that older male partners do not even respond to their female counterparts and may not understand their emotional needs [11].

The coefficient of drinking is positive and significant at least at 10% level for males for both PRM and IV Poisson-GMM methods but significant for female when PRM was considered. The coefficient of education is negative and significant only for females.

V. CONCLUSIONS AND RECOMMENDATIONS

The main purpose of this research was to find out some new and important determinants of extramarital affair in a hill state in India. The attempt was courageous, because the data collection in the area of extramarital affair in India is indeed very difficult. The authors analysed a unique dataset collected by the researchers using appropriate econometric techniques. Unlike most of the previous studies who used binary variable for extramarital affairs, this study used count data for the number of EMAs. Based on the existing hypotheses the authors used some important variables which were never used for the determination of the EMANO [38].

For the whole sample, this study found that the relationship between years of marriage and EMANO is inverted U-shaped and the maximum point of the curve is approximately 12 years (or approximately 47 years of age) which is similar to the findings of Elmslie and Tebaldi (2008). The effect of Income on EMANO is positive and significant. This study further found from the estimated marginal effects of the income coefficient that for every 10000 rupees increase in income the EMANO will increase by 0.13 unit. Our results show that the marital satisfaction significantly reduces EMANO, which supports the existing literature.

Marriage between same castes reduces EMANO significantly, which is a unique variable applicable only for the Indian population. The estimated coefficient of religiousness is negative and significant at least at 5% level for men but not for the female population. The estimated coefficient of the age difference for male and female is positive and significant for females but not for males. Probably, women do not like older partners; this may be due to sexual dissatisfaction or due to lack of attention from the older male partner, because of which they try to find other

partners to fill the emotional void.

Religiosity, drinking and marriage with lower caste women increase the EMANO for males. For their female counterparts, education (-), age difference (-) and financial satisfaction are significantly important determinants for EMANO. The econometric techniques used in this study are appropriate and the estimated results are robust. The limitation of this research is the lower sample size. This paper recommends that women should not get married with older man, which is many cases are common in the Indian subcontinent, but things are changing. This study failed to recommend a possible age difference because of lower sample size.

REFERENCES

1. Aghajanian, A. (1986). Some notes on divorce in Iran. *Journal of Marriage and the Family*, 48, 749 – 55.
2. Akinbodunse, I.A. (1996) Determination of marital conflict as perceived by couples in Ondo. Unpublished M.Ed. Project, University of Ilorin.
3. Atkins, D. C., Baucom, D. H. & Jacobson, N. S. (2001). Understanding infidelity: correlates in a national random sample. *Journal of Family Psychology*, 15(4), 735-749.
4. Atkins, D.C. & Kessel, D.E. (2008). Religiousness and infidelity: attendance, but not faith and prayer, predict marital fidelity, *Journal of Marriage and Family*, 70(2); 407-418.
5. Bassard, J.H. (1995) Why marriages go wrong. Loskegas: Ronald Press.
6. Becker, G., Landes, E.M., & Michael, R.T., (1977). An economic analysis of marital instability. *Journal of Political Economy*, 85(6), 1141-1187.
7. Besser, A., & Goetz, A.T. (2008). Personality, marital satisfaction, and probability of marital infidelity, *Individual Differences Research*, 6(1), 13-25.
8. Buller, D.J. (2005). Evolutionary psychology: the emperor's new paradigm, *TRENDS in Cognitive Sciences*, 9(6), 277-283.
9. Buss, D.M., Larsen, R.J., Westen, D., & Semmelroth, J. (1992). Sex differences in jealousy: evolution, physiology, and psychology, *Psychological Science*, 3, 251–255.
10. Buss, D.M., & Shackelford, T.K. (1997). Susceptibility to Infidelity in the First Year of Marriage. *Journal of Research in Personality*, 31, 193-221.
11. Buss, D.M., & Schmitt, D.P. (1993). Sexual strategies theory: an evolutionary perspective on human mating. *Psychological Review*, 100, 204-232.
12. Buunk, B.P. & Van Driel, B. (1989). *Variant Lifestyles and Relationships*. Newbury Park, CA: Sage.
13. Cameron, S (2002). The economics of partner out trading in sexual markets. *Journal of Bioeconomics*, 4, 195-222.
14. Cameron, A.C. & Trivedi, P.K. (2013). *Regression Analysis of Count Data*. 2nd ed. New York: Cambridge University Press.
15. Elmslie, B & Tebaldi, E. (2008). So, what did you do last night? the economics of infidelity. *KYKLOS*, 61(3), 391-410.
16. Glass, S.P., & Wright, T.L. (1977). The relationship of extramarital sex, length of marriage, and sex differences on marital satisfaction and romanticism: Athanasiou's data reanalysed. *Journal of Marriage and the Family*, 39, 691-703.
17. Hall, A.R. (2005). *Generalised Method of Moments*. Oxford: Oxford University Press.
18. Hiedemann, B., Suhomlinova, O & O'Rand, A.M., (1998). Economic independence, economic status, and empty nest in midlife marital disruption. *Journal of Marriage and Family*. 60(1), 219-231
19. Fan, C.S., Lui, H-K., (2004). Extramarital affairs, marital satisfaction, and divorce: evidence from Hong Kong. *Contemporary Economic Policy*, 22(4), 442-452.
20. Far, R.C., (1978). A theory of extramarital affairs. *Journal of Political Economy*, 86, 45-61.
21. Hartnett, J. & Wollman, N. (1979). Extramarital affairs: A study in person perception; perceptual and motor skills, 48(3C), 1306.
22. Kenrick, D., & Keefe, R. C. (1992). Age preferences in mates reflect sex differences in reproductive strategies. *Behavioral and Brain Sciences*, 15, 75 – 133.
23. Lammers, J., Stoker, J. I., Jordan, J., Pollmann, M. & Stapel, D. A. (2011). Power increases infidelity among men and women. *Psychological Science*, 22 (9), 1191-1197.

⁸According to Takahashi et al. (2006), "men and women show distinct activations during imagery of sexual and emotional infidelity".

24. Li, Q., & Racine, J. (2004). Predictor relevance and extramarital affairs. *Journal of Applied Econometrics*, 19(4), 533-535.
25. Lehrer, E.L., (2008). Age at marriage and marital instability: revisiting the beckers-landes-michael hypothesis, *Journal of Population Economics*. 21(2), 463-484.
26. Levin, R.J., (1975). The Redbook report on premarital and extramarital sex, Redbook, 38ff.
27. Nath, S. (2011) What makes people infidel? an analysis of the influence of demographics on extramarital affairs. *Undergraduate Economic Review*. 8(1), 1-17
28. Nwoye, A., (1991). *Marriage and Family Counselling*. Job: Fab Anieh (Nig) Ltd.
29. Ogundana, J.S. (1998). Factor responsible for marital instability as expressed by couples in Ilorin. Unpublished project, University of Ilorin.
30. Olayinka, M.S. (2000). *Sex education and marital guidance*. Yaba: Lantern books.
31. Previti, D., & Amato, P.R., (2004). Is infidelity a cause or a consequence of poor marital quality? *Journal of Social and Personal Relationships*. 21(2): 217-230.
- Shackelford, T.K., LeBlanc, G.J, and Drass, E., (2000). Emotional reactions to infidelity, *Cognition and Emotion*, 14(5), 643-659.
32. Shackelford, T.K., Besser, A., & Goetz, A.T. (2008). Personality, marital satisfaction, and probability of marital infidelity, *Individual Differences Research*. 6(1), 13-25.
33. Streaan, H. S. (1980). *The extramarital affair*, Free Press New York.
34. Takahashi, H., Matsuura, M., Yahata, N., Koeda, M., Suhara, T., & Okubof, Y. (2006). Men and women show distinct brain activations during imagery of sexual and emotional infidelity, *NeuroImage*, 32, 1299-1307.
35. Treas, J., & Giesen, D. (2000). Sexual infidelity among married and cohabiting Americans. *Journal of Marriage and the Family*, 62, 48-60.
36. Whisman, M.A., Gordon, K.C., & Chatav, Y. (2007) Predicting Sexual Infidelity in a Population- based Sample of Married Individuals. *Journal of Family Psychology*, 21(2), 320-324.
37. Wood, W., & Eagly, A.H., (2007). Social structural origins of sex differences in human mating. In S. W. Gangestad & J. A. Thomson (Eds.), *Evolution of the mind: Fundamental questions and controversies* (pp. 383-390), NY: Guilford Press.
38. Wooldridge, J.M. (2010) *Econometric Analysis of Cross Section and Panel Data*. 2nd ed. Cambridge, MA: MIT Press.

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